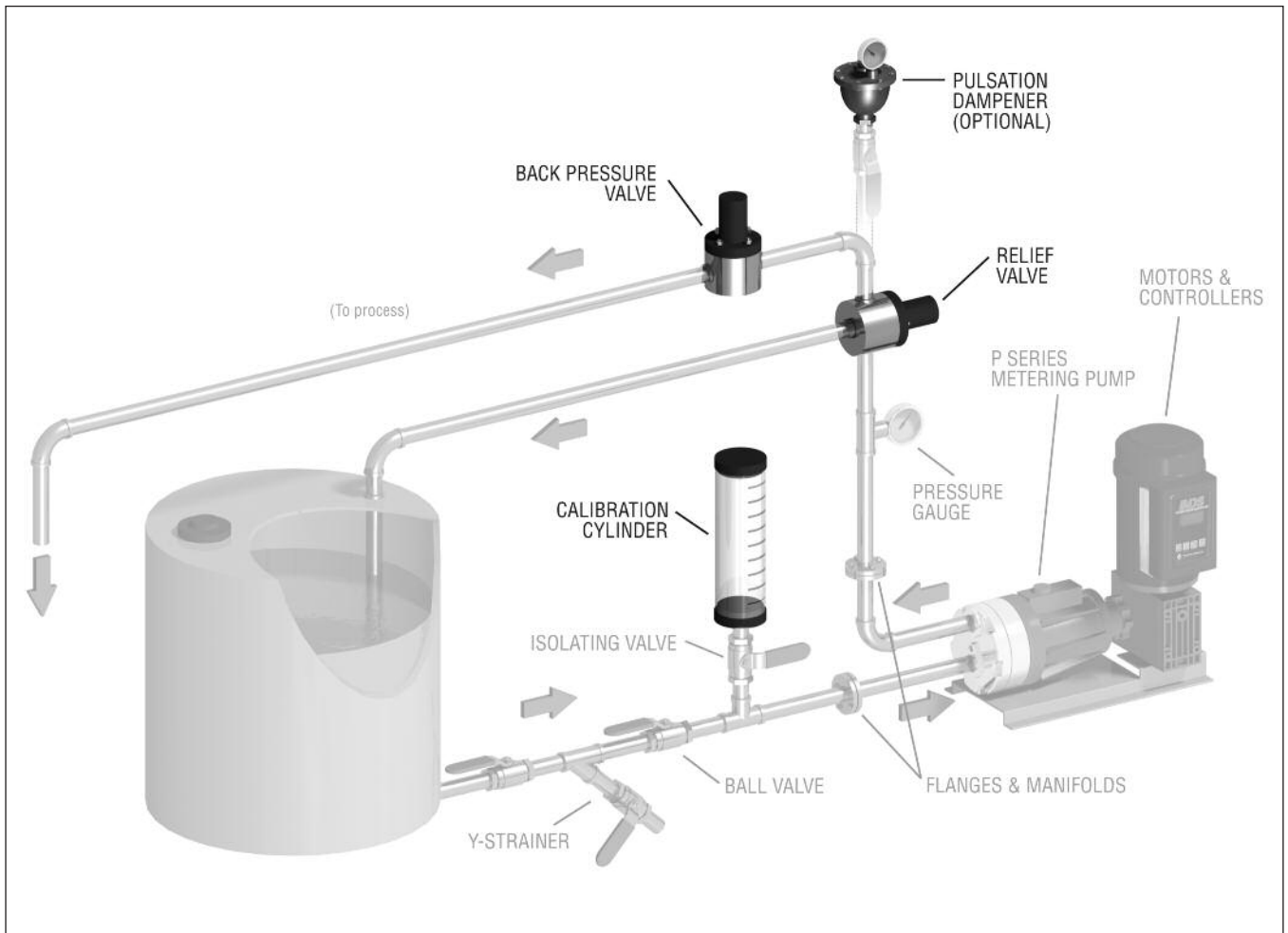


Hydra•Cell[®]

METERING SOLUTIONS[™]

Selection Guide for P Series Pump Accessories & Options



Contents	Page
Calibration Cylinders.....	2
Back Pressure & Pressure Relief Valves.....	3
Pulsation Dampeners.....	6

Calibration Cylinders

The calibration cylinder verifies the flow rate of your Hydra-Cell P Series pump, providing a visual indicator that your system is operating within the required parameters for performance and accuracy.

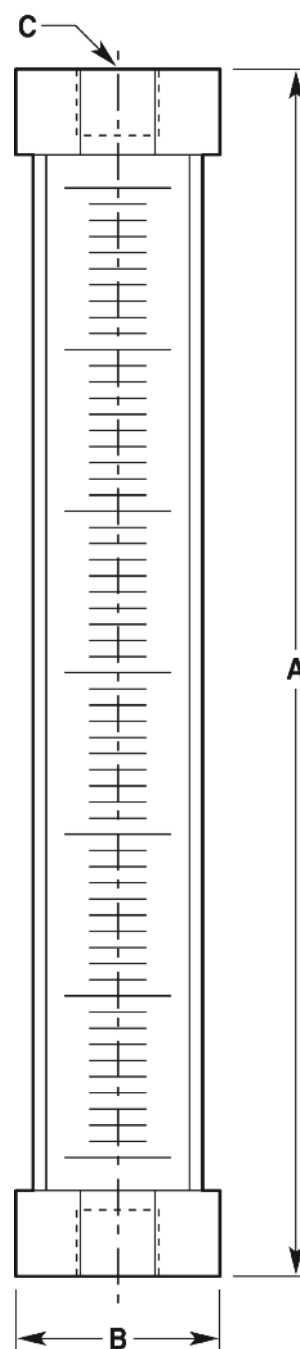
Available in PVC and glass, calibration cylinders are selected based on cylinder capacity needed (LPH or GPH) as determined by the maximum shaft RPM of your pump. Models are available for both BSTP and NPT ports.

1. Size the appropriate P Series pump to the application (refer to pump specifications for complete information).
2. Use the application RPM to select the appropriate cylinder from the chart below.



Cylinder Size				
mL	200	1000	2000	10000
Maximum Cylinder Capacity				
LPH	24	120	240	1200
GPH	6.4	32	64	320
Pump Model	Maximum Pump Shaft RPM			
P100	200	1000	1750	-
P200	75	300	600	1750
P300	75	300	600	1750
P400	30	110	210	1000
P500	-	60	115	600
P600	-	30	60	275

Port C	Cylinder Size (mL)	Part Number		Dimensions - mm (in)			
		BSPT Ports	NPT Ports	A		B	
PVC Cylinders							
1/2"	200	111-001-B	111-001	482.6	(19.0)	38.1	(1.5)
3/4"	1000	111-003-B	111-003	558.8	(22.0)	63.5	(2.5)
1"	2000	111-004-B	111-004	508.0	(20.0)	94.0	(3.7)
2"	10000	111-006-B	111-006	660.4	(26.0)	184.2	(7.25)
Glass Cylinders							
1/2"	200	111-011-B	111-011	533.4	(21.0)	63.5	(2.5)
3/4"	1000	111-013-B	111-013	685.8	(27.0)	88.9	(3.5)
1"	2000	111-014-B	111-014	685.8	(27.0)	127.0	(5.0)



Back Pressure & Pressure Relief Valves

Back pressure valves help ensure that your Hydra-Cell P Series pump provides accurate and predictable flow.

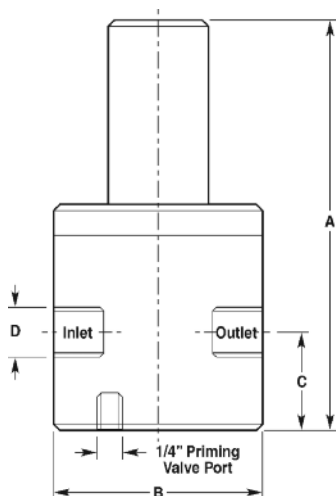
Pressure relief valves protect your pump and system from over-pressure situations.

Available in a choice of wetted materials with PTFE diaphragms, pressure valves are selected according to the valve port size needed for the appropriate maximum flow (LPH or GPH) of your Hydra-Cell P Series pump. Models are available for both BSTP and NPT ports.

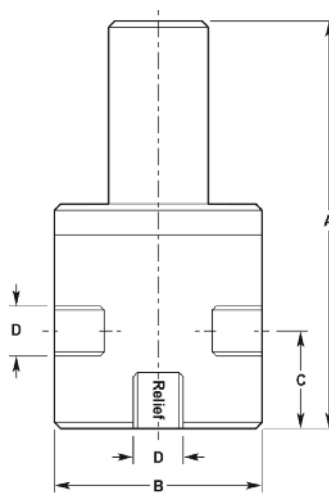


Dimensions

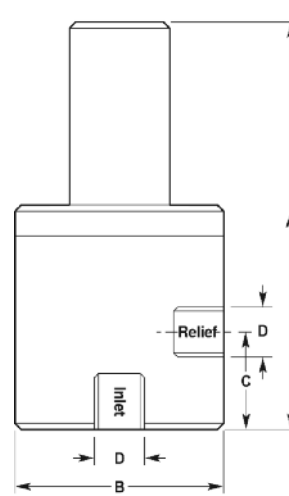
Back Pressure Valve



Pressure Relief Valve



Standard Pressure Models:
≤26 bar (375 PSI)



High Pressure Models:
≤172 bar (2500 PSI)

Back Pressure & Relief Valve Dimensions

Material	Port D	A		B		C	
		mm	in	mm	in	mm	in
Polypropylene/PVDF	3/8"	99.1	3.9	59.7	2.35	19.1	0.75
	1/2"	116.8	4.6	59.7	2.35	28.6	1.125
	3/4"	148.6	5.85	88.9	3.5	31.8	1.25
	1" StdFlo	148.6	5.85	88.9	3.5	31.8	1.25
	1" HiFlo	190.5	7.5	114.3	4.5	28.7	1.13
	2"	228.6	9.0	127.0	5.0	53.3	2.1
316 SST	1/4" High Pressure	116.8	4.6	60.3	2.375	19.1	0.75
	3/8"	88.9	3.5	59.7	2.35	19.1	0.75
	3/8" High Pressure	116.8	4.6	60.3	2.375	19.1	0.75
	1/2"	106.7	4.2	59.7	2.35	28.6	1.125
	1/2" High Pressure	116.8	4.6	60.3	2.375	27.9	1.1
	3/4"	148.6	5.85	88.9	3.5	31.8	1.25
	1" StdFlo	148.6	5.85	88.9	3.5	31.8	1.25
	1" HiFlo	190.5	7.5	114.3	4.5	28.7	1.13
	1" High Pressure	149.9	5.9	88.9	3.5	31.8	1.25
	2"	228.6	9.0	127.0	5.0	53.3	2.1
Hastelloy C	1/4" High Pressure	116.8	4.6	60.3	2.375	19.1	0.75
	3/8"	88.9	3.5	60.3	2.375	19.1	0.75
	3/8" High Pressure	116.8	4.6	60.3	2.375	19.1	0.75
	1/2"	106.7	4.2	60.3	2.375	28.6	1.125
	1/2" High Pressure	116.8	4.6	60.3	2.375	27.9	1.1
	3/4"	148.6	5.85	88.9	3.5	31.8	1.25
	1" StdFlo	139.7	5.5	88.9	3.5	31.8	1.25
	1" HiFlo	190.5	7.5	114.3	4.5	28.7	1.13
	1" High Pressure	149.9	5.9	88.9	3.5	31.8	1.25
	2"	228.6	9.0	127.0	5.0	53.3	2.1

Pressure Valves Selection Process

Pressure Valves Selection Process

1. Use the chart at right to determine the valve port size with the appropriate Maximum Flow LPH (GPH) to match the P Series pump selected.
2. Use the charts below to select the appropriate Back Pressure Valve (page 4) and Pressure Relief Valve (page 5).

Valve Port Size "D"								
	StdFlo			HiFlo		High Pressure		
	3/8"	1/2"	3/4"	1"	1"	2"	1/4"-3/8"-1/2"	1"
Maximum Flow								
LPH	450	800	1800	1800	3975	8400	2650	4543
GPH	120	210	480	480	1050	2220	700	1200

Back Pressure Valve Selection

Port "D"	Wetted Materials*	Pressure Adjustment Range		Maximum Temperature		Model Number	
		Bar	PSI	°C	°F	BSPT Ports	NPT Ports
3/8"	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-101-B	111-101
	PVDF	0.7 - 10.3	10 - 150	60	140	111-103-B	111-103
	316 SST	0.7 - 10.3	10 - 150	149	300	111-106-B	111-106
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-110-B	111-110
	316 SST	3.5 - 24	50 - 350	149	300	111-107-B	111-107
	Hastelloy C	3.5 - 24	50 - 350	149	300	111-111-B	111-111
1/2"	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-121-B	111-121
	PVDF	0.7 - 10.3	10 - 150	60	140	111-123-B	111-123
	316 SST	0.7 - 10.3	10 - 150	149	300	111-126-B	111-126
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-130-B	111-130
	316 SST	3.5 - 24	50 - 350	149	300	111-127-B	111-127
	Hastelloy C	3.5 - 24	50 - 350	149	300	111-131-B	111-131
3/4"	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-341-B	111-341
	PVDF	0.7 - 10.3	10 - 150	60	140	111-343-B	111-343
	316 SST	0.7 - 10.3	10 - 150	149	300	111-346-B	111-346
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-350-B	111-350
1" StdFlo	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-261-B	111-261
	PVDF	0.7 - 10.3	10 - 150	60	140	111-263-B	111-263
	316 SST	0.7 - 10.3	10 - 150	149	300	111-266-B	111-266
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-270-B	111-270
	316 SST	3.5 - 24	50 - 350	149	300	111-267-B	111-267
	Hastelloy C	3.5 - 24	50 - 350	149	300	111-271-B	111-271
1" HiFlo	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-361-B	111-361
	PVDF	0.7 - 10.3	10 - 150	60	140	111-363-B	111-363
	316 SST	0.7 - 10.3	10 - 150	149	300	111-366-B	111-366
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-370-B	111-370
2"	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-281-B	111-281
	PVDF	0.7 - 10.3	10 - 150	60	140	111-283-B	111-283
	316 SST	0.7 - 10.3	10 - 150	149	300	111-286-B	111-286
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-290-B	111-290
	316 SST	3.5 - 24	50 - 350	149	300	111-287-B	111-287
	Hastelloy C	3.5 - 24	50 - 350	149	300	111-291-B	111-291

* Diaphragm material is PTFE on all models. Other materials available on request.

Pressure Relief Valve Selection

Port "D"	Wetted Materials*	Pressure Adjustment Range		Maximum Temperature		Model Number	
		Bar	PSI	°C	°F	BSPT Ports	NPT Ports
1/4"	316 SST	13.8 - 138	200 - 2000	149	300	111-800-B	111-800
High Pressure	Hastelloy C	13.8 - 138	200 - 2000	149	300	111-804-B	111-804
3/8"	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-401-B	111-401
	PVDF	0.7 - 10.3	10 - 150	60	140	111-403-B	111-403
	316 SST	0.7 - 10.3	10 - 150	149	300	111-406-B	111-406
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-410-B	111-410
	316 SST	3.5 - 24	50 - 350	149	300	111-407-B	111-407
	Hastelloy C	3.5 - 24	50 - 350	149	300	111-411-B	111-411
3/8"	316 SST	13.8 - 138	200 - 2000	149	300	111-706-B	111-706
High Pressure	Hastelloy C	13.8 - 138	200 - 2000	149	300	111-710-B	111-710
1/2"	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-421-B	111-421
	PVDF	0.7 - 10.3	10 - 150	60	140	111-423-B	111-423
	316 SST	0.7 - 10.3	10 - 150	149	300	111-426-B	111-426
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-430-B	111-430
	316 SST	3.5 - 24	50 - 350	149	300	111-427-B	111-427
	Hastelloy C	3.5 - 24	50 - 350	149	300	111-431-B	111-431
1/2"	316 SST	13.8 - 138	200 - 2000	149	300	111-726-B	111-726
High Pressure	Hastelloy C	13.8 - 138	200 - 2000	149	300	111-730-B	111-730
3/4"	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-641-B	111-641
	PVDF	0.7 - 10.3	10 - 150	60	140	111-643-B	111-643
	316 SST	0.7 - 10.3	10 - 150	149	300	111-646-B	111-646
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-650-B	111-650
3/4"	316 SST	13.8 - 138	200 - 2000	149	300	111-746-B	111-746
High Pressure	Hastelloy C	13.8 - 138	200 - 2000	149	300	111-750-B	111-750
1" StdFlo	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-561-B	111-561
	PVDF	0.7 - 10.3	10 - 150	60	140	111-563-B	111-563
	316 SST	0.7 - 10.3	10 - 150	149	300	111-566-B	111-566
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-570-B	111-570
	316 SST	3.5 - 24	50 - 350	149	300	111-567-B	111-567
	Hastelloy C	3.5 - 24	50 - 350	149	300	111-571-B	111-571
1" HiFlo	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-661-B	111-661
	PVDF	0.7 - 10.3	10 - 150	60	140	111-663-B	111-663
	316 SST	0.7 - 10.3	10 - 150	149	300	111-666-B	111-666
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-670-B	111-670
1"	316 SST	13.8 - 138	200 - 2000	149	300	111-766-B	111-766
High Pressure	Hastelloy C	13.8 - 138	200 - 2000	149	300	111-770-B	111-770
2"	Polypropylene	0.7 - 10.3	10 - 150	60	140	111-581-B	111-581
	PVDF	0.7 - 10.3	10 - 150	60	140	111-583-B	111-583
	316 SST	0.7 - 10.3	10 - 150	149	300	111-586-B	111-586
	Hastelloy C	0.7 - 10.3	10 - 150	149	300	111-590-B	111-590
	316 SST	3.5 - 24	50 - 350	149	300	111-587-B	111-587
	Hastelloy C	3.5 - 24	50 - 350	149	300	111-591-B	111-591

* Diaphragm material is PTFE on all models. Other materials available on request.

Pulsation Dampeners

Pulsation dampeners protect your pumping system and its components by removing virtually all hydraulic shock and vibration resulting from the reciprocating stroking action of a positive displacement pump.

Available in a variety of housing construction and bladder materials to cover different applications, pulsation dampeners are selected based on the size dampener (in cubic inches) needed to match your Hydra-Cell P Series pump model and discharge pulsation.



Selection Process

Determine application

- Discharge pulsation (< 69 bar or > 69 bar)
- Inlet stabilization
 - High inlet pressure (>2 bar); or
 - Low inlet pressure (suction lift / <2 bar positive pressure)

Select dampener size (cu. in. volume)

Based on the P Series pump model and application, select the appropriate cubic inch size from the chart at right.

Air Control Pump Model	Application			
	Discharge Pulsation		Inlet Stabilization	
	Chargeable <69 bar	Chargeable >69 bar	Chargeable >2 bar	J-Style <2 bar
P100	4 Cu. In.	12 Cu. In.	4 Cu. In.	10 Cu. In.
P200	4 Cu. In.	12 Cu. In.	4 Cu. In.	10 Cu. In.
P300	4 Cu. In.	12 Cu. In.	4 Cu. In.	10 Cu. In.
P400	4 Cu. In.	N/A	4 Cu. In.	10 Cu. In.
P500	4 Cu. In.	12 Cu. In.	10 Cu. In.	10 Cu. In.
P600	10 Cu. In.	N/A	N/A	10 Cu. In.

Select dampener model

Use the appropriate dampener size chart in this bulletin to select the specific model with the desired housing materials, bladder material, pressure and temperature performance. (Contact Wanner International for special order units with other construction materials and temperature limits.)

Bladder Options

Bladder Material	Application Recommendations
Buna-N	Good flex life; use with petroleum, solvents, and oil-based fluids
Neoprene	Good abrasion resistance and flex; use with moderate chemicals
EPDM	Good for extreme cold; good chemical resistance with ketones, caustics
Viton	Good for hot and aggressive fluids; use with aromatics, solvents, acids, and oils
PTFE	Bellows design, excellent flex life; use with highly aggressive fluids

12-cubic-inch: SST Construction

Bladder	Maximum Bar	Temperature °C / °F		Part #
		Minimum	Maximum	
Buna-N	276	-12 (10)	88 (190)	110-360-B
EPDM	276	-40 (-40)	140 (280)	110-363-B
Viton	276	-23 (-10)	177 (350)	110-365-B
PTFE	138	5 (40)	121 (250)	110-368-B

Features:

- 1/2" FNPT inlet port (female)
- Wetted materials of construction
- Bolted fasteners - PTFE bladder
- Ring fasteners - Buna-N, EPDM & Viton bladders
- Chargeable air control standard

I0-cubic-inch: Metallic Construction

Bladder	Maximum Bar	Temperature °C / °F		Construction Material		
		Minimum	Maximum	CS Part #	SST Part #	Hastelloy C Part #
Buna-N	69	-12 (10)	88 (190)	110-240-B	110-260-B	110-290-B
Neoprene	69	-18 (0)	93 (200)	110-242-B	110-262-B	110-292-B
EPDM	69	-40 (-40)	140 (280)	110-243-B	110-263-B	110-293-B
Viton	69	-23 (-10)	177 (350)	110-245-B	110-265-B	110-295-B
PTFE	41	5 (40)	121 (250)	110-248-B	110-268-B	110-298-B

I0-cubic-inch: Polypropylene Construction

Bladder	Maximum Bar	Temperature °C / °F		Part #
		Minimum	Maximum	
Buna-N	10	0 (32)	79 (175)	110-200-B
Neoprene	10	0 (32)	79 (175)	110-202-B
EPDM	10	0 (32)	79 (175)	110-203-B
Viton	10	0 (32)	79 (175)	110-205-B
PTFE	10	5 (40)	79 (175)	110-208-B

Features:

- 1/2" FNPT inlet port (female)
- Wetted materials of construction
- Bolted fasteners
- Chargeable air control standard
- Optional J-style air control

I0-cubic-inch: PVDF Construction

Bladder	Maximum Bar	Temperature °C / °F		Part #
		Minimum	Maximum	
Buna-N	10	-12 (10)	88 (190)	110-220-B
Neoprene	10	-12 (10)	93 (200)	110-222-B
EPDM	10	-12 (10)	121 (250)	110-223-B
Viton	10	-12 (10)	121 (250)	110-225-B
PTFE	10	5 (40)	121 (250)	110-228-B

Inlet Stabilizers with J-Style Control

I0-cubic-inch: PVC Construction

Bladder	Maximum Bar	Temperature °C / °F		Part #
		Minimum	Maximum	
Buna-N	2	0 (32)	60 (140)	110-210-J-B
Neoprene	2	0 (32)	60 (140)	110-212-J-B
EPDM	2	0 (32)	60 (140)	110-213-J-B
Viton	2	0 (32)	60 (140)	110-215-J-B
PTFE	2	5 (40)	60 (140)	110-218-J-B

4-cubic-inch: Metallic Construction

Bladder	Maximum Bar	Temperature °C / °F		Construction Material		
		Minimum	Maximum	CS Part #	SST Part #	Hastelloy C Part #
Buna-N	69	-12 (10)	88 (190)	110-040-B	110-060-B	110-090-B
Neoprene	69	-18 (0)	93 (200)	110-042-B	110-062-B	110-092-B
EPDM	69	-40 (-40)	140 (280)	110-043-B	110-063-B	110-093-B
Viton	69	-23 (-10)	177 (350)	110-045-B	110-065-B	110-095-B
PTFE	41	5 (40)	121 (250)	110-048-B	110-068-B	110-098-B

4-cubic-inch: Polypropylene Construction

Bladder	Maximum Bar	Temperature °C / °F		Part #
		Minimum	Maximum	
Buna-N	10	0 (32)	79 (175)	110-000-B
Neoprene	10	0 (32)	79 (175)	110-002-B
EPDM	10	0 (32)	79 (175)	110-003-B
Viton	10	0 (32)	79 (175)	110-005-B
PTFE	10	5 (40)	79 (175)	110-008-B

Features:

- 1/2" FNPT inlet port (female)
- Wetted materials of construction
- Bolted fasteners
- Chargeable air control standard

4-cubic-inch: PVDF Construction

Bladder	Maximum Bar	Temperature °C / °F		Part #
		Minimum	Maximum	
Buna-N	10	-12 (10)	88 (190)	110-020-B
Neoprene	10	-12 (10)	93 (200)	110-022-B
EPDM	10	-12 (10)	121 (250)	110-023-B
Viton	10	-12 (10)	121 (250)	110-025-B
PTFE	10	5 (40)	121 (250)	110-028-B



Wanner International Ltd.

Units 8 & 9, Fleet Business Park
Sandy Lane
Church Crookham, Hampshire GU52 8BF, England
Tel: +(44) 01252 816847
FAX Tel: +(44) 01252 629242
Email: sales@wannerint.com
www.WannerInt.com



Wanner Pumps Ltd.

Room 1111, 11/F New Kowloon Plaza
38 Tai Kak Tsui Road
Tai Kak Tsui, Kowloon, HONG KONG
Tel: (852) 3428 6534
FAX Tel: (852) 3188 9145
Email: jloo@wannereng.com



Wanner Engineering, Inc.

1204 Chestnut Avenue
Minneapolis, MN 55403 USA
Tel: 612-332-5681
FAX Tel: 612-332-6937
Toll-Free Fax (USA): 800-332-6812
Email: sales@wannereng.com
www.Hydra-Cell.com/metering