Blue-White®

Operating Manual

CHEM-FEED®

Municipal Skid Systems

Series CFS®

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1.0 Introduction

Congratulations on purchasing the Chem-Feed® Engineered Skid System. The system is designed with the necessary components to safely inject liquid chemical into a system.

Your Chem-Feed® Engineered Skid System is pre-configured based on your selections via the matrix or when designed with our engineering staff.

Please Note: Your new Chem-Feed® System has been pressure tested at the factory with clean water for a minimum of four hours before shipping. You may notice trace amounts of clean water in the system. This is part of our stringent quality assurance program at Blue-White Industries.

2.0 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. 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. Ships on all systems.
- **Check Valve -** Protects the user from back-flow during pump maintenance. Ships on all systems.
- **Flow Verification Sensor -** S6A accurately verifies chemical feed. Exclusive to Blue-White®.
- **Inlet Y Strainer -** Protects system components from damage cause by dirt or debris.
- **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. Not recommended for peristaltic pump systems.
- **Pressure Gage with Guard -** Isolate and protect the system pressure gage. Specify pressure ranges from 0-100psi, or 0-200 psi.
- **Mounting Pads -** Stainless Steel mounting pads to secure Chem-Feed® System to a solid surface. Designed for floor mount or wall mount.
- **Corrosion Resistant -** Chem-Feed® frame constructed of chemically resistant polyester powder coated 6061 T6 aluminum. Welded joint construction.

3.0 Specifications

Items listed below are standard available items and ship with most configurations. Your system may be customized with components not listed below.

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

Pump (sold separately)
FLEXFLO model M1, M2, M3 or M4 peristaltic pumps or CHEM-FEED model Md1, MD3, MC-2, or MC-3 diaphragm pump.

Piping
PVC Schedule 80 (optional CPVC).

Tubing (T)
Reinforced braided PVC, 200 Psi max, certified NSF 1 / NSF 61. 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 ball type, 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 theads. 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).

Universal mounting blocks
PVC

Pump extended mounting brackets
316 Stainless Steel

Skid mounting foot pads
316 Stainless Steel

Mounting hardware
18-8 Stainless Steel

Drip Tray
Polypropylene

Maximum working pressure
150 psig (10.3 bar)

Operating Temperature
14°F to 115°F (-10°C to 46°C)

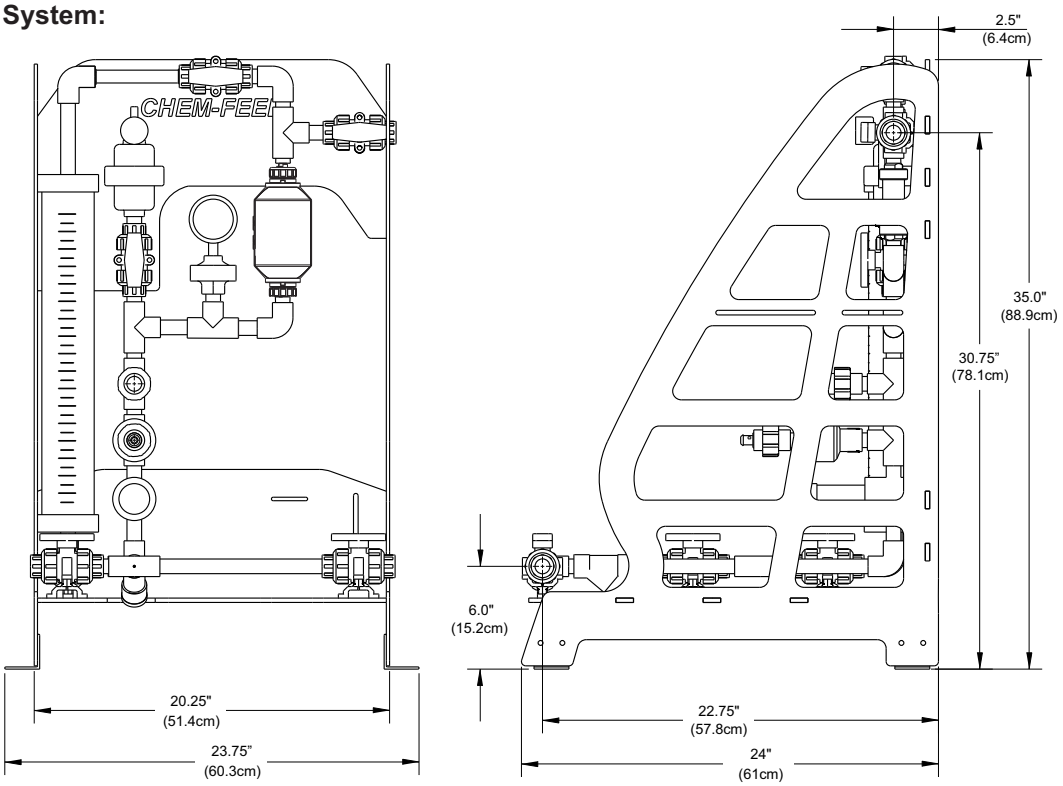
Drip Tray
16" x 21" x 3" - 4 gallons total containment

Approximate Shipping Weight
Single Pump System: 50 lb. (22.7 Kg)
Dual Pump System: 60 lb. (27.2 Kg)

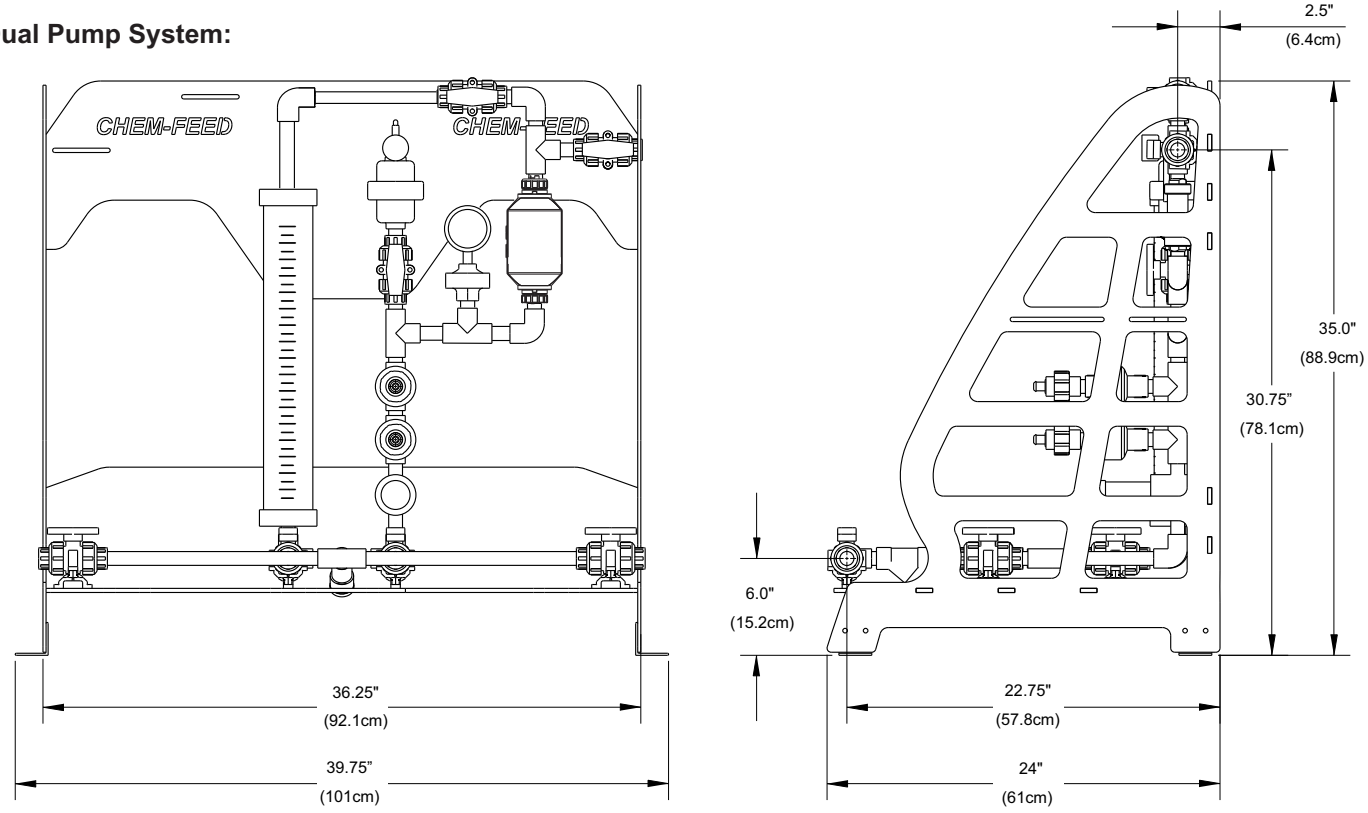
4.0 Dimensions

Your Chem-Feed System may be designed differently from drawings below. However, the dimensions shown below remain the same no matter your configuration.

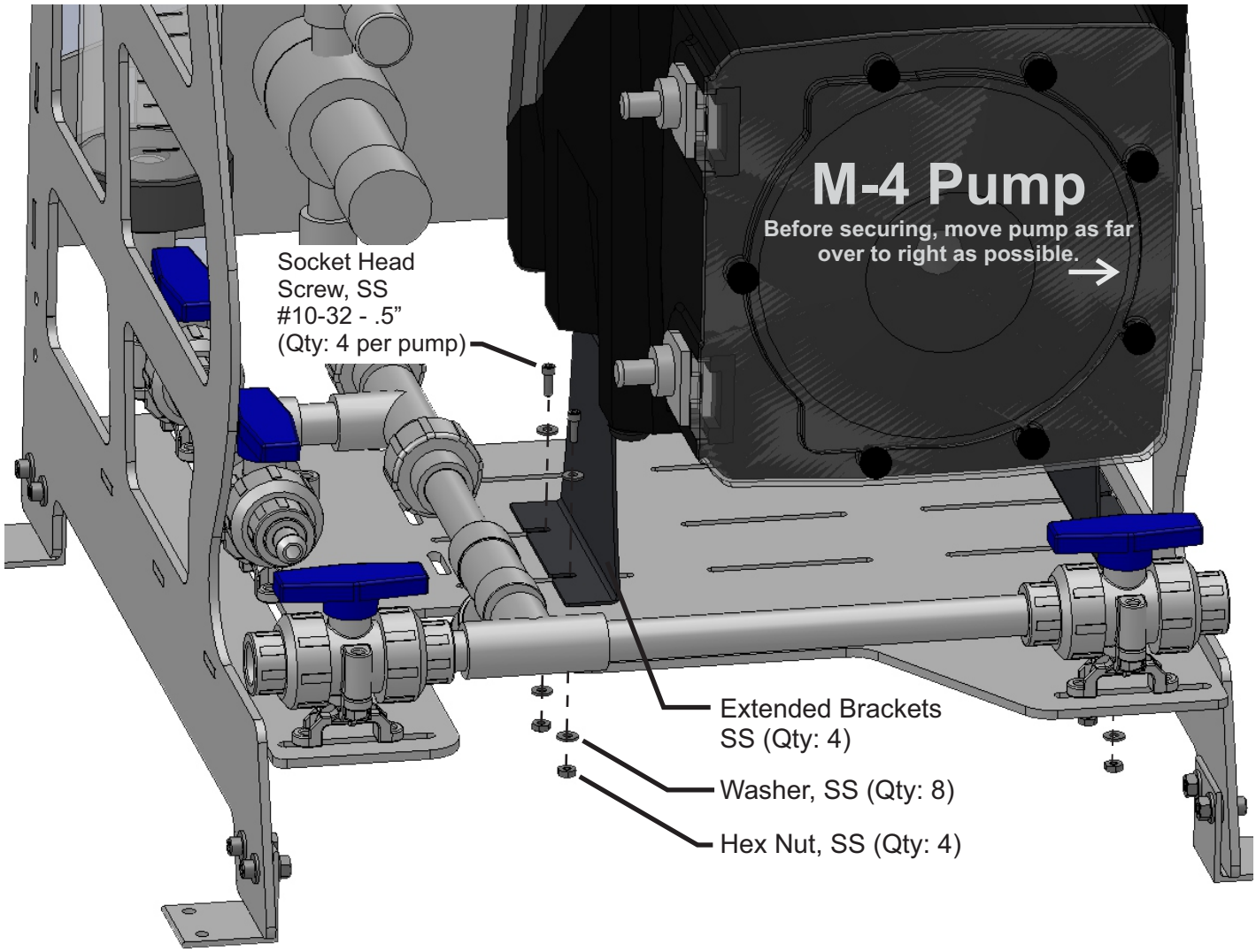
Single Pump System:



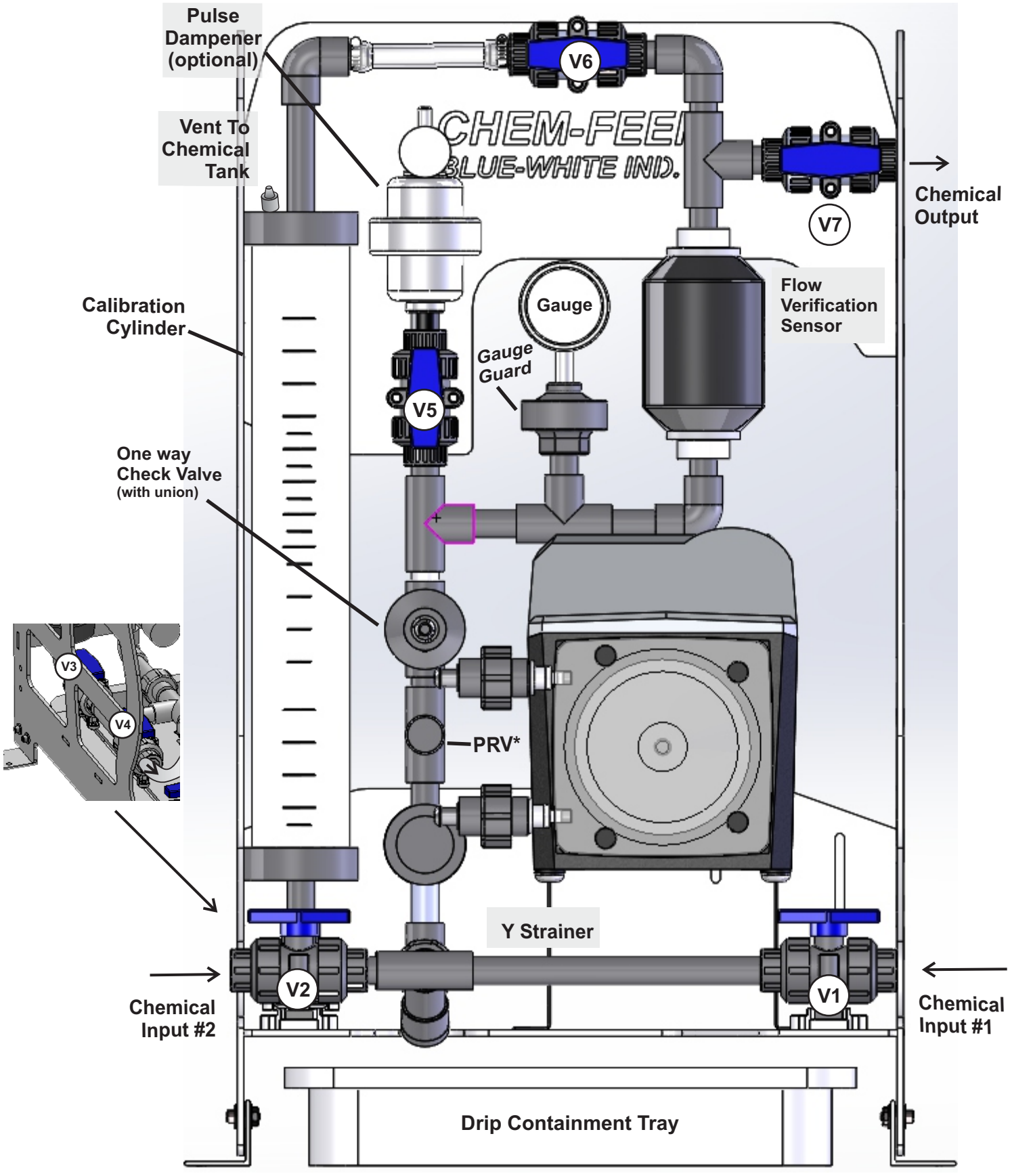
Dual Pump System:



5.0 Mounting Pump to the Chem-Feed® System - Single and Dual System



6.0 Component Identification and Typical Operation - Single Pump Skid



* PRV = Pressure Relief Valve preset at 50% maximum gauge rating.

6.1 How To Operate the Chem-Feed® Skid System - Single Pump Skid

Connections:

Connect chemical solution into either Inlet 1 or inlet 2. (V-1 or V-2)

Connect chemical treated system to outlet. (V-7)

Connect safety vent adapter with 1/4” ID tube from top of calibration cylinder to chemical supply tank.

To Pump chemical solution into system.

Open ball valve V-1 or V-2, depending on your inlet side.

Close ball valve V-3.

Open ball valve V-4.

Close ball valve V-6.

Open ball valve V-7 to inject chemical solution into your system.

Start pump.

To calibrate pump / system.

Open ball valve V-1 or V-2, depending on your inlet side.

Close ball valve V-3.

Open ball valve V-4.

Close ball valve V-7.

Open ball valve V-6.

Start pump and run until calibration cylinder is filled to top calibration line. Do not leave pump unattended during this operation.

Stop pump once calibration cylinder is filled.

Close ball valves V-1 and V-2.

Close ball valve V-6.

Open ball valve V-3.

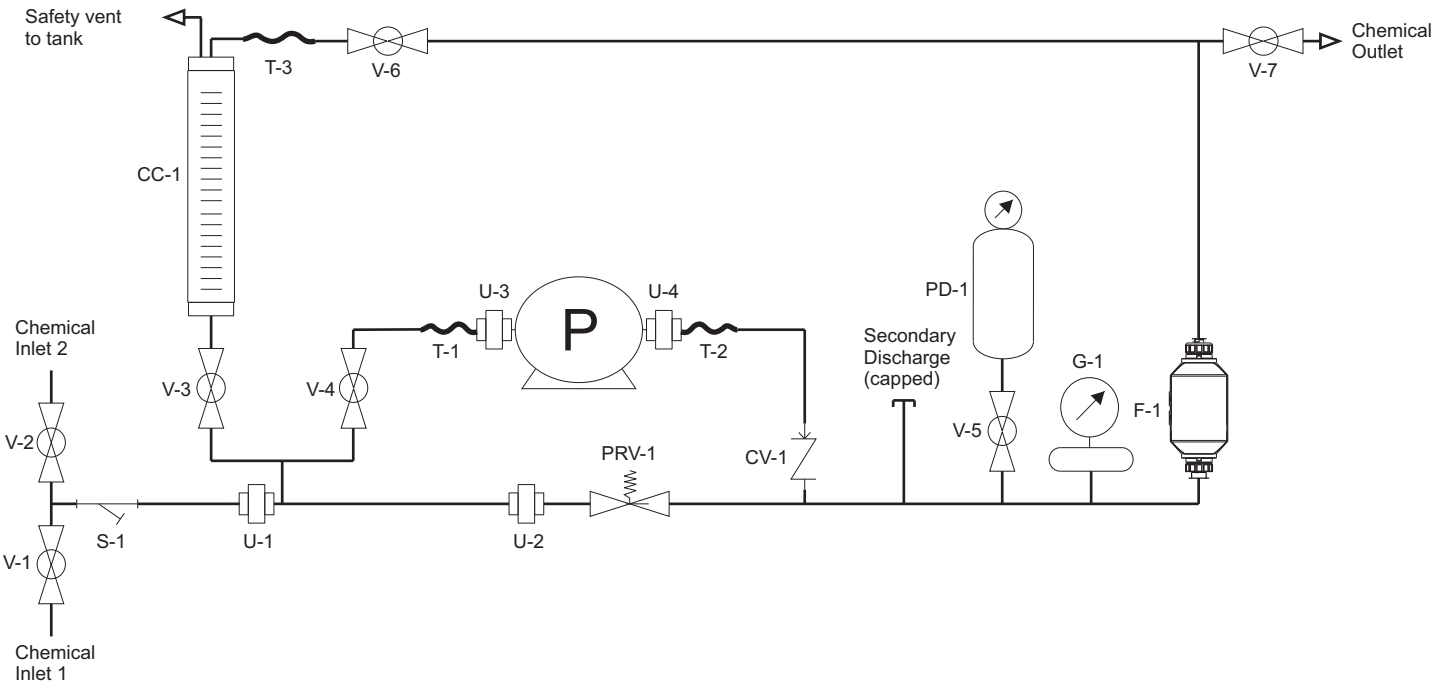
Open ball valve V-4.

Open ball valve V-7 to inject chemical solution into your system.

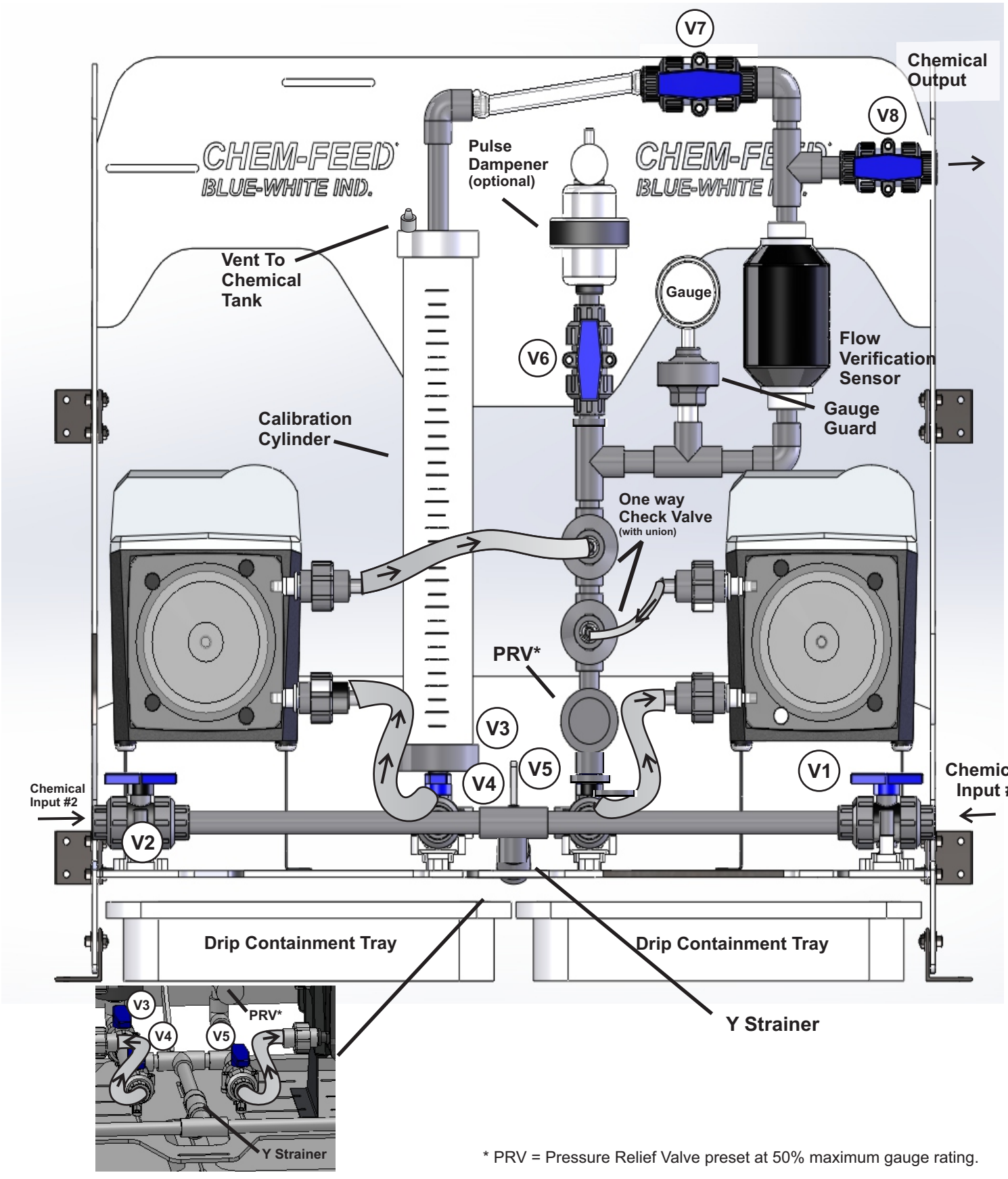
Note the chemical solution level in the calibration cylinder.

To calibrate pump at maximum speed into your system, Press the prime button on pump. The prime mode runs the pump at maximum speed for 60 seconds (1 minute) on all Blue-White® ProSeries(r) pumps.

To calibrate pump at your desired feed rate, you must pre-program your pump speed before running this routine. Please refer to the instruction manual for your pump to adjust feed rate and additional calibration instructions.



7.0 Component Identification and Typical Operation - Dual Pump Skid



* PRV = Pressure Relief Valve preset at 50% maximum gauge rating.

7.1 How To Operate the Chem-Feed® Skid System - Dual Pump Skid

Connections:

Connect chemical solution into either Inlet 1 or inlet 2. (V-1 or V-2)

Connect chemical treated system to outlet. (V-8)

Connect safety vent adapter with 1/4" ID (3/8" OD) tube from top of calibration cylinder to chemical supply tank.

To Pump chemical solution into system.

Open ball valve V-1 or V-2, depending on your inlet side.

Close ball valve V-3.

Open ball valve V-4 and / or V5. Depending on your system design.

Close ball valve V-7.

Open ball valve V-8 to inject chemical solution into your system.

Start pump(s).

To calibrate pump(s) / system.

Open ball valve V-1 or V-2, depending on your inlet side.

Close ball valve V-3.

Open ball valve V-4 or V5, depending on which pump you're calibrating.

Close ball valve V-8.

Open ball valve V-7. This open valve will direct chemical into calibration cylinder.

Start pump and run until calibration cylinder is filled to top calibration line. Do not leave pump unattended during this operation!

Stop pump once calibration cylinder is filled.

Close ball valves V-1 and V-2.

Close ball valve V-7.

Open ball valve V-3.

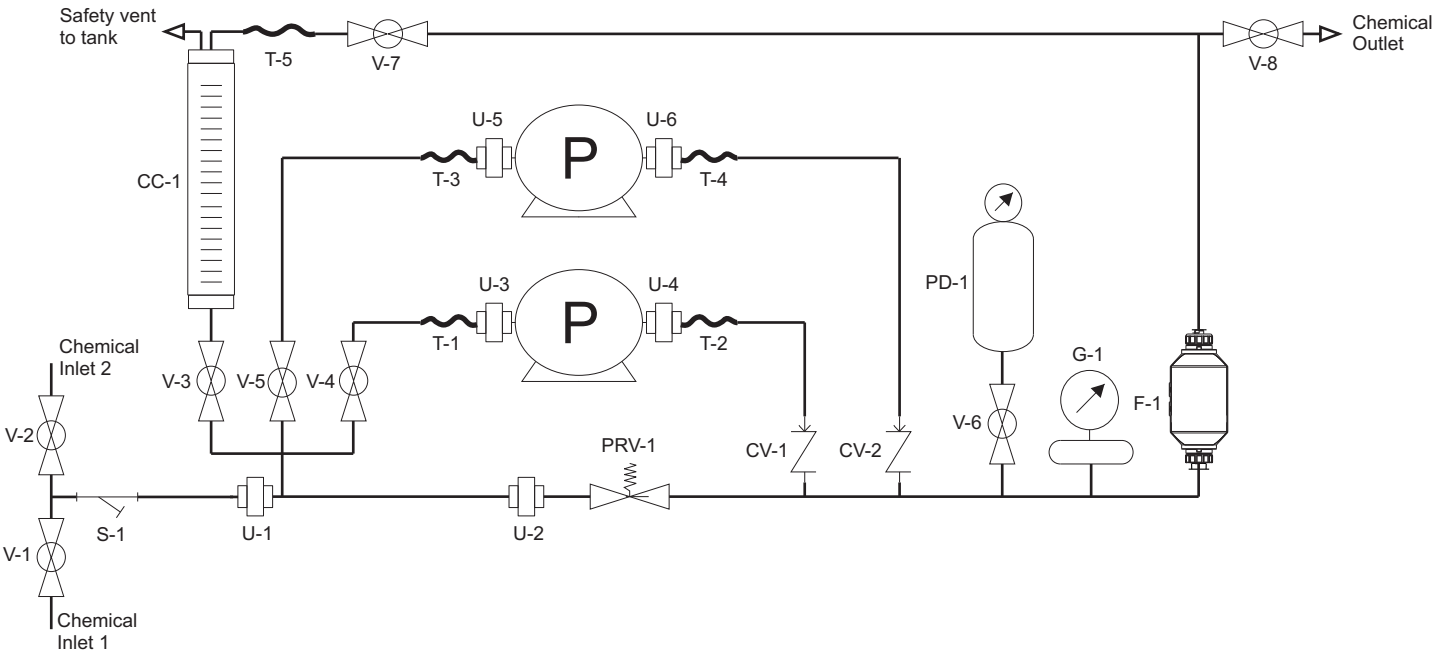
Open ball valve V-4 or V5, depending on which pump you're calibrating.

Open ball valve V-8 to inject chemical solution into your system.

Note the chemical solution level in the calibration cylinder.

To calibrate pump at maximum speed into your system, Press the prime button on pump. The prime mode runs the pump at maximum speed for 60 seconds (1 minute) on all Blue-White® ProSeries(r) pumps.

To calibrate pump at your desired feed rate, you must pre-program your pump speed before running this routine. Please refer to the instruction manual for your pump to adjust feed rate and additional calibration instructions.



8.0 Mounting the Chem-Feed® System - Single and Dual System

FLOOR MOUNT

The Skid system is shipped with the mounting brackets ready for floor mounting. Mount the skid system to the floor using eight 1/4-20 Bolts (*see fig.*1) through the mounting brackets.

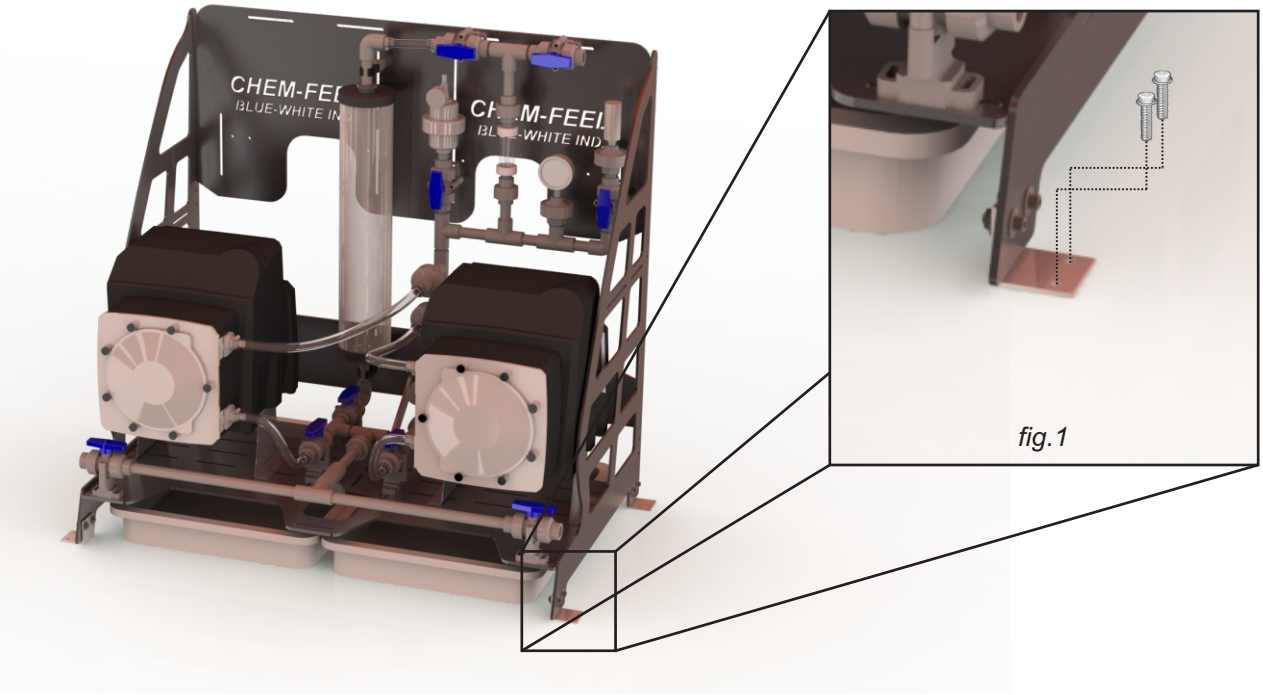


fig.1

WALL MOUNT

Remove the mounting brackets using a 1/4” wrench or socket. Install those same mounting brackets in the vertical position on the sides of the skid system (*see fig.2*). Mount the skid system to the wall using eight 1/4-20 Bolts through the mounting brackets.

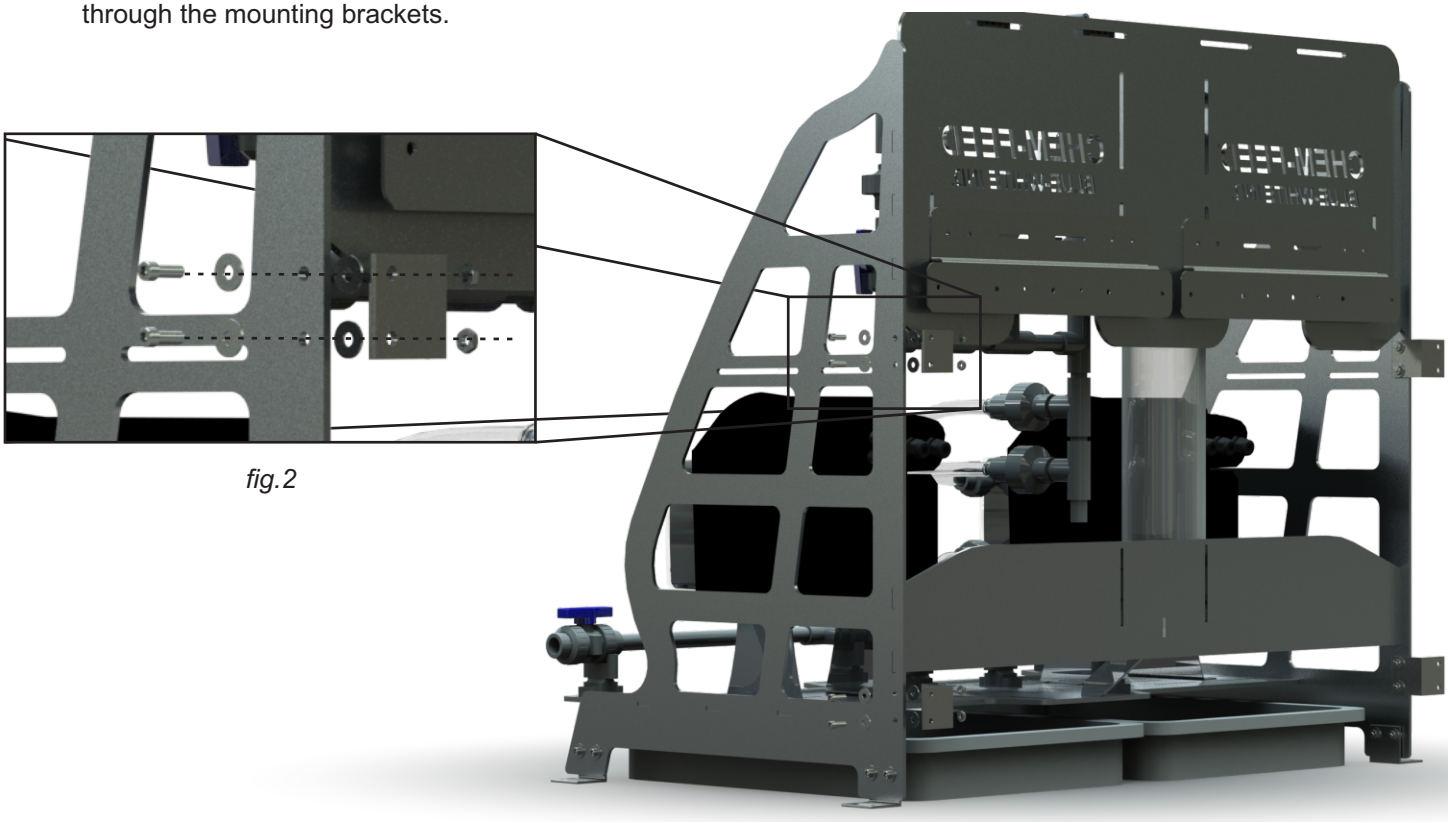


fig.2

9.0 Chem-Feed® Skid System Matrix

Simplex

Model Number Matrix

CFS-1-M

CHEM-FEED® Engineered Skid System - Municipal

CFS-1 Municipal Single pump system - single chemical / single outlet

Piping / Valves / Unions / Seal Materials

A	PVC piping, FKM seals, 1/2" ID PVC braided tubing connections	**E**	CPVC piping, FKM seals 1/2" ID PVC braided tubing connections
B	PVC piping, EPDM seals, 1/2" ID PVC braided tubing connections	**F**	CPVC piping, EPDM seals 1/2" ID OD PVC braided tubing connections
C	PVC piping, FKM seals, 1/4" ID polyethylene tubing connections	**G**	CPVC piping, FKM seals 1/4" ID Polyethylene tubing connections
D	PVC piping, EPDM seals, 1/4" ID Polyethylene tubing connections	**H**	CPVC piping, EPDM seals 1/4" ID 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 Flow Meter

A	MS612 chemical feed flow meter with meter mount display, 10-5,000 ml/min (0.158 - 79.2 GPH)
B	MS622 chemical feed flow meter with meter mount display, 100-10,000 ml/min (1.58 - 158.5 GPH)
X	None

Calibration Cylinder

		PVC		Glass	
A	64 GPH (2000 ml)	**A**			
B	32 GPH (1000 ml)	**B**		**P**	
C	16 GPH (500 ml)	**C**		**Q**	
D	8 GPH (250 ml)	**D**		**R**	
E	3 GPH (100 ml)	**E**		**S**	
X	None				

Pulsation Dampener

A	10 cubic inch, CPVC body, PTFE diaphragm	**X**	NONE

Pressure Gauge w/Guard

A	200 PSI gauge, PTFE diaphragm	**C**	30 PSI gauge, PTFE diaphragm
B	100 PSI gauge, PTFE diaphragm	**X**	None

Pump Isolation Valve

(Blank)	None
A	Isolation ball shut-off valves at check valve

CFS-1	A	A	-	A	A	A	A	-		Sample Model Number

NOTE: All skid systems ship with the following in/out union connections: ½" PVC female NPT, ½" PVC slip glue. Pump sold separately. When ordering pumps for skids, pump head orientation is standard LEFT facing only.

9.0 Chem-Feed® Skid System Matrix

Duplex
Model Number Matrix

CFS-2-M

CHEM-FEED® Engineered Skid System - Municipal

CFS-2	Municipal Dual pump system - single chemical / single outlet

Piping / Valves / Unions / Seal Materials

A	PVC piping, FKM seals, 1/2” ID PVC braided tubing connections	E	CPVC piping, FKM seals 1/2” ID PVC braided tubing connections
B	PVC piping, EPDM seals, 1/2” ID PVC braided tubing connections	F	CPVC piping, EPDM seals 1/2” ID PVC braided tubing connections
C	PVC piping, FKM seals, 1/4” ID polyethylene tubing connections	G	CPVC piping, FKM seals 1/4” ID Polyethylene tubing connections
D	PVC piping, EPDM seals, 1/4” ID Polyethylene tubing connections	H	CPVC piping, EPDM seals 1/4” ID 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 Flow Meter

A	MS612 chemical feed flow meter with meter mount display, 10-5,000 ml/min (0.158 - 79.2 GPH)
B	MS622 chemical feed flow meter with meter mount display, 100-10,000 ml/min (1.58 - 158.5 GPH)
X	None

Calibration Cylinder

		PVC		Glass	
A	64 GPH (2000 ml)	A			
B	32 GPH (1000 ml)	B		P	
C	16 GPH (500 ml)	C		Q	
D	8 GPH (250 ml)	D		R	
E	3 GPH (100 ml)	E		S	
X	None				

Pulsation Dampener

A	10 cubic inch, CPVC body, PTFE diaphragm	X	NONE

Pressure Gauge w/Guard

A	200 PSI gauge, PTFE diaphragm	C	30 PSI gauge, PTFE diaphragm
B	100 PSI gauge, PTFE diaphragm	X	None

Pump Isolation Valves

(Blank)	None
A	Isolation ball shut-off valves at check valves

Piping Orientation

(Blank)	Standard
R	Reversed

CFS-2	A	A	-	A	A	A	A	-			Sample Model Number

NOTE: All skid systems ship with the following in/out union connections: ½” PVC female NPT, ½” PVC slip glue. Pumps sold separately. When ordering pumps for skids, pump head orientation is standard LEFT facing for right pump, and Right facing for left pump.

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LIMITED WARRANTY

Your new Chem-Feed Engineered Skid System is a quality product and is warranted for 24 months from date of purchase (proof of purchase is required). The system will be repaired or replaced at our discretion. The metering pump may have its own warranty and is not covered under this warranty.

WHAT IS NOT COVERED

- **The metering pump is covered under a separate warranty.**
- **Removal, re-installation, and any related labor charges.**
- **Freight to the factory, or ProSeries service center.**
- **Systems that have been tampered with, or in pieces.**
- **Damage to the System that results from misuse, carelessness such as chemical spills, abuse, lack of maintenance, unsuitable materials of construction, or alteration which is out of our control.**
- **Systems damaged by acts of nature.**

Blue-White Industries does not assume responsibility for any loss, damage, or expense directly or indirectly related to or arising out of the use of its products. Failure must have occurred due to defect in material or workmanship and not as a result of operation of the product other than in normal operation as defined in the system manual. System components not manufactured by Blue-White are warrantied by their respective manufacturers. Manufacturer makes no warranty of fitness or merchantability. Purchaser assumes all liability in determining the acceptability of the system in their specific application.

Warranty status is determined by the system serial label and the sales invoice or receipt. The serial label must be on the system and legible. The warranty status of the system will be verified by Blue-White or a factory authorized service center.

OTHER IMPORTANT WARRANTY INFORMATION

Blue-White engineered skid systems are factory tested with water only for pressure and performance. Installers and operators of these systems must be well informed and aware of the precautions to be taken when injecting various chemicals - especially those considered hazardous or dangerous. Eye protection must be worn when working around this product.

Should it become necessary to return the system or system components for repair or service, you must attach information regarding the chemical used as some residue may be present within the unit which could be a hazard to service personnel. Blue-White Industries will not be liable for any damage that may result by the use of chemicals with their system and its components.

PROCEDURE FOR IN WARRANTY REPAIR

Contact the factory to obtain a RMA (Return Material Authorization) number. Carefully pack the system or component to be repaired. Please enclose a brief description of the problem as well as the original invoice or sales receipt, or copy showing the date of purchase. Prepay all shipping costs. COD shipments will not be accepted. Warranty service must be performed by the factory or an authorized ProSeries service center. Damage caused by improper packaging is the responsibility of the sender. When In-Warranty repair or replacement is completed, the factory pays for return shipping to the dealer or customer.

Users of electrical and electronic equipment (EEE) with the WEEE marking per Annex IV of the WEEE Directive must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to them for the return, recycle, recovery of WEEE and minimize any potential effects of EEE on the environment and human health due to the presence of hazardous substances. The WEEE marking applies only to countries within the European Union (EU) and Norway. Appliances are labeled in accordance with European Directive 2002/96/EC.
Contact your local waste recovery agency for a *Designated Collection Facility* in your area.

Blue-White®

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