



# ClearView Calibration Cylinders

03/22  
Rev. 1

## 2022 US Price List

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e.g.: **PP#1-1000-B**

**PP #1 - 1000 - B**

**Type:**

PP = Polypropylene  
CV = PVC  
CVG = Glass

**Style:**

1 = Bottom thr'd conn. only  
2 = Top/Bottom thr'd conn.  
3 = Bottom thr'd conn. c/w  
removable vented dust cap  
4 = Top/Bottom thr'd conn. c/w  
removable O-Ring Seal Top  
and float ring indicator

**Std. connection is NPT thr'd  
Optional (add suffix)**

S = Socket weld connection  
PVC = PVC construction  
CPVC = CPVC construction  
PP = PP construction  
PVDF = PVDF construction  
SS = SS construction  
BSPT = Thread  
F = Flanged  
Substitute **E** for **V** for  
**EPDM** wetted "O" Ring seal

**Size:**

100 = 100 ml (1.6 GPH)  
250 = 250 ml (4 GPH)  
500 = 500 ml (8 GPH)  
1000 = 1000 ml (16 GPH)  
2000 = 2000 ml (32 GPH)  
4000 = 4000 ml (64 GPH)  
6000 = 6000 ml Glass Only  
8000 = 8000 ml Glass Only  
10000 = 10000 ml (160 GPH)  
15000 = 15000 ml (240 GPH)  
20000 = 20000 ml (320 GPH)

SIZE	PP = 100 – 4,000
RANGE	PVC = 100 – 20,000
	Glass = 100 – 10,000

PP	Grad in ml only
PVC	Grad in ml/GPH
Glass	Grad in ml only

See Page #7 for ClearView Glass (How to Order)

Distributed by:

Manufactured by:



**PRIMARY FLUID SYSTEMS INC.** TEL (905) 333-8743  
FAX (905) 333-8746

Toll Free 1-866-324-6422

www.eco-valve.com E-Mail: Sales@ecovalve.com



# CLEARVIEW – Polypropylene

CODE A

MODEL PP# 1 - ____	Style	Price Each
100 ml	½" NPT bottom connection	\$ 61.00
250 ml	½" NPT bottom connection	\$ 67.00
500 ml	½" NPT bottom connection	\$ 78.00
1000 ml	½" NPT bottom connection	\$ 85.00
2000 ml	1" NPT bottom connection	\$151.00
4000 ml	1" NPT bottom connection	\$338.00

CODE A

MODEL PP# 2 - ____	Style	Price Each
100 ml	½" NPT bottom/top connection	\$102.00
250 ml	½" NPT bottom/top connection	\$107.00
500 ml	½" NPT bottom/top connection	\$117.00
1000 ml	½" NPT bottom/top connection	\$124.00
2000 ml	1" NPT bottom/top connection	\$221.00
4000 ml	1" NPT bottom/top connection	\$385.00

CODE A

MODEL PP# 3 - ____	Style	Price Each
100 ml	½" NPT bottom conn.c/w Dust Cap	\$ 99.00
250 ml	½" NPT bottom conn.c/w Dust Cap	\$102.00
500 ml	½" NPT bottom conn.c/w Dust Cap	\$112.00
1000 ml	½" NPT bottom conn.c/w Dust Cap	\$118.00
2000 ml	1" NPT bottom conn.c/w Dust Cap	\$212.00
4000 ml	1" NPT bottom conn.c/w Dust Cap	\$379.00

## Optional Assemblies

Bottom connection PVC valve assembly for above includes:

- (2) PVC Sch 80 close nipples
- (1) PVC ball valve
- (1) PVC Sch 80 tee

CODE D

Part #	To Suit	Price Each
AC-1/2-ASSY	½" NPT connection size	\$23.00
AC-1-ASSY	1" NPT connection size	\$44.00

Pigtail air vent assembly for above includes:

- (12) inches of ⅜" poly tubing
- (2) tie wraps
- (1) poly compression fitting

CODE D

Part #	To Suit	Price Each
Pigtail-1/2	½" NPT connection size	\$11.00
Pigtail-1	1" NPT connection size	\$20.00

## Optional Connections

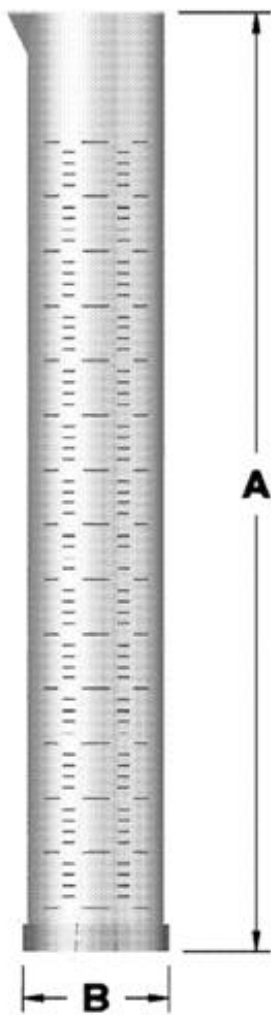
CODE A

Connection Type	Material	Size	Price /per Flange
Flange	PP	½"	\$ 222.00
Flange	PP	1"	\$ 275.00

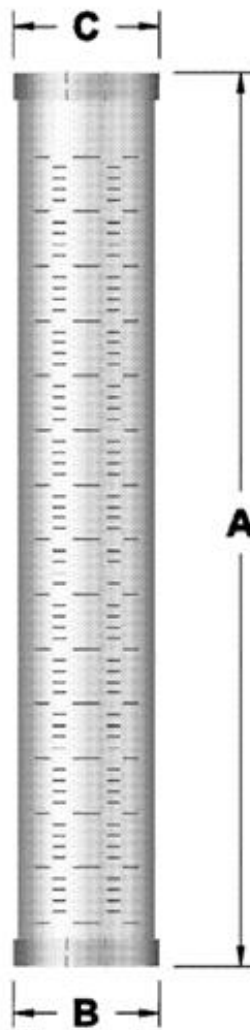
Standard CLEARVIEW polypropylene cylinders meet all accuracy requirements of ISO standard 6706 "Plastic Laboratory Ware-Graduated Cylinders"

# CLEARVIEW®

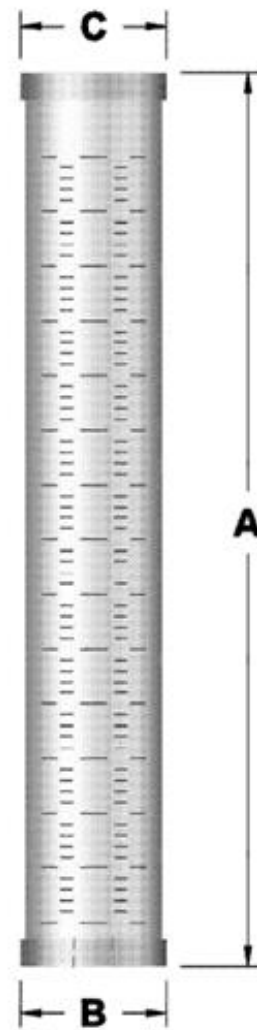
PP # 1



PP # 2



PP # 3



MODEL	SIZE ml	DIV ml	A inches	B inches	C inches	Connection
PP # 1	100	1.0	9.88	1.38	n/a	½" Thr'd
	250	2.0	12.44	1.75	n/a	½" Thr'd
	500	5.0	14.10	2.33	n/a	½" Thr'd
	1000	10.0	17.19	2.63	n/a	½" Thr'd
	2000	20.0	20.88	3.38	n/a	1" Thr'd
	4000	50.0	23.56	4.38	n/a	1" Thr'd
PP # 2 OR PP # 3	100	1.0	9.25	1.38	1.38	½" Thr'd
	250	2.0	11.63	1.75	1.75	½" Thr'd
	500	5.0	13.00	2.32	2.31	½" Thr'd
	1000	10.0	16.50	2.69	2.69	½" Thr'd
	2000	20.0	19.50	3.38	3.50	1" Thr'd
4000	50.0	22.13	4.38	4.50	1" Thr'd	

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**PRIMARY FLUID SYSTEMS INC.**  
300 South 3rd, Burlington, Ontario L7R 1G8

DWG TYPE: ELEVATION VIEW 3-D

RELEVANT: CLEARVIEW CALIBRATION CYLINDER OF POLYPROPYLENE

DWG NAME: CATALOG\_PP-CYLINDR

SCALE: UNSCALED	DATE: 14-04-08	DESIGNER: VICTOR	APPROVED: VIVIAN
PROJECT: CV_CATA-CYLINDR-PP			

# CLEARVIEW – PVC

CODE B

Model CV # 1-___	Style	Price Each
100 ml/1.6 gph	½" NPT bottom connection	\$ 47.00
250 ml/4 gph	½" NPT bottom connection	\$ 56.00
500 ml/8 gph	½" NPT bottom connection	\$ 63.00
1000 ml/16 gph	½" NPT bottom connection	\$ 67.00
2000 ml/32 gph	1" NPT bottom connection	\$129.00
4000 ml/64 gph	1" NPT bottom connection	\$233.00
10,000 ml/160 gph	2" NPT bottom connection	\$348.00
15,000 ml/240 gph	2" NPT bottom connection	\$519.00
20,000 ml/320 gph	2" NPT bottom connection	\$691.00

CODE B

Model CV # 2-___	Style	Price Each
100 ml/1.6 gph	½" NPT bottom/top connection	\$ 77.00
250 ml/4 gph	½" NPT bottom/top connection	\$ 82.00
500 ml/8 gph	½" NPT bottom/top connection	\$ 88.00
1000 ml/16 gph	½" NPT bottom/top connection	\$ 93.00
2000 ml/32 gph	1" NPT bottom/top connection	\$167.00
4000 ml/64 gph	1" NPT bottom/top connection	\$275.00
10,000 ml/160 gph	2" NPT bottom/top connection	\$399.00
15,000 ml/240 gph	2" NPT bottom/top connection	\$600.00
20,000 ml/320 gph	2" NPT bottom/top connection	\$796.00

CODE B

Model CV # 3-___	Style	Price Each
100 ml/1.6 gph	½" NPT bottom conn.c/w Dust Cap	\$ 77.00
250 ml/4 gph	½" NPT bottom conn.c/w Dust Cap	\$ 79.00
500 ml/8 gph	½" NPT bottom conn.c/w Dust Cap	\$ 86.00
1000 ml/16 gph	½" NPT bottom conn.c/w Dust Cap	\$ 91.00
2000 ml/32 gph	1" NPT bottom conn.c/w Dust Cap	\$164.00
4000 ml/64 gph	1" NPT bottom conn.c/w Dust Cap	\$268.00
10,000 ml/160 gph	2" NPT bottom conn.c/w Dust Cap	\$392.00
15,000 ml/240 gph	2" NPT bottom conn.c/w Dust Cap	\$588.00
20,000 ml/320 gph	2" NPT bottom conn.c/w Dust Cap	\$782.00

CODE B

Model CV # 4-___	Style	Price Each
100 ml/1.6 gph	½" NPT bottom/top conn. c/w removable Top w/PP float	\$ 77.00
250 ml/4 gph	½" NPT bottom/top conn. c/w removable Top w/PP float	\$ 82.00
500 ml/8 gph	½" NPT bottom/top conn. c/w removable Top w/PP float	\$ 88.00
1000 ml/16 gph	½" NPT bottom/top conn. c/w removable Top w/PP float	\$ 93.00
2000 ml/32 gph	1" NPT bottom/top conn. c/w removable Top w/PP float	\$167.00
4000 ml/64 gph	1" NPT bottom/top conn. c/w removable Top w/PP float	\$275.00
10,000 ml/160 gph	2" NPT bottom/top conn. c/w removable Top w/PP float	\$399.00
15,000 ml/240 gph	2" NPT bottom/top conn. c/w removable Top w/PP float	\$599.00
20,000 ml/320 gph	2" NPT bottom/top conn. c/w removable Top w/PP float	\$796.00

**Note:** Socket weld connections are available, please contact factory

## CLEARVIEW – PVC – Optional Assemblies

### PVC Valve Assembly

Bottom connection PVC valve assembly for above CV models includes:

- (2) PVC Sch 80 close nipples
- (1) PVC ball valve
- (1) PVC Sch 80 tee

CODE D

Part #	To Suit	Price Each
AC-1/2-ASSY	½" NPT connection size	\$23.00
AC-1-ASSY	1" NPT connection size	\$44.00
AC-2-ASSY	2" NPT connection size	\$86.00

### Pigtail Air Vent Assembly

Pigtail air vent assembly for above CV models includes:

- (12) Inches of ¾" poly tubing
- (2) Tie wraps
- (1) Poly compression fitting

CODE D

Part #	To Suit	Price Each
Pigtail-1/2	½" NPT connection size	\$11.00
Pigtail-1	1" NPT connection size	\$20.00

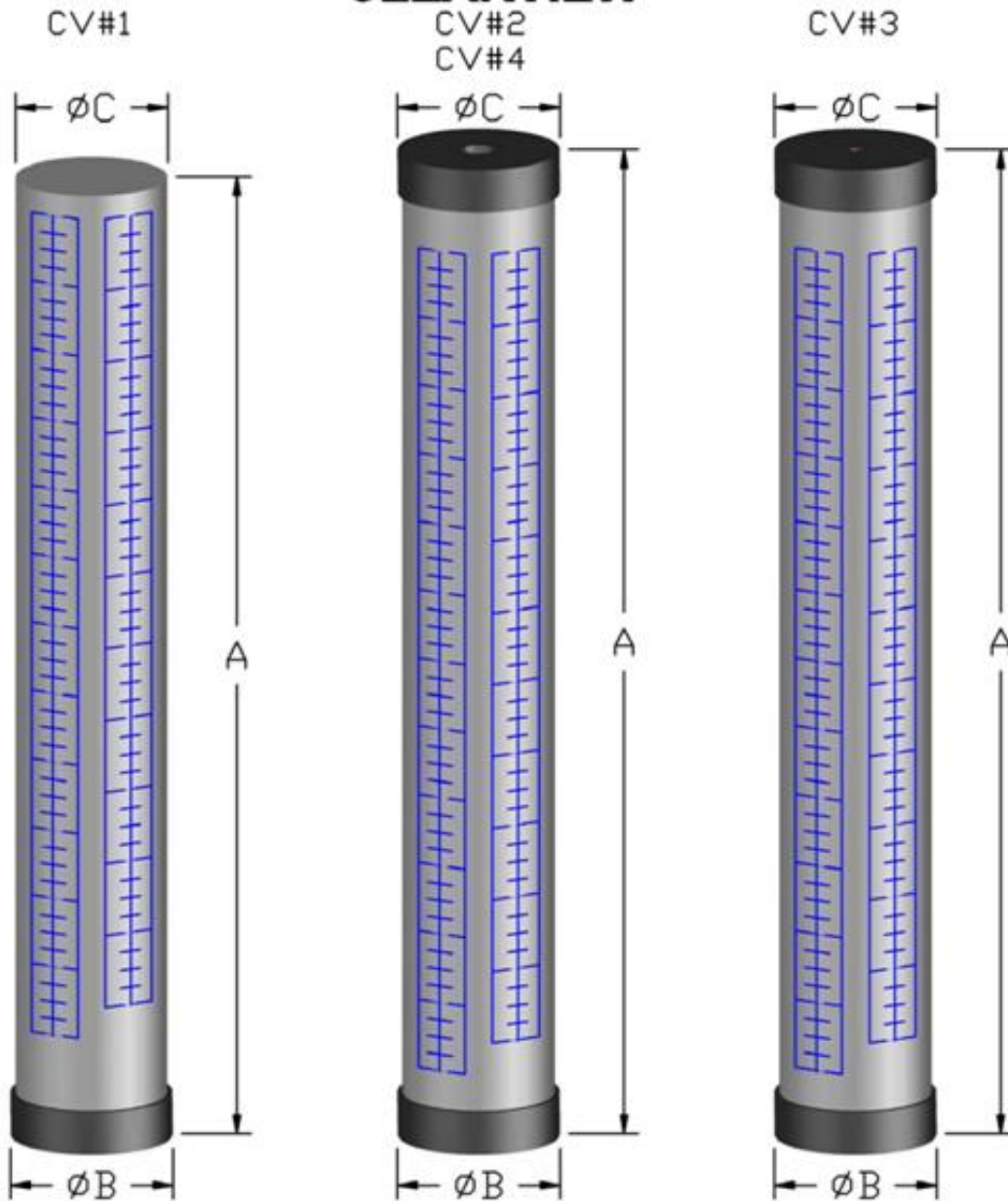
## CLEARVIEW – PVC – Optional Connections

CODE B

Connection Type	Material	Size	Price /per Flange
Flange	PVC	½"	\$ 99.00
Flange	PVC	1"	\$106.00
Flange	PVC	2"	\$160.00

**Note:** Socket weld connections are available, please contact factory

# CLEARVIEW®



MODEL	SIZE	m(GPH)	DIV	m(GPH)	A (in.)	øB (in.)	øC (in.)	Connection	Top Conn.
CV#1	100	(1.60)	1.0	(0.02)	10.00	1.39	1.39	1/2" (DN 15)	OPEN
	250	(4.00)	2.0	(0.05)	10.75	1.89	1.89		
	500	(8.00)	5.0	(0.05)	12.00	2.39	2.39		
	1000	(16.0)	10.0	(0.125)	16.00	2.77	2.77	1" (DN 25)	
	2000	(32.0)	20.0	(0.25)	19.94	3.52	3.52		
	4000	(64.0)	25.0	(0.25)	21.75	4.52	4.52	2" (DN 50)	
	10000	(160)	200.0	(2.00)	22.38	6.91	6.91		
15000	(240)	200.0	(2.00)	32.38	6.91	6.91			
20000	(320)	200.0	(2.00)	42.50	6.91	6.91			
CV#2 & CV#4	100	(1.60)	1.0	(0.02)	10.38	1.39	1.39	1/2" (DN 15)	1/2" (DN 15)
	250	(4.00)	2.0	(0.05)	11.19	1.89	1.89		
	500	(8.00)	5.0	(0.05)	12.25	2.39	2.39		
	1000	(16.0)	10.0	(0.125)	16.38	2.77	2.77	1" (DN 25)	
	2000	(32.0)	20.0	(0.25)	20.38	3.52	3.52		
	4000	(64.0)	25.0	(0.25)	22.38	4.52	4.52	2" (DN 50)	
	10000	(160)	200.0	(2.00)	22.94	6.91	6.91		
15000	(240)	200.0	(2.00)	32.94	6.91	6.91			
20000	(320)	200.0	(2.00)	42.94	6.91	6.91			
CV#3	100	(1.60)	1.0	(0.02)	10.38	1.39	1.39	1/2" (DN 15)	DUST CAP
	250	(4.00)	2.0	(0.05)	11.19	1.89	1.89		
	500	(8.00)	5.0	(0.05)	12.19	2.39	2.39		
	1000	(16.0)	10.0	(0.125)	16.25	2.77	2.77	1" (DN 25)	
	2000	(32.0)	20.0	(0.25)	20.19	3.52	3.52		
	4000	(64.0)	25.0	(0.25)	22.44	4.52	4.52	2" (DN 50)	
	10000	(160)	200.0	(2.00)	23.00	6.91	6.91		
15000	(240)	200.0	(2.00)	33.00	6.91	6.91			
20000	(320)	200.0	(2.00)	43.00	6.91	6.91			

NOTE:  
CV#4 CALIBRATION CYLINDERS HAVE  
REMOVABLE TOP CAPS.

DO NOT COPY WITHOUT PRIOR WRITTEN APPROVAL FROM PRIMARY FLUID SYSTEMS INC.

**PRIMARY FLUID SYSTEMS INC.**

399 Cooke Blvd., Burlington, Ontario L7T 4A8

CLEARVIEW CV-SERIES  
CALIBRATION CYLINDERS (PVC)

DATE ISSUED: JULY-29-2014 | SCALE: NTS | SHEET: 1 OF 1  
TOLERANCE +/- .025" | DRAWN BY: NEAL YOON

APPROVED BY: DWG NO: ADV\_CV\_CALCYL1 | REV: 3

# ClearView Glass Calibration Cylinder How To Order

## CVG - ClearView Glass Calibration Cylinder with PVC union nuts.

<b>Size</b>	
100	100 ml glass cylinder with 1 ml graduations
250	250 ml glass cylinder with 2 ml graduations
500	500 ml glass cylinder with 5 ml graduations
1000	1000 ml glass cylinder with 10 ml graduations
2000	2000 ml glass cylinder with 20 ml graduations
4000	4000 ml glass cylinder with 25 ml graduations
6000	6000 ml glass cylinder with 50 ml graduations (Available w/ CPVC, PVDF, S/S Inserts only)
8000	8000 ml glass cylinder with 50 ml graduations (Available w/ CPVC, PVDF, S/S Inserts only)
10,000	10,000 ml glass cylinder with 50 ml graduations (Available w/ CPVC, PVDF, S/S Inserts only)
<b>Insert Material</b>	
PVC	Polyvinylchloride
CPVC (Corzan)	Chlorinated polyvinylchloride
PP	Polypropylene
PVDF	Polyvinylidene flouride
S/S	316 Stainless Steel
<b>Connection Size</b>	
50	1/2" 15 DN (standard on 100, 250, 500, 1000 ml sizes)
75	3/4" 20 DN (available on 500 and 1000 ml sizes)
10	1" 25 DN (standard on 2000 and 4000 ml sizes; available on 500 and 1000 ml sizes)
15	1-1/2" 40 DN (available on 2000 and 4000 ml sizes)
20	2" 50 DN (available on 4000, 6000, 8000, and 10,000 ml sizes)
<b>Connection Type</b>	
N	NPT
B	BSPT
S	Socket ASTM
DS	Socket DIN
F	Flanged ANSI
DF	Flanged DIN
<b>Wetted "O" Ring</b>	
V	Viton (standard)
E	EPDM (ethylene propylene diene monomer)
K	Kalrez
T	PTFE encapsulated
<b>Union Nut Options (PVC Standard - Only PVC for 6L, 8L, and 10L)</b>	
CPVC	Chlorinated polyvinylchloride
PP	Polypropylene
PVDF	Polyvinylidene flouride

**CVG - 2000 - PP - 10 - N - V - PP** Example: 2000 ml glass cylinder with PP wetted inserts, Viton "O" rings, 1" npt connections and PP union nuts.

# ClearView Glass Calibration Cylinder

The standard ClearView Glass cylinders comes with prominent white markings in ml graduations with PVC wetted inserts and viton "O" ring seals, with a polycarbonate outer shield secondary containment with Buna N sealing rings all contained by threaded PVC union end connectors.

Model CVG - ___ - PVC - V	Style	CODE C Price Each
100 ml	½" Thr'd NPT or BSPT connection top/bottom	\$359.00
250 ml	½" Thr'd NPT or BSPT connection top/bottom	\$379.00
500 ml	½" Thr'd NPT or BSPT connection top/bottom	\$466.00
1000 ml	½" Thr'd NPT or BSPT connection top/bottom	\$658.00
2000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$831.00
4000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$974.00

For options contact Factory for price and availability.

The following sizes are available with larger connections add \$58.00

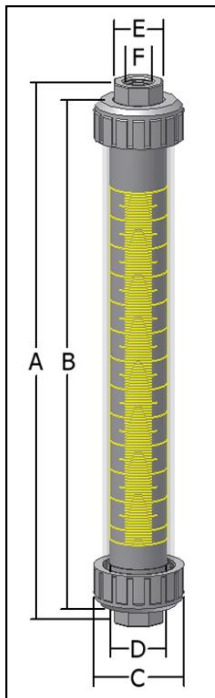
- 500 and 1000 – ¾" or 1" connection (20 or 25 DN)
- 2000 – 1 ½" connection (40 DN)
- 4000 – 1 ½" or 2" connection (40 or 50 DN)

Union ring end connectors are available in CPVC, PP or PVDF materials; consult factory for pricing

All cylinders are available with socket connections at no charge

For flanged connections consult factory for pricing

**See How to Order on page 7 for complete model numbers and options**



**Model CVG-XXX-PVC  
Glass Calibration Cylinders**

Note: Replace XXX in model # with Size ml

SIZE ml	DIV ml	A Inches	B Inches	C Inches	D Inches	E Inches	F Thread
100	1.0	10.96	10.30	2.10	1.75	1.15	½" FNPT
250	2.0	14.67	13.93	2.49	2.01	1.34	½" FNPT
500	5.0	16.18	15.18	3.37	2.75	1.72	½" FNPT
1000	10.0	19.04	17.99	4.00	3.27	1.72	½" FNPT
2000	20.0	21.52	20.62	4.81	4.00	2.02	1" FNPT
4000	25.0	26.26	24.84	6.27	5.20	3.18	1" FNPT

Dimensions subject to change without notice

### Optional Connection

			CODE C
Connection Type	Material	Size	Price /per Flange
Flange	PVC	½"	\$ 99.00
Flange	PVC	¾"	\$102.00
Flange	PVC	1"	\$106.00
Flange	PVC	1 ½"	\$120.00
Flange	PVC	2"	\$160.00

The above is a suggested List Price  
Standard delivery is stock to 3 weeks  
F.O.B. Burlington, Ont.  
Prices subject to change without notice



# ClearView Glass Calibration Cylinder

The standard ClearView Glass cylinders comes with prominent white markings in ml graduations with CPVC wetted inserts and viton "O" ring seals, with a polycarbonate outer shield secondary containment with Buna N sealing rings all contained by threaded PVC union end connectors.

**CODE C**

Model CVG - ___ - CPVC - V	Style	Price Each
100 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 385.00
250 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 425.00
500 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 584.00
1000 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 773.00
2000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$ 948.00
4000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$1,111.00
6000 ml	2" Thr'd NPT or BSPT connection top/bottom	\$2,353.00
8000 ml	2" Thr'd NPT or BSPT connection top/bottom	\$3,096.00
10,000 ml	2" Thr'd NPT or BSPT connection top/bottom	\$3,425.00

For options contact Factory for price and availability.

The following sizes are available with larger connections add \$58.00

- 500 and 1000 – ¾" or 1" connection (20 or 25 DN)
- 2000 – 1 ½" connection (40 DN)
- 4000 – 1 ½" or 2" connection (40 or 50 DN)

Union ring end connectors are available in CPVC, PP or PVDF materials-  
See chart.

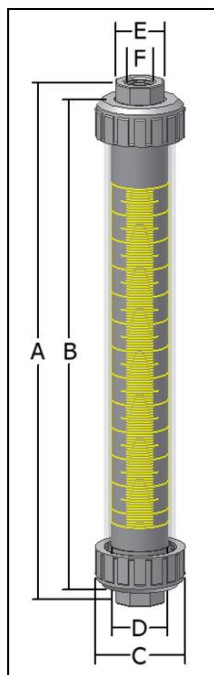
All cylinders are available with socket connections at no charge

For flanged connections consult factory for pricing

CPVC Union Ring Conn.	
Size	Price adder
100 mL	\$ 26.00
250 mL	\$ 38.00
500 mL	\$ 49.00
1000 mL	\$ 63.00
2000 mL	\$ 93.00
4000 mL	\$139.00

per cylinder

**See How to Order on page 7 for complete model numbers and options**



### Model CVG-XXX-CPVC Glass Calibration Cylinders

Note: Replace XXX in model # with Size ml

SIZE ml	DIV ml	A Inches	B Inches	C Inches	D Inches	E Inches	F Thread
100	1.0	10.96	10.30	2.10	1.75	1.15	½" FNPT
250	2.0	14.67	13.93	2.49	2.01	1.34	½" FNPT
500	5.0	16.18	15.18	3.37	2.75	1.72	½" FNPT
1000	10.0	19.04	17.99	4.00	3.27	1.72	½" FNPT
2000	20.0	21.52	20.62	4.81	4.00	2.02	1" FNPT
4000	25.0	26.26	24.84	6.27	5.20	3.18	1" FNPT

Dimensions subject to change without notice

#### Optional Connection

**CODE C**

Connection Type	Material	Size	Price /per Flange
Flange	CPVC (Corzan)	½"	\$130.00
Flange	CPVC (Corzan)	¾"	\$133.00
Flange	CPVC (Corzan)	1"	\$142.00
Flange	CPVC (Corzan)	1 ½"	\$172.00
Flange	CPVC (Corzan)	2"	\$194.00

The above is a suggested List Price  
Standard delivery is stock to 3 weeks  
F.O.B. Burlington, Ont.  
Prices subject to change without notice

# ClearView Glass Calibration Cylinder

The standard ClearView Glass cylinders comes with prominent white markings in ml graduations with PP wetted inserts and viton "O" ring seals, with a polycarbonate outer shield secondary containment with Buna N sealing rings all contained by threaded PVC union end connectors.

**CODE C**

Model CVG - ___ - PP - V	Style	Price Each
100 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 404.00
250 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 441.00
500 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 615.00
1000 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 782.00
2000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$1,055.00
4000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$1,116.00

For options contact Factory for price and availability.

The following sizes are available with larger connections add \$58.00

- 500 and 1000 – ¾" or 1" connection (20 or 25 DN)
- 2000 – 1 ½" connection (40 DN)
- 4000 – 1 ½" or 2" connection (40 or 50 DN)

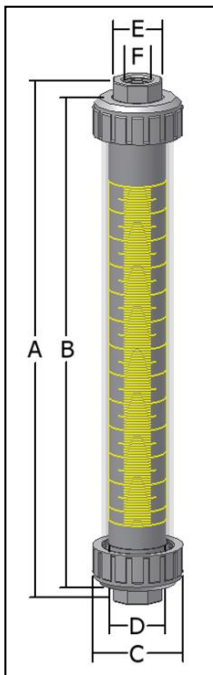
Union ring end connectors are available in CPVC, PP or PVDF materials-  
See chart.

All cylinders are available with socket connections at no charge  
For flanged connections consult factory for pricing

PP Union Ring Conn.	
Size	Price adder
100 mL	\$ 23.00
250 mL	\$ 33.00
500 mL	\$ 38.00
1000 mL	\$ 55.00
2000 mL	\$ 65.00
4000 mL	\$113.00

per cylinder

**See How to Order on page 7 for complete model numbers and options**



### Model CVG-XXX-PP Glass Calibration Cylinders

Note: Replace XXX in model # with Size ml

SIZE ml	DIV ml	A Inches	B Inches	C Inches	D Inches	E Inches	F Thread
100	1.0	10.96	10.30	2.10	1.75	1.15	½" FNPT
250	2.0	14.67	13.93	2.49	2.01	1.34	½" FNPT
500	5.0	16.18	15.18	3.37	2.75	1.72	½" FNPT
1000	10.0	19.04	17.99	4.00	3.27	1.72	½" FNPT
2000	20.0	21.52	20.62	4.81	4.00	2.02	1" FNPT
4000	25.0	26.26	24.84	6.27	5.20	3.18	1" FNPT

Dimensions subject to change without notice

#### Optional Connection

Connection Type	Material	Size	Price /per Flange	CODE C
Flange	PP	½"	\$222.00	
Flange	PP	¾"	\$248.00	
Flange	PP	1"	\$275.00	
Flange	PP	1 ½"	\$312.00	
Flange	PP	2"	\$335.00	

The above is a suggested List Price  
Standard delivery is stock to 3 weeks  
F.O.B. Burlington, Ont.  
Prices subject to change without notice

# ClearView Glass Calibration Cylinder

The standard ClearView Glass cylinders comes with prominent white markings in ml graduations with PVDF wetted inserts and viton "O" ring seals, with a polycarbonate outer shield secondary containment with Buna N sealing rings all contained by threaded PVC union end connectors.

Model CVG - ___ - PVDF - V	Style	CODE C Price Each
100 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 516.00
250 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 569.00
500 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 825.00
1000 ml	½" Thr'd NPT or BSPT connection top/bottom	\$1,152.00
2000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$1,279.00
4000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$2,032.00
6000 ml	2" Thr'd NPT or BSPT connection top/bottom	\$3,718.00
8000 ml	2" Thr'd NPT or BSPT connection top/bottom	\$4,333.00
10,000 ml	2" Thr'd NPT or BSPT connection top/bottom	\$4,712.00

For options contact Factory for price and availability.

The following sizes are available with larger connections add \$58.00

- 500 and 1000 – ¾" or 1" connection (20 or 25 DN)
- 2000 – 1 ½" connection (40 DN)
- 4000 – 1 ½" or 2" connection (40 or 50 DN)

Union ring end connectors are available in CPVC, PP or PVDF materials-  
See chart.

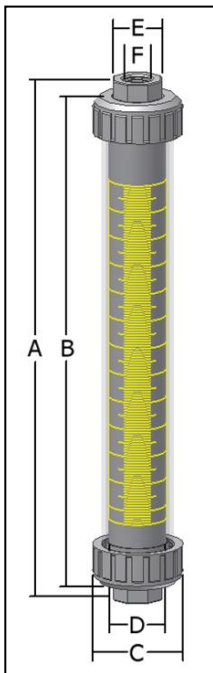
All cylinders are available with socket connections at no charge

For flanged connections consult factory for pricing

PVDF Union Ring Conn.	
Size	Price adder
100 mL	\$ 65.00
250 mL	\$ 78.00
500 mL	\$100.00
1000 mL	\$137.00
2000 mL	\$182.00
4000 mL	\$238.00

per cylinder

**See How to Order on page 7 for complete model numbers and options**



### Model CVG-XXX-PVDF Glass Calibration Cylinders

Note: Replace XXX in model # with Size

SIZE ml	DIV ml	A Inches	B Inches	C Inches	D Inches	E Inches	F Thread
100	1.0	10.96	10.30	2.10	1.75	1.15	½" FNPT
250	2.0	14.67	13.93	2.49	2.01	1.34	½" FNPT
500	5.0	16.18	15.18	3.37	2.75	1.72	½" FNPT
1000	10.0	19.04	17.99	4.00	3.27	1.72	½" FNPT
2000	20.0	21.52	20.62	4.81	4.00	2.02	1" FNPT
4000	25.0	26.26	24.84	6.27	5.20	3.18	1" FNPT

Dimensions subject to change without notice

#### Optional Connection

Optional Connection			CODE C
Connection Type	Material	Size	Price /per Flange
Flange	PVDF	½"	\$ 323.00
Flange	PVDF	¾"	\$ 384.00
Flange	PVDF	1"	\$ 584.00
Flange	PVDF	1 ½"	\$ 650.00
Flange	PVDF	2"	\$1,200.00

The above is a suggested List Price  
Standard delivery is stock to 3 weeks  
F.O.B. Burlington, Ont.  
Prices subject to change without notice

# ClearView Glass Calibration Cylinder

The standard ClearView Glass cylinders comes with prominent white markings in ml graduations with S/S wetted inserts and viton "O" ring seals, with a polycarbonate outer shield secondary containment with Buna N sealing rings all contained by threaded PVC union end connectors.

Model CVG - ___ - S/S - V	Style	CODE C Price Each
100 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 521.00
250 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 562.00
500 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 713.00
1000 ml	½" Thr'd NPT or BSPT connection top/bottom	\$ 903.00
2000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$1,023.00
4000 ml	1" Thr'd NPT or BSPT connection top/bottom	\$1,633.00
6000 ml	2" Thr'd NPT or BSPT connection top/bottom	\$2,974.00
8000 ml	2" Thr'd NPT or BSPT connection top/bottom	\$3,594.00
10,000 ml	2" Thr'd NPT or BSPT connection top/bottom	\$3,966.00

For options contact Factory for price and availability.

The following sizes are available with larger connections add \$58.00

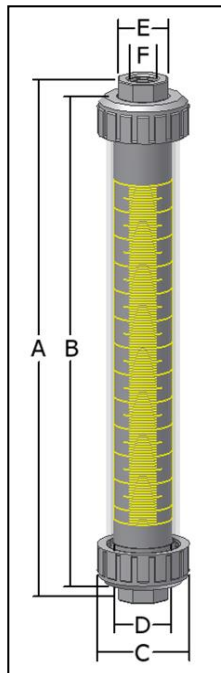
- 500 and 1000 – ¾" or 1" connection (20 or 25 DN)
- 2000 – 1 ½" connection (40 DN)
- 4000 – 1 ½" or 2" connection (40 or 50 DN)

Union ring end connectors are available in CPVC, PP or PVDF materials; consult factory for pricing.

All cylinders are available with socket connections at no charge

For flanged connections consult factory for pricing

**See How to Order on page 7 for complete model numbers and options**



### Model CVG-XXX-S/S Glass Calibration Cylinders

Note: Replace XXX in model # with Size ml

SIZE ml	DIV ml	A Inches	B Inches	C Inches	D Inches	E Inches	F Thread
100	1.0	10.96	10.30	2.10	1.75	1.15	½" FNPT
250	2.0	14.67	13.93	2.49	2.01	1.34	½" FNPT
500	5.0	16.18	15.18	3.37	2.75	1.72	½" FNPT
1000	10.0	19.04	17.99	4.00	3.27	1.72	½" FNPT
2000	20.0	21.52	20.62	4.81	4.00	2.02	1" FNPT
4000	25.0	26.26	24.84	6.27	5.20	3.18	1" FNPT

Dimensions subject to change without notice

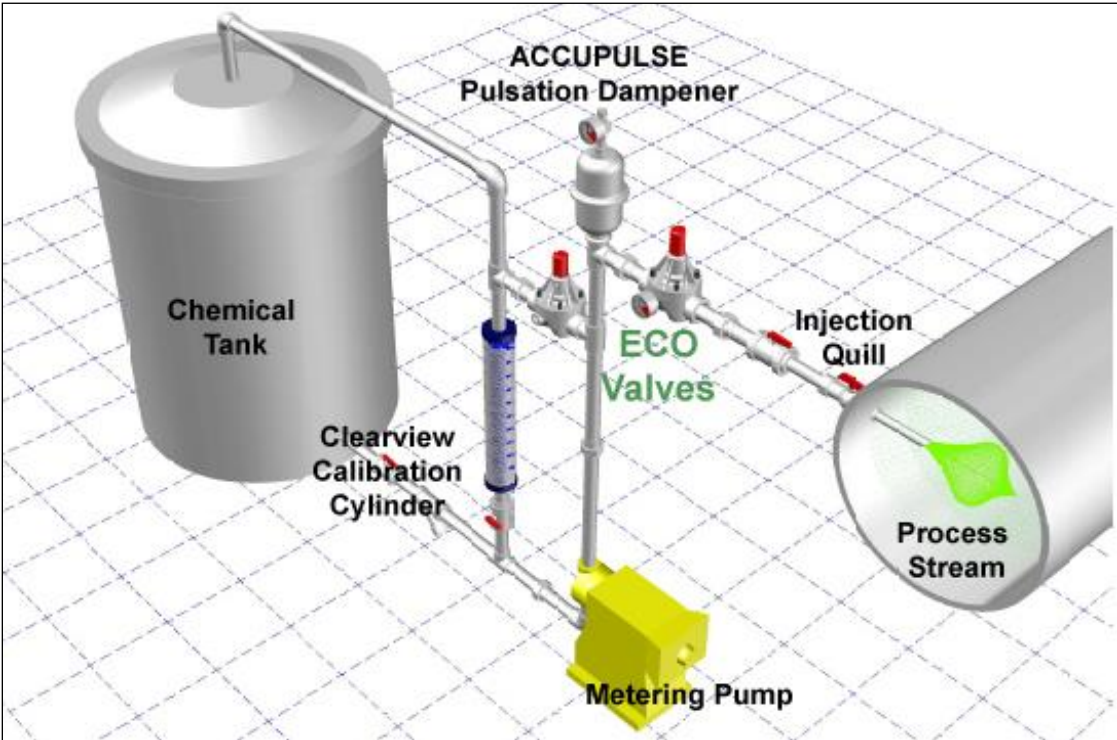
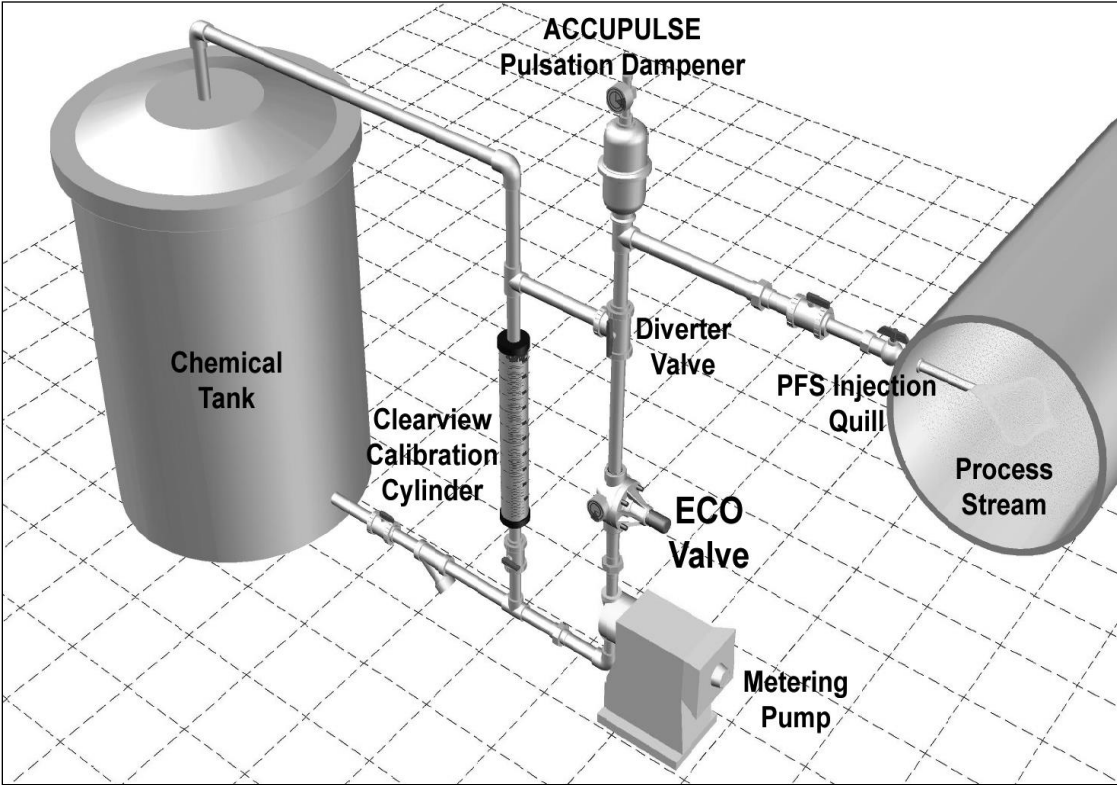
#### Optional Connection

			CODE C
Connection Type	Material	Size	Price /per Flange
Flange	316 S/S	½"	\$345.00
Flange	316 S/S	¾"	\$365.00
Flange	316 S/S	1"	\$401.00
Flange	316 S/S	1 ½"	\$699.00
Flange	316 S/S	2"	\$780.00

The above is a suggested List Price  
Standard delivery is stock to 3 weeks  
F.O.B. Burlington, Ont.  
Prices subject to change without notice

# Typical Installations

The installations below are typical installation examples only. Consult your Engineering Department for the appropriate installation of your application or call the factory for advice.





# CLEARVIEW Polypropylene Cylinder Calibration Instructions

**Note:** Before starting the calibration procedure below, ensure that the pump is primed and void of any trapped air.

**Using the ml scale:** (scale is based on volume pumped, over any given time)

1. Fill the calibration cylinder to the top mark with the liquid to be dispensed. This can be accomplished by manually filling the cylinder, or, if the feed tank level is higher than the Cylinder, by opening the isolation valve below the cylinder and back filling the cylinder.

**Caution: Never leave cylinder unattended when back filling.**

2. With the calibration cylinder full of the liquid to be dispensed, start the metering pump, and operate at 100% output until all air is removed from both suction lines and pump head.
3. Shut pump "OFF".
4. With calibration cylinder full, close isolation valve from supply tank, and open isolation valve to the cylinder.
5. Start the pump.
6. Using a stopwatch, measure the volume dispensed in 60 seconds.
7. Multiply the measured volume by 60 to find your ml per hour volume.
8. Adjust the pump volume control, higher or lower to meet with your desired output.
9. Repeat above steps 4 through 8 until your desired output is met.

If you wish to shorten the time of dispensing for calibration by one half (1/2) or one quarter (1/4), you must multiply the volume by the same number used to divide the time by to determine ml per minute or hour.

**e.g.** 100 ml in 60 seconds equals  
50 ml X 2 in 30 seconds or  
25 ml X 4 in 15 seconds

**Caution:**  
Do not use as  
a Pressure

### Conversion Factors

1 ml = 1 cc  
1000 ml = 1 liter  
ml/sec x 60 = ml/min  
1 US gal/min x 0.063 = liters/sec  
1 US gal = 3.786 liters



# CLEARVIEW PVC Cylinder Calibration Instructions

**Note:** Before starting either of the calibration procedures below, ensure that the pump is primed and void of any trapped air.

**Using the USGPH scale:** (scale is based on time, in one (1) minute volume discharge)

1. Fill the calibration cylinder to the top “0” mark on the USGPH scale.
2. Close isolation valve (#2) from supply tank, open isolation valve (#1) below cylinder and start the pump.
3. Use a stopwatch to measure the time of one (1) minute (60 seconds) and record the volume dispensed by the metering pump, using the draw down scale.
4. Adjust the pump volume control higher or lower to meet with your desired output.
5. Repeat above steps 1 through 4, until the desired output is met.
6. Divide the measured USGPH number by 60 to determine the USGPM volume, if required.

If you wish to shorten the time of dispensing for calibration by one half ( $\frac{1}{2}$ ) or one quarter ( $\frac{1}{4}$ ), you must multiply the measured volume by the same number used to divide the time.

e.g. 10 USGPH in 1 minute equals  
5 USGPH X 2 in 30 seconds or  
2.5 USGPH X 4 in 15 seconds

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**Using the ml scale:** (scale is based on volume pumped, over any given time)

1. Fill the calibration cylinder to the top “0” mark on the ml scale.
2. Close isolation valve (#2) from supply tank, open isolation valve (#1) below cylinder and start the pump.
3. Use a stopwatch to measure the time it takes to pump down a given volume (ml) in 60 seconds.
4. Multiply the volume by 60 to determine the ml per hour volume, if required.
5. Adjust the pump volume control higher or lower to meet with your desired output.
6. Repeat above steps 1 through 5, until the desired output is met.
7. If you wish to shorten the time of dispensing for calibration by one half ( $\frac{1}{2}$ ) or one quarter ( $\frac{1}{4}$ ), you must multiply the volume by the same number used to divide the time to determine ml per minute or hour.

e.g. 100 ml in 60 seconds equals  
50 ml X 2 in 30 seconds or  
25 ml X 4 in 15 seconds

**Caution:**  
Do not use as  
a Pressure

### Conversion Factors

1ml = 1 cc  
1000 ml = 1 liter  
ml/sec x 60 = ml/min  
1 US gal/min x 0.063 = liters/sec  
1 US gal = 3.786 liters



# CLEARVIEW Calibration Instructions

## Glass Cylinder

**Note:** Before starting the calibration procedure below, ensure that the pump is primed and void of any trapped air.

**Using the ml scale:** (scale is based on volume pumped, over any given time)

1. Fill the calibration cylinder to the top mark with the liquid to be dispensed. This can be accomplished by manually filling the cylinder or if the feed tank level is higher than the cylinder, by opening the isolation valve below the cylinder and back filling the cylinder.  
**Caution: Never leave unattended when back filling the cylinder.**
2. With the calibration cylinder full of the liquid to be dispensed, start the metering pump and operate at 100% output until all air is removed from both suction lines and pump head.
2. Shut pump "OFF".
3. With calibration cylinder full, close isolation Valve (#2) from supply tank, and open isolation valve (#1) below cylinder.
4. Start the pump.
5. Using a stopwatch, measure the volume dispensed in 60 seconds.
6. Multiply the measured volume by 60 to find your ml per hour volume.
7. Adjust the pump volume control, higher or lower to meet with your desired output.
8. Repeat above steps 4 through 8 until your desired output is met.

If you wish to shorten the time of dispensing for calibration by one half (1/2) or one quarter (1/4), you must multiply the volume by the same number used to divide the time by to determine ml per minute or hour.

e.g. 100 ml in 60 seconds equals  
50 ml X 2 in 30 seconds or  
25 ml X 4 in 15 seconds

**Caution:**  
Do not use as  
a Pressure

**Conversion Factors**  
1ml = 1 cc  
1000 ml – 1 liter  
ml/sec x 60 = ml/min  
1 US gal/min x 0.063 = liters/sec  
1 US gal = 3.786 liters



# Optimizing Metering Pump Application Accessories Save \$\$\$

By Dave Walker, General Manager, Primary Fluid Systems Inc.

**During these times of economic constraint and increasingly stringent environmental and occupational health and safety regulations, it becomes imperative that applications requiring the dispensing and metering of expensive and hazardous chemicals be accomplished with the utmost accuracy, care and control.**

For typical applications, when excess chemical is dispensed into the service, addition of another chemical is required to offset this action, resulting in increased expense. Conversely, if enough chemical is not dispensed into the process, the batch may be unsatisfactory for use and discarded and the processing repeated at further expense. Environmental and safety concerns are also important considerations.

The following is a general outline covering typical metering pump applications, and the accessory items that have been developed to help enhance the performance of your metering pump, for the optimum control of chemical being used.

## **Electronic & Motor Driven Metering Pumps**

Whether diaphragm or piston style, these pumps generally incorporate check valves as the mechanical source to isolate the flow of the chemical, at each stroke of the diaphragm or piston. The response time of the check valve assemblies, enabling them to reseat at the end and beginning of each stroke is essential to the performance and continuous accuracy of the metering pump.

## **Back Pressure Control Valves**

Many metering pump applications dispense to atmospheric conditions or into a process with less than 20 psig pressure and more typically, into a process with erratic system pressure. These applications require back pressure to ensure a constant pressure for the discharge check assembly on the metering pump to work properly.

It is crucial that a back pressure control valve such as **TOP VALVE** be installed in the discharge piping of the pump to ensure a constant pressure for the discharge check assembly to work under. This allows for the repeatability of a constant fluid discharge per stroke, and accuracy desired. **TOP VALVE** back pressure valves automatically provide *anti-siphon* protection and are available in a wide range of sizes and materials of construction.

## **Calibration of Metering Pumps**

Typically, metering pumps are used without proper calibration. The manufacturer provides a performance curve detailing the general discharge capacities of the pump. These curves are normally derived under controlled conditions, using water as the testing fluid. Given the large variety of chemicals available, with varying viscosities and specific gravities, and the wide differences in suction conditions on the pump and discharge piping, it is only reasonable that each application needs to be calibrated individually. Calibration must be repeated from time to time due to wear and vibration in the system.

**CLEARVIEW** calibration cylinders are available in PVC, polypropylene and glass construction in standard sizes from 100 ml to 20000 ml. They provide an excellent way to periodically check the performance and accuracy of your metering pump.

## **Pulsation Dampeners**

Pulsation is another typical problem with most metering pumps, and in some cases cannot be tolerated by the application. **ACCU-PULSE** pulsation dampeners are available in a variety of sizes and material for such situations and help remove a high degree of pulsing and surging in the line. They only work if installed properly, in the right order in the line, and with the right pressure bladder to offset the incoming pulsing. It is important that the directions supplied by the manufacturer regarding recommended set pressure and location of the dampener be adhered to.

## **Strainers**

A strainer on the suction feed line is generally overlooked and can contribute to the proper operation, life, and accuracy of the components downstream.

Small bits of debris find their way into supply tanks and will foul the function of the check assemblies, imbed themselves in the diaphragm or score the piston and cause premature failure of the pump. If the pump allows this debris further downstream, you may see failure of the back pressure valve or pulsation dampener or more typically, the injection valve will get fouled and fail.

The strainer should always be installed, periodically checked and cleaned. This will give a large pay back by ensuring the uninterrupted service and longer life of vital and more expensive components downstream.

## **Inline Pressure Relief Valves**

When using motor driven pumps or solenoid pumps capable of higher pressures than your line is designed for (i.e 150 psig), an inline pressure relief valve such as **TOP VALVE** must be installed to protect the line from overpressure and possible splitting which could cause uncontrolled discharge of hazardous chemical into the area.

Always install the pressure relief valve in the line closest to the discharge of the pump and ensure that there are no isolation valves or components capable of closing the discharge line off prior to the relief valve.

**TOP VALVE** pressure relief valves are available in a wide range of materials and sizes with adjustable pressure settings.

## **Safe Line Maintenance**

When installing a metering pump system, install as many unions in the line as possible to allow for ease of maintenance and repair of the various components used. This can easily be accomplished with the use of true union valves, which also serve the purpose of isolating valves.

When handling hazardous chemicals and indeed any chemicals, always remember to design your piping system with a way to drain off the chemical and vent any built up pressure before service begins. This will prevent most of the spillage and reduce potential hazard in the workplace. Tee off the discharge of the pump at the lowest point back to tank or install an inline pressure relief valve such as **TOP VALVE** that has the ability of venting back to the feed tank or calibration cylinder when set at "0" psig.

## **Foot Valves**

When drawing from a chemical feed tank, using suction lift to the pump, always install a foot valve on the end of the suction line and ensure it is kept a minimum of 3 to 6 inches from the bottom of the supply tank. This will reduce the possibilities of picking up any solids from the feed tank that may foul your system. Try to keep the suction lift to a minimum and follow the instructions regarding suction lift supplied by the pump manufacturer.

## **Injection Valves**

A check valve, normally spring loaded is used for the purpose of isolating your discharge chemical line from your process line. Most metering pump manufacturers supply a standard injection valve with their pump. This valve should be utilized and installed at the point of injection and have an isolation valve in close proximity. There are all types of injection valves available to accommodate the various requirements of injection needed, dependent on the process pipeline size and volume.

**PFS Injection Quills** ensure that the chemical is fully dispersed into the center of the process line and provide for a more homogenous mix in the pipeline. A built-in check helps prevent back siphoning.

## **Conclusion**

Properly designed, installed, and maintained metering pump applications should provide dependable and accurate service with minimal downtime. In order to minimize maintenance and system problems, and optimize the efficient use of chemicals, a modest investment in the suggested accessories is recommended.

If you have any questions regarding application installation or applications that are a problem and/or continuous expense, please contact our office for some free and friendly consultation.

# **TERMS AND CONDITIONS**

Minimum order for stocking distributors is \$300.00 net cost.

Minimum order for resale or OEM is \$100.00 net cost.

## **Special Terms are as follows:**

Net 30 days from date of invoice

All outstanding invoices will have a 2% service charge applied from 60 days on and every 30 days thereafter. The account will also be put on hold, until payment, including service charge is received.

All shipments are based on F.O.B. our Plant. Delivery on standard valves is 2-3 days (dependent on size of order and availability of components from stock.) All taxes are extra.

Restocking charge is 20%.

All goods to be returned for warranty inspection will require a R.G.A. # that can be obtained from our office. Goods to be shipped prepaid to our plant. This includes goods being returned for restocking.

## **Prices subject to change without notice.**

## **LIMITED WARRANTY**

Primary Fluid Systems Inc. (Primary) warrants its products against defects in workmanship or materials for one (1) year under normal use. Three-(3) year available when application card is completed and returned to factory.

Primary's obligations and liabilities under this warranty shall be limited to replacement of the product, or a refund of an amount not to exceed the purchase price of the product(s) to which such warranty claim is made. Repairs or replacements are made subject to our inspection of the returned product(s). Primary's decision of one of these alternatives shall be the buyer's exclusive remedy.

This warranty does not extend to damage by corrosion or other decomposition by chemical action. Primary does not warrant damages caused by (a) improper use of the product, (b) unauthorized modification or attachment to product, (c) misuse, abuse, accident or negligent handling or installation of product, or (e) alterations or repairs made by purchaser.

The materials of construction offered are recommendations subject in all cases to acceptance by purchaser. These recommendations do not constitute guarantee against corrosion or decomposition but are based on previous experience and best available information of the industry.

Statements and instructions set forth herein are based on the best information and practices known to Primary, but it should not be assumed that every acceptable safety procedure is contained herein. Of necessity, Primary cannot guarantee that actions in accordance with such statements and instructions will result in the complete elimination of hazards and it assumes no liability for accidents that may occur.

Except as specifically provided herein, Primary makes no warranty, representations, promise or guarantee, either express or implied, statutory, or otherwise, with respect to the product and technical information including their quality, performance, merchantability, or fitness for a particular purpose.

In no event will Primary be liable for indirect, special, incidental, economic, covert, or consequential damages arising out of the use or inability to use the product, including without limitation, damages or costs relating to the loss of profits, business and good will even if advised of the possibility of such damages. In no event shall Primary's liability exceed the amount paid by you for the product.

The warranty and remedies set forth herein are exclusive and in lieu of all others, oral or written, express or implied. No Primary dealer, distributor, agent, or employee is authorized to make any modification or addition to this warranty. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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