



Crystal Quest® Dosing Solution System INSTALLATION AND OPERATION GUIDE



ONLINE WARRANTY INFORMATION
CrystalQuest.com/warranty.html

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WARNING INFORMATION

WARNING: ELECTRIC SHOCK HAZARD

Pump supplied with grounding power cord and attached plug. To reduce risk of electrical shock, connect only to a properly grounded, grounding type receptacle. Install only on a circuit protected by a Ground-Fault Circuit-Interrupter (GFCI).

DO NOT alter the power cord or plug end.

DO NOT use receptacle adapters.

DO NOT use pump with a damaged or altered power cord or plug. Contact the factory or an authorized service facility for repair.

WARNING: HAZARDOUS VOLTAGE

DISCONNECT power cord before removing motor cover for service. Electrical service must be conducted by trained personnel only.

WARNING: EXPLOSION HAZARD

This equipment IS NOT explosion-proof. DO NOT install or operate in an explosive environment.

WARNING: RISK OF CHEMICAL EXPOSURE

Potential risk for chemical burns, fire, explosion, personal injury, or property damage. To reduce risk of exposure, the use of proper personal protective equipment is mandatory.

WARNING: RISK OF FIRE HAZARD

DO NOT install or operate on or near any flammable surface.

WARNING: RISK OF CHEMICAL OVERDOSE

To reduce risk, follow proper installation methods and recommendations. Check your local codes for additional guidelines.

To reduce the risk of injury, do not permit children to use this product. This appliance is not to be used by persons with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction.



WARNING INFORMATION *CONTINUED*

CAUTION: PLUMBING

Chemical feed pump installation must always adhere to your local plumbing codes and requirements. Be sure installation does not constitute a cross connection. Check local plumbing codes for guidelines.

This metering pump is portable and designed to be removable from the plumbing system without damage to the connections.

Before installing or servicing the pump, read the pump manual for all safety information and complete instructions. The pump is designed for installation and service by properly trained personnel.

Installation of product must adhere to all regulatory and compliance codes applicable to the area.

This metering pump and its components have been tested for use with the following chemicals: Sodium Hypochlorite (10-15%), Muriatic Acid (20-22 Baume, 31.5% HCl), and Soda Ash.

This metering pump is certified by WQA for use with Water and Sodium Hypochlorite 15%.

PUMP SUITABLE FOR USE OUTDOORS when installed with a Rain Roof.

Electrical installation should adhere to all national and local codes. Consult a licensed professional for assistance with proper electrical installation.

Removing power from pool/spa recirculation pump must also remove power from pump.

The use of an auxiliary safety device (not supplied), such as a flow switch or sensor, is recommended to prevent feed pump operation in the event of a recirculation pump failure or if flow is not sensed.

Point of chemical injection should be beyond all pumps, filters, and heaters.

Suitable for indoor and outdoor use.



OUTPUTS 45 SERIES

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 60Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
45MPH2* 45M1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.2	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0
45MPH10* 45M2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	0.5	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
45MPH22* 45M3	100 psi (6.9 bar) 25 psi (1.7 bar)	#3	1.1	2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0
45M4	25 psi (1.7 bar)	#4	1.7	3.5	7.0	10.5	14.0	17.5	21.0	24.5	28.0	31.5	35.0
45M5	25 psi (1.7 bar)	#5	2.5	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 50Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
45MPH2* 45M1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.6	0.9	1.8	2.7	3.6	4.5	5.5	6.4	7.3	8.2	9.1
45MPH10* 45M2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	1.5	3.0	6.1	9.1	12.1	15.1	18.2	21.2	24.2	27.3	30.3
45MPH22* 45M3	100 psi (6.9 bar) 25 psi (1.7 bar)	#3	3.3	6.6	13.3	20.0	26.6	33.3	40.0	46.6	53.3	60.0	66.6
45M4	25 psi (1.7 bar)	#4	5.1	10.6	21.2	31.8	42.4	53.0	63.6	74.2	84.8	95.4	106.0
45M5	25 psi (1.7 bar)	#5	7.6	15.1	30.3	45.5	60.6	75.7	90.8	106.0	121.1	136.3	151.4

FIXED FLOW RATE OUTPUT

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	GPD 60Hz	LPD 50Hz
45MPH2* 45M1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	3.0	9.1
45MPH10* 45M2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	10.0	30.3
45MPH22* 45M3	100 psi (6.9 bar) 25 psi (1.7 bar)	#3	22.0	66.6
45M4	25 psi (1.7 bar)	#4	35.0	106.0
45M5	25 psi (1.7 bar)	#5	50.0	151.4

*Injection check valve is included with pump rated 26-100 psi (1.8-6.9 bar).

NOTICE: The information within this chart is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Crystal Quest recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs.



OUTPUTS 85 SERIES

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 60Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
85MHP5* 85M1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.3	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
85MHP17* 85M2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	0.8	1.7	3.4	5.1	6.8	8.5	10.2	11.9	13.6	15.3	17.0
85MHP40* 85M3	100 psi (6.9 bar) 25 psi (1.7 bar)	#3	2.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0
85M4	25 psi (1.7 bar)	#4	3.0	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0	60.0
85M5	25 psi (1.7 bar)	#5	4.3	8.5	17.0	25.5	34.0	42.5	51.0	59.5	68.0	76.5	85.0

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 50Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
85MPH5* 85M1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.9	1.5	3.0	4.5	6.1	7.6	9.1	10.6	12.1	13.6	15.1
85MPH17* 85M2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	2.4	5.1	10.3	15.4	20.6	25.7	30.9	36.0	41.2	46.3	51.5
85MPH40* 85M3	100 psi (6.9 bar) 25 psi (1.7 bar)	#3	6.1	12.1	24.2	36.3	48.5	60.6	76.7	84.8	96.9	109.0	121.1
85M4	25 psi (1.7 bar)	#4	9.1	18.2	36.3	54.5	76.7	90.8	109.0	127.2	145.3	163.5	181.7
85M5	25 psi (1.7 bar)	#5	13.0	25.7	51.5	77.2	103.0	128.7	154.4	180.0	205.9	231.6	257.4

FIXED FLOW RATE OUTPUT

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	GPD 60Hz	LPD 50Hz
85MPH5* 85M1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	5.0	15.1
85MPH17* 85M2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	17.0	51.5
85MPH40* 85M3	100 psi (6.9 bar) 25 psi (1.7 bar)	#3	40.0	121.1
85M4	25 psi (1.7 bar)	#4	60.0	181.7
85M5	25 psi (1.7 bar)	#5	85.0	257.4

*Injection check valve is included with pump rated 26-100 psi (1.8-6.9 bar).

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OUTPUTS 100 SERIES

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 60Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
100DMHP5* 100DM1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.3	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0
100DMHP20* 100DM2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	1.0	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
100D3	100 psi (6.9 bar)	#3	2.2	4.4	8.8	13.2	17.6	22.0	26.4	30.8	35.2	39.6	44.0
100D4	25 psi (1.7 bar)	#4	3.5	7.0	14.0	21.0	28.0	35.0	42.0	49.0	56.0	63.0	70.0
100D5	25 psi (1.7 bar)	#5	5.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 50Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
100DMHP5* 100DM1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.9	1.8	3.6	5.5	7.3	9.1	10.9	12.7	14.5	16.4	18.2
100DMHP20* 100DM2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	3.0	6.1	12.1	18.2	24.2	30.3	36.4	42.4	48.5	54.5	60.6
100DM3	100 psi (6.9 bar)	#3	6.7	13.3	26.7	40.0	53.3	66.6	79.9	93.3	106.6	119.9	133.2
100DM4	25 psi (1.7 bar)	#4	10.6	21.2	42.4	63.6	84.8	106.0	127.2	148.4	169.6	190.8	212.0
100DM5	25 psi (1.7 bar)	#5	15.1	30.3	60.6	90.8	121.1	151.4	181.7	212.0	242.0	272.5	302.8

FIXED FLOW RATE OUTPUT

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	GPD 60Hz	LPD 50Hz
100DMHP5* 100DM1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	6.0	18.2
100DMHP20* 100DM2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	20.0	60.6
100DM3	100 psi (6.9 bar)	#3	44.0	133.2
100DM4	25 psi (1.7 bar)	#4	70.0	212.0
100DM5	25 psi (1.7 bar)	#5	100.0	302.8

*Injection check valve is included with pump rated 26-100 psi (1.8-6.9 bar).

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OUTPUTS 170 SERIES

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 60Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
170DMHP9* 170DM1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.5	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
170DMHP34* 170DM2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	1.7	3.4	6.0	9.5	13.6	17.0	20.4	23.8	27.2	30.6	34.0
170D3	25 psi (1.7 bar)	#3	4.0	8.0	16.0	24.0	32.0	40.0	48.0	56.0	64.0	72.0	80.0
170D4	25 psi (1.7 bar)	#4	6.0	12.0	24.0	36.0	48.0	60.0	72.0	84.0	96.0	108.0	120.0
0170D5	25 psi (1.7 bar)	#5	8.5	17.0	34.0	51.0	68.0	85.0	102.0	119.0	136.0	153.0	170.0

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 50Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
170DMHP9* 170DM1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	1.5	3.0	6.1	9.1	12.1	15.1	18.2	21.2	24.2	27.3	30.3
170DMHP34* 170DM2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	5.1	10.3	18.2	28.8	39.1	51.5	61.8	72.1	82.4	92.7	102.6
170DM3	25 psi (1.7 bar)	#3	12.1	24.2	48.5	72.7	96.9	121.1	145.4	169.6	193.8	218.0	242.2
170DM4	25 psi (1.7 bar)	#4	18.2	36.3	72.7	109.0	145.3	181.7	218.0	254.4	290.7	327.0	363.4
170DM5	25 psi (1.7 bar)	#5	25.7	51.5	86.0	154.4	205.9	257.4	308.9	360.4	411.8	463.3	514.8

FIXED FLOW RATE OUTPUT

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	GPD 60Hz	LPD 50Hz
170DMHP9* 170DM1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	10.0	30.3
170DMHP34* 170DM2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	34.0	102.6
170DM3	25 psi (1.7 bar)	#3	80.0	242.2
170DM4	25 psi (1.7 bar)	#4	120.0	363.4
170DM5	25 psi (1.7 bar)	#5	170.0	514.8

*Injection check valve is included with pump rated 26-100 psi (1.8-6.9 bar).

NOTICE: The information within this chart is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Crystal Quest recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs.



OUTPUTS 100MDC SERIES

DETERMINING OUTPUT FOR DUAL HEAD DUAL CONTROL MODEL

- The dial ring is labeled L-10; L = 5%, 1-10 indicates approximately 10% of maximum output.
- Setting #10 on both feed rate controls will deliver the pump's maximum output.
- The innermost head is the primary output. The outermost head operates at a percentage of the innermost head.
- Example Using 100MDC5

Select the output from the chart for the innermost head, and then calculate the outermost head output.

Innermost Head Output x Setting % of Outermost Head = Outermost Head Output

Example: The output of the innermost head at setting #4 = 20 gpd. The output of the outermost head at setting #3 is 30%; and would be calculated 20 gpd x 30% = 6 gpd.

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 60Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
100MDCHP5* 100MDC1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.2	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0
100MDCHP20* 100MDC2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	0.5	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
100MDC3	25 psi (1.7 bar)	#3	1.1	2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0
100MDC4	25 psi (1.7 bar)	#4	1.7	3.5	7.0	10.5	14.0	17.5	21.0	24.5	28.0	31.5	35.0
100MDC5	25 psi (1.7 bar)	#5	2.5	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 50Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
100MDCHP5* 100MDC1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.6	0.9	1.8	2.7	3.6	4.5	5.5	6.4	7.3	8.2	9.1
100MDCHP20* 100MDC2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	1.5	3.0	6.1	9.1	12.1	15.1	18.2	21.2	24.2	27.3	30.3
100MDC3	25 psi (1.7 bar)	#3	3.3	6.6	13.3	20.0	26.6	33.3	40.0	46.6	53.3	60.0	66.6
100MDC4	25 psi (1.7 bar)	#4	5.1	10.6	21.2	31.8	42.4	53.0	63.6	74.2	84.8	95.4	106.0
100MDC5	25 psi (1.7 bar)	#5	7.6	15.1	30.3	45.4	60.6	75.7	90.8	106.0	121.1	136.3	151.4

*Injection check valve is included with pump rated 26-100 psi (1.8-6.9 bar).

NOTICE: The information within this chart is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Crystal Quest recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs.



OUTPUTS 100MDC SERIES

DETERMINING OUTPUT FOR DUAL HEAD DUAL CONTROL MODEL

- The dial ring is labeled L-10; L = 5%, 1-10 indicates approximately 10% of maximum output.
- Setting #10 on both feed rate controls will deliver the pump's maximum output.
- The innermost head is the primary output. The outermost head operates at a percentage of the innermost head.
- Example Using 170MDCHP34

Select the output from the chart for the innermost head, and then calculate the outermost head output.

Innermost Head Output x Setting % of Outermost Head = Outermost Head Output

Example: The output of the innermost head at setting #8 = 13.6 gpd. The output of the outermost head at setting #6 is 60%; and would be calculated 13.6 gpd x 60% = 8.2 gpd.

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 60Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
170MDCHP9* 170MDC1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.3	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
170MDCHP34* 170MDC2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	0.8	1.7	3.4	5.1	6.8	8.5	10.2	11.9	13.6	15.3	17.0
170MDC3	25 psi (1.7 bar)	#3	2.0	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0
170MDC4	25 psi (1.7 bar)	#4	3.0	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0	60.0
170MDC5	25 psi (1.7 bar)	#5	4.3	8.5	17.0	25.5	34.0	42.5	51.0	59.5	68.0	76.5	85.0

ADJUSTABLE FLOW RATE OUTPUT – APPROXIMATE GPD @ 50Hz

MODEL	MAXIMUM PRESSURE	PUMP TUBE NO.	FEED RATE CONTROL SETTINGS										
			L	1	2	3	4	5	6	7	8	9	10
170MDCHP9* 170MDC1	100 psi (6.9 bar) 25 psi (1.7 bar)	#1	0.9	1.5	3.0	4.5	6.1	7.6	9.1	10.6	12.1	13.6	15.1
170MDCHP34* 170MDC2	100 psi (6.9 bar) 25 psi (1.7 bar)	#2	2.4	5.1	10.3	15.4	20.6	25.7	30.9	36.0	41.2	46.3	51.5
170MDC3	25 psi (1.7 bar)	#3	6.1	12.1	24.2	36.3	48.5	60.6	72.7	84.8	96.9	109.0	121.1
170MDC4	25 psi (1.7 bar)	#4	9.1	18.2	36.3	54.5	72.7	90.8	109.0	127.2	145.3	163.5	181.7
170MDC5	25 psi (1.7 bar)	#5	13.0	25.7	51.5	77.2	103.0	128.7	154.4	180.0	205.9	231.6	257.4

*Injection check valve is included with pump rated 26-100 psi (1.8-6.9 bar).

NOTICE: The information within this chart is solely intended for use as a guide. The output data is an approximation based on pumping water under a controlled testing environment. Many variables can affect the output of the pump. Crystal Quest recommends that all metering pumps undergo field calibration by means of analytical testing to confirm their outputs.



MATERIALS OF CONSTRUCTION

All Housings

Polycarbonate

Pump Tube

Santoprene^{®*}, FDA approved or Versilon^{®**}

Check Valve Duckbill

Santoprene^{®*}, FDA approved or Pellethane^{®†}

Suction/Discharge Tubing & Ferrules

Polyethylene, FDA approved

Suction Line Strainer

PVC, NSF listed, with ceramic weight

All Fasteners

Stainless Steel

Tube and Injection Fittings

PVC or Polypropylene, NSF listed

Connecting Nuts

PVC, NSF listed

3/8" Adapter

PVC or Polypropylene, NSF listed

Pump Head Latches

Polypropylene

* Santoprene[®] is a registered trademark of Exxon Mobil Corporation.

** Versilon[®] is a registered trademark of Saint-Gobain Performance Plastics.

† Pellethane[®] is a registered trademark of Lubrizol Advanced Materials, Inc.



ACCESSORY CHECKLIST

PRE-INSTALLATION

25 psi (1.7 bar) Accessory Kit Contents*

- 3 Connecting Nuts 1/4" or 3/8"
- 3 Ferrules 1/4" & 6 mm Europe
- 1 Injection Fitting
- 1 Weighted Suction Line Strainer 1/4", 3/8", 6 mm Europe
- 1 20' Roll of Suction/Discharge Tubing
1/4" or 3/8" White or UV Black OR 6 mm White Europe
- 1 Additional Pump Tube
- 2 Additional Latches
- 1 Mounting Bracket
- 1 Installation Manual

100 psi (6.9 bar) Accessory Kit Contents*

- 3 Connecting Nuts 1/4" or 3/8"
- 3 Ferrules 1/4" & 6 mm Europe
- 1 Injection Check Valve
- 1 Weighted Suction Line Strainer 1/4" or 3/8", 6 mm Europe
- 1 20' Roll of Suction/Discharge Tubing
1/4" or 3/8" White or UV Black OR 6 mm White Europe
- 1 Additional Pump Tube
- 2 Additional Latches
- 1 Mounting Bracket
- 1 Installation Manual

* Double head pumps include an additional set of the accessories listed above.



INSTALLATION - WARNINGS

ADDITIONAL SAFETY INSTRUCTIONS

Read all safety hazards before installing or servicing the pump. The pump is designed for installation and service by properly trained personnel.

Use all required personal protective equipment when working on or near a chemical metering pump.

Install the pump so that it is in compliance with all national and local plumbing and electrical codes.

Use the proper product to treat potable water systems. Use only chemicals listed or approved for use.

Install the pump to work in conjunction with pool, spa, well pump, or system controls.

Inspect tube frequently for leakage, deterioration, or wear. Schedule a regular pump tube maintenance change to prevent chemical damage to pump and/or spillage.

Mount pump vertically and use spill recovery to run chemical back to tank in the event of tube failure.

Pump is not recommended for installation in areas where leakage can cause personal injury or property damage.



INSTALLATION *CONTINUED*

MOUNT PUMP

Select a dry location (to avoid water intrusion and pump damage) above the solution tank. The best recommended location is above the solution tank in a vertical position with the pump head pointed downward and the spill recovery (see page 18) in place to reduce the risk and severity of damage.

To prevent pump damage in the event of a pump tube leak, never mount the pump vertically with the pump head up.

To avoid chemical damage from fumes, **DO NOT** mount pump directly over an open solution tank. Keep tank covered.

Avoid flooded suction or pump mounted lower than the solution container. Draw solution from the top of the tank. Pump can run dry without damage. If pump is installed with a flooded suction, a shut-off valve or other device must be provided to stop flow to pump during service.

1. Use the mounting bracket as a template to drill pilot holes in mounting location.

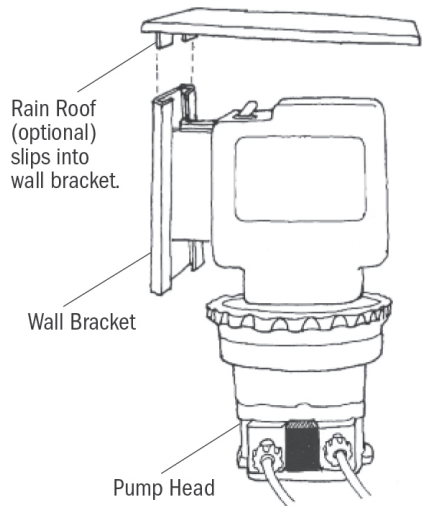
2. Secure bracket with fasteners or wall anchors. Slide pump into bracket.

Provide 8" clearance to allow pump orientation to be reversed during tube replacement. **DO NOT** allow water intrusion into the motor or corrosion and damage will occur.

To prevent motor damage, verify with a volt meter that the receptacle voltage corresponds with the pump voltage.

3. Plug cord into receptacle and turn the motor power switch on. If the pump is adjustable, turn the dial ring to 10.

4. Activate the pump by the pump control (flow switch, pressure switch, etc.) and verify rotation of the roller assembly within the clear pump head. Turn pump switch off.





INSTALLATION *CONTINUED*

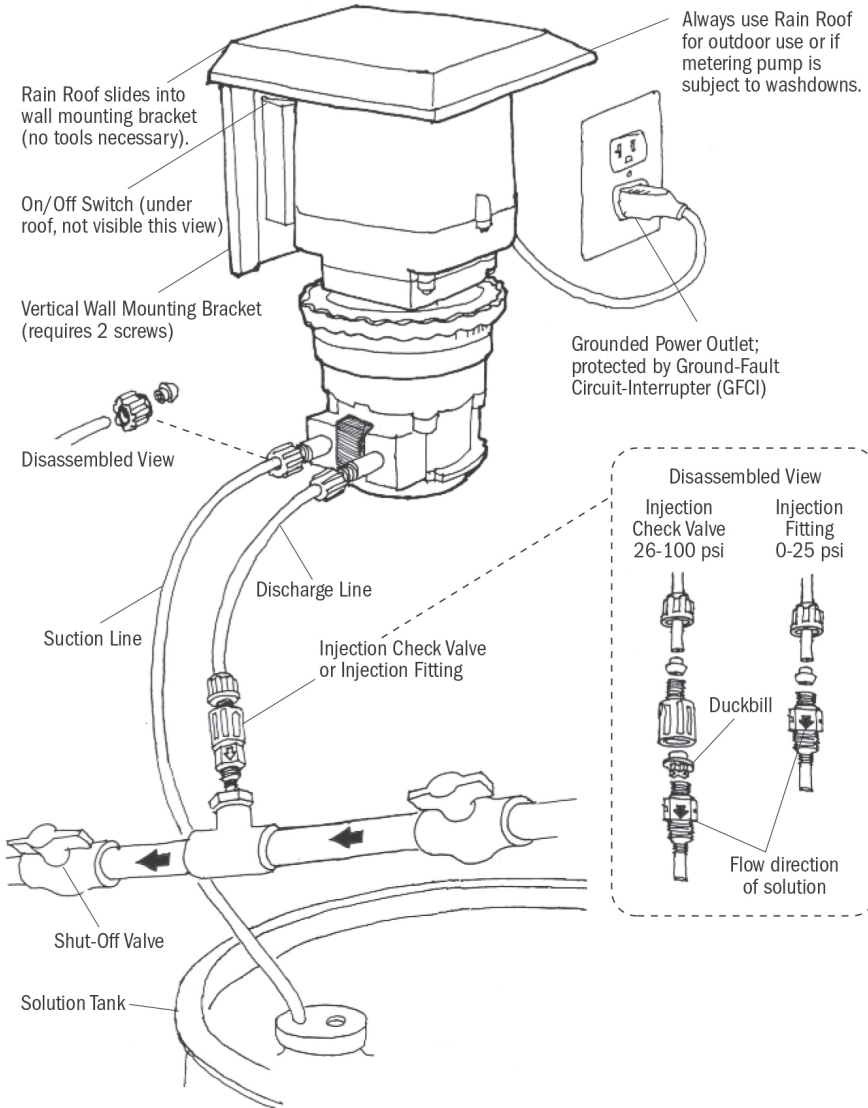
ADDITIONAL INSTRUCTIONS FOR CE PUMPS WHEN APPLICABLE

ADDITIONAL INSTALLATION INSTRUCTIONS

1. All Class II Pumps located in Zone 1 of swimming pool areas require locating where flooding cannot occur.
2. This pump is intended to be installed as "fixed" as opposed to portable.
3. The Rain Roof must be installed and "vertical orientation" mounting of entire unit observed.
4. After installation, the power supply plug must be accessible during use.
5. This unit must be scrapped if the supply cord is damaged.
6. Observe and comply with all National Wiring Standards.



INSTALLATION DIAGRAM



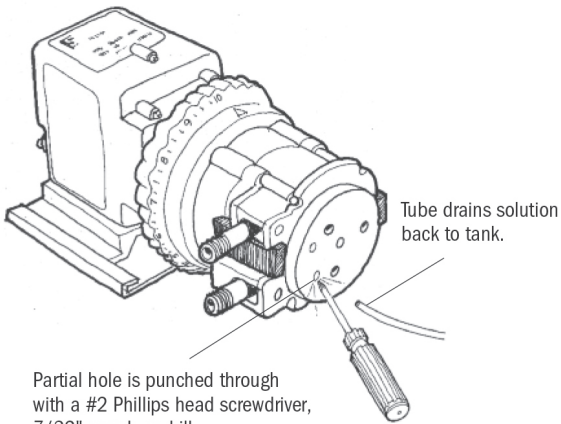


INSTALLATION *CONTINUED*

SPILL RECOVERY

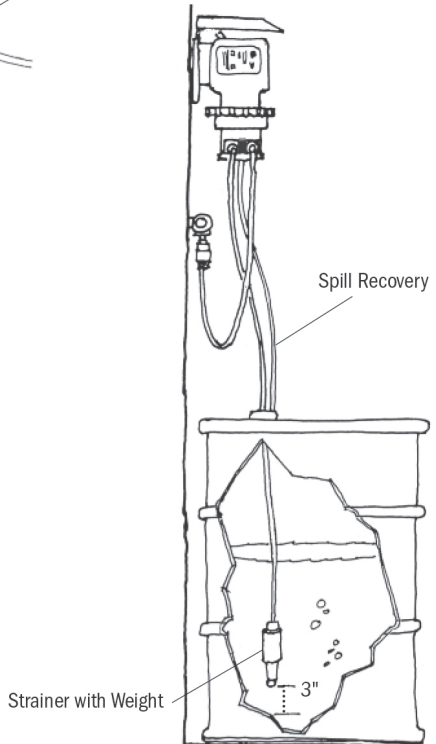
Mount the pump vertically and use the spill recovery to drain chemical back to the tank in the event of tube failure. This will help prevent chemical from collecting in the tube housing and reduces spillage on the floor.

The pump motor is ventilated and water intrusion can cause motor damage. A rain roof is recommended for outdoor and wet environments.



Partial hole is punched through with a #2 Phillips head screwdriver, 7/32" punch or drill.

Use section of 1/4" suction/discharge tubing and insert in hole.





INSTALLATION *CONTINUED*

INSTALL SUCTION LINE TO PUMP HEAD

1. Uncoil the suction/discharge tubing. Use outside of solution tank as a guide to cut proper length of suction line ensuring it will be 2-3" above the bottom of solution tank.

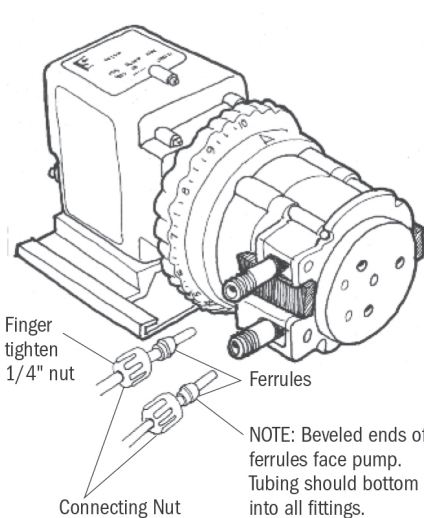
Allow sufficient slack to avoid kinks and stress cracks. Always make a clean square cut to assure that the suction line is burr free. Normal maintenance requires trimming.

Suction lines that extend to the bottom of the tank can result in debris pickup leading to clogged injectors and possible tube failure.

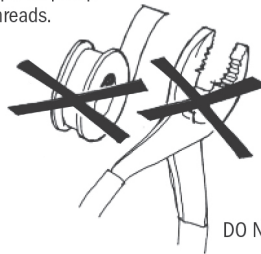
2. Make connections by sliding the line(s) through connecting nut* and ferrule and finger tighten to the corresponding tube fittings.
3. Finger tighten nut to the threaded tube fitting while holding the tube fitting.

Over tightening the ferrule and nut with a wrench may result in damaged fittings, crushed ferrules, and air pick up.

DO NOT use thread seal tape on pump tube connections or tools to tighten connections.



DO NOT use thread seal tape on pump tube threads.



DO NOT use pliers.

* For 3/8" connections only. While stabilizing the tube fitting, attach female end of adapter to the tube fitting(s) (ferrule inside). Slide line through 3/8" connecting nut and finger tighten to male end of adapter. If leak occurs, gradually tighten the 3/8" connecting nut as required.

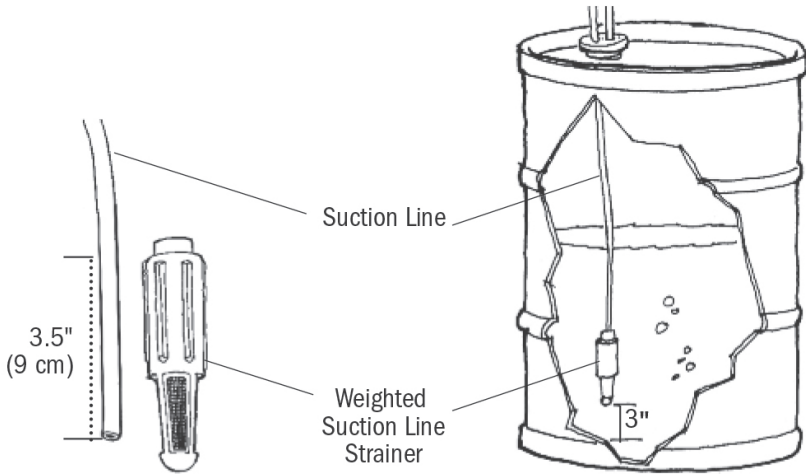
INSTALLATION *CONTINUED*

INSTALL SUCTION WEIGHT TO SUCTION LINE

1. Drill a hole into the bung cap or solution tank lid. Slide the tubing through and secure the weighted strainer to the line.
2. To attach the strainer, push approximately 3.5" of suction line through the cap on the strainer body. Pull tubing to make sure it is secure.
3. Suspend slightly above tank bottom to reduce the chance of sediment pickup.

DO NOT mix chemicals in the solution container. Follow recommended mixing procedures according to the manufacturer.

DO NOT operate pump unless chemical is completely in solution. Turn pump off when replenishing solution.





INSTALLATION *CONTINUED*

1. Make a secure finger tight connection on the discharge fitting of the pump head as instructed in Install Suction Line instructions.

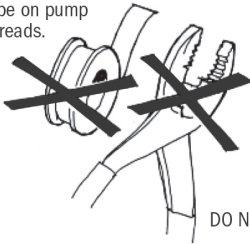
DO NOT use thread seal tape on pump tube connections or tools to tighten connections.

WARNING: HAZARDOUS PRESSURE: Shut off water or circulation system and bleed off any system pressure.

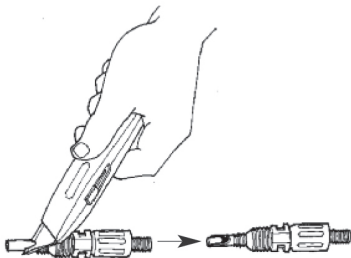
Locate a point of injection beyond all pumps and filters or as determined by the application.

2. A 1/4" or 1/2" Female NPT (FNPT) connection is required for installing the injection fitting. If there is no FNPT fitting available, provide one by either tapping the pipe or installing FNPT pipe tee fitting.
3. Wrap the Male NPT (MNPT) end of injection fitting with 2 or 3 turns of thread seal tape. If necessary, trim the injection fitting quill as required to inject product directly into flow of water.

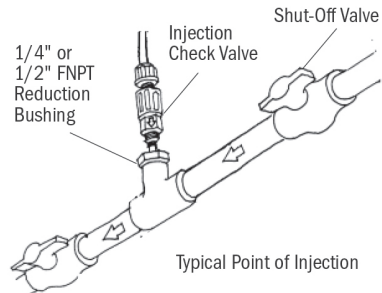
DO NOT use thread seal tape on pump tube threads.



DO NOT use pliers.



Trim Injection Fitting



Shut-Off Valve
Injection Check Valve
1/4" or 1/2" FNPT Reduction Bushing

Typical Point of Injection



INSTALLATION *CONTINUED*

4. Hand tighten the injection fitting into the FNPT fitting.

0-25 psi Model (includes injection fitting)

- a. Install connecting nut* and ferrule to the pump discharge line. Insert discharge line into injection fitting until it reaches base of fitting.
- b. Finger tighten connecting nut* to fitting.

26-100 psi Model (includes injection check valve)

- a. Prior to connection, test injection check valve and NPT threads for leaks by pressurizing system. If necessary, tighten an additional 1/4 turn.
- b. Install connecting nut* and ferrule to the pump discharge line. Insert discharge line into check valve body until it reaches base of body.
- c. Finger tighten connecting nut* to fitting.

5. Turn pump on and re-pressurize system. Observe chemical flow as actuated by system and check all connections for leaks.

6. After suitable amount of dosing time, perform tests for desired chemical readings (e.g., pH or ppm). If necessary, fine tune dosing levels by rotating dial ring (adjustable pumps only) or by adjusting solution strength.

The injection point and fitting require periodic maintenance to clean any deposits or buildup. To allow quick access to the point of injection, Crystal Quest recommends the installation of shut-off valves.

*For 3/8" connections, insert discharge line until it reaches base of injection fitting (25 psi) or check valve body (100 psi). If leak occurs, gradually tighten the 3/8" connecting nut as required.



TROUBLESHOOTING - MOTOR

WARNING: HAZARDOUS VOLTAGE

DISCONNECT power cord before removing motor cover for service. Electrical service should be performed by trained personnel only.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Loud or excessive noise	Worn ball bearings Insufficient lubrication Worn gears or gear posts	Replace rotor assembly Apply a reusable waterproof cover to gears and gear posts Inspect and/or replace gears and gear posts
Motor does not work; fan does not turn	Faulty electrical supply Rotor bound to coil Damaged motor coil Worn or damaged rotor bearings Damaged power cord Rotor rusted to coil Faulty wire connections Obstructed fan	Check supply voltage circuit Replace bearing brackets if cracked Replace motor coil Replace rotor assembly Inspect and/or replace power cord Clean off coil and rotor or replace Inspect and/or repair electrical connections Remove obstruction
Motor runs; fan turns, output shaft does not	Worn or damaged gears	Replace gears as needed
Motor overheats and shuts off and on	Incorrect voltage High ambient temperature Damaged/malfunctioning coil	Check voltage and frequency matches data label Pumps are rated at 125°F maximum Replace motor coil
Phenolic gear is stripping	Water intrusion Cracked bearing bracket Worn gear posts Rusted helical gear at end of rotor Worn gear case cover Insufficient lubrication	Use Rain Roof & replace phenolic gear Replace bearing bracket & phenolic gear Replace gear posts & phenolic gear Buff off rotor or replace rotor, replace phenolic gear Replace gear case Lubricate with a reusable waterproof cover



TROUBLESHOOTING - FEED RATE CONTROL

PROBLEM	POSSIBLE CAUSE	SOLUTION
Adjustment ring will not turn	Seized variable cam Seized adjustment ring	Apply a reusable waterproof cover to variable cam & cam slot Clean then lubricate ring with a reusable waterproof cover
Adjustment ring turns, output doesn't change	Variable cam disengaged from ring Broken variable cam	Re-insert 90° end into ring Replace variable cam
Pump head does not rotate	Worn index plate Motor problem Pump head roller assembly stripped Index pin holder loose Index pin broken	Turn over or replace index plate Refer to Motor section Replace roller assembly Tighten holder into spider assembly Replace index pin and lifter assembly
Pump head rotates continuously	Variable cam	Replace or re-insert variable cam
Erratic indexing	Index plate worn Variable cam worn Lifter worn	Turn over or replace index plate Replace variable cam Replace index pin & lifter assembly



TROUBLESHOOTING - PUMP HEAD

PROBLEM	POSSIBLE CAUSE	SOLUTION
Components cracking	Chemical attack	Check chemical compatibility
Pump head leaking	Pump tube rupture	Replace pump tube, ferrules; center tube
No pump output, pump head rotates	Depleted solution tank Pump suction line weight is above solution Leak in the suction line Ferrules installed incorrectly, missing or damaged Injection point is clogged Clogged suction and/or discharge line and/or injection check valve Life of pump tube exhausted Suction line is flush with the nose of the weighed strainer	Replenish solution Position suction line 3" above bottom of tank Inspect or replace suction line Replace ferrules Inspect and clean injection point Clean and/or replace as needed Replace pump tube, ferrules; center tube Pull suction line approximately 1" from bottom of strainer, cut bottom of suction tubing at an angle
Low pump output, pump head rotates	Life of pump tube exhausted Rollers worn or broken Injection point is restricted Incorrect tube size High system back pressure	Replace pump tube, ferrules; center tube Replace roller assembly Inspect and clean injection point Replace tube with correct size Verify system pressure against tube psi, replace tube if needed
No pump output, pump head doesn't rotate	Stripped roller assembly Feed rate control problem Motor problem	Replace roller assembly Refer to feed rate control section Refer to motor section
Pump output high	Incorrect tube size or setting Roller assembly broken Malfunctioning feed rate control Incorrect motor rpm	Replace tube with correct size or adjust settings. Replace roller assembly Refer to feed rate control section Replace with motor that matches pump model



TROUBLESHOOTING - PUMP TUBE

NOTICE: A leaking pump tube damages the metering pump. Inspect pump frequently for leakage and wear. Refer to Tube Replacement section for additional safety precautions and instructions.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Tube leaking	Pump tube ruptured Calcium or mineral deposits Excessive back pressure Tube is twisted Tube is not centered	Replace pump tube, ferrules; center tube Clean injection fitting, replace pump tube, ferrules; center tube Verify system pressure against tube psi, replace tube if needed Replace pump tube, ferrules; center tube Replace pump tube, ferrules; center tube
Tube life is shortened	Chemical attack Mineral deposits at injection point Sediment blockage at check valve Degraded check valve duckbill Duckbill in wrong orientation Seized rollers caused abrasion on tube Exposure to heat or sun	Check chemical compatibility Remove deposits, replace pump tube, ferrules; center tube Clean injection fitting, ensure suction line is 3" above tank bottom. Use suction line strainer. Replace duckbill at every tube change Reverse duckbill orientation Clean roller assembly or replace DO NOT store tubes in high temperatures or in direct sunlight
Tube connection is leaking	Missing ferrule on 1/4" or 6 mm line Crushed ferrule Ferrule in wrong orientation 3/8" nut loose Missing ferrule in 3/8" adapter	Replace ferrule Replace ferrule Reverse orientation of ferrule Secure adapter and tighten 3/8" nut as needed Replace with new adapter fitting or insert new ferrule into adapter



TUBE REPLACEMENT – SAFETY INFORMATION

WARNING: RISK OF CHEMICAL EXPOSURE

To reduce risk of exposure, check the pump tube regularly for leakage. At the first sign of leakage, replace the pump tube.

To reduce risk of exposure, the use of proper personal protective equipment is mandatory when working on or near chemical metering pumps.

To reduce risk of exposure, and also prior to service, shipping, or storage, pump generous amounts of water or a compatible buffer solution to remove chemical from pump.

Consult chemical manufacturer and MSDS sheet for additional information and precautions for the chemical in use.

Personnel should be skilled and trained in the proper safety and handling of the chemicals in use.

Inspect tube frequently for leakage, deterioration, or wear. Schedule a regular pump tube maintenance change to prevent chemical damage to pump and/or spillage.

CAUTION: PINCH POINT HAZARD

Use extreme caution when replacing pump tube. Be careful of your fingers and DO NOT place fingers near rollers.

WARNING: HAZARDOUS PRESSURE/CHEMICAL EXPOSURE

Use caution and bleed off all resident system pressure prior to attempting service or installation.

Use caution when disconnecting discharge line from pump. Discharge may be under pressure. Discharge line may contain chemical.

DO NOT apply grease, oil, or lubricants to the pump tube or housing.

Prior to pump tube replacement, inspect the entire pump head for cracks or damaged components. Ensure rollers turn freely.

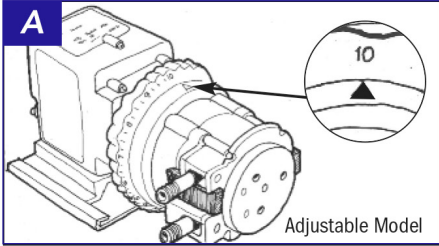
Rinse off chemical residue and clean all chemical and debris from pump head components prior to tube replacement. Apply a reusable waterproof cover to main shaft and tube housing cover bushing during tube replacement.

DO NOT pull excessively on pump tube. Avoid kinks or damage during tube installation.

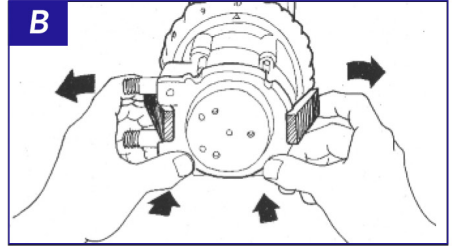
Inspect the suction and discharge lines, injection point (into pipe), and injection check valve duckbill for blockages after any tube rupture. Clear or replace as required.

TUBE REMOVAL – ILLUSTRATED BASIC STEPS

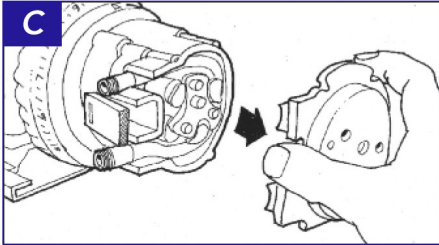
NOTICE: Refer to written instructions for complete steps.



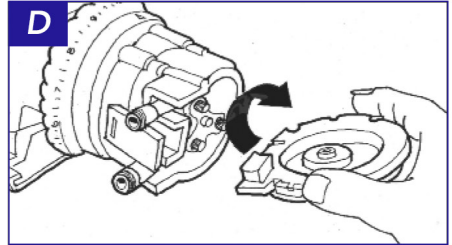
Adjustable model must be on setting 10



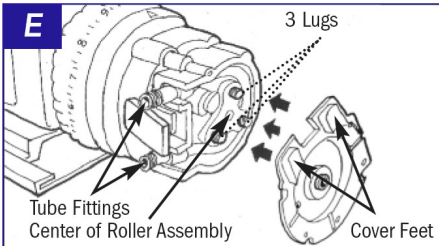
Open latches



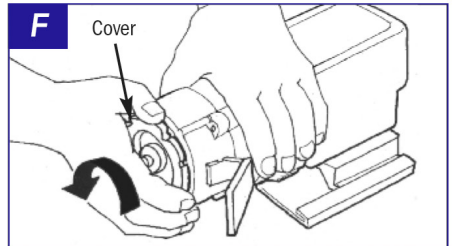
Remove cover



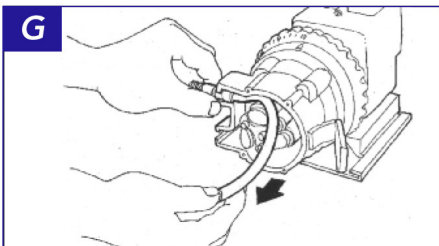
Invert cover



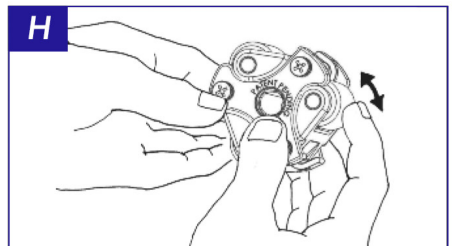
Align cover feet near tube fittings



Collapse roller assembly



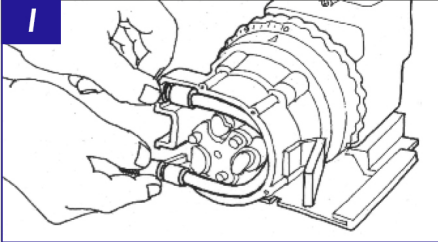
Remove tube



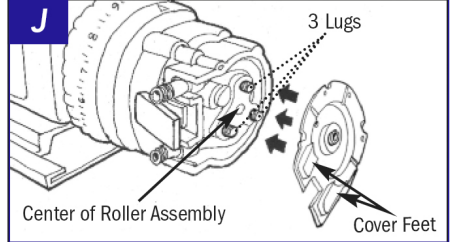
Check rollers

TUBE INSTALLATION & CENTERING – ILLUSTRATED BASIC STEPS

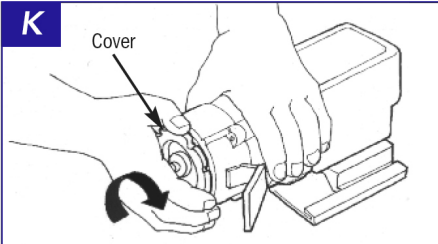
NOTICE: Refer to written instructions for complete steps.



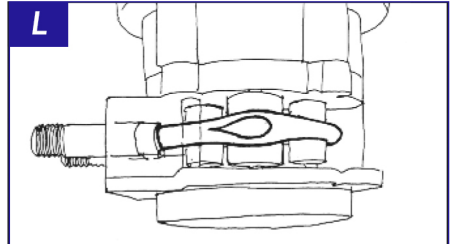
I Place new tube



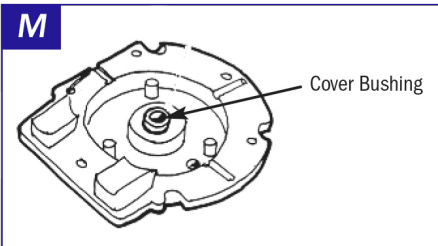
J Align cover feet near the bottom



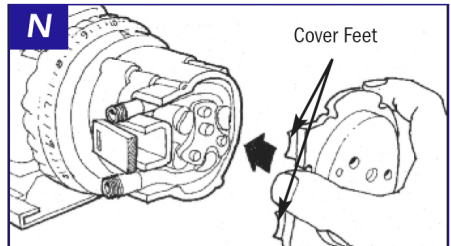
K Expand roller assembly



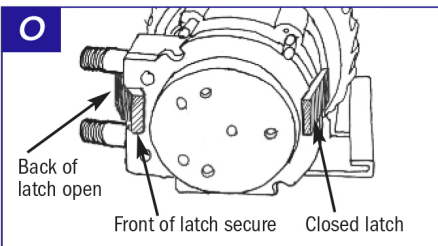
L Confirm roller assembly is expanded



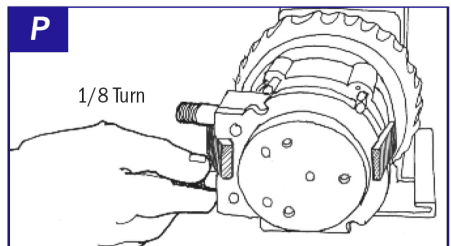
M Apply a reusable waterproof cast to cover bushing



N Install cover feet first



O Prepare to center tube



P Center tube



TUBE INSTALLATION & CENTERING – WRITTEN STEPS

Tube Replacement – Single Head (Adjustable & Fixed Output Pumps)

PREPARATION

1. Follow all safety precautions prior to tube replacement.
2. Prior to service, pump water or a compatible buffer solution through the pump and suction and discharge lines to remove chemical and avoid contact.

REMOVE THE PUMP TUBE

1. Turn the pump off and unplug the power cord. On the adjustable model, ensure that the feed rate control is set to 10. *Illustration A p27*
2. Depressurize and disconnect the suction and discharge lines.
3. Open the back and front of the latches on both sides of the head. Carefully fold latches back to prevent contact with the cover. *Illustration B p27*
For CE pump only: Remove the safety screw on cover.
4. Remove the tube housing cover and flip to use as a tool in the next step.
Illustration C & D p27
5. Align the center of the inverted cover with the center of the roller assembly so that the three holes on the face of the cover align with the three knurled lugs on the roller assembly. Position the cover feet near the tube fittings. *Illustration E p27*
NOTE: The roller assembly needs to be collapsed to remove the tube.
6. On the adjustable pump, hold the feed rate control securely. On the fixed output pump hold the pump securely. Use the tube housing cover as a wrench and quickly (snap) rotate the cover counter-clockwise to collapse the roller assembly. The tube will no longer be pressed against the tube housing wall. *Illustration F p27*
NOTE: Counter-clockwise is viewed from facing the head of the pump.
7. Remove and discard the pump tube. *Illustration G p27*
8. Remove the roller assembly, and the tube housing. On the adjustable pump also remove the shaft. Set them aside to reinstall later.
9. Use a non-citrus all-purpose cleaner to clean chemical residue from the tube housing, roller assembly and cover.
10. Check the housing, cover and roller assembly for cracks and replace if cracked.
11. Ensure the rollers turn freely. Replace the roller assembly if the rollers are seized or worn or if there is a reduction or lack of output from the pump.
Illustration H p27
12. Reinstall the clean tube housing. On an adjustable pump, also install the shaft into the feed rate control.
13. Apply a reusable waterproof cast to the shaft tip.
14. Install the roller assembly.



TUBE REPLACEMENT – SINGLE HEAD

Adjustable & Fixed Output Pumps

INSTALL THE PUMP TUBE AND EXPAND THE ROLLER ASSEMBLY

IMPORTANT! DO NOT LUBRICATE PUMP TUBE OR ROLLER ASSEMBLY.

1. Ensure the power to the pump is off and the power cord is unplugged. On the adjustable model, ensure that the feed rate control is set to 10. *Illustration A p27*
 2. Place the new tube in the pump head; use your fingers to center it over the rollers. *Illustration I p28*
 3. Place the tube housing cover on the tube housing, affix the front latches to the cover lip and then press the latches back to secure. Be sure the cover is seated with the sleeve bearing on the shaft and is flush with housing, before latching.
 4. With the cover latched, plug the pump in and turn the power on. Allow the pump to run the roller assembly in its collapsed position for approximately one minute to relax the tube.
 5. Turn the pump off and unplug the power cord.
 6. Remove the tube housing cover and flip to use as a tool in the next step. *Illustration C & D p27*
 7. Align the center of the inverted cover with the center of the roller assembly so that the three holes on the face of the cover align with the three knurled lugs on the roller assembly. Position the cover feet near the bottom. *Illustration J p28*
- NOTE:** The roller assembly needs to be expanded so the tube is pressed against the tube housing wall.



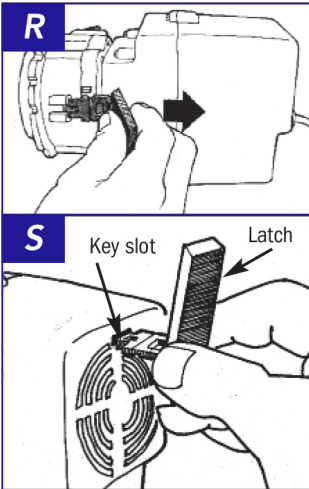
TUBE REPLACEMENT – SINGLE HEAD Adjustable & Fixed Output Pumps

8. Expand roller assembly.

Adjustable Model

- Hold the feed rate control securely, use the cover as a wrench and quickly (snap) rotate the roller assembly clockwise to expand the roller assembly. The tube will be pressed against the tube housing wall. *Illustration K & L p28* Proceed to step 9.
NOTE: Clockwise is viewed from facing the head of the pump.

Fixed Output Model (motor vent with key slot, manufactured after 04/29/11)



- a. Slide one latch out to remove it from the tube housing. Insert the latch end into the key slot in the vent in the rear of the motor housing. While pressing the latch into the rear of the motor, gently rotate the cover clockwise until it stops. *Illustration R & S*
- b. Holding the pump securely, use the cover as a wrench and quickly (snap) rotate the roller assembly clockwise to expand the roller assembly. The tube will be pressed against the tube housing wall. *Illustration K & L p28*
NOTE: Clockwise is viewed from facing the head of the pump.
- c. Remove the latch from the vent and re-attach it to the tube housing. Proceed to step 9.

9. Apply a small amount of a reusable waterproof cast to the cover bushing ONLY. DO NOT lubricate the pump tube. *Illustration M p28*

10. Place the tube housing cover (feet first) on the tube housing, affix the front of the latches to the cover lip and then press the latches back to secure. Be sure the cover is seated with the sleeve bearing on the shaft and is flush with the housing, before latching. *Illustration N p28*



TUBE REPLACEMENT – SINGLE HEAD

Adjustable & Fixed Output Pumps

CENTER THE TUBE

1. Ensure the pump is off. Lift the latch located between the tube fittings, leaving the end of the latch engaged with the lip on the tube housing cover. Leave the latch on the opposite side engaged. *Illustration O p28*
2. Plug the pump in and turn it on. Turn the tube fitting on the suction side not more than 1/8 of a turn in the direction the tube must move. *Illustration P p29*
3. DO NOT let go of the fitting until the tube rides approximately in center of the rollers.
4. Turn the pump off, let go of the fitting, and secure the latch between the fittings. *For CE pump only: Reinstall the safety screw on the cover.*
5. Inspect the suction and discharge lines, point of injection, and check valve duckbill for blockages. Clean and/or replace as required.
6. Reconnect the suction and discharge lines.
7. Turn the pump on and run for one minute for verify operation.



CLEANING THE POINT OF INJECTION – SAFETY INFORMATION

0-25 psi models are installed using an injection fitting and 26-100 psi models use an injection check valve. Both allow the extension tip to be installed in the center of the pipe directly in the flow of water to help reduce deposit accumulation.

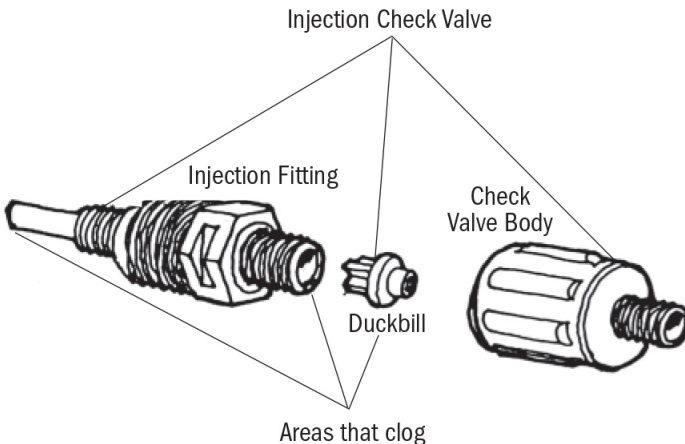
WARNING: Warns about hazards that CAN cause death, serious personal injury, or property damage if ignored.

WARNING: HAZARDOUS PRESSURE/CHEMICAL EXPOSURE

Use caution and bleed off all resident system pressure prior to attempting service or installation.

Use caution when disconnecting discharge line from pump. Discharge line may be under pressure. Discharge line may contain chemical.

To reduce risk of exposure, the use of proper personal protective equipment is mandatory when working on or near chemical metering pumps.



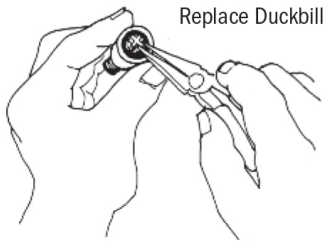


CLEANING THE POINT OF INJECTION *CONTINUED*

1. Turn metering pump off and unplug cord. Disable water pump or auxiliary equipment electrical supply.
2. Depressurize system and bleed pressure from pump discharge line.
3. Loosen and remove connecting nut and ferrule from the injection check valve or injection fitting to disconnect discharge tubing.

26-100 psi Model (includes injection check valve)

- Unscrew the top fitting (check valve body) to disassemble. The bottom fitting (injection fitting with arrow) should remain attached to the pipe.
 - Remove duckbill from check valve body and replace if deteriorated or swollen (replace duckbill with every tube change). If clogged, clean or replace (yearly replacement recommended).
 - Examine O-ring in the injection fitting and replace if deteriorated or damaged.
4. Insert a #2 Phillips head screwdriver through injection fitting into the pipe to locate or break up accumulated deposits. If screwdriver cannot be inserted, drill the deposit out of the injection fitting (DO NOT drill through the opposite pipe wall.)



Replace Duckbill



Clean out accumulated deposits with a #2 Phillips head screwdriver.

Periodic inspection and cleaning of the point of injection will maintain proper pump operation and provide maximum tube life.



CLEANING THE POINT OF INJECTION *CONTINUED*

5. Replace discharge line if cracked or deteriorated. If the end is clogged, cut off the calcified or blocked section of discharge line.

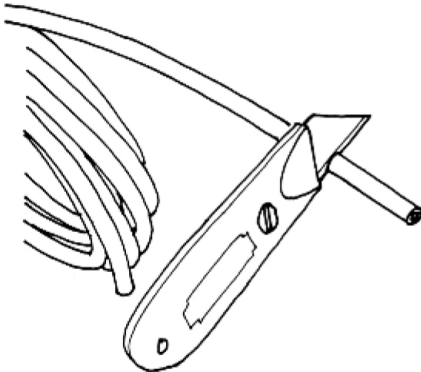
0-25 psi Model (includes injection fitting)

Replace ferrule and reinstall the discharge line to the injection fitting approximately 3/4"-1" until it stops.

26-100 psi Model (includes injection check valve)

- Reassemble the injection check valve in reverse order.
- Replace ferrule and reinstall the discharge line to the injection check valve approximately 3/4" until it stops.

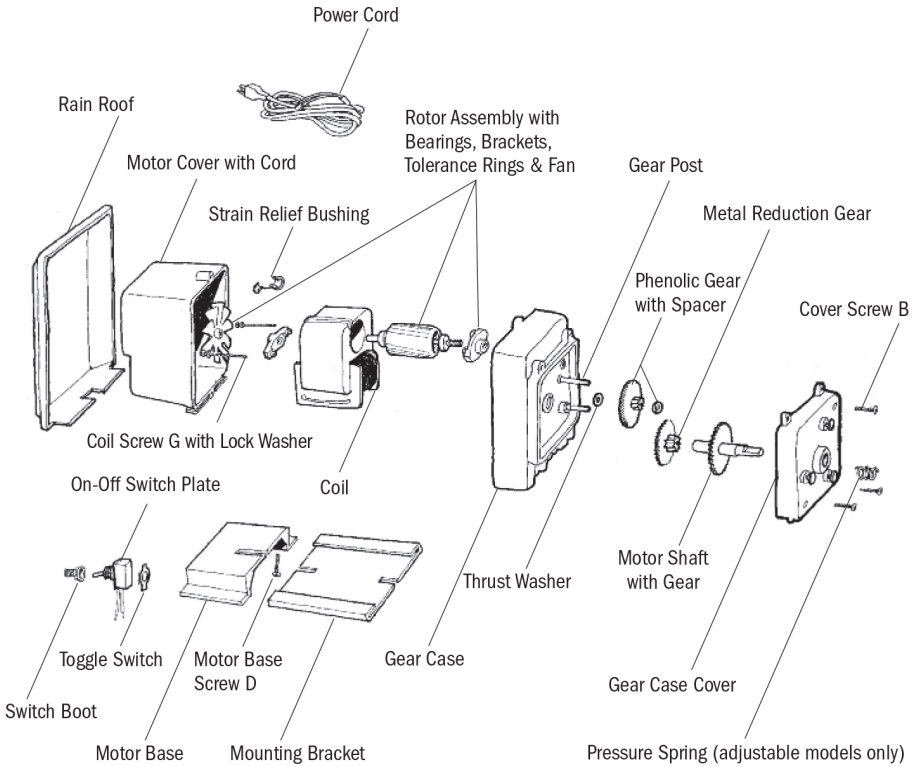
6. Tighten the connection nut finger tight.
7. Enable the water pump electrical supply and pressurize the water system.
8. Put the metering pump back in service and inspect all connections for leaks.



Cut off the calcified or blocked section.



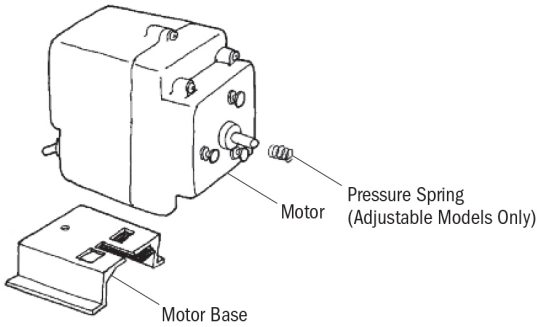
MOTOR EXPLODED VIEW



Contact factory for part numbers.



MOTOR – 60Hz

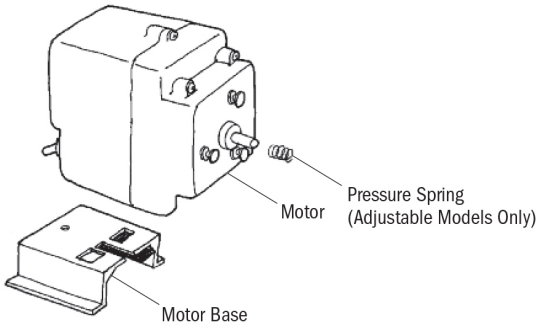


60Hz

	PART NUMBER	UM
For Adjustable Output 45 & 100 Series		
120V	PM6041D	EA
220V	PM6042D	EA
For Adjustable Output 85 & 170 Series		
120V	PM6081D	EA
220V	PM6082D	EA
For Fixed Output 45 Series		
120V	ME6041D	EA
220V	ME6042D	EA
For Fixed Output 85 Series		
120V	ME6081D	EA
220V	ME6082D	EA
For Fixed Output 100 Series		
120V	DM6041D	EA
220V	DM6042D	EA
For Fixed Output 170 Series		
120V	DM6081D	EA
220V	DM6082D	EA



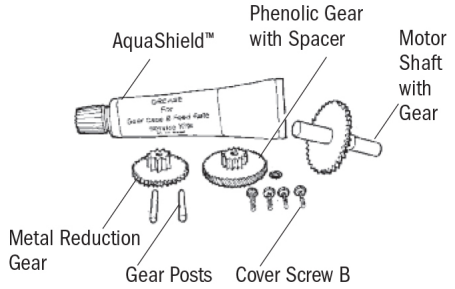
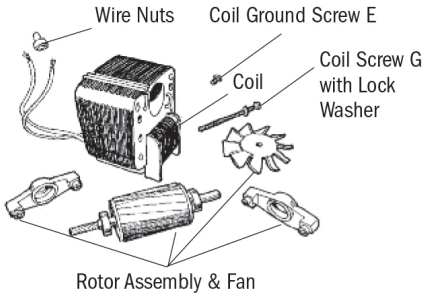
MOTOR – 50Hz *International*



50Hz *International*

	PART NUMBER	UM
For Adjustable Output 45 & 100 Series		
230V	PM64230	EA
250V	PM6426D	EA
For Adjustable Output 85 & 170 Series		
230V	PM68230	EA
250V	PM6826D	EA
For Fixed Output 45 Series		
230V	ME64230	EA
250V	ME6426D	EA
For Fixed Output 85 Series		
230V	ME68230	EA
250V	ME6826D	EA
For Fixed Output 100 Series		
230V	DM64230	EA
250V	DM64250	EA
For Fixed Output 170 Series		
230V	DM68230	EA
250V	DM68250	EA

MOTOR SERVICE KITS



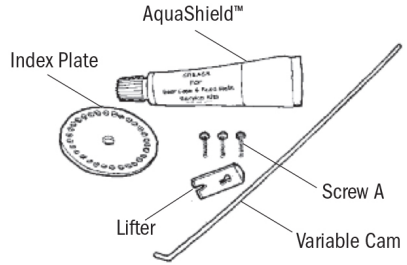
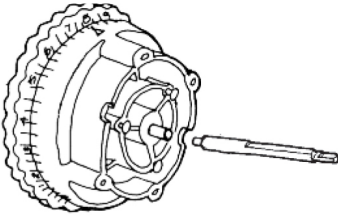
MOTOR SERVICE KITS

	PART NUMBER	UM
60Hz Kit		
120V	PM64230	EA
220V	PM6426D	EA

GEAR CASE SERVICE KITS

	PART NUMBER	UM
For Adjustable Output 45 & 100 Series	GSK45A	KIT
For Adjustable Output 85 & 170 Series	GSK85A	KIT
For Fixed Output 45 Series	GSK45F	KIT
For Fixed Output 85 Series	GSK85F	KIT

FEED RATE CONTROL AND SERVICE KIT



FEED RATE CONTROL WITH SHAFT

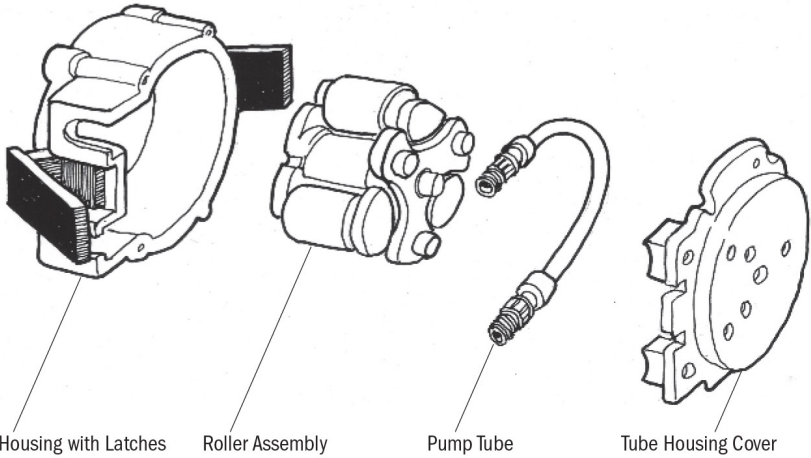
	PART NUMBER	UM
For Adjustable Output Single Head 45 & 85 Series	FC5040D	EA
For Fixed Output 45 Series 100 & 170 Series	DM5040D	EA
For Dual Head Dual Control 100MDC & 170MDC Series	DM504DC	EA

FEED RATE CONTROL SERVICE KIT

	PART NUMBER	UM
	FSK100	KIT



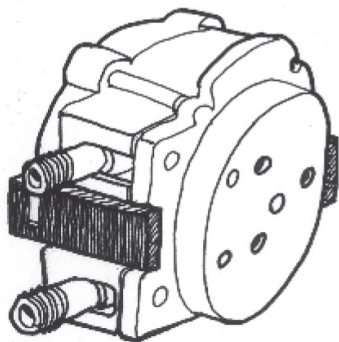
PUMP HEAD - EXPLODED VIEW



	PART NUMBER	UM
QP Tube housing with latches	QP400-1	EA
	QP400-2	2-PK
QP Latches	QP401-2	2-PK
QP Roller Assembly	QP500-1	EA
	QP500-4	4-PK
QP Roller Arm Assembly includes arms, bushings, rollers, screws	QP500-3	EA
QP Tube Housing Cover with Bushing 250V	QP100-1	EA
	QP100-4	4-PK



PUMP HEAD



Pump Tube* Pressure Rating

0-25 psi (0-1.7 bar): # 1, 2, 3, 4, 5
 26-100 psi (1.8-6.9 bar): # 1, 2, 7 check valve required

* Refer to output chart to match tube & pump model.

	PART NUMBER	UM
Includes Santoprene® pump tube, ferrules 1/4" select tube # 1, 2, 3, 4 or 5 for __	QP25__-1	EA
	QP25__-2	2-PK
Includes Santoprene® pump tube & duckbill, ferrules 1/4" select tube # 1, 2 or 7 for __ #7 is not for 100 & 170 series	QP10__-1	EA
Includes Versilon®** pump tube, ferrules 1/4" select tube # 1, 2, 3, 4 or 5 for __	QP25T__-1	EA
Includes Versilon®** pump tube, ferrules 1/4", Pellethane® duckbill select tube # 1 or 2 for __	QP10T__-1	EA

EUROPE

Includes Santoprene® pump tube, ferrules 6 mm select tube # 1, 2, 3, 4 or 5 for __	QP17__-1	EA
	QP17__-2	2-PK
Includes Santoprene® pump tube & duckbill, ferrules 6 mm select tube # 1, 2 or 7 for __ #7 is not for 100 & 170 series	QP69__-1	EA
Includes Versilon®** pump tube, ferrules 6 mm select tube # 1, 2, 3, 4 or 5 for __	QP17T__-1	EA
Includes Versilon®** pump tube, ferrules 6 mm, Pellethane® duckbill select tube # 1 or 2 for __	QP69T__-1	EA

** Versilon® tubes are application specific; confirm chemical compatibility with the chemical resistance guide in the catalog. In 26-100 psi (1.8-6.9 bar) applications with a Versilon® tube, a Pellethane® duckbill is in the check valve; both materials are clear.



PUMP HEAD SERVICE KITS – 0-25 PSI (0-1.7 BAR)



Roller Assembly



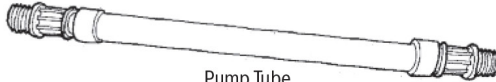
Latches



Ferrules 1/4" or 6 mm *Europe*



Connecting Nuts 1/4"



Pump Tube

FOR 0-25 PSI (0-1.7 BAR) PUMPS

	PART NUMBER	UM
Kit includes Santoprene® pump tube select tube # 1, 2, 3, 4 or 5 for __	QP25__K	KIT
Kit includes Versilon®** pump tube select tube # 1, 2, 3, 4 or 5 for __	QP25T__K	KIT

EUROPE

Kit includes Santoprene® pump tube, ferrules 6 mm select tube # 1, 2, 3, 4 or 5 for __	QP17__K	KIT
Kit includes Versilon®** pump tube, ferrules 6 mm select tube # 1, 2, 3, 4 or 5 for __	QP17T__K	KIT

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Pump Tube Pressure Rating**

0-25 psi (0-1.7 bar): # 1, 2, 3, 4, 5
26-100 psi (1.8-6.9 bar): # 1, 2, 7 check valve required

** Refer to output chart to match tube & pump model.



PUMP HEAD SERVICE KITS – 26-100 PSI (1.8-6.9 BAR)



Roller Assembly



Latches



Ferrules 1/4" or 6 mm Europe



Connecting Nuts 1/4"



Pump Tube



Duckbill

FOR 26-100 PSI (1.8-6.9 BAR) PUMPS

	PART NUMBER	UM
Kit includes Santoprene® pump tube & duckbill select tube # 1, 2 or 7 for __ #7 is not for 100 & 170 series	QP10__K	KIT
Kit includes Versilon®** pump tube & Pellethane® duckbill select tube # 1, or 2 for __	QP10T__K	KIT

EUROPE

Kit includes Santoprene® pump tube & duckbill & ferrules 6 mm select tube # 1, 2 or 7 for __ #7 is not for 100 & 170 series	QP69__K	KIT
Kit includes Versilon®** pump tube, Pellethane® duckbill, ferrules 6 mm select tube # 1, or 2 for __	QP69T__K	KIT

* Versilon® tubes are application specific; confirm chemical compatibility with the chemical resistance guide in the catalog. In 26-100 psi (1.8-6.9 bar) applications with a Versilon® tube, a Pellethane® duckbill is in the check valve; both materials are clear.

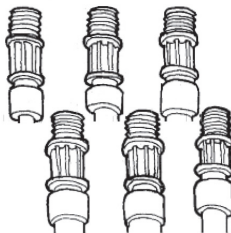
Pump Tube Pressure Rating**

0-25 psi (0-1.7 bar): # 1, 2, 3, 4, 5
26-100 psi (1.8-6.9 bar): # 1, 2, 7 check valve required

** Refer to output chart to match tube & pump model.



PUMP TUBES



Tube number located on fitting

Pump Tube* Pressure Rating

0-25 psi (0-1.7 bar): # 1, 2, 3, 4, 5
 26-100 psi (1.8-6.9 bar): # 1, 2, 7 check valve required

* Refer to output chart to match tube & pump model.

	PART NUMBER	UM
Santoprene® pump tube, ferrules 1/4" select tube # 1, 2, 3, 4, 5 or 7 for __ #7 is not for 100 & 170 series	UCCP20__ MCCP20__	2-PK 5-PK
Santoprene® pump tube & duckbills, ferrules 1/4" select tube # 1, 2 or 7 for __ #7 is not for 100 & 170 series	UCCP__FD	2-PK
Versilon® pump tube, ferrules 1/4" select tube # 1, 2, 3, 4 or 5 for __	UCTYG0__ MCTYG0__	2-PK 5-PK
Versilon® pump tube, ferrules 1/4" & Pellethane® duckbills select tube # 1 or 2 for __	UCTY__FD	2-PK

EUROPE

Santoprene® pump tube, ferrules 6 mm select tube # 1, 2, 3, 4, 5 or 7 for __ #7 is not for 100 & 170 series	UCCP2__CE MCCP2__CE	2-PK 5-PK
Santoprene® pump tube & duckbills, ferrules 6 mm select tube # 1, 2 or 7 for __ #7 is not for 100 & 170 series	UC__FDCE	2-PK
Versilon® pump tube, ferrules 6 mm select tube # 1, 2, 3, 4 or 5 for __	UCTY__CE MCTY__CE	2-PK 5-PK
Versilon® pump tube, ferrules 6 mm & Pellethane® duckbills select tube # 1 or 2 for __	UCTY__DCE	2-PK

** Versilon® tubes are application specific; confirm chemical compatibility with the chemical resistance guide in the catalog. In 26-100 psi (1.8-6.9 bar) applications with a Versilon® tube, a Pellethane® duckbill is in the check valve; both materials are clear.



CHECK VALVES

Injection Check Valve 1/4"



Injection Check Valve 3/8"



Injection Check Valve 6 mm



FOR 26-100 PSI (1.8-6.9 BAR) PUMPS

	PART NUMBER	UM
Includes Santoprene® duckbill, ferrule 1/4"	UCDBINJ MCDBINJ	EA 5-PK
Includes Santoprene® duckbill, ferrule 3/8"	UCINJ38 MCINJ38	EA 5-PK
Includes Pellethane®** duckbill, ferrule 1/4"	UCTYINJ MCTYINJ	EA 5-PK
Includes Pellethane®** duckbill, ferrule 3/8"	UCTYIJ38 MCTYIJ38	EA 5-PK
Includes FKM* duckbill, ferrule 1/4"	UCKMINJ MCKMINJ	EA 5-PK
Includes FKM* duckbill, ferrule 3/8"	UCKMI38 MCKMI38	EA 5-PK
Injection ball check valve 1/4"	BCV14TVH	EA

EUROPE

Includes Santoprene® duckbill, ferrule 6 mm	UCINJCE MCINJCE	EA 5-PK
Includes Pellethane®** duckbill, ferrule 6 mm	UCTINJCE MCTINJCE	EA 5-PK
Includes FKM* duckbill, ferrule 6 mm	UCKMJCE MCKMJCE	EA 5-PK

** Versilon® tubes are application specific; confirm chemical compatibility with the chemical resistance guide in the catalog. In 26-100 psi (1.8-6.9 bar) applications with a Versilon® tube, a Pellethane® duckbill is in the check valve; both materials are clear.



ONE-YEAR LIMITED WARRANTY

CRYSTAL QUEST® warrants your CRYSTAL QUEST® Chlorinator System for one year from the date of purchase against all defects in materials and workmanship when used in compliance with the manual. CRYSTAL QUEST® disclaims all implied warranties including, without limitation, warranties of merchantability and fitness for a particular purpose. If for any reason the product proves to be defective within one year from the date of purchase (90 days for filter cartridge), please call for assistance. This warranty gives you specific legal rights and you may have other legal rights which vary from state to state. CRYSTAL QUEST® assumes no responsibility for incidental or consequential damages, for damages arising out of misuse of the product, or the use of any unauthorized attachment. Some states do not allow the exclusion or limitation of implied warranties or incidental or consequential damages; therefore, the above limitations or exclusions may not apply to you. Should service be required during or after the warranty period or should you have any questions regarding how to use your CRYSTAL QUEST® Chlorinator System, contact our Technical Support Department at service@crystalquest.com, Monday through Friday, 9 A.M. to 5 P.M. Eastern Time.

KEEP THIS MANUAL FOR FUTURE REFERENCE AND UNIT MAINTENANCE

Online warranty information
<http://crystalquest.com/warranty.htm>

Product design is subject to change without notice.

For further assistance, contact your Crystal Quest dealer
or visit us at www.crystalquest.com

To view the latest edition of the Chlorinator System Guide, visit CrystalQuest.com

Please note all drawings, pictures, colors and sizes are approximate for illustrative purposes only and may not exactly resemble the end product.

FOR YOUR RECORDS

Model	
Serial Number	
Date of Installation	