

Pump Spare Parts & Accessories

QUICK REFERENCE

“Pump Spare Parts & Accessories” T.O.C.

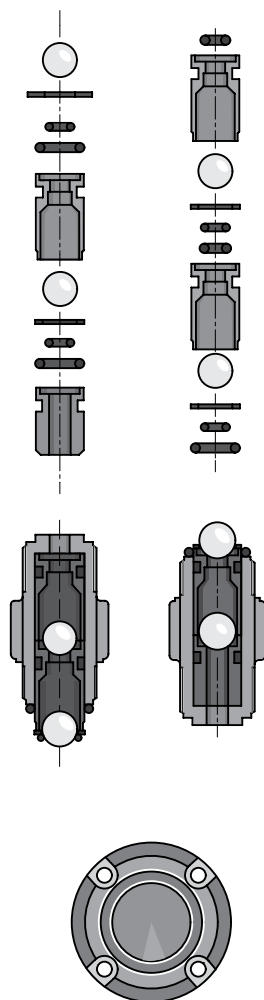
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CATALOG SECTION TABS

product overview	■ Introduction ■ pump selection by capacity ■ chemical resistance list ■ Solenoid & Motor Pump Overview ■ Analytical Instrumentation Overview	product overview
solenoid-driven metering pumps	■ concept PLUS ■ beta ■ gamma/L ■ delta ■ extronic ■ mikro delta	solenoid-driven metering pumps
motor-driven metering pumps	■ Sigma/ 1 ■ Sigma/ 2 ■ Sigma/ 3 ■ ProMus ■ Makro ■ Orlita ■ DulcoFlex	motor-driven metering pumps
pump spare parts & accessories	■ solenoid pump spare parts ■ motor pump spare parts ■ pump accessories	pump spare parts & accessories
DULCOMETER® instrumentation	■ D1C ■ D2C ■ Dulcometer® Compact ■ DMT ■ DDC ■ MicroFlex ■ SlimFlex ■ MultiFLEX ■ AEGIS	DULCOMETER® instrumentation
DULCOTEST® sensors	■ amperometric sensors ■ potentiometric sensors ■ potentiostatic sensors ■ conductometric sensors ■ accessories	DULCOTEST® sensors
polymer blending systems	■ ProMix™-M (In-line Controls) ■ ProMix™-M (Batch & In-line Controls) ■ ProMix™-S ■ ProMix™-C	polymer blending systems

Solenoid Pump Spare Parts

beta/a, concept^{PLUS} and gamma/L



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Complete liquid ends include pump head, valves, mounting screws, diaphragm and backplate. Spare parts kits include:

PP, PC, PV, & NP Liquid Ends

- 1 Diaphragm
- 1 Suction Valve
- 1 Discharge Valve
- 2 Connector Sets
- 2 Valve Balls
- 1 Set O-rings

TT Liquid Ends

- 1 Diaphragm
- 1 Suction Valve
- 1 Discharge Valve
- 2 Connector Sets
- 2 Valve Balls
- 1 Set O-rings
- 2 Ball Seat Discs

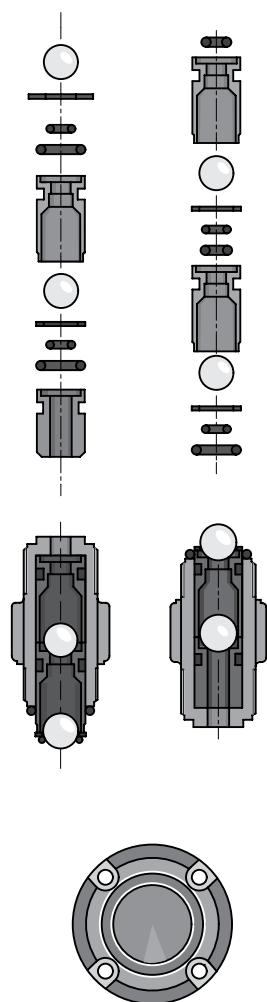
SS Liquid Ends

- 1 Diaphragm
- 4 Valve Balls
- 1 Set O-rings
- 4 Ball Seat Discs

Liquid End Version	Material Code	Complete Liquid End	Spare Parts Kit	Spare Valves Only (connector sets not included)		
				Suction	Discharge	Diaphragm
1000	PPE	1002057	1001644	792644	740350	1000244
	PPB	1002065	1001652	792646	740351	1000244
	PCE	1002365	1001713	792119	740349	1000244
	NPE	1002193	1001713	792119	740349	1000244
	PCB	1002358	1001721	792026	740348	1000244
	NPB	1002201	1001721	792026	740348	1000244
	TTT	1002345	1001737	809407	809406	1000244
	SST	1002557	1002549	809424	809423	1000244
	PVT	1023134	1023107	1023128	1023127	1000244
1601	PPE	1002058	1001645	792644	740350	1000245
	PPB	1002066	1001653	792646	740351	1000245
	PCE	1002366	1001714	792119	740349	1000245
	NPE	1002194	1001714	792119	740349	1000245
	PCB	1002359	1001722	792026	740348	1000245
	NPB	1002202	1001722	792026	740348	1000245
	TTT	1002346	1001738	809407	809406	1000245
	SST	1002558	1002550	809424	809423	1000245
	PVT	1023135	1023108	1023128	1023127	1000245
1602	PPE	1002059	1001646	792644	740350	1000246
	PPB	1002067	1001654	792646	740351	1000246
	PCE	1002367	1001715	792119	740349	1000246
	NPE	1002195	1001715	792119	740349	1000246
	PCB	1002360	1001723	792026	740348	1000246
	NPB	1002203	1001723	792026	740348	1000246
	TTT	1002347	1001739	809407	809406	1000246
	SST	1002559	1002551	809424	809423	1000246
	PVT	1023136	1023109	1023128	1023127	1000246
1005	PPE	1002060	1001647	792644	740350	1000247
	PPB	1002068	1001655	792646	740351	1000247
	PCE	1002368	1001716	792119	740349	1000247
	NPE	1002196	1001716	792119	740349	1000247
	PCB	1002361	1001724	792026	740348	1000247
	NPB	1002204	1001724	792026	740348	1000247
	PVT HV	1018072	1019066	1002267	1002267	1000247
	TTT	1002348	1001740	809407	809406	1000247
	SST	1002560	1002552	809424	809423	1000247
	PVT	1023137	1023110	1023126	1023125	1000247
0708	PPE	1002061	1001648	1001437	1001441	1000248
	PPB	1002069	1001656	1001436	1001440	1000248
	PCE	1002369	1001717	1001435	1001439	1000248
	NPE	1002197	1001717	1001435	1001439	1000248
	PCB	1002362	1001725	1001434	1001438	1000248
	NPB	1002205	1001725	1001434	1001438	1000248
	PVT HV	1018073	1019067	1002267	1002267	1000248
	TTT	1002349	1001741	809445	809444	1000248
	SST	1002561	1002553	809497	809496	1000248
	PVT	1023138	1023111	1023126	1023125	1000248
0413	PPE	1002062	1001649	1001437	1001441	1000249
	PPB	1002070	1001657	1001436	1001440	1000249
	PCE	1002370	1001718	1001435	1001439	1000249

Solenoid Pump Spare Parts

beta/a and gamma/L

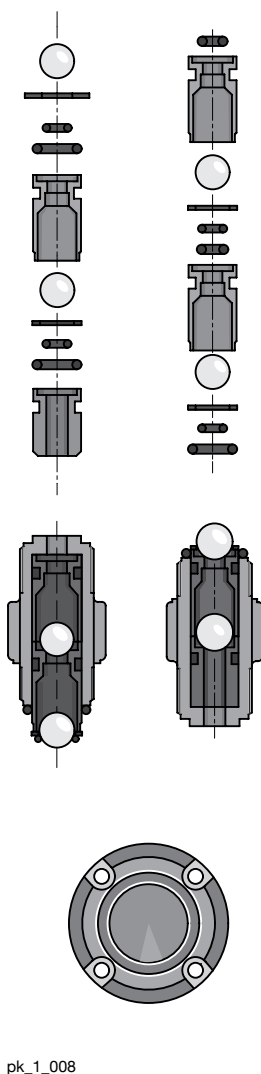


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Liquid End Version	Material Code	Complete Liquid End	Spare Parts Kit	Spare Valves Only (connector sets not included)		
				Suction	Discharge	Diaphragm
0413 (cont.)	NPE	1002198	1001718	1001435	1001439	1000249
	PCB	1002363	1001726	1001434	1001438	1000249
	NPB	1002206	1001726	1001434	1001438	1000249
	PVT HV	1018084	1019069	1002267	1002267	1000249
	TTT	1002350	1001742	809445	809444	1000249
	SST	1002562	1002554	809497	809496	1000249
	PVT	1023139	1023112	1023126	1023125	1000249
0220	PPE	1002063	1001650	1001437	1001441	1000250
	PPB	1002071	1001658	1001436	1001440	1000250
	PCE	1002371	1001719	1001435	1001439	1000250
	NPE	1002199	1001719	1001435	1001439	1000250
	PCB	1002364	1001727	1001434	1001438	1000250
	NPB	1002207	1001727	1001434	1001438	1000250
	PVT HV	1018085	1019070	1002267	1002267	1000250
	TTT	1002351	1001754	809445	809444	1000250
	SST	1002563	1002555	1002547	1002548	1000250
	PVT	1023140	1023113	1023126	1023125	1000250
	PPE	1002060	1001647	792644	740350	1000247
1605	PPB	1002068	1001655	792646	740351	1000247
	PCE	1002368	1001716	792119	740349	1000247
	NPE	1002196	1001716	792119	740349	1000247
	PCB	1002361	1001724	792026	740348	1000247
	NPB	1002204	1001724	792026	740348	1000247
	PVT HV	1018072	1019066	1002267	1002267	1000247
	TTT	1002348	1001740	809407	809406	1000247
	SST	1002560	1002552	809424	809423	1000247
	PVT	1023137	1023110	1023126	1023125	1000247
	PPE	1002061	1001648	1001437	1001441	1000248
	PPB	1002069	1001656	1001436	1001440	1000248
1008	PCE	1002369	1001717	1001435	1001439	1000248
	NPE	1002197	1001717	1001435	1001439	1000248
	PCB	1002362	1001725	1001434	1001438	1000248
	NPB	1002205	1001725	1001434	1001438	1000248
	PVT HV	1018073	1019067	1002267	1002267	1000248
	TTT	1002349	1001741	809445	809444	1000248
	SST	1002561	1002553	809497	809496	1000248
	PVT	1023138	1023111	1023126	1023125	1000248
	PPE	1002062	1001649	1001437	1001441	1000249
	PPB	1002070	1001657	1001436	1001440	1000249
	PCE	1002370	1001718	1001435	1001439	1000249
0713	NPE	1002198	1001718	1001435	1001439	1000249
	PCB	1002363	1001726	1001434	1001438	1000249
	NPB	1002206	1001726	1001434	1001438	1000249
	PVT HV	1018084	1019069	1002267	1002267	1000249
	TTT	1002350	1001742	809445	809444	1000249
	SST	1002562	1002554	809497	809496	1000249
	PVT	1023139	1023112	1023126	1023125	1000249
0420	PPE	1002063	1001650	1001437	1001441	1000250
	PPB	1002071	1001658	1001436	1001440	1000250
	PCE	1002371	1001719	1001435	1001439	1000250
	NPE	1002199	1001719	1001435	1001439	1000250
	PCB	1002364	1001727	1001434	1001438	1000250
	NPB	1002207	1001727	1001434	1001438	1000250
	PVT HV	1018085	1019070	1002267	1002267	1000250
	TTT	1002351	1001754	809445	809444	1000250
	SST	1002563	1002555	1002547	1002548	1000250
	PVT	1023140	1023113	1023126	1023125	1000250
	PPE	1002064	1001651	1001437	1001441	1000251
0232	PPB	1002072	1001659	1001436	1001440	1000251
	PCE	1002609	1001720	1001435	1001439	1000251
	NPE	1002200	1001720	1001435	1001439	1000251
	PCB	1002608	1001728	1001434	1001438	1000251
	NPB	1002208	1001728	1001434	1001438	1000251
	TTT	1002352	1001755	809445	809444	1000251
	SST	1002564	1002556	1002547	1002548	1000251
	PVT	1023141	1023124	1023126	1023125	1000251

Solenoid Pump Spare Parts

beta/a and gamma/L Auto-degassing



For Auto-degassing pumps.

Complete liquid ends include pump head, valves, mounting screws, diaphragm and back plate. Spare parts kits include:

PP & NP

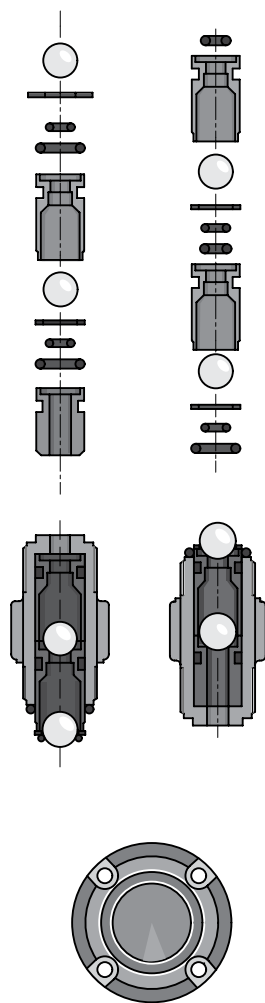
Liquid Ends

- | | |
|-------------------|------------------------|
| 1 Diaphragm | 2 Valve Balls |
| 1 Suction Valve | 1 Set O-rings |
| 1 Discharge Valve | 1 Vent Valve, Complete |
| 2 Connector Sets | |

Liquid End Version	Material Code	Complete Liquid End	Spare Parts Kit	Spare Valves Only (connector sets not included)			Diaphragm
				Suction	Discharge	Vent	
GALa							
1601	PPE	1002393	1001756	792644	1001067	1001063	1000245
	PPB	1002392	1001762	792646	1001066	1001062	1000245
	NPE	1002248	1001660	792119	1001065	1001061	1000245
	NPB	1002242	1001666	792026	1001064	1001060	1000245
1602	PPE	1002395	1001757	792644	1001067	1001063	1000246
	PPB	1002394	1001763	792646	1001066	1001062	1000246
	NPE	1002249	1001661	792119	1001065	1001061	1000246
	NPB	1002243	1001667	792026	1001064	1001060	1000246
1005	PPE	1002399	1001758	792644	1001067	1001063	1000247
	PPB	1002398	1001764	792646	1001066	1001062	1000247
	NPE	1002250	1001662	792119	1001065	1001061	1000247
	NPB	1002244	1001668	792026	1001064	1001060	1000247
0708	PPE	1002397	1001759	1001437	1001071	1001063	1000248
	PPB	1002396	1001765	1001436	1001070	1001062	1000248
	NPE	1002251	1001663	1001435	1001069	1001061	1000248
	NPB	1002245	1001669	1001434	1001068	1001060	1000248
0413	PPE	1002401	1001760	1001437	1001071	1001063	1000249
	PPB	1002400	1001766	1001436	1001070	1001062	1000249
	NPE	1002252	1001664	1001435	1001069	1001061	1000249
	NPB	1002246	1001670	1001434	1001068	1001060	1000249
0220	PPE	1002403	1001761	1001437	1001071	1001063	1000250
	PPB	1002402	1001767	1001436	1001070	1001062	1000250
	NPE	1002253	1001665	1001435	1001069	1001061	1000250
	NPB	1002247	1001671	1001434	1001068	1001060	1000250
1605	PPE	1002399	1001758	792644	1001067	1001063	1000247
	PPB	1002398	1001764	792646	1001066	1001062	1000247
	NPE	1002250	1001662	792119	1001065	1001061	1000247
	NPB	1002244	1001668	792026	1001064	1001060	1000247
1008	PPE	1002397	1001759	1001437	1001071	1001063.5	1000248
	PPB	1002396	1001765	1001436	1001070	1001062.7	1000248
	NPE	1002251	1001663	1001435	1001069	1001061.9	1000248
	NPB	1002245	1001669	1001434	1001068	1001060.1	1000248
0713	PPE	1002401	1001760	1001437	1001071	1001063.5	1000249
	PPB	1002400	1001766	1001436	1001070	1001062.7	1000249
	NPE	1002252	1001664	1001435	1001069	1001061.9	1000249
	NPB	1002246	1001670	1001434	1001068	1001060.1	1000249
0420	PPE	1002403	1001761	1001437	1001071	1001063.5	1000250
	PPB	1002402	1001767	1001436	1001070	1001062.7	1000250
	NPE	1002253	1001665	1001435	1001069	1001061.9	1000250
	NPB	1002247	1001671	1001434	1001068	1001060.1	1000250

Solenoid Pump Spare Parts

beta/b



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Complete liquid ends include pump head, valves, mounting screws, diaphragm and backplate. Spare parts kits include:

PP, PC, PV, & NP Liquid Ends

- 1 Diaphragm
- 1 Suction Valve
- 1 Discharge Valve
- 2 Connector Sets
- 2 Valve Balls
- 1 Set O-rings

TT Liquid Ends

- 1 Diaphragm
- 1 Suction Valve
- 1 Discharge Valve
- 2 Connector Sets
- 2 Valve Balls
- 1 Set O-rings
- 2 Ball Seat Discs

SS Liquid Ends

- 1 Diaphragm
- 4 Valve Balls
- 1 Set O-rings
- 4 Ball Seat Discs

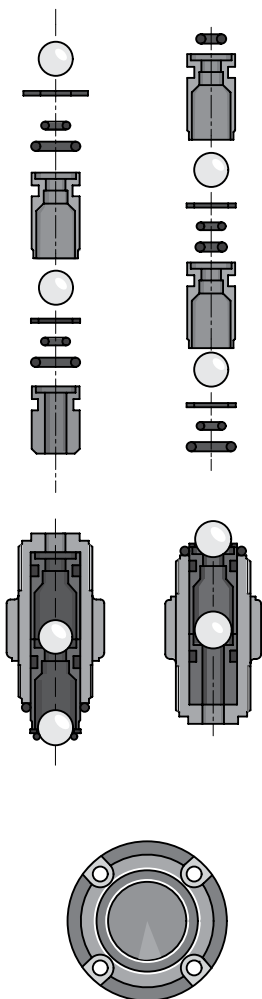
Liquid End Version	Material Code	Complete Liquid End	Spare Parts Kit	Spare Valves Only (connector sets not included)		
				Suction	Discharge	Diaphragm
1000	PPT	1035317	1023107	1023128	1023127	1000244
	NPT	1034560	1023107	1023128	1023127	1000244
	PVT	1023134	1023107	1023128	1023127	1000244
	TTT	1002345	1001737	809407	809406	1000244
	SST	1002557	1002549	809424	809423	1000244
1601	PPT	1035318	1023108	1023128	1023127	1000245
	NPT	1034561	1023108	1023128	1023127	1000245
	PVT	1023135	1023108	1023128	1023127	1000245
	TTT	1002346	1001738	809407	809406	1000245
	SST	1002558	1002550	809424	809423	1000245
2001	NPT	1034561	1023108	1023128	1023127	1000245
	SST	1002558	1002550	809424	809423	1000245
1602	PPT	1035319	1023109	1023128	1023127	1000246
	NPT	1034562	1023109	1023128	1023127	1000246
	PVT	1023136	1023109	1023128	1023127	1000246
	TTT	1002347	1001739	809407	809406	1000246
	SST	1002559	1002551	809424	809423	1000246
2002	NPT	1034562	1023109	1023128	1023127	1000246
	SST	1002559	1002551	809424	809423	1000246
1604	PPT	1035320	1035332	1023128	1023127	1034612
	NPT	1034563	1035332	1023128	1023127	1034612
	PVT	1035298	1035332	1023128	1023127	1034612
	TTT	1034582	1035330	809407	809406	1034612
	SST	1035325	1035331	809424	809423	1034612
	PVT HV	1035326	1035342	x	x	1034612
0708	PPT	1035321	1023111	1023126	1023125	1000248
	NPT	1034564	1023111	1023126	1023125	1000248
	PVT	1023138	1023111	1023126	1023125	1000248
	TTT	1002349	1001741	809445	809444	1000248
	SST	1002561	1002553	809497	809496	1000248
	PVT HV	1018073	1019067	1002267	1002267	1000248
0413	PPT	1035322	1023112	1023126	1023125	1000249
	NPT	1034565	1023112	1023126	1023125	1000249
	PVT	1023139	1023112	1023126	1023125	1000249
	TTT	1002350	1001742	809445	809444	1000249
	SST	1002562	1002554	809497	809496	1000249
	PVT HV	1018084	1019069	1002267	1002267	1000249
0220	PPT	1035323	1023113	1023126	1023125	1000250
	NPT	1034566	1023113	1023126	1023125	1000250
	PVT	1023140	1023113	1023126	1023125	1000250
	TTT	1002351	1001754	809445	809444	1000250
	SST	1002563	1002555	1002547	1002548	1000250
	PVT HV	1018085	1019070	1002267	1002267	1000250
2504	NPT	1034563	1035332	1023128	1023127	1034612
	SST	1035325	1035331	809424	809423	1034612
1008	PPT	1035321	1023111	1023126	1023125	1000248
	NPT	1034564	1023111	1023126	1023125	1000248
	PVT	1023138	1023111	1023126	1023125	1000248
	TTT	1002349	1001741	809445	809444	1000248
	SST	1002561	1002553	809497	809496	1000248
	PVT HV	1018073	1019067	1002267	1002267	1000248

Solenoid Pump Spare Parts

beta/b continued

Liquid End Version	Material Code	Complete Liquid End	Spare Parts Kit	Spare Valves Only (connector sets not included)		
				Suction	Discharge	Diaphragm
0713	PPT	1035322	1023112	1023126	1023125	1000249
	NPT	1034564	1023112	1023126	1023125	1000249
	PVT	1023139	1023112	1023126	1023125	1000249
	TTT	1002350	1001742	809445	809444	1000249
	SST	1002562	1002554	809497	809496	1000249
	PVT HV	1018084	1019069	1002267	1002267	1000249
0420	PPT	1035323	1023113	1023126	1023125	1000250
	NPT	1034566	1023113	1023126	1023125	1000250
	PVT	1023140	1023113	1023126	1023125	1000250
	TTT	1002351	1001754	809445	809444	1000250
	SST	1002563	1002555	1002547	1002548	1000250
	PVT HV	1018085	1019070	1002267	1002267	1000250

beta/b Auto-degass



pk_1_008

For Auto-degassing pumps.

Complete liquid ends include pump head, valves, mounting screws, diaphragm and back plate. Spare parts kits include:

PP & NP Liquid Ends

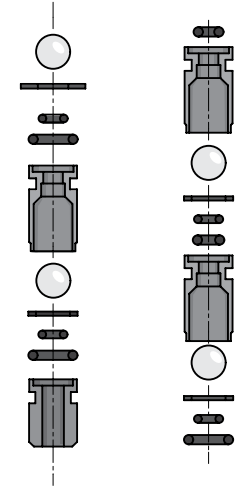
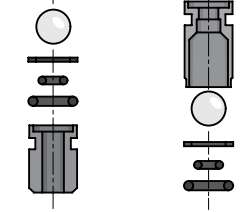
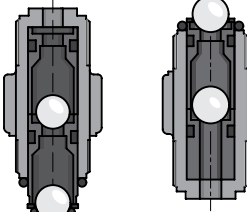
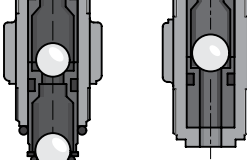
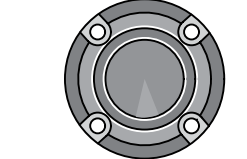
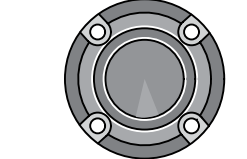
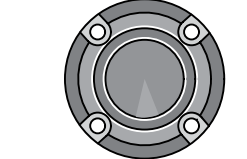
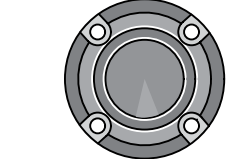
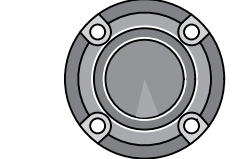
1 Diaphragm	1 Suction Valve	1 Discharge Valve	2 Valve Balls
2 Connector Sets	1 Set O-rings	1 Vent Valve, Complete	

Liquid End Version	Material Code	Complete Liquid End	Spare Parts Kit	Spare Valves Only (connector sets not included)			Diaphragm
				Suction	Discharge	Vent	
1601	NPE	1002248	1001660	792119	1001065	1001061	1000245
	NPB	1002242	1001666	792026	1001064	1001060	1000245
	PPE	1002393	1001756	792644	1001067	1001063	1000245
	PPB	1002392	1001762	792646	1001066	1001062	1000245
1602	NPE	1002249	1001661	792119	1001065	1001061	1000246
	NPB	1002243	1001667	792026	1001064	1001060	1000246
	PPE	1002395	1001757	792644	1001067	1001063	1000246
	PPB	1002394	1001763	792646	1001066	1001062	1000246
1604	NPE	1035299	1035333	792119	1001065	1001061	1034612
	NPB	1035300	1035334	792026	1001064	1001060	1034612
	PPE	1035301	1035335	792644	1001067	1001063	1034612
	PPB	1035302	1035336	792646	1001066	1001062	1034612
0708	NPE	1002251	1001663	1001435	1001069	1001061	1000248
	NPB	1002245	1001669	1001434	1001068	1001060	1000248
	PPE	1002397	1001759	1001437	1001071	1001063	1000248
	PPB	1002396	1001765	1001436	1001070	1001062	1000248
0413	NPE	1002252	1001664	1001435	1001069	1001061	1000249
	NPB	1002246	1001670	1001434	1001068	1001060	1000249
	PPE	1002401	1001760	1001437	1001071	1001063	1000249
	PPB	1002400	1001766	1001436	1001070	1001062	1000249
0220	NPE	1002253	1001665	1001435	1001069	1001061	1000250
	NPB	1002247	1001671	1001434	1001068	1001060	1000250
	PPE	1002403	1001761	1001437	1001071	1001063	1000250
	PPB	1002402	1001767	1001436	1001070	1001062	1000250
1008	NPE	1002251	1001663	1001435	1001069	1001061	1000248
	NPB	1002245	1001669	1001434	1001068	1001060	1000248
	PPE	1002397	1001759	1001437	1001071	1001063	1000248
	PPB	1002396	1001765	1001436	1001070	1001062	1000248
0713	NPE	1002252	1001664	1001435	1001069	1001061	1000249
	NPB	1002246	1001670	1001434	1001068	1001060	1000249
	PPE	1002401	1001760	1001437	1001071	1001063	1000249
	PPB	1002400	1001766	1001436	1001070	1001062	1000249
0420	NPE	1002253	1001665	1001435	1001069	1001061	1000250
	NPB	1002247	1001671	1001434	1001068	1001060	1000250
	PPE	1002403	1001761	1001437	1001071	1001063	1000250
	PPB	1002402	1001767	1001436	1001070	1001062	1000250

Solenoid Pump Spare Parts

EXtronic

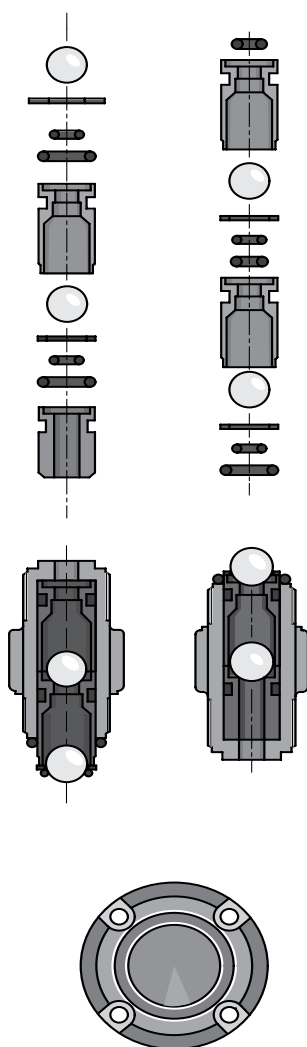
EXtronic Spare Parts Kits

	Liquid end version	Material Code	Spare Parts Kit	Diaphragm
	1000	PP1	740357	811452
		NP3	740354	811452
		TT	912674	811452
		SS2	912675	811452
	1601	PP1	740361	811453
		NP3	740358	811453
		NS3/PS3	792033	811453
		TT	912678	811453
		SS2	912679	811453
	1201	PP1	740380	811454
		NP3	740362	811454
		NS3/PS3	792034	811454
		TT	912682	811454
		SS2	912683	811454
	0803	PP1	740384	1002510
		NP3	740381	1002510
		NS3/PS3	792035	1002510
		TT	912686	1002510
		SS2	912687	1002510
	1002/2502	PP1	740388	811456
		NP3	740385	811456
		NS3/PS3	792036	811456
		TT	912690	811456
		SS2	912691	811456
		HV/PP4 (Type 1002)	910174	811456
	0308/1006/2505	PP1	740497	1002511
		NP1	740498	1002511
		TT	912694	1002511
		SS2	912695	1002511
		HV/PP4 (Type 1006)	910940	1002511
	0613/1310	PP1	740504	811458
		NP1	740505	811458
		TT1	912698	811458
		SS2	912699	811458
		HV/PP4 (Type 1310)	910942	811458
	0417/0814	PP1	740501	811459
		NP1	740502	811459
		TT	910978	811459
		SS2	910980	811459
		HV/PP4 (Type 0814)	910944	811459
	0430/0230-DN 10	PP1	740507	811460
		NP1	740508	811460
		TT	910994	811460
		SS1	910996	811460
	0260			811461

pk_1_008

Solenoid Pump Spare Parts

delta®



Spare parts kits for delta®, consisting of:

- 1 diaphragm
- 1 suction valve set
- 1 discharge valve set
- 2 ball valves
- 1 set of O-rings
- 1 connector set

Liquid End Version	Material Code	Complete Liquid End	Spare Parts Kit	Diaphragm
1612	NPE	1030540	1030536	1000248
	NPB	1030542	1030525	1000248
	PVT	1025140	1027081	1000248
	SST	1027074	1027086	1000248
1020	NPE	1030541	1030537	1000249
	NPB	1030543	1030526	1000249
	PVT	1025141	1027082	1000249
	SST	1027075	1027087	1000249
0730	NPE	1030618	1030621	1000250
	NPB	1030609	1030612	1000250
	PVT	1025142	1027083	1000250
	SST	1027076	1027088	1000250
0450	PVT	1025143	1027084	1000251
	SST	1027077	1027089	1000251
0280	PVT	1025184	1027085	1025075
	SST	1027078	1027090	1025075
1608	NPE	1030619	1030620	1030353
	NPB	1030610	1030611	1030353
	PVT	1030227	1030225	1030353
	SST	1030228	1030226	1030353
2508	NPE	1030619	1030620	1030353
	NPB	1030610	1030611	1030353
	SST	1030228	1030226	1030353

Note: Stainless steel version without suction and discharge valve sets.

product overview

solenoid-driven metering pumps

motor-driven metering pumps

pump spare parts & accessories

DULCOMETER® instrumentation

DULCOTEST® sensors

polymer blending systems

Motor Pump Spare Parts

Sigma 1,2 & 3 (New Multi-layer safety diaphragm)

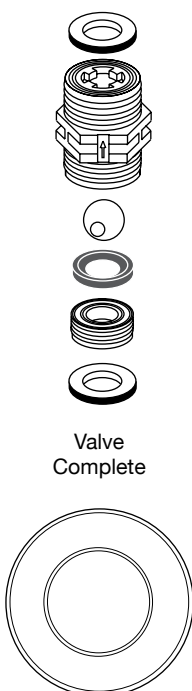
Complete liquid ends include pump head, valves, mounting screws, diaphragm and backplate. Clamping nuts and inserts are not included with complete liquid ends, complete valves or spare parts kits. Spare parts kits include:

PVT Liquid ends

- 1 Diaphragm
- 1 Suction valve
- 1 Discharge valve
- 2 Valve balls
- 1 Set of o-rings

SST Liquid ends

- 1 Diaphragm
- 2 Valve balls
- 1 Set of o-rings, complete
(sleeve rings, ball seat rings)



Material Code	Liquid End Complete	Spare Parts Kit	Valve Complete	Diaphragm
<u>12017, 12035, 10050 with Liquid end FM 50</u>				
PVT	1030104	1035964	1002267	1030114
SST	1030106	1035966*	809459	1030114
<u>10022, 10044, 07065 with Liquid end FM 65</u>				
PVT	1030105	1035967	1002267	1030115
SST	1030107	1035969*	809459	1030115
<u>07042, 04084, 04120, with Liquid end FM 120</u>				
PVT	1036214	1035961	792517	1035828
SST	1036215	1035963	809404	1035828
<u>16050 with Liquid end FM 130</u>				
PVT	1029763	1035951	792517	1029771
SST	1029764	1035957*	809404	1029771
<u>16090, 16130 with Liquid end FM 130</u>				
PVT	7781515	1035951	792517	1029771
SST	1029764	1035957*	809404	1029771
<u>07120, 07220 with Liquid end FM 350</u>				
PVT	1029761	1035953	740615	1033422
SST	1029762	1035960*	803708	1033422
<u>04350 with Liquid end FM 350</u>				
PVT	7781516	1035953	740615	1033422
SST	7781517	1035960*	803708	1033422
<u>120145, 120190, 120270, with Liquid end FM 330 - DN 25</u>				
PVT	1029585	1034678	740615	1029604
SST	1029586	1034679*	803708	1029604
<u>070410, 070580, 040830, with Liquid end FM 1000 - DN 32</u>				
PVT	1029578	1034681	1020031	1029603
SST	1029587	1034682*	1002811	1029603

*SS complete without spare valves

Motor Pump Spare Parts

Sigma 1, 2 & 3 (Old Style Standard diaphragm)

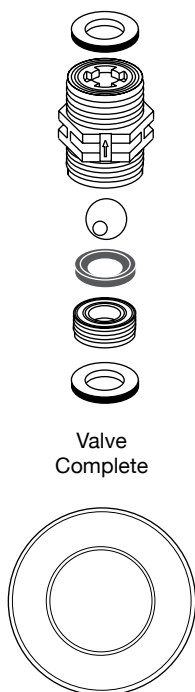
Complete liquid ends include pump head, valves, mounting screws, diaphragm and backplate. Clamping nuts and inserts are not included with complete liquid ends, complete valves or spare parts kits. Spare parts kits include:

PVT Liquid ends

- 1 Diaphragm
- 1 Suction valve
- 1 Discharge valve
- 2 Valve balls
- 1 Set of o-rings

SST Liquid ends

- 1 Diaphragm
- 2 Valve balls
- 1 Set of o-rings, complete (sleeve rings, ball seat rings)



Material Code	Liquid End Complete	Spare Parts Kit	Valve Complete	Diaphragm
12017, 12035, 10050 with Liquid end FM 50				
PVT	1010560	1010541	1002267	1010279
SST	1010561	1010555	809459	1010279
SST*		1010554		1010279
10022, 10044, 07065 with Liquid end FM 65				
PVT	1010562	1010542	1002267	1010282
SST	1010563	1010557	809459	1010282
SST*		1010556		1010282
07042, 04084, 04120 with Liquid end FM 120				
PVT	1010565	1010543	792517	1010285
SST	1010566	1010559	809404	1010285
SST*		1010558		1010285
16050 with Liquid end FM 130				
PVT	792755	740324	792517	792495
SST	792761	740328	809404	792495
SST*		740326		
16090, 16130 with Liquid end FM 130				
PVT	7792755	740324	792517	792495
SST	792761	740328	809404	792495
SST*		740326		
07120, 07220 with Liquid end FM 350				
PVT	792756	740325	740615	792496
SST	792762	740329	803708	792496
SST*		740327		
04350 with Liquid end FM 350				
PVT	7792756	740325	740615	792496
SST	792762	740329	803708	792496
SST*		740327		
120145, 120190, 120270, with Liquid end FM 330 - DN 25				
PVT	1005298	1005308	740615	1004604
SST	1005300	1005312	803708	1004604
SST*		1005310		1004604
070410, 070580, 040830, with Liquid end FM 1000 - DN 32				
PVT	1005297	1005309	1020031	1002835
SST	1005299	1005313	1002811	1002835
SST*		1005311		1002835

*SS complete without spare valves

Liquid End Version		Material Code	Complete Liquid End	Spare Parts Kit	Valve Suction (Spare valves only)	Complete Discharge	Packing set
Sigma HK							
08	(For pump versions 32002, 23004, & 10006)	S	1000584	1001572	803792	803793	1000565
12.5	(For pump versions 14006, 10011, & 05016)	S	910420	910470	803792	803793	485401
25	(For pump versions 07012, 04522, & 02534)	S	910421	910471	803792	803793	485402
50	(For pump versions 04022, 02541, & 01264)	S	910422	910472	803794	803795	485403

Motor Pump Spare Parts

Meta

Complete liquid ends include pump head, valves, mounting screws, diaphragm and backplate. Spare parts kits include:

Standard kit for PP, TT and PVC material versions:

- 1 Pump diaphragm
- 1 Suction valve, complete
- 1 Discharge valve, complete
- 2 Valve balls
- 1 Set of o-rings (complete w/O-rings & ball-seat discs)

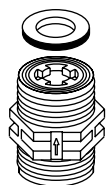
Standard kit for SS (316 stainless steel) version:

- 1 Pump diaphragm
- 2 Valve balls
- 1 Set of o-rings (complete w/sleeve rings & ball-seat discs)

Standard kit for MTKa version:

- 1 Pump diaphragm
- 4 Valve balls
- 4 Ball-seat discs
- 2 PTFE/graphite piston packing rings
- 2 Piston guides
- 14 Flat o-rings
- 2 O-rings

Note: Union nut and NPT inserts are not included in the spare parts kit.



MTMa
Valve
Complete

Liquid End Version	Material Code	Complete Liquid End	Spare Parts Kit	Valve Complete	Diaphragm
Meta MTMaH/MTMaA					
130 (For pump versions 12065, 12086, 12108 & 12130)	PCA	910402	910454	803703	811470
	PCE	7910402	7910454	7803703	811470
	PPE	910401	910451	803701	811470
	TTT	910403	910457	803705	811470
	SST	910404	910474	803707	811470
	SST	910404	910460*	803707	811470
260 (For pump versions 10130, 09173, 07216, 06260, 10173, 10216, 10260, 10200, 10263 & 10330)	PCA	910408	910455	803703	811471
	PCE	7910409	7910455	7803703	811471
	PPE	910407	910452	803701	811471
	TTT	910409	910458	803705	811471
	SST	910410	910475	803707	811471
	SST	910410	910461*	803707	811471
	[†] PPT 6 mm	7910407	1001570	792518	811471
530 (For pump versions 05265, 04253, 03441, 03530, 05540, 05530, 04400, 04527, 03662, & 03790)	PCA	910414	910456	803704	811472
	PCE	7910415	7910456	7803705	811472
	PPE	910413	910453	803702	811472
	TTT	910415	910459	803706	811472
	SST	910416	910476	803708	811472
	SST	910416	910462*	803708	811472
	^{††} PPT 6 mm	7910413	1001568	740615	811472
	^{††} PCT 6 mm	7910414	1001568	740615	811472

*SS complete without spare valves

[†]For pump versions 10200, 10263, 10333

^{††}For pump versions 04400, 04527, 03662

Liquid End Version	Material Code	Complete Liquid End	Spare Parts Kit	Valve Suction (Spare valves only)	Valve Discharge (Spare valves only)	Packing set
Meta MTKaH/MTKaA						
12.5 (For pump versions 10812, 21012, 21606, 24006, 16208, 22508, 12190 & 21610)	SS	910420	910470	803792	803793	485401
25 (For pump versions 10213, 11313, 07617, 10617, 06122, 10222, 05126 & 09926)	SS	910421	910471	803792	803793	485402
50 (For pump versions 05425, 06025, 04033, 05633, 03241, 05441, 02749 & 05249)	SS	910422	910472	803794	803795	485403

Motor Pump Spare Parts

ProMus

Description	Part No.
Rebuild Kit for Manual Stroke Adjuster	852751
Rebuild Kit for Nema 7 Electric Stroke Adjuster	852753
Rebuild Kit for Sz 17 Hydraulics 3/8 Plunger	853755
Rebuild Kit for Sz 17 Hydraulics 7/16 Plunger	853756
Rebuild Kit for Sz 30 Hydraulics 5/8 Plunger	854756
Rebuild Kit for Sz 30 Hydraulics 13/16 Plunger	854757
Rebuild Kit for Sz 30 Hydraulics 1 1/8 Plunger	854758
Rebuild Kit for Sz 40 Hydraulics 1 3/4 Plunger	855754
Rebuild Kit for Sz 40 Hydraulics 2 Plunger	855755
Rebuild Kit for Sz 40 Hydraulics 2 1/4 Plunger	855756
Liquid End Spare Parts Kits Size 17	
Spare Parts Kit for Size 17 with 316 SS single ball	853502
Spare Parts Kit for Size 17 with 316 SS double ball for suct. & disch.	853503
Spare Parts Kit for Size 17 with 316 SS double ball for disch.	853505
Spare Parts Kit for Size 17 with Alloy 20 single ball	853582
Spare Parts Kit for Size 17 with Alloy 20 double ball for suct. & disch.	853583
Spare Parts Kit for Size 17 with Alloy 20 double ball for disch.	853585
Spare Parts Kit for Size 17 with Hastelloy C single ball	853662
Spare Parts Kit for Size 17 with Hastelloy C double ball for suct. & disch.	853663
Spare Parts Kit for Size 17 with Hastelloy C double ball for disch.	853665
Spare Parts Kit for Size 17 with PVT double ball	853908
Liquid End Spare Parts Kits Size 30	
Spare Parts Kit for Size 30 with 316 SS single ball	854501
Spare Parts Kit for Size 30 with 316 SS double ball for suct. & disch.	854503
Spare Parts Kit for Size 30 with 316 SS double ball for disch., 30/17	854505
Spare Parts Kit for Size 30 with 316 SS double ball for disch., 30/30	854507
Spare Parts Kit for Size 30 with 316 SS double ball for suct. & disch., 30/17	854509
Spare Parts Kit for Size 30 with Alloy 20 single ball	854601
Spare Parts Kit for Size 30 with Alloy 20 double ball for suct. & disch., 30/30	854603
Spare Parts Kit for Size 30 with Alloy 20 double ball for disch., 30/17	854605
Spare Parts Kit for Size 30 with Alloy 20 double ball for disch., 30/30	854607
Spare Parts Kit for Size 30 with Alloy 20 double ball for suct. & disch., 30/17	854609
Spare Parts Kit for Size 30 with Hastelloy C single ball	854801
Spare Parts Kit for Size 30 with Hastelloy C double ball for suct. & disch., 30/30	854803
Spare Parts Kit for Size 30 with Hastelloy C double ball for disch., 30/17	854805
Spare Parts Kit for Size 30 with Hastelloy C double ball for disch., 30/30	854807
Spare Parts Kit for Size 30 with Hastelloy C double ball for suct. & disch., 30/17	854809
Spare Parts Kit for Size 30 with PVT single ball	854908
Liquid End Spare Parts Kits Size 40	
Spare Parts Kit for Size 40 with 316 SS single ball	855501
Spare Parts Kit for Size 40 with Alloy 20 single ball	855504
Spare Parts Kit for Size 40 with Hastelloy C single ball	855507
Spare Parts Kit for Size 40 with PVT single ball	855908

Motor Pump Spare Parts

Makro TZMa

Spare parts kits for ProMinent Makro series metering pumps include pump diaphragm, valve balls, valve components and all required o-rings.

Standard kit for PP, NP-Acrylic and PVC material versions:

- 1 Pump diaphragm
- 1 Suction valve, complete
- 1 Discharge valve, complete
- 2 Valve balls
- 1 Set of o-rings, complete

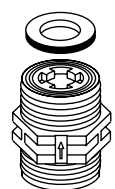
Standard kit for TT-PTFE material version:

- 1 Pump diaphragm
- 1 Suction valve, complete
- 1 Discharge valve, complete
- 2 Valve balls
- 2 Ball-seat discs or valve assembly
- 1 Set of o-rings, complete

Standard kit for SS (stainless steel) version:

- 1 Pump diaphragm
- 2 Valve balls
- 1 Set of o-rings, complete

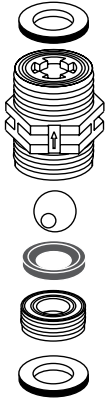
Note: Union nut and NPT inserts are not included in the spare parts kit.

	Liquid end Type	Material Code	Complete Liquid end	Spare Parts Kit	Valve Complete	Diaphragm
	FM-130 DN 20	PPE	910401	910451	803701	811470
		PCB	910402	910454	803703	811470
		TTT	910403	910457	803705	811470
		SST	910404	910474 910460*	803707	811470
	FM-260 DN 20	PPE	910407	910452	803701	811471
		PCB	910408	910455	803703	811471
		TTT	910409	910458	803705	811471
		SST	910410	910475 910461*	803708	811471
	FM-530 DN 25	PPE	910413	910453	740615	811472
		PCB	910414	910456	740615	811472
		TTT	910415	910459	740615	811472
		SST	910416	910476 910462*	803708	811472
	FM-1500 & 2100 DN 40	PPE	1001245	1001573	1023799	811473
		PCB	1001244	1001574	1023799	811473
		TTT	1001246	1001575	1023799	811473
		SST	1001247	1001577 1001576*	1004178	811473
	FMH-70-20	PPE		911903	1023799	1007298
		PCB		911901	1023799	1007298
		TTT		911905	1023799	1007298
		SST		911907 911908*	1004178	1007298
	FMH-90-20	PPE		911904	1023799	1007298
		PCB		911902	1023799	1007298
		TTT		911906	1023799	1007298
		SST		911909 911910*	1004178	1007298

*SS with 2 valves, complete

Motor Pump Spare Parts

Makro TZMb



Material Code	Spare Parts Kit	Suction/Discharge Valves	Diaphragm
<u>120260, 120340, 120430, 120510, 120650 (FM670 - DN25)</u>			
PCT/PPT/TTT	1025164	740615	1022887
SST	1022896	803708	1022887
SST*	1022895	-	1022887
<u>070430, 070570, 070720, 070860, 071070</u>			
PCT/PPT/TTT	1025167	1020031	1022900
SST	1022917	1002811	1022900
SST*	1022916	-	1022900
<u>040840, 041100, 041400, 041670, 042100</u>			
PCT/PPT/TTT	1025169	1023799	1022921
SST	1022930	1004178	1022921
SST*	1022929	-	1022921

* Without Checkvalves

Pump & Systems Accessories

PROFIBUS® Adapters

	Description		Figure	Part No.
 fig. 1	Y-adapter 2 x M12 x 1 male/female	9 pin, Sub-D plug	1	1005838
 fig. 2	9 pin, Sub-D plug			
 fig. 3	Adapter 1 x M12 x 1 male	9 pin, Sub-D plug	2	1005839
 fig. 4	Y-adapter 2 x M12 x 1 male/female	M12 x 1	3	1024216
 fig. 5	Adapter 1 x M12 x 1 male	M12 x 1	4	1024219
 fig. 5	PROFIBUS® Y-adapter	M12 x 1	5	1036621
 fig. 5	PROFIBUS® termination resistance, plug-in	M12 x 1	5	1036621

Control Cables

Required for external control of ProMinent metering pumps including:

- beta
- gamma/ L
- delta
- Sigma/ 1 control
- Sigma/ 2 control
- Sigma/ 3 control

Description	Part No.
Universal control cable, 5-wire, 6 ft. (2 m)	1001300
Universal control cable, 5-wire, 15 ft. (5 m)	1001301
Universal control cable, 5-wire, 30 ft. (10 m)	1001302
Universal control cable, 5-wire, 150 ft. (50 m)	1032811

(SEE DETAILED WIRING DIAGRAMS NEXT PAGE)

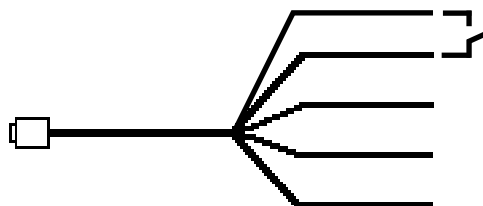
Pump & Systems Accessories

Control Cable Diagrams

Remote On/Off

BROWN and BLACK wires must be connected together via an ON/OFF contact or shorted together. When the contact is closed between the BLACK & BROWN wires, the pump will run. When the contact is open, the pump will stop.

***Note:** If ON/OFF control is the only control feature being used, WHITE, BLUE & GREY wires are not used and should be cut back.



BROWN: Remote On/Off*

BLACK: Common*

GREY: Auxiliary Frequency

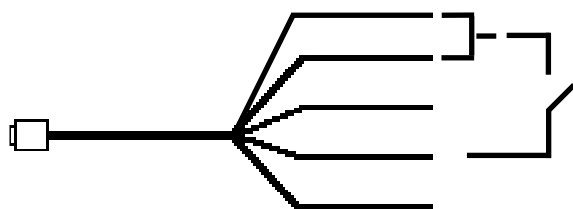
WHITE: Pulse

BLUE: Analog

Pulse Control

Pulse control will allow the pump to run in proportion to a pulsing potential free contact closure.

***Note:** BROWN and BLACK wires have to be connected together via an ON/OFF contact or shorted together. If the GREY wire is not used it should be cut back. The BLUE wire is not used and should be cut back.



BROWN: Remote On/Off*

BLACK: Common (PC)*

GREY: Auxiliary Frequency

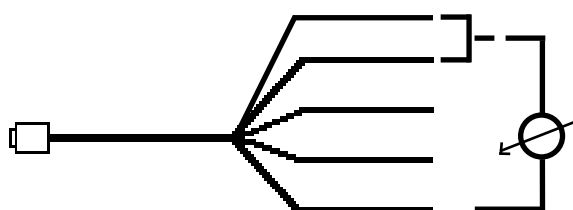
WHITE: Pulse (PC)

BLUE: Analog

Analog Control (not available with beta metering pumps)

Analog control runs in proportion to an analog signal such as 4 - 20 mA.

***Note:** BROWN and BLACK wires must be connected together via an ON/OFF contact or shorted together. The BLACK wire is negative and the BLUE wire is positive. If GREY wire is not used it should be cut back. The WHITE wire is not used and should be cut back.



BROWN: Remote On/Off*

BLACK: Common (-)*

GREY: Auxiliary Frequency

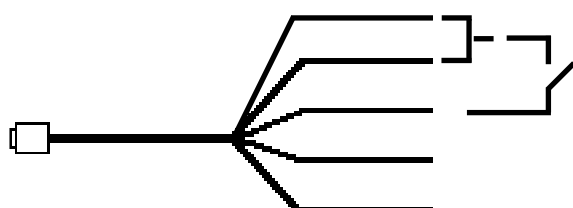
WHITE: Pulse

BLUE: Analog (+)

Auxiliary Frequency

Auxiliary frequency will allow the pump to default to a predetermined stroking frequency regardless of which operating mode the pump is in. The pump defaults to this stroking frequency as long as a contact is closed between the black and grey wires of the universal control cable.

***Note:** BROWN and BLACK wires must be connected together via an ON/OFF contact or shorted together.



BROWN: Remote On/Off*

BLACK: Common (AUX)*

GREY: Auxiliary Frequency (AUX)

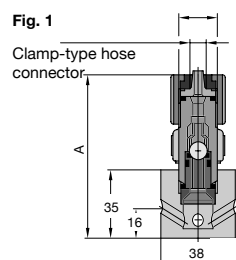
WHITE: Pulse

BLUE: Analog

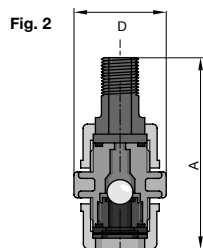
Pump & Systems Accessories

Foot Valves

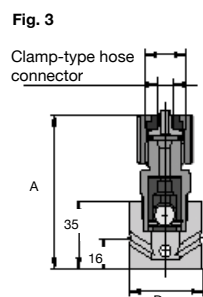
To be installed at the inlet of the suction line to improve priming and protect pump against coarse impurities. With ceramic* weight, strainer and ball check valve (must be mounted vertically for ball check function).



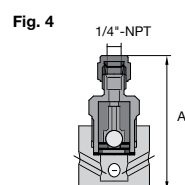
2396/4



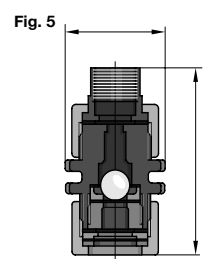
2165/4



2397/4



2398/4



1521/4

Dimensions inches (mm)

Polypropylene

Valve body of PP, o-rings of EPDM (PP1, PPE)

	Dim "A"	Dim "D"	Part No.
Connection 1/4" x 3/16" tubing (Fig 1)	3-1/4 (83)	1-3/8 (35)	924558
Connection 1/2" x 3/8" tubing (Fig 1)	3-1/4 (83)	1-3/8 (35)	924566
Connection 1/2" MNPT for 0423/0230 (Fig 2)	3-7/8 (98)	1-3/8 (35)	809465
Connection 3/8" PPE Foot Valve			7924552

Valve body of PP, o-rings of Viton® (PP2, PPB)

Connection 1/4" x 3/16" tubing (Fig 1)	3-1/4 (83)	1-3/8 (35)	7924558
Connection 1/2" x 3/8" tubing (Fig 1)	3-1/4 (83)	1-3/8 (35)	7809470
Connection 1/2" MNPT for 0423/0230 (Fig 2)	3-7/8 (98)	1-3/8 (35)	7809465
Connection 3/8" PPB Foot Valve			7924553

Valve body of PP, o-rings of EPDM-high viscosity (PP4)

Connection 1/2" MNPT (Fig 2)	4 (102)	1-5/8 (42)	7924516
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Valve body of PP, o-rings of Viton®-high viscosity (PP5)

Connection 1/2" MNPT (Fig 2)	4 (102)	1-5/8 (42)	7809471
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PVC

Valve body of PVC, o-rings of EPDM

Connection 1/4" x 3/16" tubing (Fig 1)	3-1/8 (79)	1-3/8 (35)	7924547
Connection 1/2" x 3/8" tubing (Fig 1)	3-1/4 (83)	1-3/8 (35)	7924549
Connection 1/2" MNPT (Fig 2)	3-7/8 (98)	1-3/8 (35)	7809464
Connection 3/8" NPE Foot Valve			7924550

Valve body of PVC, o-rings of Viton®

Connection 1/4" x 3/16" tubing (Fig 1)	3-1/8 (79)	1-3/8 (35)	924557
Connection 1/2" x 3/8" tubing (Fig 1)	3-1/4 (83)	1-3/8 (35)	924565
Connection 1/2" MNPT (Fig 2)	3-7/8 (98)	1-3/8 (35)	809464
Connection 3/8" NPB Foot Valve			7924551

PVT

Valve body of PVDF, seals of PTFE

Connection 1/4" x 3/16" tubing (Fig 1)	3-1/8 (79)	1-3/8 (35)	1024705
Connection 1/2" x 3/8" tubing (Fig 1)	3-1/4 (83)	1-3/8 (35)	1024827

PTFE

Valve body and seals of PTFE (TT1)

Connection 1/4" x 3/16" tubing (Fig 3)	3-1/4 (83)	1-1/2 (38)	809455
Connection 1/2" x 3/8" tubing (Fig 3)	3-1/2 (89)	1-1/2 (38)	809473
Connection 1/2" MNPT (not illustrated)	3-7/8 (98)	1-1/2 (38)	809466

SS

Valve body of stainless steel, seals of PTFE

Connection 1/4" FNPT (SS2) (Fig 4)	2-5/8 (67)	1-1/2 (38)	924567
Connection 3/8" FNPT (SS1) (Fig 5)	2-5/8 (67)	1-1/2 (38)	809467

***Note:** For fluoride, (hydrofluosilicic acid) or when plastic is required to replace standard ceramic weight.

PVC foot valve weight

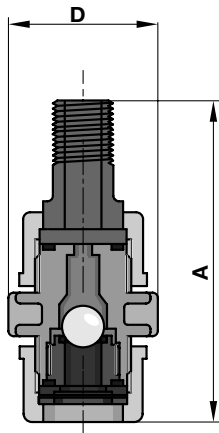
7404007

Viton® is a registered trademark of Dupont Dow Elastomers

Pump & Systems Accessories

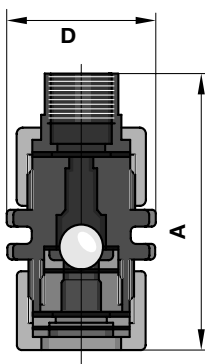
Foot Valves

Fig. 1



2165/4

Fig. 2



1521/4

Polypropylene (Fig. 1) - Valve body of PP, o-rings of EPDM (PP1)

Connection	Dimensions inches (mm)		Part No.
	Dim "A"	Dim "D"	
1/2" MNPT (DN 10) (delta, Sigma 1 and Sigma 2)	3-7/8 (98)	1-1/2 (38)	809465
3/4" MNPT (DN 15) (Sigma 1 and Sigma 2)	4 (102)	1-3/4 (44)	924516
3/4" MNPT (DN 20) (Sigma 2)	5 (127)	2-1/4 (57)	803721
1" MNPT (DN 25) (Sigma 2, Sigma 3 and Makro)	5-1/4 (133)	2-1/2 (63)	803722
1-1/2" MNPT (DN 40) (Sigma 3 and Makro)	6-1/2 (165)	3-1/2 (89)	1004204

PVC (Fig. 1) - Valve body of PVC, o-rings of Viton® (NP1)

1/2" MNPT (DN 10) (delta, Sigma 1 and Sigma 2)	3-7/8 (98)	1-1/2 (38)	809464
3/4" MNPT (DN 15) (Sigma 1 and Sigma 2)	4 (102)	1-3/4 (44)	924515
3/4" MNPT (DN 20) (Sigma 2)	5 (127)	2-1/4 (57)	803723
1" MNPT (DN 25) (Sigma 2, Sigma 3 and Makro)	5-1/4 (133)	2-1/2 (63)	803724
1-1/2" MNPT (DN 40) (Sigma 3 and Makro)	6-1/2 (165)	3-1/2 (89)	1004193

PTFE/PTFE (Fig. 1) Valve body and seals of PTFE (TT1)

1/2" MNPT (DN 10) (delta, Sigma 1 and Sigma 2) (PTFE/PTFE)	3-7/8 (98)	1-3/8 (35)	809466
3/4" MNPT (DN 15) (Sigma 1 and Sigma 2) (PTFE/PTFE)	4-1/8 (105)	1-3/4 (44)	924517
3/4" MNPT (DN 20) (Sigma 2) (PTFE/PTFE)	4-3/4 (121)	2-1/4 (57)	803725
1" MNPT (DN 25) (Sigma 2, Sigma 3 and Makro) (PTFE/PTFE)	5-3/8 (137)	2-1/2 (63)	803726
1-1/2" MNPT (DN 40) (Sigma 3 and Makro) (PTFE/PTFE)	6-1/2 (165)	3-1/2 (89)	1004205

PVDF/PTFE (Fig. 1) Valve body of PVDF and seals of PTFE

1/2" MNPT (DN 10) (delta, Sigma 1 and Sigma 2) (PVDF/PVDF)	3-7/8 (98)	1-3/8 (35)	7803720
3/4" MNPT (DN 15) (Sigma 1 and Sigma 2) (PVDF/PVDF)	4-1/8 (105)	1-3/4 (44)	7803721
3/4" MNPT (DN 25) (Sigma 2, Sigma 3 and Makro) (PVDF/PVDF)	4-3/4 (121)	2-1/4 (57)	7803722
1" MNPT (DN 25) (Sigma 2, Sigma 3 and Makro) (PVDF/PVDF)	5-3/8 (137)	2-1/2 (63)	7803723
1-1/2" MNPT (DN 32) (PVDF/PVDF)			1006434

SS - Valve body of stainless steel, seals of PTFE

3/8" FNPT (DN 10) (delta, Sigma 1 and Sigma 2)	2-3/4 (70)	1-1/2 (38)	809467
1/2" FNPT (DN 15) (Sigma 1 and Sigma 2)	3 (76)	1-3/4 (44)	924518
3/4" MNPT (DN 20) (Sigma 2)	4-1/2 (114)	2-1/8 (54)	803727
1" MNPT (DN 25) (Sigma 2, Sigma 3 and Makro)	5-1/8 (130)	2-1/2 (63)	803728
1-1/2" MNPT (DN 32)			1006435
1-1/2" MNPT (DN 40) (Sigma 3 and Makro)	6-1/4 (159)	3-1/8 (79)	1004206
1/4" FNPT	2-3/4 (70)	1-1/2 (38)	803730
3/8" FNPT	2-3/4 (70)	1-1/2 (38)	803731

* See Figure 1, ** See Figure 2

Pump & Systems Accessories

Injection Valves

To connect the pump discharge line to the point of injection for installation in any position, except PTFE version without spring to be installed in a vertical position discharging upward. All valves except PTFE include a 7 psig (0.5 bar) Hastelloy-C spring.

Caution: Injection valves and injection lances should not be used as isolating elements or for antisiphon protection!

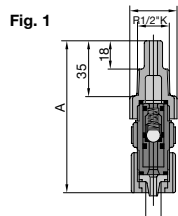
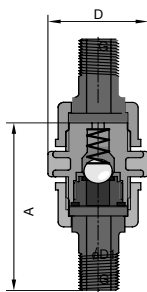


Fig. 1
Clamp-type
hose connector
2399/4



1447/4

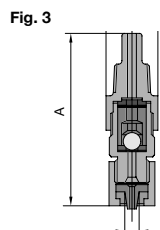


Fig. 3
Clamp-type
hose connector
2400/4

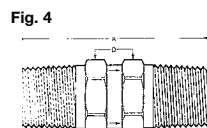
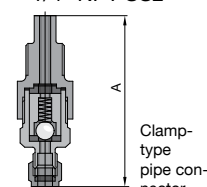


Fig. 4
1/4" NPT SS2



2401/4

Polypropylene

Valve body of PP, o-rings of EPDM (PP1, PPE)

	Dim "A" inches (mm)	Part No.
Connection 1/4" x 3/16" tubing x 1/2" MNPT injection end (Fig 1)	3-7/8 (98)	924681
Connection 1/2" x 3/8" tubing x 1/2" MNPT injection end (Fig 1)	3-7/8 (98)	924596
Connection 1/2" MNPT for 0423/0230 (Fig 2)	5-1/4 (133)	809461
Connection 3/8" PPE Injection Valve		7924586

Valve body of PP, o-rings of Viton® (PP2, PPB)

Connection 1/4" x 3/16" tubing x 1/2" MNPT injection end (Fig 1)	3-7/8 (98)	7924681
Connection 1/2" x 3/8" tubing x 1/2" MNPT injection end (Fig 1)	3-7/8 (98)	7809478
Connection 1/2" MNPT for 0423/0230 (Fig 2)	5-1/4 (133)	7809461
Connection 3/8" PPB Injection Valve		7924587

Valve body of PP, o-rings of EPDM-high viscosity (PP4)

Connection 1/2" MNPT for PP4 (Fig 2)	5-3/8 (137)	7924521
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Valve body of PP, o-rings of Viton®-high viscosity (PP5)

Connection 1/2" MNPT for PP5 (Fig 2)	5-3/8 (137)	7809462
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PVC

Valve body of PVC, o-rings of EPDM

Connection 1/4" x 3/16" tubing x 1/2" MNPT injection end (Fig 1)	3-3/4 (95)	7924580
Connection 1/2" x 3/8" tubing x 1/2" MNPT injection end (Fig 1)	3-7/8 (98)	7924582
Connection 1/2" MNPT (Fig 2)	5-3/8 (137)	7809460
Connection 3/8" NPE Injection Valve		7924583

Valve body of PVC, o-rings of Viton®

Connection 1/4" x 3/16" tubing x 1/2" MNPT injection end (Fig 1)	3-3/4 (95)	924680
Connection 1/2" x 3/8" tubing x 1/2" MNPT injection end (Fig 1)	3-7/8 (98)	924595
Connection 1/2" MNPT (Fig 2)	5-3/8 (137)	809460
Connection 3/8" NPB Injection Valve		7924584

PTFE

Body and o-rings of PTFE

Connection 1/4" x 3/16" tubing x 1/2" MNPT injection end (Fig 3)	4-1/8 (105)	809488
Connection 1/2" x 3/8" tubing x 1/2" MNPT injection end (Fig 3)	4-1/4 (108)	809481
Connection 1/2" MNPT (not illustrated)		809462

SS

Valve body of stainless steel, seals of PTFE (SS1 & SS2)

Poppet check valve, connection 1/4" MNPT x 1/4" MNPT, spring-loaded, adjustable by internal hex nut from 3-50 psig (0.2-3.5 bar) (Fig 4)

	1-5/8 (42)	7914587
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Optional adapter for above valve 1/4" FNPT x 1/2" MNPT (Fig 5)

		7914588
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Ball check valve, connection 1/4" FNPT inlet to 1/2" MNPT

discharge, 7 psig (0.5 bar) spring (Fig 5)	3-1/2 (89)	924597
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Ball check valve, connection 3/8" FNPT inlet to 1/2" MNPT

discharge, 7 psig (0.5 bar) spring (not illustrated) (SS1)	3-1/2 (89)	809463
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(for 0423 & 0230 only)

PVT

Valve body of PVDF, seals of PTFE

Connection 1/4" x 3/16" tubing x 1/2" MNPT injection end (Fig 1)	3-3/4 (95)	1024708
Connection 1/2" x 3/8" tubing x 1/2" MNPT injection end (Fig 1)	3-7/8 (98)	1024714

Pump & Systems Accessories

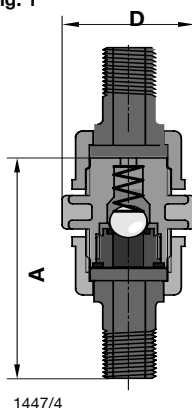
Injection Valves

Injection valves

To connect the pump discharge line to the point of injection for installation in any position, except PTFE version without spring to be installed in a vertical position discharging upward. All valves except PTFE and Sigma/Meta/Makro HK have 7 psig (0.5 bar) Hastelloy-C spring.

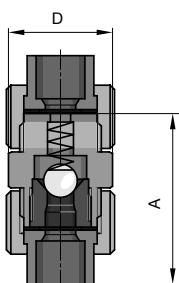
Caution: Injection valves and injection lances should not be used as isolating elements or for antisiphon protection!

Fig. 1



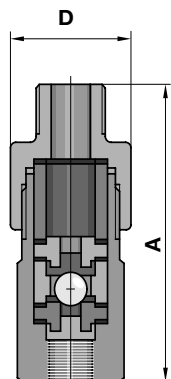
1447/4

Fig. 2



2405/4

Fig. 3



1239/4

Threaded Connection

Dimensions inches (mm)

Dim "A"

Dim "D"

Part No.

Polypropylene (Fig. 1) Valve body of PP, o-rings of EPDM (PP1)

1/2" MNPT (DN 10)	5-1/4 (133)	1-1/2 (38)	809461
3/4" MNPT (DN 15)	5-3/8 (137)	1-3/4 (44)	924521
3/4" MNPT (DN 20)	6-3/4 (171)	2-1/4 (57)	803710
1" MNPT (DN 25)	7-1/8 (181)	2-3/8 (60)	803711
1-1/2" MNPT (DN 40)	8-1/4 (210)	3-1/2 (89)	804761

PVC (Fig. 1) - Valve body of PVC, o-rings of Viton® (NP)

1/2" MNPT (DN 10)	5-3/8 (137)	1-1/2 (38)	809460
3/4" MNPT (DN 15)	5-3/8 (137)	1-5/8 (42)	924520
3/4" MNPT (DN 20)	6-3/4 (171)	2-1/4 (57)	803712
1" MNPT (DN 25)	7-1/8 (181)	2-3/8 (60)	803713
1-1/2" MNPT (DN 40)	8-1/4 (210)	3-1/2 (89)	804760

PTFE/PTFE (Fig. 1) - Valve body and seals of PTFE (TT1)

1/2" MNPT (DN 10)	(PTFE/PTFE)	4-7/8 (124)	1-3/8 (35)	809462
3/4" MNPT (DN 15)	(PTFE/PTFE)	5-1/2 (140)	1-3/4 (44)	924522
3/4" MNPT (DN 20)	(PTFE/PTFE)	6-7/8 (175)	2-1/4 (57)	803714
1" MNPT (DN 25)	(PTFE/PTFE)	7-1/4 (184)	2-1/2 (63)	803715
1-1/2" MNPT (DN 40)	(PTFE/PTFE)	8-1/4 (210)	3-1/2 (89)	804762

PVDF/PTFE (Fig. 1) - Valve body of PVDF and seals of PTFE

1/2" MNPT (DN 15)	(PVDF/PVDF)	4-7/8 (124)	1-3/8 (35)	7803724
3/4" MNPT (DN 15)	(PVDF/PVDF)	5-1/2 (140)	1-3/4 (44)	7803725
3/4" MNPT (DN 25)	(PVDF/PVDF)	6-7/8 (175)	2-1/4 (57)	7803726
1" MNPT (DN 25)	(PVDF/PVDF)	7-1/4 (184)	2-1/2 (63)	7803727
1-1/2" MNPT (DN 32)	(PVDF/PVDF)			1002783

SS - Valve body of stainless steel, seals of PTFE

3/8" FNPT (DN 10)	3-1/8 (79)	1-3/8 (35)	809463
1/2" FNPT (DN 15)	3-1/2 (89)	1-3/4 (44)	924523
3/4" MNPT (DN 20)	6-1/2 (165)	2-1/8 (54)	803716
1" MNPT (DN 25)	7-1/4 (184)	2-1/2 (63)	803717
1-1/2" MNPT (DN 40)	8-1/4 (210)	3-1/8 (79)	804763
1-1/2" MNPT (DN 32)			1002801

High pressure valves for HK pumps (Fig. 3)

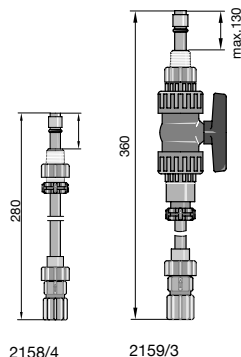
1/4" MNPT by 1/2" MNPT (DN 8)	4 (83)	1-5/8 (42)	803732
3/8" MNPT by 1/2" MNPT (DN 10)	4 (83)	1-5/8 (42)	803733

Pump & Systems Accessories

Injection Lances

Length of insertion variable from 3/4" to 6-1/2" (20 mm...165 mm) for large diameter pipes. Consisting of spring-loaded ball check injection valve, adjustable insertion pipe and elastomeric sleeve over injection port for backflow prevention. Materials: Hastelloy C spring, Ceramic valve ball, EPDM and silicon o-rings. Max. working pressure 87 psig (6 bar). Requires 1/2" FNPT pipe tap.

Note: For units with isolating valve, the valve may not be closed until the insertion pipe has been pulled out through the valve. Call factory for 3/4" and 1" connection.



Polypropylene (EPDM o-rings)

Connection 1/4" x 3/16" tubing to 1/2" MNPT

Part No.

1021530

Connection 1/2" x 3/8" tubing to 1/2" MNPT

1021530

same, but with ball-type isolating valve

Connection 1/4" x 3/16" tubing to 1/2" MNPT

1021531

Connection 1/2" x 3/8" tubing to 1/2" MNPT

1021531

PVC (Viton® o-rings)

Connection 1/4" x 3/16" tubing to 1/2" MNPT

1021528

Connection 1/2" x 3/8" tubing to 1/2" MNPT

1021528

same, but with ball-type isolating valve

Connection 1/4" x 3/16" tubing to 1/2" MNPT

1021529

Connection 1/2" x 3/8" tubing to 1/2" MNPT

1021529

Note: For brass 3/4" and 1" corporation stops, please call factory.

In-line check valve for tubing



Polypropylene

With connectors on both ends for installation in flexible tubing, valve body of PP, o-rings of EPDM, with valve ball, spring-loaded with Hastelloy C spring, 7 psig (0.5 bar).

By using different Connector Sets, different sizes of tubing from 1/4" to 1/2" can be connected with each other.

Connection for tubing 1/4" x 3/16"

809434

Connection for tubing 1/2" x 3/8"

809436

PVC

With connectors on both ends for installation in flexible tubing, valve body of PVC, o-rings of Viton®, with valve ball, spring-loaded with Hastelloy C spring, 7 psig (0.5 bar).

By using different Connector Sets, different sizes of tubing from 1/4" to 1/2" can be connected with each other.

Connection for tubing 1/4" x 3/16"

809417

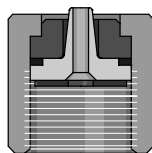
Connection for tubing 1/2" x 3/8"

809415

1856/4

Pump & Systems Accessories

Connector Sets



2181/4

Description

PP/VITON® for hose type 1/4" x 3/16"
 PP/VITON® for hose type 1/2" x 3/8"
 PP/VITON® for hose type 3/8" x 1/4"
 PP/EPDM for hose type 1/4" x 3/16"
 PP/EPDM for hose type 1/2" x 3/8"
 PP/EPDM for hose type 1/4" x 1/2"
 PP/EPDM for hose type 3/8" x 1/4"
 PVC/Viton® for hose type 1/4" x 3/16"
 PVC/Viton® for hose type 1/2" x 3/8"
 PVC/Viton® for hose type 1/4" x 1/2"
 PVC/Viton® for hose type 3/8" x 1/4"
 PVC/EPDM for hose type 1/4" x 3/16"
 PVC/EPDM for hose type 1/2" x 3/8"
 PVC/EPDM for hose type 3/8" x 1/4"
 PTFE for hose type 1/4" x 3/16"
 PTFE for hose type 1/2" x 3/8"
 PVT for hose type 1/4" x 3/16"
 PVT for hose type 1/2" x 3/8"
 PVT for hose type 3/8" x 1/4"
 PVT for hose type 8x4 mm (single only)

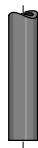
Part No.

790872
 740133
 7817168
 790885
 740132
 817163
 7817151
 817050
 817055
 817068
 7817051
 790871
 740160
 7817049
 817201
 791199
 1023246
 1024584
 7781457
 7500416

Tubing

Suction and discharge tubing

1052/4



Max. Operating . Pressure Rating (psig)

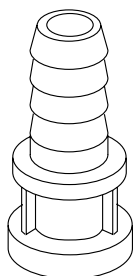
PVC soft 1/4" x 3/16" (for suction side only)
 PVC soft 1/2" x 3/8" (for suction side only)
 PVC fabric reinforced 1/4" x 1/2"
 PE 1/4" x 3/16"
 PE 1/2" x 3/8"
 PE 3/8" x 1/4"
 Teflon (FEP) 1/4" x 3/16"
 Teflon (FEP) 1/2" x 3/8"
 Teflon (FEP) 8 x 4 mm

7
 7
 232
 100
 100
 100
 100
 363

Part No.

7037004
 7037009
 37032
 7037005
 7037010
 7037011
 7037426
 7037428
 1033166

Hose Barbs



Material (all 1/2" DN 10)

PP
 PVC
 PTFE
 316 SS

Part No.

800657
 800554
 811572
 810536

Material (all 3/4" DN 15)

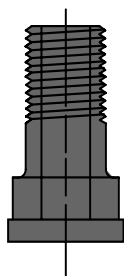
PP
 PVC
 PTFE
 316 SS

800655
 811407
 811424
 810567

Union Nuts & Inserts



1031/4



Threaded insert

1486/4

	Union Nut	Threaded Insert	Union Nut	Insert	Union Nut	Threaded Insert
Pump	Material	Material	Thread	Thread	Part No.	Part No.
High Viscosity	PP	PP	DN 10	1/2" MNPT	358613	7358402
Makro	PP	PP	DN 20	3/4" MNPT	358615	1017381
Makro	PP	PP	DN 25	1" MNPT	358616	1017382
Makro	PP	PP	DN 40	1-1/2" MNPT	358618	7358611
Makro	PVC	PVC	DN 20	3/4" MNPT	356564	1017381
Makro	PVC	PVC	DN 25	1" MNPT	356565	1017382
Makro	PVC	PVC	DN 40	1-1/2" MNPT	356567	7358613
Makro	PVDF	PTFE	DN 20	3/4" MNPT	358815	1017381
Makro	PVDF	PTFE	DN 25	1" MNPT	358816	1017382
Makro	PVDF	PTFE	DN 40	1-1/2" MNPT	358818	7358615
Sigma	PVDF	PTFE	DN 10	1/2" MNPT	358813	7358634
Sigma	PVDF	PTFE	DN 15	3/4" MNPT	358814	1017380
Sigma	PVDF	PTFE	DN 20	3/4" MNPT	358815	1017381
Sigma	PVDF	PTFE	DN 25	3/4" MNPT	358816	7358645
Sigma	PVDF	PTFE	DN 25	1" MNPT	358816	1017382
Sigma/3	PVDF	PTFE	DN 32	1-1/2" MNPT	1003639	1017383
Sigma	SS	SS	DN 10	3/8" FNPT	805270	7805285
Sigma	SS	SS	DN 15	1/2" FNPT	805271	7805286
Makro	SS	SS	DN 20	3/4" MNPT	805272	7358609
Sigma	SS	SS	DN 25	3/4" MNPT	805273	7358646
Makro/Sigma	SS	SS	DN 25	1" MNPT	805273	7358610
Sigma/3	SS	SS	DN 32	1-1/2" MNPT	805274	7358648
Makro	SS	SS	DN 40	1-1/2" MNPT	805275	7358617

Fig. 1

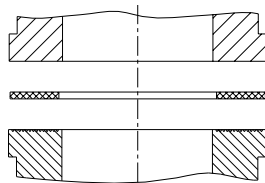


Fig. 2

PTFE, P/N

M20 x 1.5	1021686
DN10	1019364
DN15	1019365
DN20	1019366
DN25	1019367
DN32	1019353
DN40	1019368
DN50	1019369

EPDM, P/N

DN10	1019315	1019314
DN15	1019317	1019316
DN25	1019319	1019318
DN32	1019321	1019320
DN40	1019323	1019322
DN50	1019325	1019324

Pump & Systems Accessories

Gaskets

Gaskets

Virgin White Teflon gaskets for PTFE

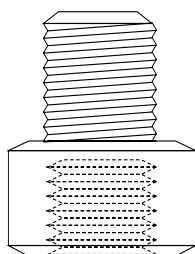
Part No.

DN 10	Vario/Sigma	483957
DN 15	Sigma/Vario	483921
DN 20	Meta/Sigma	483922
DN 32	Sigma	7744320
DN 40	Makro	483951

Note: The material make-up of the standard gaskets are teflon with a Viton® center. For applications using chemicals that react negatively with Viton®, the above gaskets are needed.

Tubing Adapters

Adapters

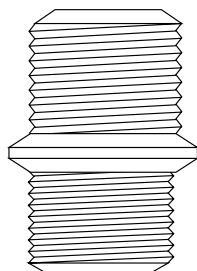


M20 x 1.5 Female by 1/2" MNPT

PVC	7744060
PVDF	7358652

M20 x 1.5 Female Socketweld

PVC	7740129
CPVC	7740881
PVDF	7745882



M20 x 1.5 Male by 1/2" MNPT

PVC/EPDM	7500856
PVC/Viton®	7500855
PVDF	7358660

M20 x 1.5 Male Socketweld

PVC	7740130
CPVC	7745158
PVDF	7745598



Right-angled PVC threaded connector

Connector for the beta and gamma/L auto-degassing liquid ends required when mounting multifunction valves; optionally used to direct discharge flow upwards. Angle union 90°.

Type PCB (PVC/Viton®)	1003318
Type PCE (PVC/EPDM)	1003472



Tubing fold preventer

Fits on top of the beta and gamma/L auto-degassing liquid ends, used to prevent a fold in the bypass line which is fed back to the tank. This is required when using soft tubing, however rigid tubing is standard.

for tubing size (mm)

1/4" x 3/16" (6mm)	1001844
--------------------	---------

Pump & Systems Accessories

Backpressure Valves

Pressure Relief Valves

Backpressure, antisiphon and pressure relief valves



In-line pressure relief valve (3 port)



Backpressure valve (2 port)



Backpressure valve on tee for pressure relief

Backpressure (2-port) valves may be used in-line to provide a constant discharge pressure for protection from siphoning, or they may be teed off of the discharge line for pressure relief, discharging back to the source tank or to the pump suction line to create a bypass.

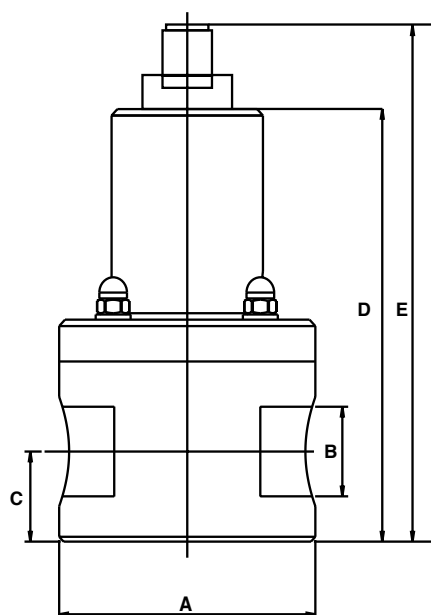
Pressure relief (3-port) valves are mounted in the discharge line, featuring a separate relief port which discharges back to the source tank or to the pump suction line to create a bypass.

Backpressure valves provide several functions: they improve repeatability by providing a constant discharge pressure; they provide antisiphon protection for discharge into pressurized water lines or vacuums, or where suction head exceeds discharge head; and they minimize pulsation when used in conjunction with a pulsation dampener.

In-line backpressure/antisiphon and pressure relief valves

These adjustable backpressure (2-port) and pressure relief (3-port) valves have FNPT ports and require tubing adapters for use with flexible tubing.

Can be adjusted with screwdriver.



Dimensions in inches (mm)

A	B	C	D	E
2.6 (65)	1/4 NPT	1.2 (31)	4.9 (125)	6.2 (158)
2.6 (65)	1/2 NPT	1.2 (31)	4.9 (125)	6.2 (158)
3.5 (88)	3/4 NPT	1.1 (28)	5.4 (136)	6.7 (169)
3.9 (98)	1 NPT	1.4 (36)	5.7 (145)	7.0 (178)
4.6 (118)	1-1/2 NPT	2.2 (56)	9.0 (229.5)	10.3 (260.5)
4.6 (118)	2 NPT	2.2 (56)	9.0 (229.5)	10.3 (260.5)

Pump & Systems Accessories

Backpressure Valves

Pressure Relief Valves

1/4" FNPT valves

Material

PP
PVC
PVDF
316 SS

Backpressure Valve (2-port)

1009444
1009445
1009446
1009447

Pressure Relief Valve (3-port)

1009452
1009453
1009454
1009455

Tubing Adapters

(1 required per valve port): 1/4" x 3/16" tubing x 1/4" MNPT

PP/EPDM
PP/Viton®
PVC/EPDM
PVC/Viton®

Part No.

7500060
7500058
7500064
7500062

1/2" FNPT valves

Material

PP
PVC
PVDF
316 SS

Backpressure Valve (2-port)

1006846
1006850
1006854
1008796

Pressure Relief Valve (3-port)

1006858
1006862
1006866
1008800

Tubing Adapters

(1 required per valve port): 1/2" x 3/8" tubing x 1/2" MNPT

PP/EPDM
PP/Viton®
PVC/EPDM
PVC/Viton®

Part No.

7500061
7500059
7500065
7500063

3/4" FNPT valves

Material

PP
PVC
PVDF
316 SS

Backpressure Valve (2-port)

1006847
1006851
1006855
1008797

Pressure Relief Valve (3-port)

1006859
1006863
1006867
1008801

1" FNPT valves

PP
PVC
PVDF
316 SS

1006848
1006852
1006856
1008798

1006860
1006864
1006868
1008802

1-1/2" FNPT valves

PP
PVC
PVDF
316 SS

1006849
1006853
1006857
7302243

1006861
1006865
1006869
7302261

2" FNPT valves

PP
PVC
PVDF
316 SS

1009448
1009449
1009450
7302247

1009456
1009457
1009458
7302265

Spare Parts Sets

Contains 1 of each: compression spring, diaphragm, spring plate, and pressure adj. disc.

SPK 1/4" - 1/2"
SPK 3/4" - 1"
SPK 1-1/2" - 2"

1035446
1035447
1035448

1035446
1035447
1035448

Spare diaphragms

1/4" - 1/2" valve PTFE/EPDM
3/4" - 1" valve PTFE/EPDM
1-1/2" - 2" valve PTFE/EPDM

1006813
1006814
1006815

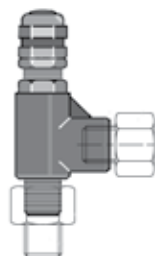
1006813
1006814
1006815

Pump & Systems Accessories

Pressure Relief Valves

Pressure relief valves

High pressure relief valve, adjustable, 1/4" and 1/2" NPT for Sigma/ Meta/Makro HK and ProMus pumps



1112/4

Can also be used as a backpressure valve for < 30 gph (113 L/h).

These valves are without springs, which must be ordered separately.

Materials: Stainless steel/Viton®

Connection: 1/4" NPT male and female thread

Part No.

7202505

Materials: Stainless steel/EPDM

Connection: 1/4" NPT male and female thread

7744507

Spring: psig (bar)

Color:

50 - 350	(3.5 - 25)	blue	7202519
350 - 750	(25 - 50)	yellow	7202520
750 - 1500	(50 - 100)	violet	7202525
1500 - 2250	(100 - 155)	orange	7202524
2250 - 3000	(155 - 205)	brown	7202523
3000 - 4000	(205 - 275)	white	7202522
4000 - 5000	(275 - 340)	red	7202521

Materials: Stainless steel/Viton®

Connection: 1/2" NPT male and female thread

7744508

Materials: Stainless steel/EPDM

Connection: 1/2" NPT male and female thread

7744509

Spring: psig (bar)

Color:

50 - 350	(3.5 - 25)	blue	7744510
350 - 750	(25 - 50)	yellow	7744511
750 - 1500	(50 - 100)	violet	7744512

Pump & Systems Accessories

Pulsation Dampeners

Pulsation dampeners operate on the principle that gas is compressible and fluid is not. The pulsation dampener consists of an air chamber containing compressed air, a fluid chamber connected to the pump's suction or discharge line, and a bladder or bellows which separates the air and fluid.

Some models are flow-through design, with two ports so they can be mounted directly on the pump suction or discharge line. Other models are single port design, to be teed off of the pump suction or discharge line. Flow-through models may also be used in a tee if one port is capped.

All models feature a Schrader (bicycle) valve and pressure gauge for charging the air chamber on-site.

PVDF/Nordel pulsation dampeners are recommended for sodium hydroxide (caustic) applications. Viton® pulsation dampeners are recommended for sodium hypochlorite applications.

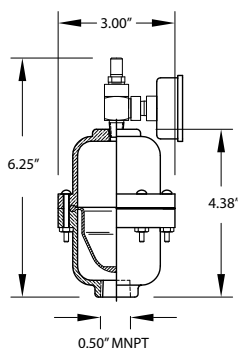
Multiply the pump's displacement per stroke (mL) times 26 to get minimum pulsation dampener volume (mL) to achieve 90% reduction in pulsation.

We recommend using pressure relief valves with the pulsation dampeners.

General Specifications

Maximum pressure:	150 psig (polypro, PVDF and PTFE), 300 psig (SS)
Temperature range:	
Nordel bladder:	-60°F to 280°F (-51°C to 138°C)
Viton® bladder:	30°F to 350°F (-1°C to 177°C)
HYPALON® bladder:	-20°F to 275°F (-29°C to 135°C)
PTFE bellows:	40°F to 220°F (4°C to 104°C)
Polypro housing :	32°F to 175°F (0°C to 79°C)
PVC housing:	32°F to 140°F (0°C to 60°C)
PVDF housing:	10°F to 250°F (-12°C to 121°C)
PTFE housing:	-20°F to 125°F (-29°C to 52°C)
SS housing:	32°F to 200°F (0°C to 93°C)

*Teflon bellows are smaller in volume



10 CU IN
(164 mL)

131 mL (8 cu. in.) Models

SS housing: 3/8" FNPT, 1 port	
PTFE bellows	3 (1.4)
PVDF housing: 1/2" FNPT, 1 port	
PTFE bellows	1 (0.9)

164 mL (10 cu. in.) Models

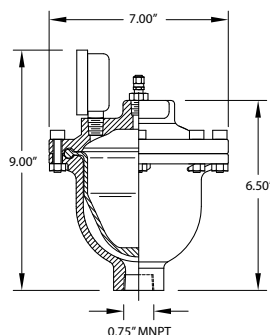
CPVC housing: 1/2" FNPT, 1 port				
Nordel bladder (EPDM)	1 (0.9)	RC-10X-E50	III	7744096
Viton® bladder	1 (0.9)	RC-10X-V50	III	7744097
HYPALON® bladder	1 (0.9)	RC-10X-H50	III	7744098
Polypro housing: 1/2" FNPT, 1 port				
Nordel bladder (EPDM)	1 (0.9)	CTP1005 ND 5	III	7744102
PVDF housing: 1/2" FNPT, 1 port				
Nordel bladder (EPDM)	1 (0.9)	CTK1005 ND 5	III	7744100
Viton® bladder	1 (0.9)	CTK1005 V 5	III	7744099

Viton® and HYPALON® are registered trademarks of DuPont Dow Elastomers

Pump & Systems Accessories

Pulsation Dampeners

Pulsation dampeners (cont.)



36 CU IN
(600 mL)

262 mL (16 cu. in.) Models

PVC housing: 3/4" FNPT, 1 port

PTFE bellows

7 (3.2)

CT1311 T

II

7744211

PVDF housing: 3/4" FNPT, 1 port

PTFE bellows

7 (3.2)

CT1401 T

II

7253234

SS housing: 3/4" FNPT, 1 port

PTFE bellows

11 (5.0)

CT3120 T

II

7253237

600 mL (36 cu. in.) Models

PVC housing: 3/4" FNPT, 1 port

Nordel bladder

7 (3.2)

CT1311 ND

II

7253232

Viton® bladder

7 (3.2)

CT1311 V

II

7253233

HYPALON® bladder

7 (3.2)

CT1311 H

II

7740946

Polypro housing: 3/4" FNPT, 1 port

Nordel bladder

6 (2.7)

CT1301 ND

II

7253230

PVDF housing: 3/4" FNPT, 1 port

Viton® bladder

7 (3.2)

CT1401 V

II

7253235

SS housing: 3/4" FNPT, 1 port

Viton® bladder

11 (5.0)

CT3120 V

II

7253238

1147 mL (70 cu. in.) Models

PVC housing: 3/4" FNPT, 1 port

PTFE bellows

10 (4.5)

CT311 T

II

7253229

SS housing: 3/4" FNPT, 1 port

PTFE bellows

14 (6.4)

CT3020 T

II

7253206

PVDF housing: 3/4" FNPT, 1 port

PTFE bellows

8 (3.6)

CT401 T

II

7253219

1393 mL (85 cu. in.) Models

PVC housing: 3/4" FNPT, 1 port

Nordel bladder

6 (2.7)

CT311 ND

II

7253221

Viton® bladder

6 (2.7)

CT311 V

II

7253220

HYPALON® bladder

6 (2.7)

CT311 H

II

7740947

PVDF housing: 3/4" FNPT, 1 port

Nordel bladder (EPDM)

7 (3.2)

CT401 ND

II

7253209

Viton® bladder

8 (3.6)

CT401 V

II

7253210

1998 mL (122 cu. in.) Models

PVC housing: 2" FNPT, 1 port

PTFE bellows

16 (7.3)

CT911 T

I

7253228

2867 mL (175 cu. in.) Models

PVC housing: 2" FNPT, 1 port

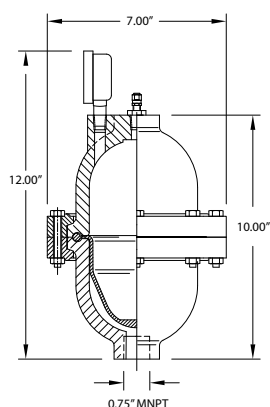
HYPALON® bladder

13 (5.9)

CT911 H

I

7740948

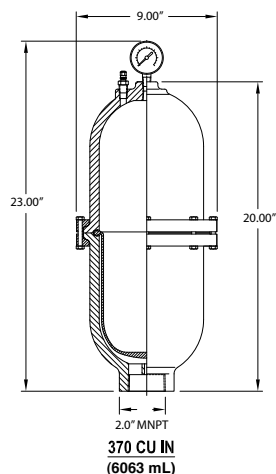


85 CU IN
(1393 mL)

Pump & Systems Accessories

Pulsation Dampeners

Pulsation dampeners (cont.)



5822 mL (355 cu. in.) Models

PVC housing: 2" FNPT, 1 port

PTFE bellows

PVDF housing: 2" FNPT, 1 port

PTFE bellows

SS housing: 2" FNPT, 1 port (Fig. 4)

PTFE bellows

6063 mL (370 cu. in.) Models

PVC housing: 2" FNPT, 1 port (Fig. 4)

Nordel bladder

Viton® bladder

Polypro housing: 2" FNPT, 1 port (Fig. 4)

Viton® bladder

Note: Other sizes and materials available upon request.

Shipping Wt. lbs (kg)	Model	Bladder Size	Part No.
18 (8.2)	CT111 T	I	7253227
21 (9.5)	CT201 T	I	7253215
40 (18.1)	CT2400 T	I	7253211
16 (7.3)	CT111 ND	I	7253222
16 (7.3)	CT111 V	I	7253218
15 (6.8)	CT101 V	I	7253213

High pressure (1000psi) pulsation dampeners for ProMus pumps only.

66 mL (4 cu. in.) Models

316 Stainless Steel housing: 3/8" FNPT, 1 port (not illustrated)
Nordel bladder (EPDM)

164 mL (10 cu. in.) Models

Hastelloy C housing: 3/8" FNPT, 1 port (not illustrated)
Viton® bladder

316 Stainless Steel housing: 3/8" FNPT, 1 port (not illustrated)
Nordel bladder (EPDM)

600 mL (36 cu. in.) Models

316 Stainless Steel housing: 3/8" FNPT, 1 port (not illustrated)
Nordel bladder (EPDM)

Model	Bladder Size	Part No.
H1120 ND	III	7744387
H1080 V	III	7744382
H1020 ND	III	7744388
H3120 ND	II	7744389

Pump & Systems Accessories

Pulsation Dampeners

	Model	Bladder Size	Part No.
Nordel (EPDM) bladders	1000-28	III	7740208
	401-28	II	7740202
	201-28	I	7740205
Viton bladders	1000-31	III	7740209
	401-25	II	7740203
	201-25	I	7740206
Hypalon bladders	1000-30	III	7740959
	401-30	II	7740960
	201-30	I	7740961
PTFE bellows	301-10	II	7740204
	101-10	I	7740207

High pressure charging hose

Charging hose consists of an 8 foot (2.4 m) length of 5000 psi hose with a 1/4" NPT (M) fitting at one end, for connection to a nitrogen bottle regulator and a charging adapter with purge valve and gauge at the other end.

	Model	Part No.
1/4" air inlet and 1/8" fill valve	701-00	7744376

Inlet stabilizers

An inlet stabilizer will improve flow conditions to the inlet side of a pump and protect and extend the service life of all inlet system components. Inlet stabilizers must be mounted as close to the pump's inlet connection as possible, and no more than 10 pipe diameters away. All units include a 30-0-30 vacuum/pressure gauge, air venturi, and ball valve for charging bladder chamber. Units must be sized similar to pulsation dampeners, i.e. 26 x (mL/stroke) = minimum required inlet stabilizer volume. **Note:** Requires a compressed air supply be available for initial bladder charging and periodic readjustment as necessary.

	Model	Size	Part No.
1393 mL (85 cu. in.) Models (for 3/4" models)			
PVC housing:			
Viton® bladder	J3111V	II	7740859
HYPALON® bladder	J3111H	II	7744305
Nordel bladder (EPDM)	J3111ND	II	7744306
PVDF housing:			
Viton® bladder	J401V	II	7740860
6063 mL (370 cu. in.) Models (for 2" models)			
PVC housing:			
Viton® bladder	J1111V	I	7744307
HYPALON® bladder	J1111H	I	7744308
Nordel bladder (EPDM)	J1111ND	I	7744309
PVDF housing:			
Viton® bladder	J201V	I	7744310

Materials shown are in contact with process fluid.

Other material and sizes are available. Please consult factory.

Pump & Systems Accessories

Calibration Columns

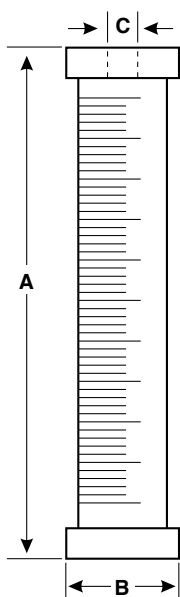
Calibration Columns are installed on the suction side of the metering pump and are isolated with two valves installed with the columns. The top of the column is vented back to the supply tank or drain. The calibration columns are filled to the top mark then the valve from the tank is closed. Turning on the metering pump will draw down the liquid providing a simple means to verify the accuracy of the pump flow rate. USGPH (gallons per hour) and mL (milliliters) are shown on the columns.

Glass Calibration Columns

- Borosilicate glass tube
- Protective outer shell
- GPH & mL scale
- Max. column pressure is 15 psi

Clear PVC Calibration Columns

- Clear tube for easy GPH reading
- Sealed top
- NSF-61 approved materials
- GPH & mL scale
- Max. column pressure is 15 psi

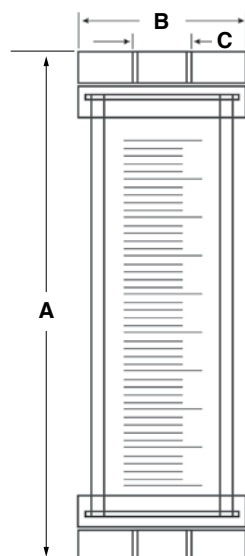


Clear PVC Calibration Column (Threaded)

Column Volume	Cap Material	Height A	Diameter B	Fitting Size C	Capacity (GPH)	Scale (mL)	Part No.
100 mL	PVC	11.00"	1.50"	1/2" NPT	3.2	2.0	7501331
250 mL	PVC	11.75"	2.10"	1/2" NPT	8.0	2.0	7501332
500 mL	PVC	13.00"	2.50"	1/2" NPT	16.0	5.0	1048428
500 mL	PVC	13.00"	2.50"	3/4" NPT	16.0	5.0	7501333
1,000 mL	PVC	22.00"	2.50"	3/4" NPT	32.0	5.0	7501334
2,000 mL	PVC	20.00"	3.95"	1" NPT	64.0	10.0	7501335
4,000 mL	PVC	37.00"	3.95"	1" NPT	128.0	10.0	7501336
10,000 mL	PVC	25.75"	7.25"	2" NPT	320.0	20.0	7501337
20,000 mL	PVC	47.75"	7.25"	2" NPT	640.0	20.0	7501338

Clear PVC Calibration Column (Socket)

Column Volume	Cap Material	Height A	Diameter B	Fitting Size C	Capacity (GPH)	Scale (mL)	Part No.
100 mL	PVC	11.00"	1.50"	1/2" SKT	3.2	2.0	7501339
250 mL	PVC	11.75"	2.10"	1/2" SKT	8.0	2.0	7501340
500 mL	PVC	13.00"	2.50"	3/4" SKT	16.0	5.0	7501341
1,000 mL	PVC	22.00"	2.50"	3/4" SKT	32.0	5.0	7501342
2,000 mL	PVC	20.00"	2.50"	1" SKT	64.0	10.0	7501343
4,000 mL	PVC	37.00"	3.95"	1" SKT	128.0	10.0	7501344
10,000 mL	PVC	25.75"	3.95"	2" SKT	320.0	20.0	7501345
20,000 mL	PVC	47.75"	7.25"	2" SKT	640.0	20.0	7501346



Glass Calibration Column

Column Volume	Cap Material	Height A	Diameter B	Fitting Size C	Capacity (GPH)	Scale (mL)	Part No.
100 mL	PVDF	14.93"	2.50"	1/2" NPT	3.2	2.0	7501347
100 mL	SS	14.93"	2.50"	1/2" NPT	3.2	2.0	7501355
200 mL	PVDF	20.93"	2.50"	1/2" NPT	6.4	2.0	7501348
200 mL	SS	20.93"	2.50"	1/2" NPT	6.4	2.0	7501356
500 mL	PVDF	14.99"	3.50"	3/4" NPT	16.0	5.0	7501349
500 mL	SS	14.99"	3.50"	3/4" NPT	16.0	5.0	7501357
1,000 mL	PVDF	26.99"	3.50"	3/4" NPT	32.0	5.0	7501350
1,000 mL	SS	26.99"	3.50"	3/4" NPT	32.0	5.0	7501358
2,000 mL	PVDF	27.33"	5.00"	1" NPT	63.0	10.0	7501351
2,000 mL	SS	27.33"	5.00"	1" NPT	63.0	10.0	7501359
4,000 mL	PVDF	39.28"	5.00"	1" NPT	127.0	10.0	7501352
4,000 mL	SS	39.28"	5.00"	1" NPT	127.0	10.0	7501360

O-Ring material is made of Viton®

Pump & Systems Accessories

Flow Monitor

Ultra-sound Flow Meter DulcoFlow®

Used for the measurement of pulsing flows ranging from 0.02-13 gph. All parts that come into contact with the feed chemical are made from PVDF, ensuring that even aggressive feed chemicals can be measured without a problem. The device is installed approximately 12" inches downstream of the pump in the metering line. Interfering influences, such as air bubbles, are detected and transmitted to the DulcoFlow® unit as an error message. The use of the delta is only fast with metering stroke versions.

Alongside the recording and measurement of flows, the flow meter DulcoFlow® can also be used to monitor individual metering strokes, if "Contact output" is selected for signal output in the identity code. In this case, the device is calibrated to the lifting volume set on the pump. A lower and an upper limit can be entered and if the figure falls below or exceeds these limits, no feedback is transmitted to the pump. As a result, this generates an error message.

The device is designed for wall or panel mounting.

- The cumulative volume can be calculated in gallons or liters
- Direct display of the flow and number of strokes recorded
- 2 LEDs for stroke feedback and operating status
- Analog output or frequency output for flow volume
- Contact output for direct connection to the metering pump (single stroke monitoring)



Technical data

Measuring range:	0.02-13 gph
Accuracy:	< 2% during calibrated
Analog output:	4-20 mA (recording or control)
Frequency output:	Configurable, max. 10 kHz
Protection class:	IP 65
Power supply:	100-230 V AC / 50/60 Hz
Max. viscosity of fluid:	2000 cP
Dimensions:	7.22" x 4.76" x 4.38" (HxWxD)
Measurable volume:	0.03 ml/stroke (DFMa05) 0.05 ml/stroke (DFMa08)

Note: Max. distance from the pump discharge to the DulcoFlow unit is 12" inches.

Media to be measured

Connector:	Hose connection with nominal width 1/2" x 3/16", 1/2" x 3/8", 3/8" x 1/4", 1/2" MNPT
Medium pressure:	44-232 psi * (minimum 44 psi needed for consistent measurement)
Medium temperature:	14-113 °F

*A backpressure valve is recommended

Identcode Ordering System

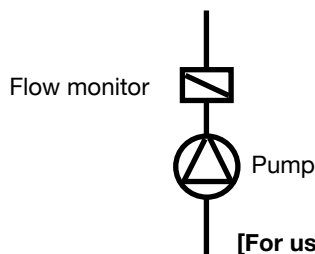
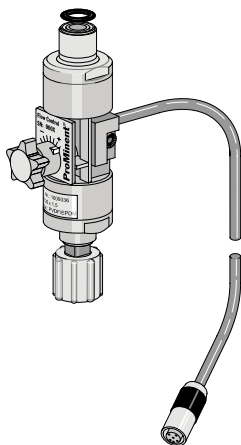
DFMA	Series Version:							
	05	beta, gamma/L 1000 - 0413/0716, delta 1608 - 1612						
	08	beta, gamma/L 0220/0420 - 0232, delta 1020 - 0280						
	Seal Material:							
	T	PTFE						
	Connection:							
	1	1/4" x 3/16"						
	2	3/8" x 1/4"						
	3	1/2" x 3/8"						
	4	special - connection DN10						
	Electrical Connection:							
	D	N. American Plug 115 V						
	Signal Output:							
	1	4-20 mA output						
	2	Contact Output						
	3	with current and contact exit						
4	exit for controlled pump							
Design:								
0	with ProMinent logo							
Accessories:								
0	without accessories							
DFMA	05	T	1	D	0	0	0	

Pump & Systems Accessories

Metering Monitors

Adjustable metering monitor "Flow Control"

Supplied with connection cable for assembly directly to liquid end. Monitors individual strokes according to the float and orifice principle. The partial quantity of chemical flowing past the float is adjusted from the total stroke volume via the adjusting screw so that an alarm relay is actuated if the flow falls 20%. The user can select the number of incomplete strokes permitted (between 1 and 125) in accordance with the actual process requirements.



[For use with low-viscosity (water-like) fluids only].

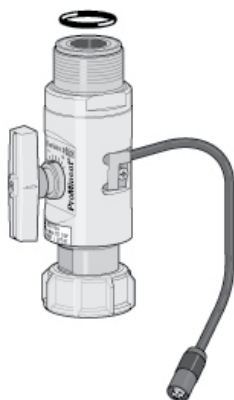
Materials:

Flow meter: PVDF
 Float: PTFE-coated
 O-rings: Viton® B/EPDM

For gamma/L series in material versions PP, PVDF, NP and TT.

Flow Control	Material	Pump type	Part No.
Flow Control type I	PVDF, EPDM	1000, 1601, 1602	1009229
Flow Control type II	PVDF, EPDM	1005, 1605, 0708, 1008, 0413 0713, 0220, 0420, 0232	1009336
Flow Control type I	PVDF, Viton® B	1000, 1601, 1602	1009335
Flow Control type II	PVDF, Viton® B	1005, 1605, 0708, 1008, 0413 0713, 0220, 0420, 0232	1009338

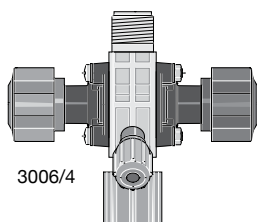
For Sigma HM with connection cable for assembly to liquid end.



Flow Control	Material	Pump type	Part No.
Flow Control type III (Sigma/ 1)	PVDF, EPDM	12017, 10022, 12035, 10044 10050, 07065	1021168
	PVDF, Viton® B	12017, 10022, 12035, 10044 10050, 07065	1021169
Flow Control type III (Sigma/ 1 & 2)	PVDF, EPDM	07042, 04084, 04120, 12050 12090, 12130	1021170
	PVDF, Viton® B	07042, 04084, 04120, 12050 12090, 12130	1021171
Flow Control type IV (Sigma/ 2 & 3)	PVDF, EPDM	07120, 04350, 120145, 120190 120270	1021164
	PVDF, Viton® B	07120, 04350, 120145, 120190 120270	1021165
Flow Control type V (Sigma/ 3)	PVDF, EPDM	07410, 07580, 04830	1021166
	PVDF, Viton® B	07410, 07580, 04830	1021167

Pump & Systems Accessories

Multifunction Valve



ProMinent's multifunction valve is operated by means of smooth-action rotary knobs which automatically return to their initial position when released. Made of PVDF, it can be used in feed systems for virtually all chemicals. The multifunction valve is mounted directly on the liquid end of the pump for backpressure, antisiphon, pressure relief, priming, and draining the discharge line. The inlet thread is female M20 x 1.5 and the discharge is male M20 x 1.5.

ProMinent's multifunction valve has the following functions:

- Backpressure valve, opening pressure approximately 22 psi (1.5 bar)
- Relief valve, opening pressure approximately 87, 145 or 232 psi (6, 10 or 16 bar)
- Admission aid in existing backpressure, no need to de-pressurize pipes
- Pressure relief, e.g. prior to servicing

Warning: Backpressure valves are not intended as completely sealed units!

Materials in contact with chemicals:

Valve body	PVDF
Diaphragm	PTFE-coated
O-rings	Viton® or EPDM
DN 10 adapter	PVC

Technical data:

Type	Relief opening pressure	Application range by size	Part No.
Size I (M20 x 1.5)	232 psi (16 bar)	alpha all types	792011
Size I	145 psi (10 bar)	beta & gamma/L type 1000, 1601,	791715
Size I	87 psi (6 bar)	1602, 1605, 1005, 1008, 0708, 0413, 0220	1005745
Size II (M20 x 1.5)	145 psi (10 bar)	beta & gamma/L type 1605, 1008,	792203
Size II	87 psi (6 bar)	0713, 0420, 0232	740427
Size III (DN 10)	145 psi (10 bar)		792215

Note: Multifunction valves mounted to stainless steel liquid ends require below adapters. **Cannot adjust pressure; fixed factory setting.*

Connector Set for SS version pumps

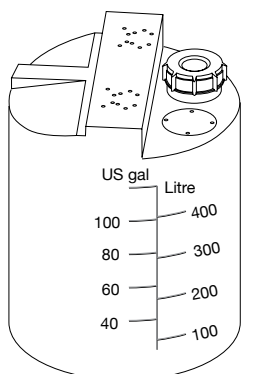
Adapter with o-rings, for use with SS2 liquid ends: 1/4" MNPT x Male M20 x 1.5 adapter, PVDF	7358651
Adapter with o-rings, for use with SS2 liquid ends: 3/8" MNPT x Male M20 x 1.5 adapter, PVDF	7358659

* Viton® is a registered trademark of DuPont Dow Elastomers

Pump & Systems Accessories

Tanks

Chemical tanks



15, 26, 70, 132 gallon capacity

Made of translucent UV-stabilized polyethylene, with gallon/litre scale, screw cap. Mounting platforms for ProMinent metering pumps and mixers. All tanks are specifically developed to maximize toughness. These tanks are impact, stress, and chemical resistant. Maximum allowable temperature 180°F (82°C). Tank opening (screw cap) diameter for 15 - 132 gal.: 6.5".

Tank opening (screw cap) diameter for 220 and 300 gal.: 5-1/4".

Capacity		O.D.		Height		Empty Weight		Part No.
gallon	(litre)	in.	(mm)	in.	(mm)	lb.	(kg)	
15	(60)	18	(445)	22	(559)	11	(5.0)	791994
26	(100)	20	(500)	30	(760)	17	(7.7)	1001490
70	(265)	26	(661)	42.5	(11079.5)	37	(17)	1023175
132	(500)	32	(820)	47	(1190)	54	(24.5)	791997
220	(830)	42	(1067)	41	(1041)	55	(25.0)	7809688
300	(1100)	43	(1092)	59	(1499)	70	(31.7)	7809687

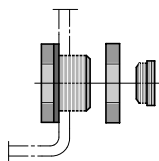
Note: pump mounting kit needed for all tanks (part no. 7500124)

Accessories for Tanks:

Lock and key for screw-on cap

200683

PVC tank drain fitting with plug



1077/4

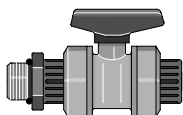
1/2" FNPT as an additional connection for chemical tanks. To be used as an open drain with plug or for addition of optional 1/2" ball valve fitting. Fits 1 3/8" opening.

Part No.

PVC with Viton® seal	7745801
PVC with EPDM seal	7740771

3/4" FNPT as an additional connection for chemical tanks. To be used as an open drain with plug or for addition of optional 3/4" ball valve fitting. Fits 1-3/8" opening.

PVC with Viton® seal	7745802
PVC with EPDM seal	7741477



2424/4

PVC ball valve

1/2" PVC ball valve with 1/2" FNPT connections for all chemical tanks with 1/2" PVC tank drain fittings.

PVC with Viton® seal	7000309
PVC with EPDM seal	7000311

3/4" PVC ball valve with 3/4" FNPT connections for all chemical tanks with 3/4" PVC tank drain fittings.

PVC with Viton® seal	7741668
PVC with EPDM seal	7741485

Pump & Systems Accessories

Mixers

U.S. Mixers

Fig. 1

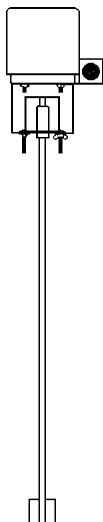
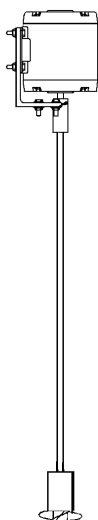


Fig. 2



Electric mixers

Note: with any tank-mounted mixer, the inertia of fluid rotating in a polyethylene tank may cause the tank to move when the fluid level is low. Provision should be made to anchor the tank or to automatically shut the mixer off when the fluid level is low.

For U.S. only. For Canada mixers, see below.

High speed mixer for water-like fluids in 15, 26 or 66 U.S. gallon tanks (Fig. 1):

Motor: 1/20 HP, 1550/1725 RPM, 115 VAC, 60 Hz, 1 ph., TEFC, with 8' Type SJ power cord, no on/off switch.

Shaft: 316 SS shaft/impeller (epoxy coated)

Mount: Four hole mounting flange with bolt holes, set at 5° angle for mounting directly on tank top.

Accessories: 1" diameter PVC metering pump suction pipe with bulkhead fitting for mounting to tank top.

Shipping weight: 9 lbs. (4 kg)

For 26 gallon tank (19" shaft)

For 66 gallon tank (34" shaft)

Shaft only (19" replacement)

Shaft only (34" replacement)

Part No.

7818588

7818589

7818590

7818591

High speed mixer for water-like fluids in 132 to 300 gallon tanks (Fig. 2):

Motor: 1/4 HP, 1725 RPM, 115/230 VAC, 60 Hz, TEFC. Power cord not included.

Shaft: 316 SS shaft/propeller. Shaft length: 36" (may be cut down for smaller tanks)

Mount: Bracket with bolt holes, for mounting directly on tank top.

Shipping weight: 27 lbs. (12 kg)

Shaft only (36" replacement)

7818592

7744506

Slow speed mixer for water-like fluids in 15, 26 or 66 gallon tanks:

Motor: 1/3 HP, 60 RPM, 115 VAC, 50/60 Hz, 1 ph., TEFC. Power cord not included.

Shaft: 316 SS shaft w/ 1 set of impellers. Shaft length is 44" (may be cut).

Mount: Bracket w/ 4 bolt holes for mounting directly on tank top.

Shipping weight: 32 lbs.

7818594

Note: Motor not thermally protected.

Mixer mounting kit for 15 gallon tanks:

Polyethylene flange adapter for mounting mixers to metric flange. Includes all necessary hardware.

7744385

Mixer mounting kit for 26, 66, and 132 gallon tanks:

Polyethylene flange adapter for mounting mixers to metric flange. Includes all necessary hardware.

7744319

*(Other mixers available upon request)

Canada Mixers

High speed mixer for water-like fluids in 15, 26 or 66 gallon tanks:

Motor: 1/20 HP

Mount: includes mounting bracket

Shaft: 316 SS shaft and propeller

7356679

High speed mixer for water-like fluids in 132 to 300 gallon tanks:

Motor: 1/4 HP

Mount: includes PVC mounting flange

Shaft: 316 SS shaft and propeller

7818565

Note: Both mixers for Canada only.

Pump & Systems Accessories

Float Switches

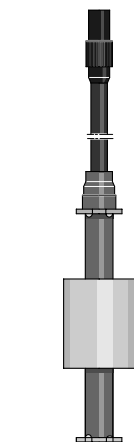
Float switches, two stage Float switch, two-stage: for beta, gamma/ L and delta pumps
(includes ceramic weight - do not use ceramic weight for fluoride service)

To monitor the fluid level in the chemical tank. Two-stage function, first stage is early warning annunciation, second stage will shut down pump after an additional drop in the fluid level of approximately 1.2" (30 mm).

With 3-pole round connector, suitable for direct connection to ProMinent gamma series.

Technical data:

Max. contact load 60 V, 0.3 A, 5 W/5 VA, temperature range -13°F to 167°F (-25°C to 75°C).



2380/4

Materials:

PP body, foamed PP float 7/8" (21 mm) dia., PE cable

PP with 3-pole round connector	cable length	6 ft. (2 m)	7142093
		15 ft. (5 m)	

PVC body, foamed PP float 7/8" (21 mm) dia., PE cable

PVC with 3-pole round connector	cable length	6 ft. (2 m)	7142043
		15 ft. (5 m)	

PVDF body, foamed PVDF float 1" (25 mm) dia., PE cable

PVDF with 3-pole round connector	cable length	6 ft. (2 m)	7792639
		15 ft. (5 m)	

Part No.

Ceramic weight for float switch

1.53" dia. x 1.26" with oval opening .51" x 1.06"
(39 mm x 32 mm) (13 mm x 27 mm)

404004



1086/4

With two-stage float switches with round connector, the weight is slid into position from below after the float has been removed.

Note: Not for use in fluoride application (e.g. hydrofluosilicic acid).

Pump & Systems Accessories

Float Switches

Float switches, single stage **Float switch, single-stage: for Concept^{PLUS}** (includes ceramic weight – do not use ceramic weight for fluoride service)



2820/4

For minimum level indication with simultaneous shutdown of the metering pump.

Technical data:

Max. contact load 60 V, 0.3 A, 5 W/5 VA, temperature range -13°F to 167°F (-25°C to 75°C).

Materials:

PP body, foamed PP float 7/8" (21 mm) dia., PE cable

PP with flat connector

cable length	6 ft.	(2 m)
	15 ft.	(5 m)

790412

790470

PVC body, foamed PP float 7/8" (21 mm) dia., PE cable

PVC with flat connector

cable length	6 ft.	(2 m)
	15 ft.	(5 m)

790414

790468

PVDF body, PVDF float 1" (25 mm) dia., PE cable

PVDF with flat connector

cable length	6 ft.	(2 m)
	15 ft.	(5 m)

790416

790472

Float switch weights



1086/4

Ceramic weight

1.53" dia. x 1.26" with oval opening .51" x 1.06"
(39 mm x 32 mm) (13 mm x 27 mm)

404003

Note: Not for use in fluoride applications (e.g. hydrofluosilicic acid), use PVC weight.

PVC weight

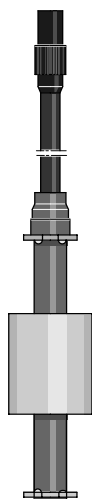
For bottom of foot valve in fluoride applications.

7404007

Pump & Systems Accessories

Float Switches

Float switches, two stage for Sigma Control pumps



2380/4

Float switch, two-stage (includes ceramic weight - do not use ceramic weight for fluoride service)

To monitor the fluid level in the chemical tank. Two-stage function, first stage is early warning annunciation, second stage will shut down pump after an additional drop in the fluid level of approximately 1.2" (30 mm).

With 3-pole round connector, suitable for direct connection to ProMinent Vario series.

Technical data:

Max. contact load 60 V, 0.3 A, 5 W/5 VA, temperature range -13°F to 167°F (-25°C to 75°C).

Materials:

Part No.

PP body, foamed PP float 7/8" (21 mm) dia., PE cable			
PP with 3-pole round connector	cable length	6 ft. (2 m)	7142093
		15 ft. (5 m)	7142095
PVC body, foamed PP float 7/8" (21 mm) dia., PE cable			
PP with 3-pole round connector	cable length	6 ft. (2 m)	7142043
		15 ft. (5 m)	7142038
PVDF body, foamed PVDF float 1" (25 mm) dia., PE cable			
PP with 3-pole round connector	cable length	6 ft. (2 m)	7142006
		15 ft. (5 m)	7142007

Float switches, single stage for Makro and Sigma basic pumps



2820/4

Float switch, single-stage (includes ceramic weight - do not use ceramic weight for fluoride service)

For minimum level indication in source tank. May be used to stop pump at motor starter or variable speed drive, or trigger alarm. May be used with relay combination.

Technical Data:

Max. contact load 60 V, 0.3 A, 5 W/5 VA, temperature range -13°F to 167°F (-25°C to 75°C).

Materials:

Part No.

PP body, foamed PP float 7/8" (21 mm) dia., PE cable			
PP with 2 loose cable ends	cable length	15 ft. (5 m)	790412
PVC body, foamed PP float 7/8" (21 mm) dia., PE cable			
PVC with flat connector	cable length	15 ft. (5 m)	790468
PVDF body, PVDF float 1" (25 mm) dia., PE cable			
PVDF with flat connector	cable length	15 ft. (5 m)	790472

Float switch weights

PVC weight

For bottom of foot valve for fluoride applications.

7404007

For fluoride, (hydrofluosilicic acid) or when plastic is required to replace standard ceramic weight.

Pump & Systems Accessories

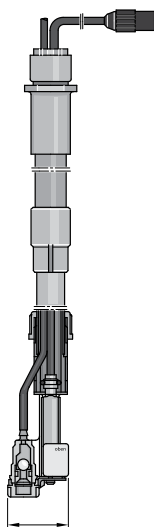
Suction Assemblies

Suction assemblies, two-stage: for beta, gamma/ L and delta pumps

Including foot valve, rigid supporting pipe, suction line and float switch with 6 ft. (2 m) cable. For use in drums or tanks with mixers, which could tangle flexible suction tubing or float switch cables.

two-stage: with 3-pole *round connector*, for early warning and eventual pump shut-down for gamma.

PP version: EPDM o-rings, PE suction line



Adjustable PP suction assembly, with bulkhead fitting for 1" opening and 2-stage float switch

For ProMinent pumps with PP foot valve, PE suction hose, PP supporting pipe and union. PP two-stage float switch with 3-pole round connector

Adjustable length (foot valve to bulkhead)

26" to 41" (660 mm to 1040 mm) for 26 - 220 gallon (140 - 830 L) tanks

Requires 1.0" hole in top of tank for bulkhead fitting

PP version

Suction line	Part No.
1/4" x 3/16"	790368
1/2" x 3/8"	790370

2798/R

Pump & Systems Accessories

Suction Assemblies

Suction assemblies, single-stage: for Concept^{PLUS}

Including foot valve, rigid supporting pipe, suction line and float switch with 6 ft. (2 m) cable. For use in drums or tanks with mixers, which could tangle flexible suction tubing or float switch cables.

PP version: PP float switch, PE suction line

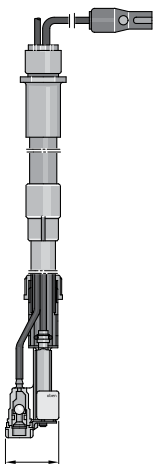
PVC version: PVC float switch, PE suction line

Adjustable PP suction assembly, with bulkhead fitting for 1" opening and single-stage float switch for tanks

With PP foot valve, PE suction hose, PP supporting pipe and union.

Size II 26" to 41" (660 mm to 1040 mm) for 26 - 220 gal. (140 - 830 L) tank

Requires 1.0" hole in top of tank for bulkhead fitting



2798/F

PP version

Part No.

Suction line

1/4" x 3/16"

790356

1/2" x 3/8"

790358

PVC version

Part No.

Suction line

1/4" x 3/16"

790350

1/2" x 3/8"

790352

product
overview

solenoid-driven
metering pumps

motor-driven
metering pumps

pump spare parts &
accessories

DULCOMETER®
instrumentation

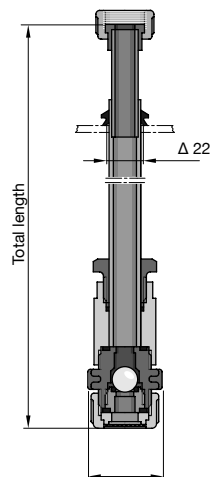
DULCOTEST®
sensors

polymer blending
systems

Pump & Systems Accessories

Suction Assemblies

Suction assemblies: for Sigma Basic and Makro pumps



PP without float switch

Size of connection		Max. tank size gallons (liters)	Max. length inches (mm)	Part No.
PP-DN 10 - 1/2"	Sigma	220 (830)	up to 52"(1320)	790389
PP-DN 15 - 3/4"	Sigma	220 (830)	up to 52" (1320)	790394
PP-DN 20 - 3/4"	Makro	220 (830)	up to 52"(1320)	790395
PP-DN 25 - 1"	Sigma/Makro	220 (830)	up to 52"(1320)	790396
PP-DN 32 - 1-1/2"	Sigma	-	-	1005524

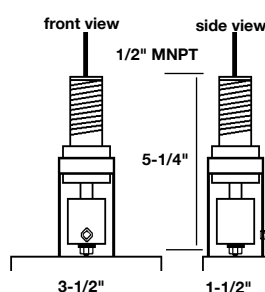
PVC without float switch

Size of connection		Max. tank size gallons (liters)	Max. length inches (mm)	
PVC-DN 10 - 1/2"	Sigma	220 (830)	up to 52"(1320)	790387
PVC-DN 15 - 3/4"	Sigma	220 (830)	up to 52"(1320)	790391
PVC-DN 20 - 3/4"	Makro	220 (830)	up to 52"(1320)	790392
PVC-DN 25 - 1"	Sigma/Makro	220 (830)	up to 52"(1320)	790393
PVC-DN 32 - 1-1/2"	Sigma	-	-	1005525

Note: This fitting is a compression fitting, pipe can be cut to desired length.

2801/3

Diaphragm-failure Detector



Diaphragm-failure detector

To trip an alarm and/or switch the metering pump off in case of diaphragm failure. In a failure, fluid drains out a weep hole in the backplate, through a tube to the detector column. The float switch in the column trips with 10 mL. of fluid. Comprising of a float switch PVC/PE, clear PVC column, tube connectors and connecting tube. Switch closure, max. contact rating 60 VAC, 300 mA, 5 W.

1/2" MNPT conduit connection. Shipped with loose ends on cable.

Part No.

N/O	7803640
N/C	7803650



Signal horn

115 V, 60 Hz, 95 dB, NEMA 4X (e.g. in conjunction with fault annunciating relay or relay combination)

7705004



Amber signal strobe light

115 V, 60 Hz, NEMA 4X (e.g. for use in conjunction with fault annunciating relay or relay combination)

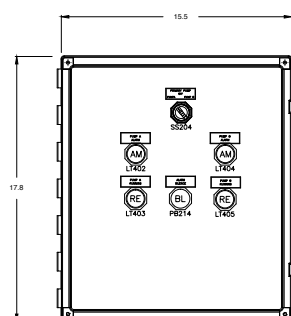
7914785

Pump & Systems Accessories

Universal Switchover Box

One, two, three or four pump terminal boxes are TYPE 4X polycarbonate boxes with terminals for Power and control / alarm cable connections for all pumps respectively. Terminal box can be connected to PFC control panels for Local or Remote operation of the pumps, customer has access to all functions of PFC Solenoid and control version pumps via the terminal box including Dry contact start and 4-20mA speed reference as well as the Alarm contact status and Analog feedback for each pump.

Next Generation



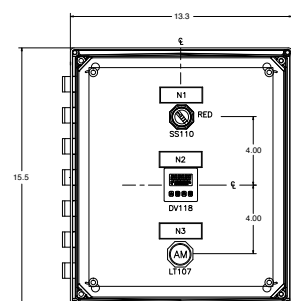
Type 4X Polycarbonate PLC operated switchover control with ability to Single switch over or 3 attempt switchover prior to stopping the process. , Alternating primary pump or non alternating primary selection, Accepts Remote Start and 4-20mA or Pacing signals, external interlock contacts N.O and N.C. , Provides Alarm, Running and 4-20mA feedback for each pump, leak detection status available when appropriate pump option selected. Output available for customer supplied audible alarm. Optional duplex receptacle available. Functions are selectable via jumper installed by customer

Part No.

CP2_120VAC Auto S/O:
(17.8"x15.5")

7746095
(replaces p/n 7951130)

One Pump SCADA Panel

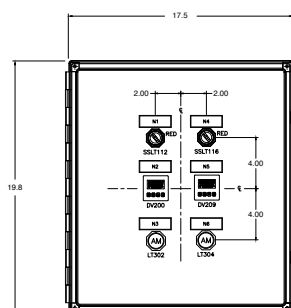


TYPE 4X Single Pump Local control panel for customer SCADA interface. Dry contact Start & 4-20mA speed reference from SCADA in Remote mode, status to SCADA include Alarm, Pump Running, & analog feedback of pump output. Enclosure dimensions (15.5"x13.3")

Part No.

7745681

Two Pump SCADA Panel



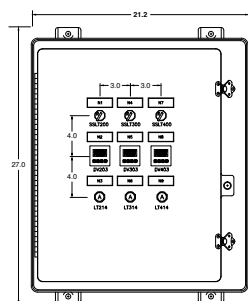
TYPE 4X Dual Pump Local control panel for customer SCADA interface. Each pump receives dry contact Start & 4-20mA speed reference from SCADA in Remote mode, status to SCADA include Alarm, Pump Running, & analog feedback of pump output for each pump. Enclosure dimensions (19.8"x17.5")

7745682

Pump & Systems Accessories

Universal Switchover Box

Three Pump SCADA Panel



TYPE 4X Three Pump Local control panel for customer SCADA interface. Each pump receives dry contact Start & 4-20mA speed reference from SCADA in Remote mode, status to SCADA include Alarm, Pump Running, & analog feedback of pump output for each pump. Enclosure dimensions (27"x 21.2")

7746598

Terminal Box Kit, 1 Pump, Non-GFI Receptacle

(Consists of P/N: 7745824* + Additional Components for Receptacle)

Part No

7745878

Terminal Box Kit, 1 Pump, GFI Receptacle

(Consists of P/N: 7745824 + Additional Components for Receptacle)

(NOT TO BE UTILIZED WITH SIGMA CONTROL SERIES PUMPS)

7745879

Terminal Box Kit, 2 Pump, Non-GFI Receptacle

(Consists of P/N: 7745262* + Additional Components for Receptacle)

7745800

Terminal Box Kit, 2 Pump, GFI Receptacle

(Consists of P/N: 7745262* + Additional Components for Receptacle)

(NOT TO BE UTILIZED WITH SIGMA CONTROL SERIES PUMPS)

7745881

Terminal Box Kit, 3 Pump, Non-GFI Receptacle

(Consists of P/N: 7745263* + Additional Components for Receptacle)

7746097

Terminal Box Kit, 3 Pump, GFI Receptacle

(Consists of P/N: 7745263* + Additional Components for Receptacle)

(NOT TO BE UTILIZED WITH SIGMA CONTROL SERIES PUMPS)

7746098

Terminal Box Kit, 4 Pump, Non-GFI Receptacle

(Consists of P/N: 7746128* + Additional Components for Receptacle)

7746099

Terminal Box Kit, 4 Pump, GFI Receptacle

(Consists of P/N: 7746128* + Additional Components for Receptacle)

(NOT TO BE UTILIZED WITH SIGMA CONTROL SERIES PUMPS)

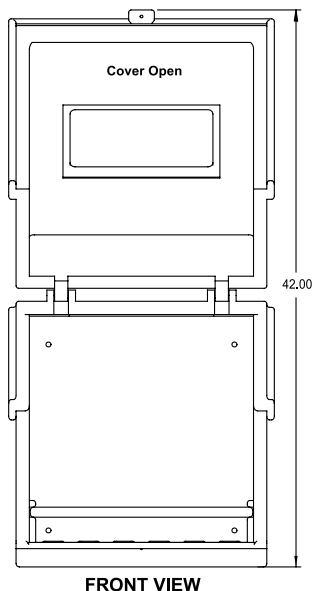
7746100

* Terminal Box Only

Pump & Systems Accessories

Pump Shelves and Stands

Pump Shelf with Containment



Safely contains up to 2 ProMinent® pumps and adds spill containment protection. Can be purchased with or without protective cover. Pump tubing can be run through holes on either side of shelf base. Cover includes viewing window. Cannot be used for hard piped applications.

Materials of Construction: Polyethylene

Shipping weight (w/o pumps): 15 lbs.

Height: 19"

Width: 19"

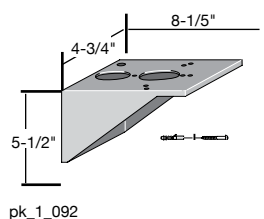
Depth: 16.5"

Hinge: Plated Steel

Drain: 1/4" FNPT

Description **Part Numbers**

Shelf w/cover 7500374

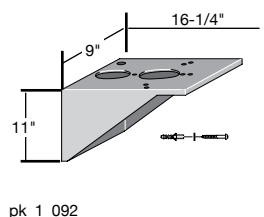


Wall mounting bracket for solenoid pumps

Made of fiberglass-reinforced PPE, with wall-plugs and screws, accepting a concept, gamma and beta. Pumps can be mounted either parallel or perpendicular to the wall.

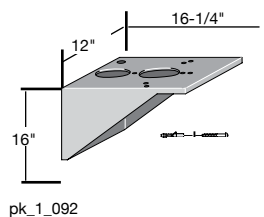
Part No.

810164



Wall mounting bracket for delta pump

1028798



Wall mounting bracket for Sigma pumps

Polypro wall bracket mounts pumps so that diaphragm is parallel to the wall.

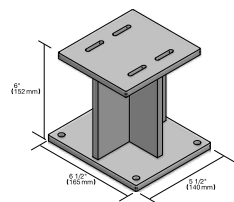
7803799

Pump & Systems Accessories

Pump Shelves and Stands

Floor mounting bracket for solenoid pumps

Polypropylene floor mounting bracket accepts pumps parallel to the floor.

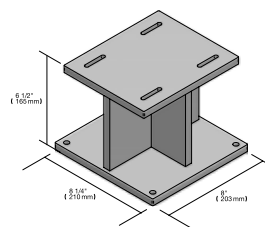


6" PP floor mounting bracket

1028758

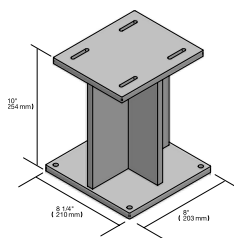
Floor mount bracket for Motor pumps

Polypropylene floor mounting bracket accepts pumps parallel to the floor.



6-1/2" PP floor mounting bracket

1028759

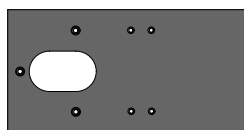


10" PP floor mounting bracket

1028760

Adapter plate

With fixtures, for vertical wall-mounting of beta or gamma pumps with auto-degassing liquid ends. Used with PPE wall console.



PP adapter plate

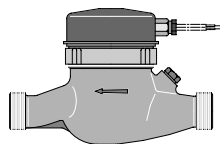
1003030

pk_1_121

Pump & Systems Accessories

Water Meters

Pulse-type water meters for potable water



1137/4

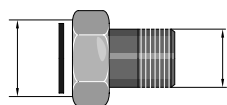
Contact water meter – US GPH Scale

max. operation temperature 104° F.

Pipe Coupl. Size in.	Min. Flow Rate in			Max. Flow Rate in			Press. Loss Max. Flow Rate		Part No.
	GPM	GPH	(L/h)	GPM	GPH	(L/h)	psig	(bar)	
3/4"	0.5	30	(113)	20	1200	(4542)	14.5	(1)	7500076
1"	0.6	36	(136)	50	3000	(11356)	14.5	(1)	7500077
1-1/2"	1.0	60	(227)	100	6000	(22712)	14.5	(1)	7500078
2"	2.0	120	(454)	130	7800	(29526)	14.5	(1)	7500079

Note: Price includes two screw fittings.

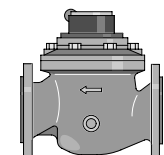
*Please specify pulse rate desired



1139/4

Screw fittings in brass with packing for water meters (price per unit)

3/4"	7359021
1"	7359022
1-1/2"	7359023
2"	7359024



1138/4

Contact water meter – US GPH, 3"...6" flanged

max. operation temperature 104°F.

Min. Flow Rate in			Max. Thru-Put		Pipe Flange Size in.	Install. Length in.	Standard Gallon/ Pulse	Weight lb. (kg)	Part No.
GPM	GPH	(L/h)	GPM	GPH					
2.6	156	(590)	650	39000	3" ASA	9" (225 mm)	10	42 (19)	7304512
11	660	(2498)	1875	112500	6" ASA	12" (298 mm)	25	89 (40)	7304514

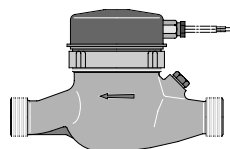
Pump & Systems Accessories

Water Meters

Pulse-type water meters, 3/4"...2" NPT fittings – Liter Scale

Max. working temperature 40°C, max. contact load 100 mA, 24 V

Max. flow rate = $Q_{\max}$, nominal flow rate = Q_n



1137/4

Qmax = Qn NG = Nominal size (m³/h)	Connections in.	Overall length w/o unions mm	Standard K factor	Part No.
5	3/4"	190 mm (7.5")	1	304434
10	1"	260 mm (10.2")	1.5	304435
20	1-1/2"	300 mm (11.8")	2	304436
30	2"	270 mm (10.6")	4	304438

Note: Price includes two screw fittings.

*Please specify pulse rate desired

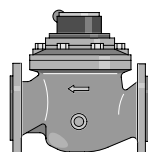
Other pulse rates available (liters per pulse out)

.05	1	5	40	300
.1	1.5	10	50	400
.25	2	15	100	500
.3	2.5	20	150	1000
.4	3	25	200	1500
.5	4	30	250	2000

Pulse-type water meters, 3"...6" flanged

Max. working temperature 40°C, max. contact load 100 mA, 24 V

Max. flow rate = $Q_{\max}$, nominal flow rate = Q_n



1138/4

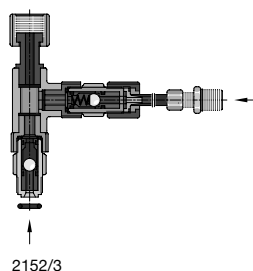
Qmax/Qn (m³/h)	Connections in.	Overall length mm	Pulse spacing	Part No.
110/55	3" ASA	225 mm (9")	Please call	304439
180/90	4" ASA	251 mm (10")		304442
350/175	6" ASA	298 mm (12")		304443

Pump & Systems Accessories

Flushing Devices

Flushing devices

Fig. 1



To flush and clean liquid end, discharge line and injection valve, and to protect against deposits and crystallization. Manual or timer-controlled device. To be fitted to the suction connector of the metering pump (also suitable for retrofitting). The automatic version comprises flushing device, timer, solenoid valve and the required connectors.

Flushing device, manual, High Viscosity version

Part No.

For tubing connectors 1/4" x 3/16" and 1/2" x 3/8" (Fig. 1)

809909

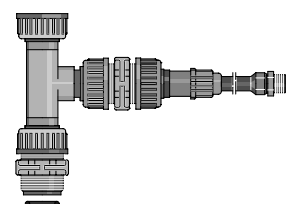
For 1/2" MNPT connection for g/4 PP4/5, g/5 0423 and 0230 (Fig. 2)

7809917

For 1/2" MNPT connection for g/5 PP4/5 series

7809919

Fig. 2



Flushing device, manual, PVC version

For tubing connectors 1/4" x 3/16" and 1/2" x 3/8" (Fig. 1)

809925

For 1/2" MNPT connection for g/5 0423 and 0230 (Fig. 2)

7809926

Note: Call for info on automatic devices.

2160/3

product
overview

solenoid-driven
metering pumps

motor-driven
metering pumps

pump spare parts &
accessories

DULCOMETER®
instrumentation

DULCOTEST®
sensors

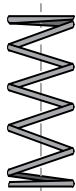
polymer blending
systems

Pump & Systems Accessories

Valve Springs

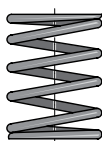
Valve springs

Fig. 1



pk_1_103

Fig. 2



pk_1_104

You may spring-load the valve balls in the pump suction and/or discharge valves to improve the valve function and increase the repeatability. Particularly recommended when pumping viscous fluids of more than 50 cPs (mPa).

Discharge valve springs may be used instead of an external backpressure valve to improve repeatability when discharging to an open tank. Suction valve springs in excess of 1 psig (0.05 bar) make priming difficult; and in excess of 7 psig (0.5 bar) makes pumping impossible, except where suction pressure exceeds spring pressure.

Not recommended for antisiphon protection – use a diaphragm-type backpressure valve for antisiphon protection. There is no labor charge for installing the valve springs into the pump valves or injection valves.

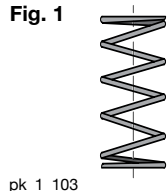
	Pressure Rating Material of psig (bar)		Construction	Part No.
Suction and Discharge Valves Model #'s: BT/4 & G/L 1000, 1601, 1602, 1005, 1605 (Fig. 1)	1	(0.05)	316 SS	469406
	14	(1.0)	316 SS	469401
Suction and Discharge Valves, and Injection Valves Model #'s: BT/4 & G/L 0708, 0413, 0220, 1008, 0713, 0420, 0232 (Fig. 2) All standard delta liquid ends	1	(0.05)	Hastelloy C	469403
	7	(0.5)	Hastelloy C	469404
	7	(0.5)	PVDF-coated Hastelloy C	818590
	14	(1.0)	Hastelloy C	469413
	14	(1.0)	PVDF-coated Hastelloy C	818536
	29	(2.0)	Hastelloy C	469410
Suction and Discharge Valves Model #'s: G/b 1002 PP4/PP5, 0423, 0230, plus Injection Valves: Models 0423, 0230	1	(0.05)	Hastelloy C	469114
	1	(0.05)	302 SS	7469401
	7	(0.5)	Hastelloy C	469115
	7	(0.5)	PVDF-coated Hastelloy C	818515
	14	(1.0)	Hastelloy C	469119
Suction and Discharge Valves: Model #'s: G/b 1006, 1310, 0813 PP4/PP5 only, plus Injection Valves: Models 1006, 1310 and 0813 PP4/PP5	1	(0.05)	Hastelloy C	469107
	1	(0.05)	302 SS	7469404
	7	(0.5)	Hastelloy C	469108
	7	(0.5)	PVDF-coated Hastelloy C	818516
	14	(1.0)	Hastelloy C	469116
Discharge Valves Model #'s (<u>w/ auto-degassing</u>): BT/4 & G/L 1601, 1602, 1005, and 1605	21	(1.5)	Hastelloy C	791052

Pump & Systems Accessories

Valve Springs

Valve springs

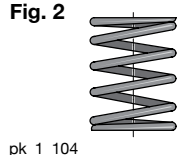
Fig. 1



You may spring-load the valve balls in the pump suction and/or discharge valves to improve the valve function and increase the repeatability. Particularly recommended when pumping viscous fluids of more than 50 cPs (mPa).

Discharge valve springs may be used instead of an external backpressure valve to improve repeatability when discharging to an open tank. Suction valve springs in excess of 1 psig (0.05 bar) make priming difficult; and in excess of 7 psig (0.5 bar) makes pumping impossible, except where suction pressure exceeds spring pressure.

Fig. 2



Not recommended for antisiphon protection – use a diaphragm-type backpressure valve for antisiphon protection.

There is no labor charge for installing the valve springs into the pump valves or injection valves.

Pump Model	Spring Pressure Rating psig (bar)		Material of Construction	Part No.
DN 10 valves: Vario models 12017, 12026, 12042, 10025, 09039, 07063 Sigma/1, Hydro	1	(0.05)	Hastelloy C	469114
	7	(0.5)	Hastelloy C	469115
	7	(0.5)	PVDF-coated Hastelloy C	818515
	14	(1.0)	Hastelloy C	469119
	1	(0.05)	302 SS	7469401
DN 15 Valves: Vario models 06047, 105075, 04120 Sigma/1 Sigma/2 models 12050, 12090, 12130 Hydro	(0.05)	Hastelloy C	469107	
	7	(0.5)	Hastelloy C	469108
	7	(0.5)	PVDF-coated Hastelloy C	818516
	14	(1.0)	Hastelloy C	469116
	1	(0.05)	302 SS	7469404
DN 20 Valves: Meta/Makro models with 3/4" connectors	1	(0.05)	Hastelloy C	469451
	7	(0.5)	Hastelloy C	469409
	7	(0.5)	PVDF-coated Hastelloy C	818517
	14	(1.0)	Hastelloy C	469135
	1	(0.05)	302 SS	7469402
DN 25 Valves: Meta/Makro models with 1" connectors Sigma/2 models 07120, 07220, 04350	1	(0.05)	Hastelloy C	469452
	7	(0.5)	Hastelloy C	469414
	7	(0.5)	PVDF-coated Hastelloy C	818518
	14	(1.0)	Hastelloy C	469136
	1	(0.05)	302 SS	7469403
DN 40 Valves: Meta/Makro models with 1-1/2" connectors	7	(0.5)	Hastelloy C	469104
	7	(0.5)	PVDF-coated Hastelloy C	818519
	14	(1.0)	Hastelloy C	469137
Meta/Makro HK pumps with 1/4" connectors	1	(0.05)	316 SS	469461
Makro HK pumps with 3/8" connectors	1	(0.05)	316 SS	469462

Pump & Systems Accessories

Motors

AC and DC Motors

AC motors

All AC motors are recognized by Underwriters Laboratories component approval program, and Canadian Standards Association.

All motors are 1725 RPM, C-faced, and 60 Hz. Manufacturer may vary.

					Part No.
1/3 HP	TEFC	56-C	115/208-230V	1 phase	7951046
1/3 HP	TEFC	56-C	208-230/460V	3 phase	7951048
1/2 HP	TEFC	56-C	115/208-230V	1 phase	7951021
1/2 HP	TEFC	56-C	208-230/460V	3 phase	7951023
3/4 HP	TEFC	56-C	115/208-230V	1 phase	7951060
3/4 HP	TEFC	56-C	208-230/460V	3 phase	7951061
1 HP	TEFC	56-C	208-230/460V	3 phase	7951024
1-1/2 HP	TEFC	56-C w/base	115/208-230V	1 phase	7951025
1-1/2 HP	TEFC	56-C w/base	208-230/460V	3 phase	7951026
3 HP	TEFC	***184TC	230V	1 phase	7951141
3 HP	TEFC	***182TC	208-230/460V	3 phase	7951142

*** Must use adapter (see below)

AC explosion-proof motors

Corrosion resistant epoxy finish. Positively locked drive end bearing.
UL and CSA approved for Class I, Group D or Class II, Group F and G.
UL approved cast conduit box-standard.
Manufacturer may vary.

					Part No.
1/3 HP	56-C	115/208-230V	1 phase		7951014
1/3 HP	56-C	208-230/460V	3 phase		7951013
1/3 HP	56-C	115/208-230V	1 phase		*7500344
1/2 HP	56-C	208-230/460V	3 phase	**7746261	
1/2 HP	56-C	115/208-230V	1 phase		7951006
1/2 HP	56-C	208-230/460V	3 phase		7951005
3/4 HP	56-C	115/208-230V	1 phase		7951004
3/4 HP	56-C	208-230/460V	3 phase		7951003
1 HP	56-C	208-230/460V	3 phase		7744983
1-1/2 HP	56-C w/base	208-230/460V	3 phase		7951002
3 HP	***182TC	208-230/460V	3 phase		7951001

* For use with Sigma/1 basic pumps only. Includes necessary mounting hardware.

** Sigma/1 basic Explosion-Proof motors for VFD applications. Includes necessary mounting hardware.

*** Must use adapter (see below)

Adapter *** (Required when using motors with 184TC or 182TC face)

Mounting flange and motor shaft coupling (Makro pumps w/3 HP, AC motors)	7951144
--	---------

DC motors

Permanent magnet 1750 rpm.

					Part No.
1/3 HP	TENV	90 V	56-C	Sigma	7951078
1/2 HP	TENV	90 V	56-C	Meta	7951079
3/4 HP	TEFC	90 V	56-C	Sigma/3, Meta, Makro, Hydro	7951080
1-1/2 HP	TEFC	180 V	145-TC	Makro, Hydro	7951081
3 HP	TEFC	180 V	184-C	Makro	7951140

Pump & Systems Accessories

Variable Speed Drives

AC Inverter

Provides variable motor speed with three-phase AC motors by adjusting the frequency (Hz) output to the motor. Motor not included with inverter. See motor section for three-phase motors. Features NEMA 4X enclosure with keypad and display of percent load or output voltage. Selectable for local or remote operation via 4-20 mA signal. Minimum speed 3-30 Hz.

Specifications

For 1/4 to 1/2 HP motors with line voltage 208-240 VAC, 3 phase, 60 hz	7746667
3 phase vac output: 2.3 amps max.	
Weight: 5.07 lbs (2.3 kg)	
Dimensions: (H x W x D) 9.137 x 6.34 x 6.89" (232 x 161 x 175 mm)	
For up to 1 HP motors with line voltage 208-240 VAC, 3 phase, 60 hz	7746668
3 phase vac output: 4.3 amps max.	
Weight: 5.07 lbs (2.3 kg)	
Dimensions: (H x W x D) 13.3 x 11 x 6.25" (338 x 280 x 159 mm)	
For up to 2 HP motors with line voltage 208-240 VAC, 3 phase, 60 hz	7746669
3 phase vac output: 7.0 amps max.	
Weight: 5.07 lbs (2.3 kg)	
Dimensions: (H x W x D) 9.137 x 6.34 x 6.89" (232 x 161 x 175 mm)	
For up to 1 HP motors with line voltage 380-480 VAC, 3 phase, 60 hz	7746670
3 phase vac output: 2.2 amps max.	
Weight: 5.07 lbs (2.3 kg)	
Dimensions: (H x W x D) 9.137 x 6.34 x 6.89" (232 x 161 x 175 mm)	
For up to 2 HP motors with line voltage 380-480 VAC, 3 phase	7746671
3 phase vac output: 4.1 amps max.	
Weight: 5.07 lbs (2.3 kg)	
Dimensions: (H x W x D) 9.137 x 6.34 x 6.89" (232 x 161 x 175 mm)	

(For 3 HP and larger drives contact Customer Service)

Inverter Duty Rated Motors

1/3 HP	TEFC	230/460 VAC	56C	3 phase	7951146
1/2 HP	TEFC	230/460 VAC	56C	3 phase	7951145
3/4 HP	TEFC	230/460 VAC	56C	3 phase	7951147
1 HP	TENV	230/460 VAC	143TC	3 phase	7744373
1-1/2 HP	TENV	230/460 VAC	145TL	3 phase	7951149
3 HP	TENV	230/460 VAC	*184TC	3 phase	7951143

* Must use adapter (see below)

Adapter * (Required when using motors with 184TC or 182TC face)

Mounting flange and motor shaft coupling (Makro pumps w/3 HP, AC motors) 7951144

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Pump & Systems Accessories

Variable Speed Drives

Dart DC SCR Drives with Motors (253 G Model)

Dart DC SCR drives with motors

DC SCR variable speed motor and drive system, 1725 RPM max., AC line input voltage 120 (for 90 VDC motors) or 240 VAC (for 180 VDC motors), 1 phase, 50/60 Hz.

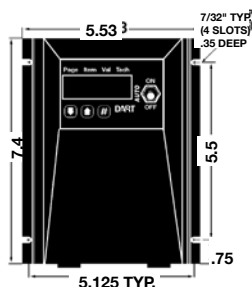
1/3 HP to 1/2 HP models with 56C frame TENV motors.

3/4 HP to 1-1/2 HP models with 56C/143TC frame TEFC motors.

Manual mode: Output voltage to motor is proportional to potentiometer setting between 20% and 100%. **In manual mode, setting 0 VDC output = 20% setting on potentiometer.**

Auto mode: Output voltage to motor is proportional to external 4-20 mA input (20 mA = 100%, 4 mA = 0%). Linearity is excellent between 100% and 10% (20 to 5.6 mA), and drops off below 10%. With manual/off/auto (external) switch. NEMA 4/12 enclosure.

1/3 HP SCR drive w/90 VDC motor	} (requires 115/230 VAC input, 1 phase)	Part No. 7951015
1/2 HP SCR drive w/90 VDC motor		7951010
3/4 HP SCR drive w/90 VDC motor		7951011
1-1/2 HP SCR drive w/180 VDC motor (requires 208-240 VAC input, 1 phase)		7951020



Dart DC SCR drives and motors with tach feedback (253 G Model)

DC SCR variable speed motor, tachometer and drive system, 1725 RPM max., AC line input voltage 120 or 240 VAC, 1 phase, 50/60 Hz. DC output 90 or 180 volts.

1/3 HP to 1/2 HP models with DC 56C frame TENV motors; 3/4 HP to 1-1/2 HP models with DC 56C/143TC frame TEFC motors. Tachometer mounted between motor C-face and pump flange.

Includes long motor coupling to accommodate tach.

Manual mode: Digital RPM control by up/down keypad, LED read-out in RPM or programmable engineering units (e.g. percent, strokes/min., flow rate, etc.). Actual RPM measured by tach corresponds to manual setpoint. Minimum speed 8 RPM.

External mode: Actual RPM measured by tach is proportional to analog 4-20 mA input (20 mA = 100%, 4 mA = 0%). Minimum speed 8 RPM.

1/3 HP SCR drive w/90 VDC motor and tach (requires 115 VAC input)	7951090
1/2 HP SCR drive w/90 VDC motor and tach (requires 115 VAC input)	7951094
3/4 HP SCR drive w/90 VDC motor and tach (requires 115 VAC input)	7951095
1-1/2 HP SCR drive w/180 VDC motor and tach (requires 230 VAC input)	7951096

Pump & Systems Accessories

Variable Speed Drives

Dart DC SCR drive without Motor

Part No.

Variable speed drive for controlling the voltage output to DC motors.
Motor not included with SCR. See motor section for selection.

Dart 253 G Series Variable Speed DC Control

2 HP Max, 90/180 VDC Out, 120/240 VAC In, SCR Drive, 253-200E-7-4X 7740941
(with 120 VAC Input, drive rating is 1 HP @ 90 VDC to motor)

Dart MDII Series Programmable Drives (requires tachometer, below)

2 HP Max, 90/180 VDC Out, 120/240 VAC In, SCR Drive, MD30-E-7 7951120
(with 120 VAC Input, drive rating is 1 HP @ 90 VDC to motor)

56C - Faced tachometers for Dart MDII Drives above

MADISON TACH & RING GEAR KIT ARTS-01-Z-0-1-M00-060-0.625 7745669
MADISON TACH RING GEAR 0.625 SHAFT - ONLY 7746657
MADISON TACH & RING GEAR KIT ATRS-01-Z-0-1-M00-060-0.875 7746656
MADISON TACH RING GEAR 0.875 SHAFT - ONLY 7746396

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Pump & Systems Accessories

Motors - Canadian

AC Motors *(for Canadian customers only)

AC motors

All AC Motors are approved by CSA.

All motors are 1725 RPM, 60 Hz, manufacturers may vary.

Horsepower	Enclosure	Frame	AC Voltage	Phase	Part No.
1/3 HP	TEFC	56 C	115 / 208-230	1 phase	7901317
1/3 HP	TEFC	56 C	208-230 / 460	3 phase	7901329
1/3 HP	TEFC	56 C	575	3 phase	7901323
1/2 HP	TEFC	56 C	115 / 208-230	1 phase	7901318
1/2 HP	TEFC	56 C	208-230 / 460	3 phase	7901330
1/2 HP	TEFC	56 C	575	3 Phase	7901324
3/4 HP	TEFC	56 C	115 / 208-230	1 phase	7901319
3/4 HP	TEFC	56 C	208-230 / 460	3 phase	7901331
3/4 HP	TEFC	56 C	575	3 phase	7901325
1 HP	TEFC	56 C	115 / 208-230	1 phase	7901320
1 HP	TEFC	56 C	208-230 / 460	3 phase	7901332
1 HP	TEFC	56 C	575	3 phase	7901326
1-1/2 HP	TEFC	56 C	115 / 208-230	1 phase	7901321
1-1/2 HP	TEFC	56 C	208-230 / 460	3 phase	7901333
1-1/2 HP	TEFC	56 C	575	3 phase	7901327
3 HP*	TEFC	182 TC	208-230 / 460	3 phase	7901334
3 HP*	TEFC	184 C	575	3 phase	7901322
3 HP*	TEFC	182 TC	575	3 phase	7901328

* Must use adapter (see below)

AC explosion-proof motors

All motors come with an explosion proof conduit box and built in overload protection.

CSA approved for Class I Group C and D, or Class II Group F and G.

Manufacturer may vary.

Horsepower	Enclosure	Frame	AC Voltage	Phase	Part No.
1/3 HP	EXP	56 C	115 / 208-230	1 phase	7901335
1/3 HP	EXP	56 C	208-230 / 460	3 phase	7901339
1/3 HP	EXP	56 C	575	3 phase	7901340
1/2 HP	EXP	56 C	115 / 208-230	1 phase	7901336
1/2 HP	EXP	56 C	208-230 / 460	3 phase	7901341
1/2 HP	EXP	56 C	575	3 phase	7901342
3/4 HP	EXP	56 C	115 / 208-230	1 phase	7901337
3/4 HP	EXP	56 C	208-230 / 460	3 phase	7901343
3/4 HP	EXP	56 C	575	3 phase	7901344
1 HP	EXP	56 C	115 / 208-230	1 phase	7901338
1 HP	EXP	56 C	208-230 / 460	3 phase	7901345
1 HP	EXP	56 C	575	3 phase	7901346
1-1/2 HP	EXP	56 C	208-230 / 460	3 phase	7901347
1-1/2 HP	EXP	56 C	575	3 phase	7901348

***Flange Adapter** (Required for installing 3 HP motors or motors with 182/184 frames)

Mounting flange and motor shaft coupling (Makro pumps w/3 HP, AC motors) 7951144

Pump & Systems Accessories

Variable Speed Drives - Canadian

Provides variable motor speed with three phase AC Motors by adjusting the frequency (Hz) output to the motor. The motor is not included with the inverter. Choose the motor from the AC Inverter Duty Rated Motors section following the listing of Inverters. Push button keypad and display for Hertz, RPM, % Frequency.

All Inverter AC output voltage is 3 phase.

Maximum Motor HP	AC Input	Phase	AC Output	Dim. (mm) H x W x D	Enclosure	Part No.
1/2 HP	120/240	1 ph	230 V 2.2 A	200 x 200 x 95	NEMA 4	7901357
1/2 HP	200/240	3 ph	230 V 2.2 A	200 x 155 x 110	NEMA 4	7901360
1 HP	120/240	1 ph	230 V 4 A	200 x 200 x 125	NEMA 4	7901363
1 HP	200/240	3 ph	230 V 4 A	200 x 155 x 110	NEMA 4	7901366
1 HP	400/480	3 ph	460 V 2 A	200 x 155 x 110	NEMA 4	7901369
1 HP	590	3 ph	575 V 1.6 A	200 x 155 x 110	NEMA 4	7901372
1-1/2 HP	120/240	1 ph	230 V 5.2 A	200 x 200 x 125	NEMA 4	7901375
1-1/2 HP	200/240	3 ph	230 V 5.2 A	200 x 200 x 125	NEMA 4	7901378
2 HP	200/240	3 ph	230 V 6.8 A	200 x 200 x 125	NEMA 4	7901381
2 HP	400/480	3 ph	460 V 3.4 A	200 x 200 x 125	NEMA 4	7901384
2 HP	590	3 ph	575 V 2.7 A	200 x 200 x 125	NEMA 4	7901387
3 HP	200/240	3 ph	230 V 9.6 A	200 x 200 x 150	NEMA 4	7901390
3 HP	400/480	3 ph	460 V 4.8 A	200 x 200 x 125	NEMA 4	7901393
3 HP	590	3 ph	575 V 3.9 A	200 x 200 x 125	NEMA 4	7901396

AC Inverter Duty Rated Motors *(for Canadian customers only)

HP	Enclosure	Frame	AC Voltage	Phase	Part No.
1/3 HP	TEFC	56 C	230/460	3 phase	7902404
1/3 HP	TEFC	56 C	575	3 phase	7902407
1/2 HP	TEFC	56 C	230/460	3 phase	7902405
1/2 HP	TEFC	56 C	575	3 phase	7902408
3/4 HP	TEFC	56 C	230/460	3 phase	7902406
3/4 HP	TEFC	56 C	575	3 phase	7902409
1 HP	TEFC	56 C	208-230 / 460	3 phase	7901332
1 HP	TEFC	56 C	575	3 phase	7901326
1-1/2 HP	TEFC	56 C	208-230 / 460	3 phase	7901333
1-1/2 HP	TEFC	56 C	575	3 phase	7901327
3 HP*	TEFC	182 TC	208-230 / 460	3 phase	7901334
3 HP*	TEFC	184 C	575	3 phase	7901322
3 HP*	TEFC	182 TC	575	3 phase	7901328

* Flange Adapter 7951144 Required for installing 3 HP motors or motors with 182/184 frames.

Pump & Systems Accessories

Variable Speed Drives - Canadian

DC Motors *(for Canadian customers only)

DC motors

Permanent magnet 1750 RPM.

<u>Horsepower</u>	<u>Enclosure</u>	<u>Frame</u>	<u>AC Voltage</u>	<u>Part no.</u>
1/3 HP	TEFC	0 – 90 VDC	56 C	7902413
1/2 HP	TEFC	0 – 90 VDC	56 C	7902412
3/4 HP	TEFC	0 – 90 VDC	56 C	7356703
1-1/2 HP	TEFC	0 – 180 VDC	56 C	7902411

The SCR control does not come with a motor. Select the required DC motor from the DC motor list.

The KB Penta DC Drive is used to control the DC voltage to DC motors. This controls the speed of the motor. The DC voltage is variable from 0 – 90 VDC or 0 – 180 VDC which represents 0 to approximately 1750 RPM motor speed. Features of this drive include: Manual –OFF – Auto selector switch; Speed pot for manual motor speed control; Auto motor speed control via an isolated 4 – 20 mA input. Single phase line input voltage is selectable as 120 VAC (for 0 – 1 HP motors 0 – 90 VDC) or 230 VAC (for 0 – 2 HP motors 0 – 180 VDC).

For motors 0 – 1 HP, 120 VAC in 0 – 90 VDC out

For motors 0 – 2 HP, 230 VAC in 0 – 180 VDC out

KB Penta DC Drive SCR Controller

7356704

Economy KB Penta AC Drive *(for Canadian customers only)

This lower cost AC inverter can control motor speed on AC motors up to 1 HP. It has a selectable 115 VAC or 230 VAC input and generates a 230 VAC 3 phase 3.6 A output. Features include switch selectable manual / auto operation, Manual speed control via local potentiometer and Auto speed control via a 4 – 20 mA input. Motor is not included with the drive, select the motor from the AC Inverter Duty Rated Motor list.

Dimensions (mm) 241 x 140 x 148 (H x W x D)

Economy KB Penta AC Drive

7902410

Pump & Systems Accessories

Stroke-positioning Motors

Stroke positioning motors must be field wired to remove power when the pump drive motor is stopped. For automatic stroke-length control with positioning motor, controlled by a standard process signal.

With standard process signal input 4-20 mA, corresponding to 0-100% stroke length.

Power supply: 115 V or 230 V, 60 Hz, 1 phase.

Manual/automatic mode selector switch.

Spring-return switch for manual stroke-length adjustment.

Mechanical stroke-length indicator.

Positioning time about 1 second per 1% stroke length

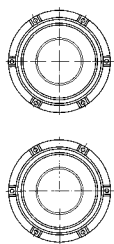
Stroke-positioning control system 4-20 mA

	110 V	230 V
Sigma 1	7781491	-
Sigma/2 HM (5 mm)	1018894	1018893
Sigma/3	1006504	1006505
Sigma/2 HK	1018890	1018889
Makro	1020798	-
ProMus (Nema 7)	852752	852752

Viton® Diaphragms

Motor Pump diaphragms

ProMinent pump diaphragm made from a steel core with Viton® facing. Particularly suited for media tending to crystalize, such as silicate.



1047_4_1

Viton® for pump type:	Max. working pressure	Part No.
Sigma/1 12017, 12035, 10050	87 psi (6 bar)	1010281
Sigma/1 10022, 10044, 07065	87 psi (6 bar)	1010284
Sigma/1 07042, 04084, 04120	87 psi (6 bar)	1010287
Sigma/2 12050, 12090, 12130	87 psi (6 bar)	1018953
Sigma/2 07120, 07220, 04350	87 psi (6 bar)	1018984
Sigma/3 120145, 120190, 120270, 120330	87 psi (6 bar)	1006564
Sigma/3 070410, 070580, 040830, 041030	87 psi (6 bar)	1006566
Meta/Makro 130	87 psi (6 bar)	7811470
Meta/Makro 260	87 psi (6 bar)	7811471

Viton® is a registered trademark of Dupont Dow Elastomers

Pump & Systems Accessories

Valve Balls

Valve Balls	Material	Dimensions in. (mm)		Part No.
For use with 4.8 mm valve	PTFE	1/4"	(4.8)	7404205
	SS	1/4"	(4.8)	7404233
	Ceramic	1/4"	(4.8)	404201
For use with 9.5 mm valve only	PTFE	1/2"	(9.5)	7404206
	SS	1/2"	(9.5)	7404240
For use with 9.2 mm (standard) valve	Ceramic	1/2"	(9.2)	404281

Special valve balls

For metering pumps and accessories if standard materials are unsuitable.



11.1 mm dia. for DN 10 (Vario/ Sigma)

Part No.

PTFE (1/2" MNPT connection)

7404207

Ceramic (1/2" MNPT connection)

404277

SS (3/8" FNPT connection)

404243



16 mm dia. for DN 15 (Vario/ Sigma)

PTFE (3/4" MNPT connection)

7404208

Ceramic (3/4" MNPT connection)

404275

SS (1/2" FNPT connection)

404244

pk_1_102

20 mm dia. for valve dia. 3/4" DN 20 (Meta, Makro)

PTFE

404256

Ceramic

404273

SS

404246

25 mm dia. for valve dia. 1" DN 25 (Sigma, Meta, Makro)

PTFE

404257

Ceramic

404274

SS

404247

38.1 mm dia. for valve dia. 1-1/2" DN 40 (Makro)

PTFE

404261

Ceramic

404278

SS

7404260

Pump & Systems Accessories

Deaeration Valve Assembly

Introduction

Some chemicals "off-gas" (ie. decompose) when the pump is sitting idle; the gas accumulates and may cause the pump to lose prime. ProMinent's deaeration valve assembly can help evacuate gases accumulated in the liquid end of the pump automatically even against system backpressure.

The deaeration valve assembly operates by allowing any accumulated gases to exit, through the bleed valve. A small amount of liquid along with the expelled gases are channeled through the bleed valve and bypassed back to the supply tank. When gas is present in the deaeration valve the resistance to flow through the bleed valve is relatively low. When the deaeration valve becomes full of liquid the resistance to flow through the deaeration valve increases dramatically, forcing the majority of the liquid to pass through the main discharge line.

Installation

A. General

Install the pump in accordance with the instructions contained in the pump operating manual. The deaeration valve assembly must be installed directly on the outlet side of the discharge check valve.

B. Routing of Bypass Line

The bypass line should be routed back to the top of the chemical storage tank. Install the pump so the bypass line is not submerged in the chemical. It is not recommended to pipe into the calibration columns because they will overflow after a short period.

Warning: install the bypass line so any bypassed air/gas is not rerouted into the suction line.

C. Calibration

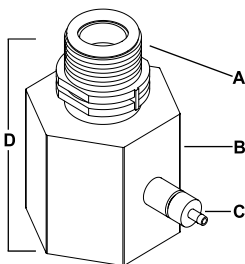
In calibrating the pump, use a graduated cylinder as the fluid source. You must collect any fluid returned through the bypass during the calibration and subtract it from the quantity drawn into the suction line.

Maintenance

- Ensure the pump connections are correct and tight
- Maintain a clean liquid end with no buildup of chemical crystalline material. Especially check the bleed valve and discharge ball checks.

Replacing the bleeder valve O-ring:

- Unscrew the bleeder valve and carefully remove the O-ring with a small screwdriver
- Fit a new O-ring into the valve port and screw in the bleeder valve and tighten to 2.2-2.6 ft. lb. torque



Size	Valve MNPT/ PVT (A)	Deaeration Valve/CPVC (B)	Air Relief Valve (C)	Deaeration Valve Complete (D)
DN 10	1002267	7740147	914596	7744259
DN 15	792517	7744695	914596	7744260
DN 20	792518	7744248	914596	7744249
DN 25	740615	7744986	914596	7744987
DN 32	1020031	7745133	914596	7745134

