

## CHEM-FEED<sup>®</sup> CFS

Single pump and dual pump systems

Strong, lightweight  
polyester powder coated  
welded aluminum structure

Efficient, small footprint design

Flow indicator

Drip containment tray

Stainless Steel mounting pads

Field replaceable components

Can be shipped via UPS



Single pump model number CFS-1AA-XAAA  
Shown with Flex-Pro pump sold separately



Dual pump model number CFS-2AA-XAAA  
Shown with Flex-Pro pump sold separately

Complete the system by ordering any of the following **ProSeries<sup>®</sup>** metering pumps:

- **Flex-Pro<sup>®</sup>** A2, A3 or A4 series Peristaltic Metering Pump with Integral Controller
- **Chem-Pro<sup>®</sup>** C2 or C3 series Diaphragm Metering Pump with Integral Controller

### Applications:

- Chemical metering
- Chlorination
- Fluoridation
- Potassium Permanganate
- Alum
- Sodium Bisulfite / Bisulfate
- Hydrochloric Acid
- Polymers
- Caustics
- Flocculants

### Chem-Feed Skid System Features:

**Chem-Feed Engineered Skid Systems** were designed and engineered using solid modeling tools for superior piping installation and easy component maintenance. Custom engineered universal mounting blocks and pre-machined mounting slots provide for easy component servicing and replacement. Lightweight for wall or floor mounting. Each factory built and tested system includes the following standard components:

**Pressure Relief Valve** - Protects the system from over-pressurization, 5-100 psi setting range, 150 psi maximum system pressure.

**Check Valve** - Protects the user from back-flow during pump maintenance.

**Flow Indicator** - Provides a visual indication of chemical movement through the system.

The following optional components are available for specification (see the ordering matrix):

**Inlet Y Strainer** - Recommended for Diaphragm Pump systems.

**Calibration Cylinder** - Confirm pump output under system conditions. Specify cylinder volumes from 1.6 GPH to 32 GPH.

**Pulsation Dampener** - Protect the system components from pulsation. Recommended for diaphragm pump systems.

**Pressure Gauge with Guard** - Isolate and protect the system pressure gauge. Specify pressure ranges from 0-30 psi, 0-100psi, or 0-200 psi.

**Chem-Sensor S6A** - Provides 4-20mA and pulse output data to SCADA and to the pump to verify chemical movement through the system - see S6A data sheet for more details.

**Specifications:****Skid**

Chemically resistant polyester powder coated 6061 T6 aluminum. Welded joint construction.

**Pump** (sold separately)

Flex-Pro model A3 or A4 peristaltic pumps or Chem-Pro model C2 or C3 diaphragm pump.

**Piping**

PVC Schedule 80 (optional CPVC).

**Tubing (T)**

Reinforced braided PVC, 200 Psi max, meets NSF std. 51. The pump inlet and outlet flexible tubing connections are terminated to half unions and secured to the barbed fitting with stainless steel clamps. The calibration cylinder fill

**Tubing clamps**

300 series SS band, 400 series SS screw

**Unions (U)**

PVC body, schedule 80, FKM seals

**Ball valves (V)**

Vented type ball, True unions, PVC body, PTFE shaft bearings and seats, FKM seals

**Pressure Relief Valve (PRV)**

PVC body, PTFE primary diaphragm seal. Non-wetted components: FKM secondary seal, zinc plated steel spring, stainless steel external hardware, HDPE pressure adjusting screw and locknut. Infinite adjustment from 5-100 psi. Maximum inlet pressure 150 psi.

**Calibration Cylinder (CC)**

PVC body, PVC end caps, 1/4" ID tubing outlet vent.

Available volumes: 1.6 GPH (100ml), 4 GPH (250ml), 8 GPH (500ml), 16 GPH (1000ml), 32 GPH (2000ml).

**Pulsation Dampener (PD)**

CPVC body, 10 cubic inch volume, FKM bladder (optional EPDM bladder)

**Gauge w/guard (G)**

Gauge: liquid filled stainless steel with blowout plug, bottom mount, 1/4" NPT threads. Available pressure ranges: 0-30 psi, 0-100, psi, 0-200 psi.

Guard: PVC body, FKM diaphragm seal, temperature compensated oil filled.

**Check Valve (CV)**

PVC body, FKM diaphragm (optional EPDM). Cracking pressure: 1.0-1.5 psi. Maximum working pressure: inlet = 150 psi, back = 100 psi.

**Flow Indicator (F)**

Machined cast acrylic, PVC connections, ceramic ball, polypropylene ball stop, PVC half unions, FKM seals (optional EPDM).

**Y Strainer (S)**

PVC body, FKM seals (optional EPDM).

**S6A Chemical Flowmeter (FVS)**

PVDF & PEEK body, PVC socket weld connections, FKM seals (optional EPDM). Available working flow ranges:

10-5,000 ml/min (0.158 - 79.2 GPH)

100-10,000 ml/min (1.58 - 158.0 GPH)

**Universal mounting blocks**

PVC

**Pump extended mounting brackets**

316 Stainless Steel

**Skid mounting foot / wall pads**

316 Stainless Steel

**Mounting hardware**

18-8 Stainless Steel

**Drip Tray**

Polypropylene, 16" x 21" x 3" - 4 gallons total containment

**Maximum working pressure**

125 psig (8.6 bar)

**Operating Temperature**

14°F to 115°F (-10°C to 46°C)

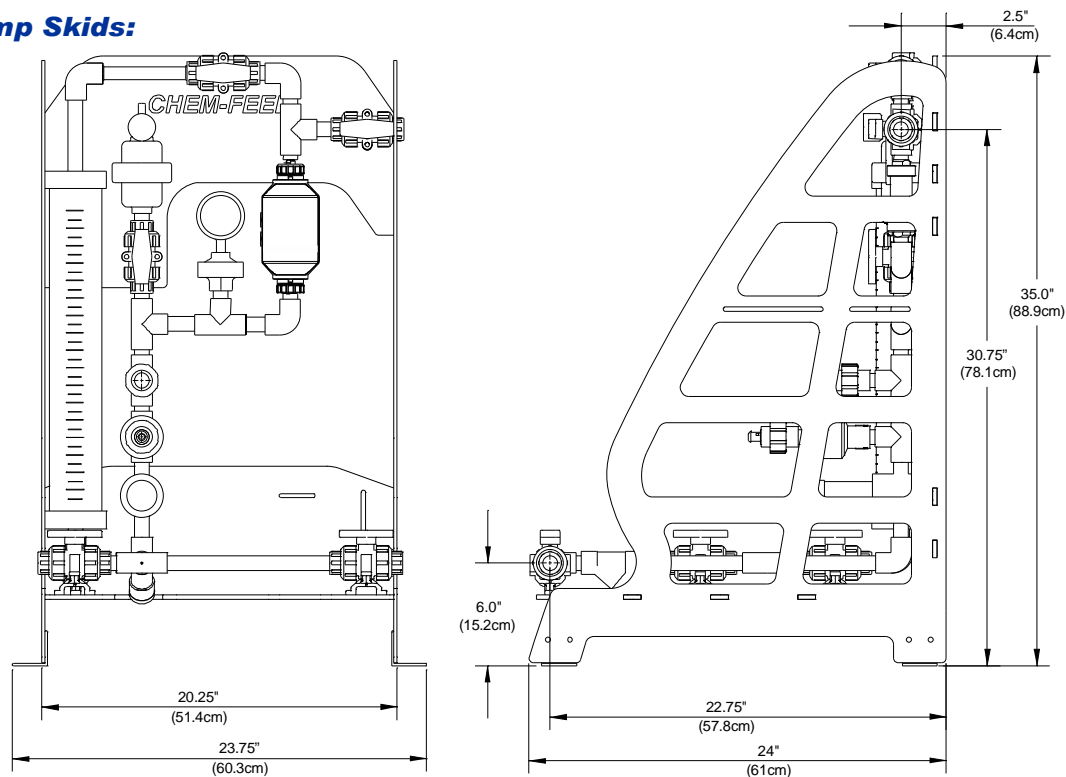
**Approximate Shipping Weight (pump ships separately)**

Single Pump System: 60 lb. (27.2 Kg)

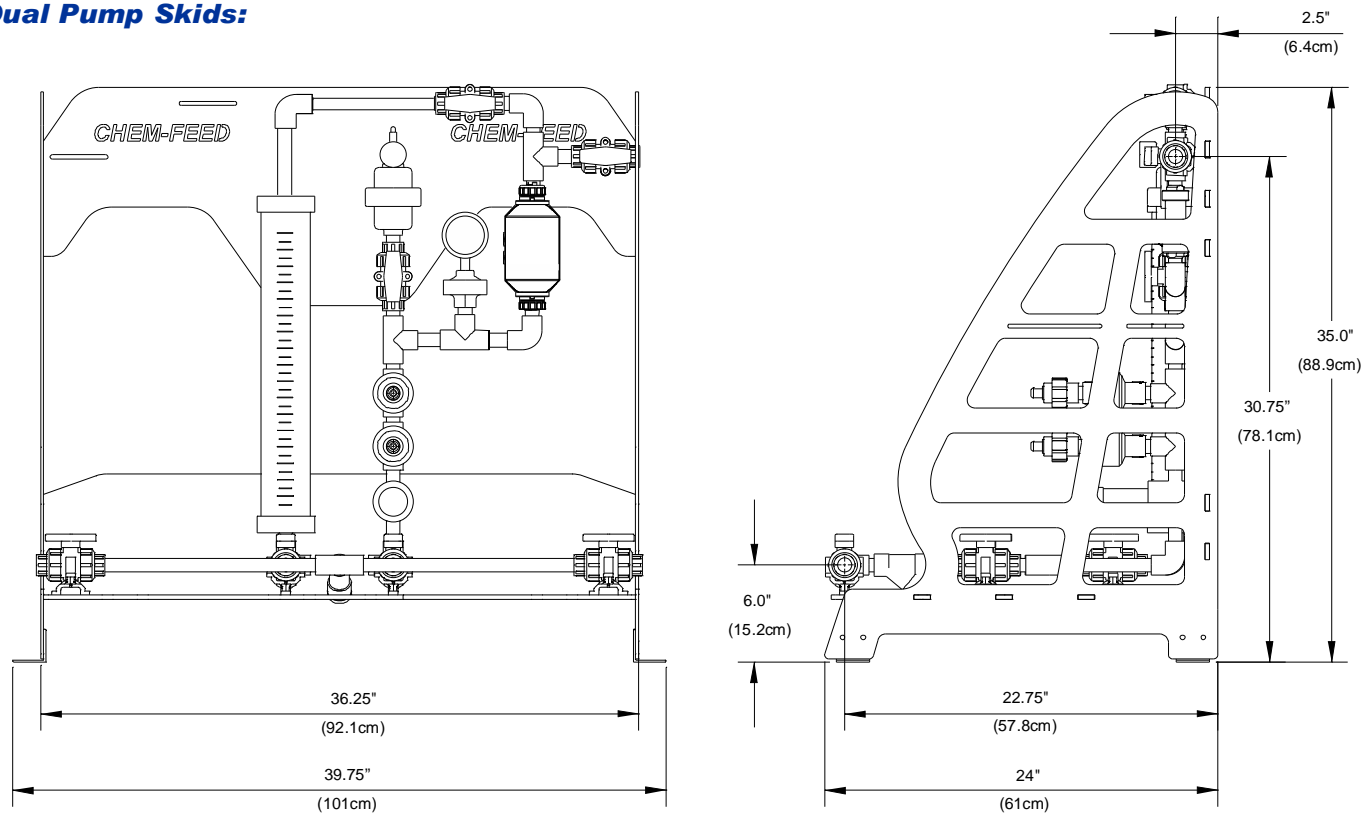
Dual Pump System: 70 lb. (31.8 Kg)

**Dimensions:**

**Single Pump Skids:**

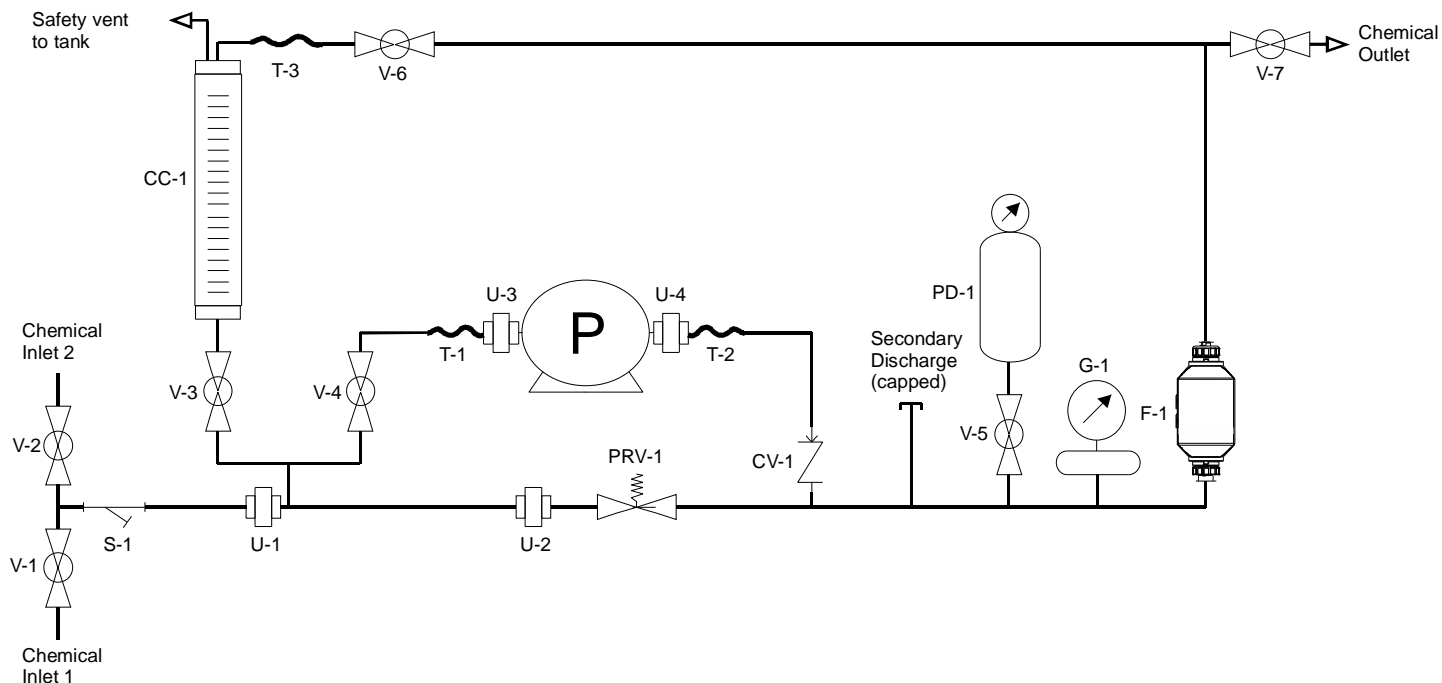


**Dual Pump Skids:**

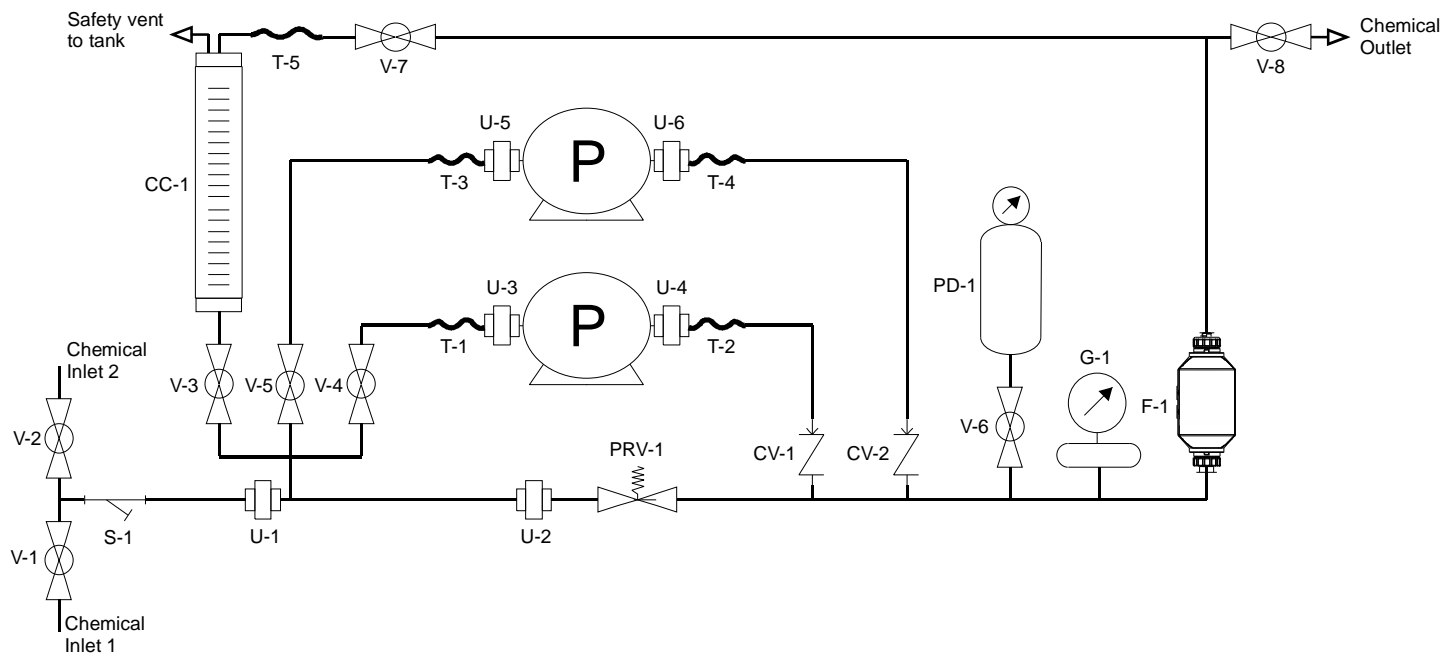


# Piping and Instrumentation Diagrams:

## Single Pump Skids:



## Dual Pump Skids:



**Suggested Model Variations** (see model number matrix below for additional variations):

### Suggested Models for Flex-Pro Peristaltic Pump Applications

| Number of Pumps | Piping & Seals | Inlet Strainer | Calibration Cylinder | Pressure Relief Valve | Pulsation Dampener | Pressure Gauge w/Guard | Check Valve | Chem-Feed Skid Model Number |
|-----------------|----------------|----------------|----------------------|-----------------------|--------------------|------------------------|-------------|-----------------------------|
| One             | PVC/FKM        | NO             | NO                   | YES                   | NO                 | NO                     | YES         | CFS-1AA-XXXX                |
| One             | PVC/EPDM       | NO             | NO                   | YES                   | NO                 | NO                     | YES         | CFS-1BA-XXXX                |
| Two             | PVC/FKM        | NO             | NO                   | YES                   | NO                 | NO                     | YES         | CFS-2AA-XXXX                |
| Two             | PVC/EPDM       | NO             | NO                   | YES                   | NO                 | NO                     | YES         | CFS-2BA-XXXX                |

### Suggested Models for Chem-Pro Diaphragm Pump Applications

| Number of Pumps | Piping & Seals | Inlet Strainer | Calibration Cylinder | Pressure Relief Valve | Pulsation Dampener | Pressure Gauge w/Guard | Check Valve | Chem-Feed Skid Model Number |
|-----------------|----------------|----------------|----------------------|-----------------------|--------------------|------------------------|-------------|-----------------------------|
| One             | PVC/FKM        | YES            | 32 GPH               | YES                   | YES                | 200 PSI                | YES         | CFS-1AA-XAAA                |
| One             | PVC/EPDM       | YES            | 32 GPH               | YES                   | YES                | 200 PSI                | YES         | CFS-1BA-XAAA                |
| Two             | PVC/FKM        | YES            | 32 GPH               | YES                   | YES                | 200 PSI                | YES         | CFS-2AA-XAAA                |
| Two             | PVC/EPDM       | YES            | 32 GPH               | YES                   | YES                | 200 PSI                | YES         | CFS-2BA-XAAA                |

### Model Number Matrix:

| Chem-Feed Engineered Skid System Matrix                |  |  |     |  |       |  |  |  |  |
|--|--|--|-----|--|-------|--|--|--|--|
| System type  |  |  |     |  |       |  |  |  |  |
| CFS-1  | Single pump system - single chemical / single outlet   |  |     |  |       |  |  |  |  |
| CFS-2  | Dual pump system - single chemical / single outlet   |  |     |  |       |  |  |  |  |
| Piping / Valves / Unions / Seal Materials              |  |  |     |  |       |  |  |  |  |
| A  | PVC piping, FKM seals, 3/4" OD PVC braided tubing connections                                      |  |     |  | E     | CPVC piping, FKM seals, 3/4" OD PVC braided tubing connections   |  |  |  |
| B  | PVC piping, EPDM seals, 3/4" OD PVC braided tubing connections                                     |  |     |  | F     | CPVC piping, EPDM seals, 3/4" OD PVC braided tubing connections  |  |  |  |
| C  | PVC piping, FKM seals, 3/8" OD Polyethylene tubing connections                                     |  |     |  | G     | CPVC piping, FKM seals, 3/8" OD Polyethylene tubing connections  |  |  |  |
| D  | PVC piping, EPDM seals, 3/8" OD Polyethylene tubing connections                                    |  |     |  | H     | CPVC piping, EPDM seals, 3/8" OD Polyethylene tubing connections |  |  |  |
| X  | Skid Frame only without piping   |  |     |  |       |  |  |  |  |
| Structure Assembly Materials                           |  |  |     |  |       |  |  |  |  |
| A  | Chemical resistant powder coated aluminum stand with 316SS mounting pads                           |  |     |  |       |  |  |  |  |
| Chemical Feed Flowmeter                                |  |  |     |  |       |  |  |  |  |
| E  | Model S6A12 Chemical Feed Flowmeter with meter mount display, 10-5,000 ml/min (0.158 - 79.2 GPH)   |  |     |  |       |  |  |  |  |
| F  | Model S6A22 Chemical Feed Flowmeter with meter mount display, 100-10,000 ml/min (1.58 - 158.0 GPH) |  |     |  |       |  |  |  |  |
| 5  | Model S6A11 Chemical Feed Flowmeter with remote display, 10-5,000 ml/min (0.158 - 79.2 GPH)        |  |     |  |       |  |  |  |  |
| 6  | Model S6A21 Chemical Feed Flowmeter with remote display, 100-10,000 ml/min (1.58 - 158.0 GPH)      |  |     |  |       |  |  |  |  |
| X  | None   |  |     |  |       |  |  |  |  |
| Calibration Cylinder                                   |  |  | PVC |  | Glass |  |  |  |  |
| 1.6 GPH (100 ml)                                       |  |  | E   |  | S     |  |  |  |  |
| 4 GPH (250 ml)   |  |  | D   |  | R     |  |  |  |  |
| 8 GPH (500 ml)   |  |  | C   |  | Q     |  |  |  |  |
| 16 GPH (1000 ml)                                       |  |  | B   |  | P     |  |  |  |  |
| 32 GPH (2000 ml)                                       |  |  | A   |  |       |  |  |  |  |
| X  | None   |  |     |  |       |  |  |  |  |
| Pulsation Dampener                                     |  |  |     |  |       |  |  |  |  |
| A  | 10 cubic inch, CPVC body, PTFE diaphragm   |  |     |  |       |  |  |  |  |
| X  | None   |  |     |  |       |  |  |  |  |
| Pressure Gauge w/Guard                                 |  |  |     |  |       |  |  |  |  |
| A  | 200 PSI gauge, PTFE diaphragm  |  |     |  |       |  |  |  |  |
| B  | 100 PSI gauge, PTFE diaphragm  |  |     |  |       |  |  |  |  |
| C  | 30 PSI gauge, PTFE diaphragm   |  |     |  |       |  |  |  |  |
| X  | None   |  |     |  |       |  |  |  |  |
| Miscellaneous Options - (leave blank if not specified) |  |  |     |  |       |  |  |  |  |
| A  | Isolation ball shut-off valves at check valves   |  |     |  |       |  |  |  |  |
| R  | Outlet plumbing and calibration column position switched (Only available on the dual skid)         |  |     |  |       |  |  |  |  |
| 1  | Install a specific pump model on the skid and perform pressure and fluid testing                   |  |     |  |       |  |  |  |  |
| 2  | Install two specific pump models on the skid and perform pressure and fluid testing                |  |     |  |       |  |  |  |  |

**Note:**  
All skid systems ship with the following in/out union connections:

- ½" PVC female NPT
- ½" PVC slip glue

|       |   |   |   |   |   |   |   |   |   |   |
|-------|---|---|---|---|---|---|---|---|---|---|
| CFS-1 | A | A | - | E | A | X | B | - | A | Sample Chem-Feed Engineered Skid System Part Number |
|-------|---|---|---|---|---|---|---|---|---|---|

#### Note:

All skid systems ship with the following in/out union connections:

- ½" PVC female NPT
- ½" PVC slip glue

**ProSeries® Pumps:**

| ProSeries Pump Features (see the specific technical data sheets for additional pump features)                 | Flex-Pro Peristaltic | Chem-Pro Diaphragm |
|---|----------------------|--------------------|
| Valveless peristaltic technology self primes against maximum back pressure. Cannot Vapor lock. Linear output. | •                    |                    |
| Diaphragm technology for system pressures to 175 PSI. PVDF/Ceramic/TFEP head resists most chemicals.          |                      | •                  |
| SCADA Input: Remote speed control via 4-20mA, 0-10VDC, high speed digital pulse, contact closure pulse        | •                    | •                  |
| SCADA Input: One, contact closure (remote start / stop)   | •                    |                    |
| Remote/Local control lockout settings   | •                    |                    |
| SCADA Output: One, high switching current alarm relay   | •                    | •                  |
| SCADA Output: Three, dry contact or maximum 30VDC/115VAC 1 amp contact closures                               | •                    |                    |
| SCADA Output: Programmable 4-20mA signal or high speed pulse, proportional to pump output                     | •                    | •                  |
| TFD (Tube Failure Detection) or DFD (Tube Failure Detection) System Alarm                                     | •                    | •                  |
| FVS (Flow Verification System) Alarm *  | •                    | •                  |
| NEMA 4X (IP66) wash-down rating   | •                    | •                  |
| Variable speed motor  | •                    | •                  |
| Variable speed brush-less DC motor  | •                    |                    |

**Chem-Pro® Diaphragm Pump Models:**

 See additional pump models and more information at [www.blue-white.com](http://www.blue-white.com)

| Feed Rate Operating Range |            |              | Maximum Pressure | Maximum Speed      | Pumphead Materials     | Chem-Pro Model Numbers |           |
|---------------------------|------------|--------------|------------------|--------------------|------------------------|------------------------|-----------|
| GPH                       | LPH        | ML/Min       | PSI (bar)        | Strokes per Minute |                        | 115V AC                | 230V AC   |
| .07 - 7.1                 | .31 - 31   | 5.20 - 520   | 175 (12.0)       | 166                | PVDF/PTFE/Ceramic/TFEP | C2V243XVA              | C2V253XVA |
| .13 - 12.7                | .45 - 45   | 7.50 - 750   | 175 (12.0)       | 166                | PVDF/PTFE/Ceramic/TFEP | C2V241XVA              | C2V251XVA |
| .20 - 20.3                | .78 - 78   | 13.0 - 1300  | 175 (12.0)       | 166                | PVDF/PTFE/Ceramic/TFEP | C2V242XVA              | C2V252XVA |
| .42 - 42.0                | 1.53 - 153 | 25.50 - 2550 | 100 (6.8)        | 130                | PVDF/PTFE/Ceramic/TFEP | C3V242XVA              | C3V252XVA |

**Flex-Pro® Peristaltic Pump Models:**

 See additional pump models and more information at [www.blue-white.com](http://www.blue-white.com)

| Feed Rate Operating Range |              |             | Pump Tube Material | Maximum Pressure | Maximum Speed | Flex-Pro Model Numbers |            |
|---------------------------|--------------|-------------|--------------------|------------------|---------------|------------------------|------------|
| GPH                       | LPH          | ML/Min      |                    | PSI (bar)        | RPM           | 115V AC                | 230V AC    |
| .001 - 2.10               | .003 - 7.80  | .05 - 132   | Flex-A-Prene®      | 125 (8.6)        | 125           | A3V24-MND              | A3V25-MND  |
| .007 - 17.4               | .026 - 66.0  | .4 - 1097   | Flex-A-Prene®      | 125 (8.6)        | 125           | A3V24-MNH              | A3V25-MNH  |
| .013 - 33.3               | .050 - 126   | .8 - 2100   | Flex-A-Prene®      | 125 (8.6)        | 125           | A3V24-MNK              | A3V25-MNK  |
| .02 - 50.7                | .08 - 192    | 1.3 - 3200  | Flex-A-Prene®      | 80 (5.5)         | 125           | A4V24-MNK              | A4V25-MNK  |
| .04 - 100.0               | .15 - 378    | 2.5 - 6300  | Flex-A-Prene®      | 50 (3.4)         | 125           | A4V24-MNL              | A4V25-MNL  |
| .06 - 158.5               | .24 - 600    | 4.0 - 10000 | Flex-A-Prene®      | 30 (2.1)         | 125           | A4V24-MNP              | A4V25-MNP  |
| .006 - 15.06              | .023 - 57.0  | .38 - 950   | Flex-A-Chem®       | 50 (3.4)         | 125           | A3V24-MTH              | A3V25-MTH  |
| .014 - 35.1               | .053 - 133.2 | .8 - 2220   | Flex-A-Chem®       | 50 (3.4)         | 125           | A3V24-MTK              | A3V25-MTK  |
| .02 - 42.8                | .06 - 162    | 1.1 - 2700  | Flex-A-Chem®       | 30 (201)         | 125           | A4V24-MTK              | A4V25-MTK  |
| .002 - 4.60               | .007 - 17.4  | .1 - 290    | Flex-A-Thane®      | 65 (4.5)         | 125           | A3V24-MGE              | A3V25-MGE  |
| .004 - 10.1               | .015 - 38.4  | .3 - 637    | Flex-A-Thane®      | 65 (4.5)         | 125           | A3V24-MGG              | A3V25-MGG  |
| .011 - 28.5               | .043 - 108   | .7 - 1800   | Flex-A-Thane®      | 65 (4.5)         | 125           | A3V24-MGK              | A3V25-MGK  |
| .022 - 55.5               | .084 - 210   | 1.4 - 3500  | Flex-A-Thane®      | 65 (4.5)         | 125           | A4V24-MGK              | A4V25-MGK  |
| .04 - 100.0               | .15 - 378    | 2.5 - 6300  | Flex-A-Thane®      | 65 (4.5)         | 125           | A4V24-MGKK             | A4V25-MGKK |

**Tubing chemical resistance data**
**Flex-A-Prene® Tubing Meets FDA criteria for food | Excellent chemical resistance**

|                    |                                 |                       |                     |                           |
|--------------------|---------------------------------|-----------------------|---------------------|---------------------------|
| Alcohol general    | Calcium hypochlorite 20%        | Formic acid           | Lactic acid         | Sodium hydroxide 50%      |
| Aluminum sulfate   | Ethylene glycol                 | Glucose               | Magnesium chloride  | Sodium Bisulfite          |
| Ammonium chloride  | Ferric chloride                 | Hydrochloric acid 33% | Magnesium sulfate   | Sodium Hypochlorite 12.5% |
| Ammonium hydroxide | Ferric nitrate                  | Hydrocyanic acid      | Phosphoric acid     | Sodium sulfide            |
| Benzyl alcohol     | Ferric sulfate                  | Hydrogen peroxide     | Plating solutions   | Sulfuric acid up to 50%   |
| Bleach             | Ferrous chloride - 43% in water | Hypochlorous acid     | Potassium hydroxide | Tannic acid               |
| Brine solutions    | Ferrous sulfate                 | Iodine                | Propylene glycol    |                           |

**Flex-A-Chem® Tubing - Ultra smooth plasticizer-free bore (inner liner) Meets FDA criteria for food | Superior chemical resistance**

|                              |                               |                                    |         |                  |
|------------------------------|-------------------------------|------------------------------------|---------|------------------|
| Ferrous Chloride (up to 40%) | Hydrofluoric Acid (up to 48%) | Potassium Hypochlorite (up to 70%) | Bases   | Alcohols         |
| Fluoboric Acid (up to 48%)   | Nitric Acid (up to 71%)       | Sodium Phosphate (up to 30%)       | Salts   | Isobutyl Alcohol |
| Fluosilicic Acid (up to 25%) | Phosphoric Acid (up to 85%)   | Sulfuric Acid (up to 98%)          | Ketones |                  |

**Flex-A-Thane® Tubing Meets FDA criteria for food | Resistant to oils, greases and fuels**

|             |          |                 |                         |             |
|-------------|----------|-----------------|-------------------------|-------------|
| Cyclohexane | Heptane  | Mineral spirits | ASTM reference No.1,2,3 | Oils:       |
| Diesel Fuel | Hexane   | Soap solutions  | Castor                  | Linseed     |
| Fatty acids | Kerosene | Turpentine      | Coconut                 | Lubricating |
| Gasoline    | Lard     | Oils:           | Fuel                    | Mineral     |

Note: Data shown at 72 degrees F.