

Permeate to Destination or back to CIP System
xx gpm @ 5 psi

Concentrate to Destination or back to CIP System
xx gpm @ 5 psi (avg)
xx gpm @ 5 psi (Inst. Batch)

Hot Water In
30gpm @ 1.5 psi.
<300uS and
30-60degC
(Intermittent Use)

Note:
All motors are full stop.
All pneumatic valves are fail close.

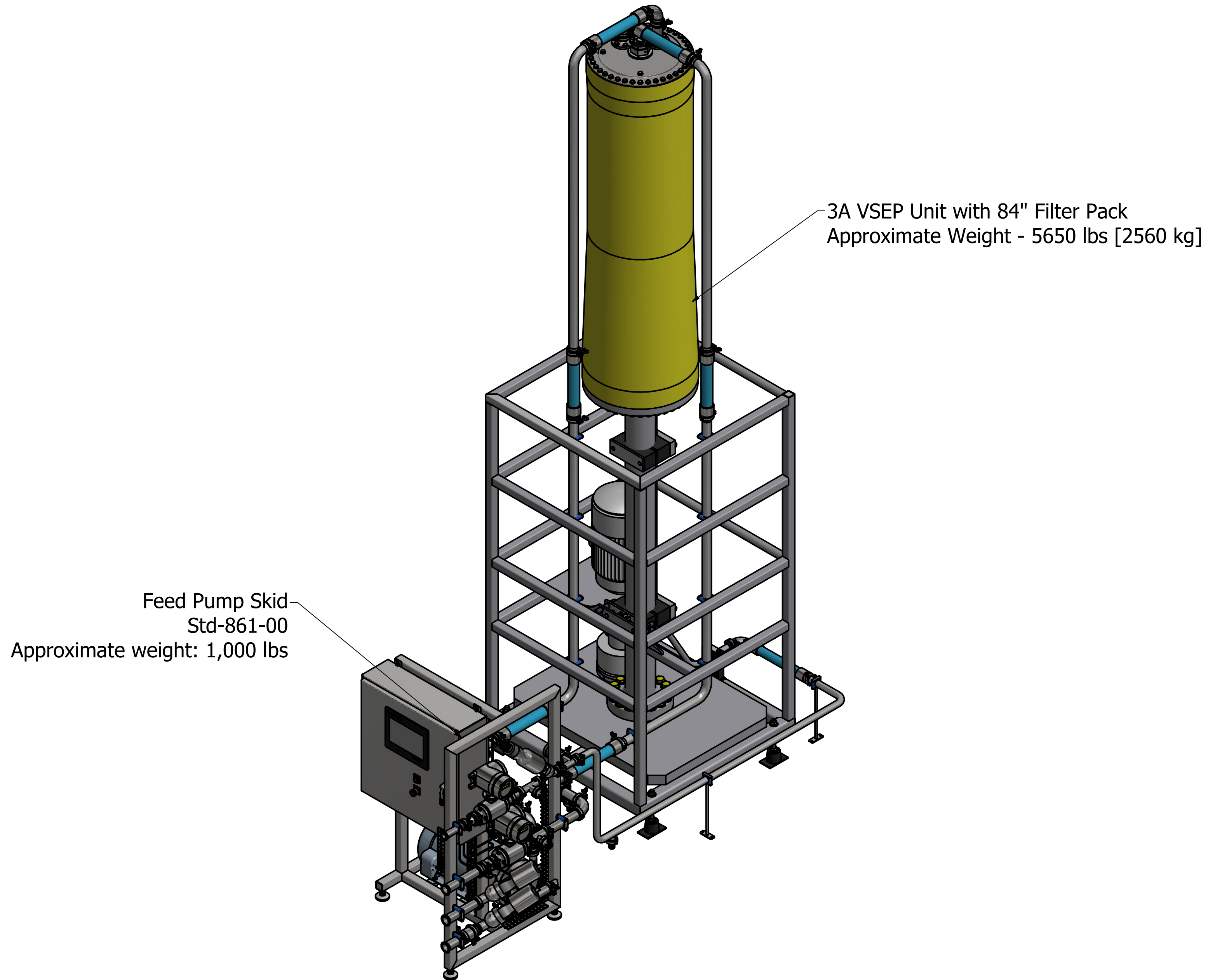
- Customer Components Provided:
- 1) Tanks with associated equipment
 - 2) Levels and other Instruments
 - 3) Transfer Pumps and motor starters
 - 4) Hot Water Tank or In-line Heaters
 - 5) Sump with associated equipment
 - 6) Valves and Piping
 - 7) Electrical Load Panel, CBs, and Generator or Transformer
 - 8) Crane or Lift
 - 9) Catwalk or Ladder
 - 10) Plant Air or Compressor
 - 11) Other equipment as recommended
 - 12) CIP System
 - 13) Chemical Metering System

- NLR System Components Provided:
- 1) 3A VSEP Unit with 3A 84" Filter Pack
 - 2) Premium Combo 3A Skid Assembly
 - 3) 3A VSEP Plumbing Interconnection

Notes:
NLR Confidential Material
Preliminary - For Reference
Only.

Revision	NEW LOGIC RESEARCH		
	84" VSEP 3A System		
	P&ID		
August 2020			A. DeSchuer

ISO VIEW

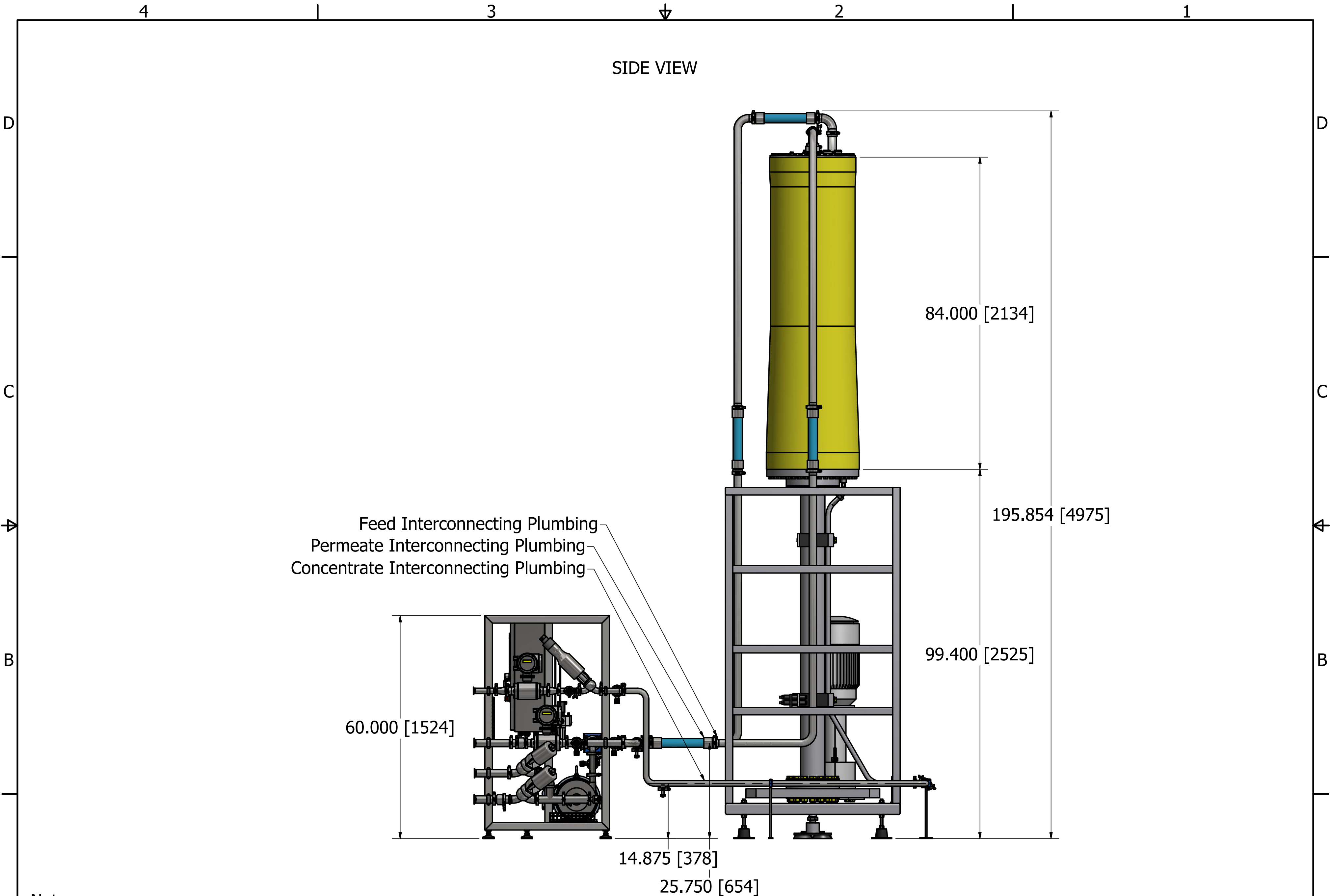


Notes:

- 1. New Logic Research Confidential material
- 2. Slight differences between drawings and actual system may be attributed to New Logic Research continuously evolving and improving its technology.
- 3. All dimensions are shown in inches [mm]

84" 3A Standard System

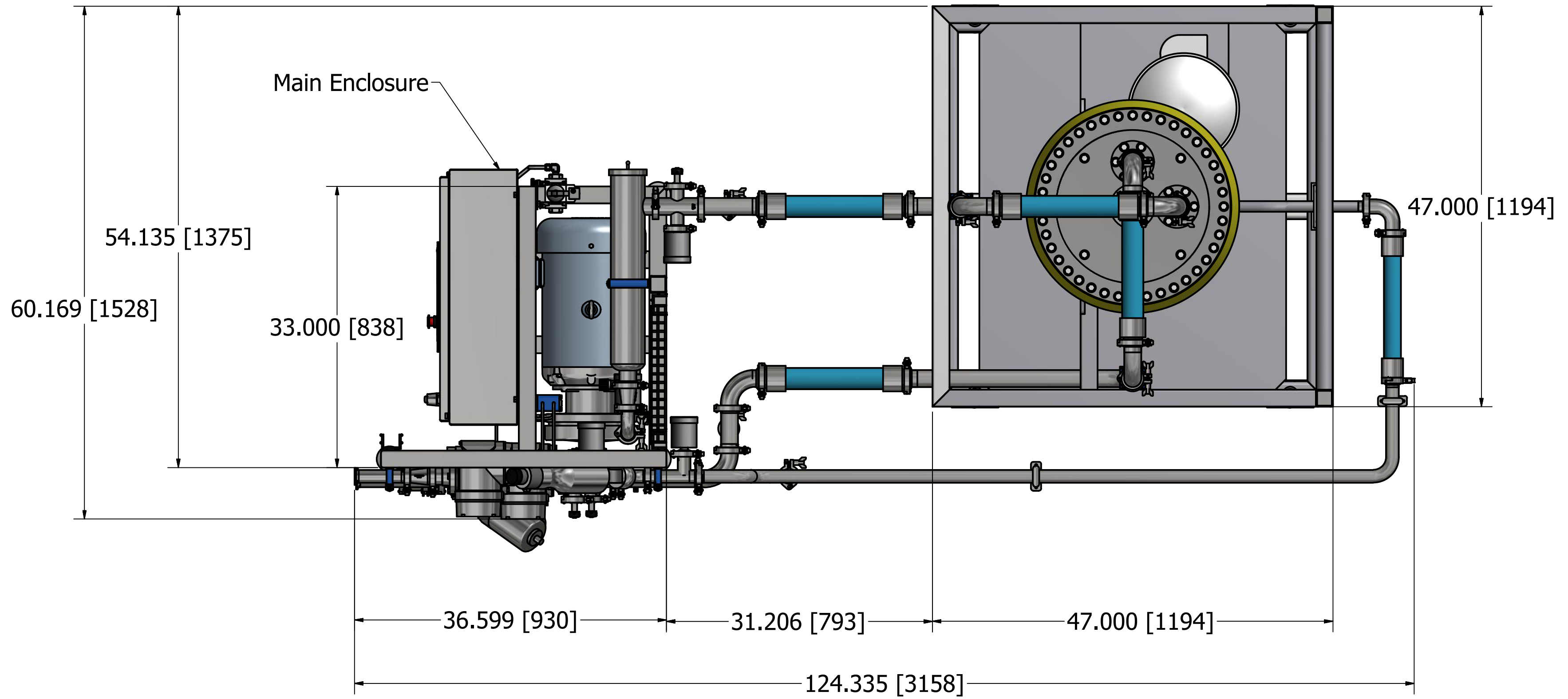
SIDE VIEW



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84" 3A Standard System

TOP VIEW



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84" 3A Standard System

4

3

2

1

ISO VIEW

Enclosure
A-30H3008SSLP3PT

Pump Skid Frame
Std-861-01

Concentrate Plumbing
Std-861-02-02

Permeate Plumbing
Std-861-02-01

Hot Water Inlet

Feed Pump
Waukesha WCB 2085LV 256JM

Feed Inlet

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84" 3A Standard System

D

D

C

C

B

B

A

A

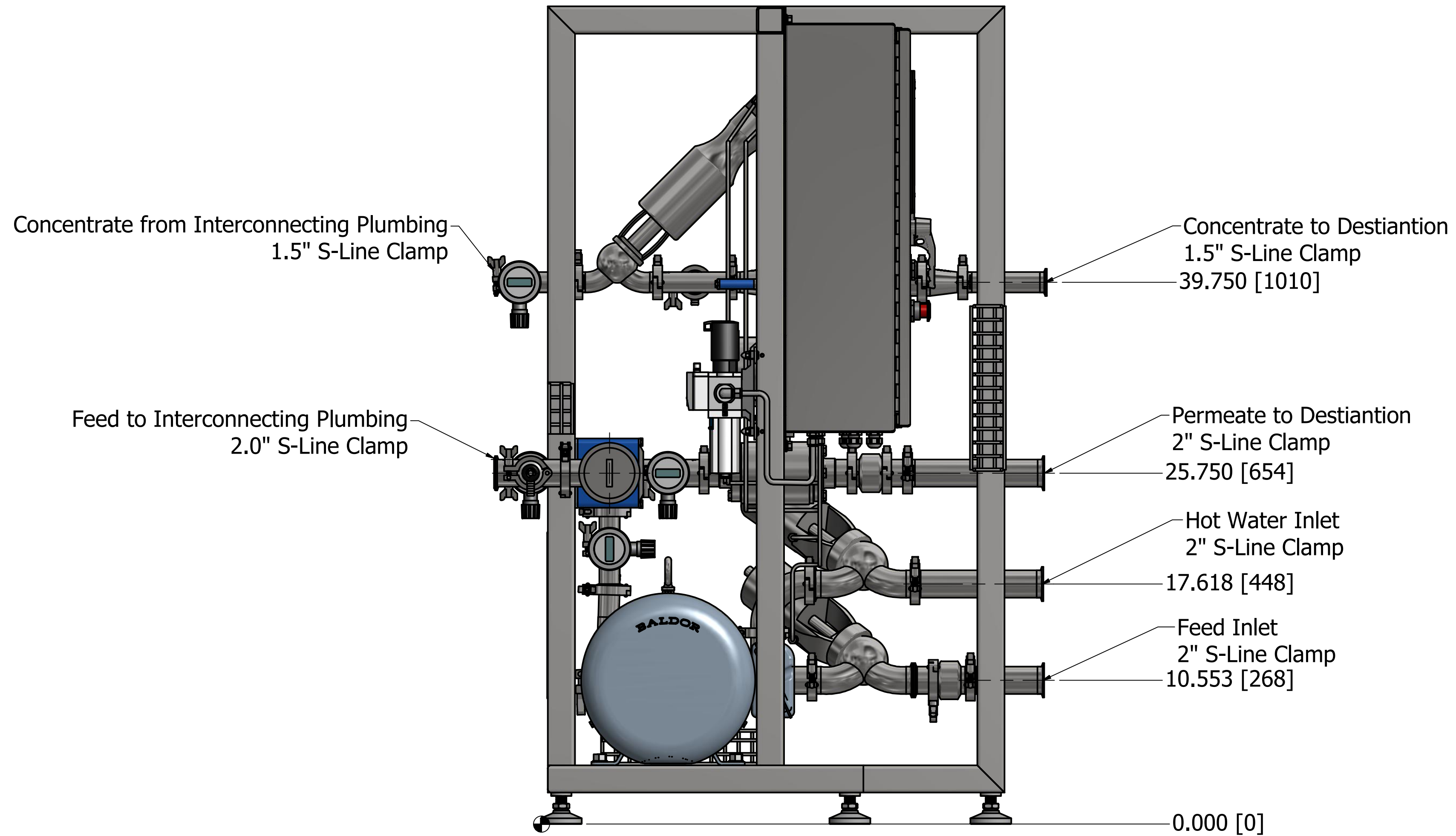
4

3

2

1

FRONT VIEW



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84" 3A Standard System

4

3

2

1

ISO VIEW

D

D

C

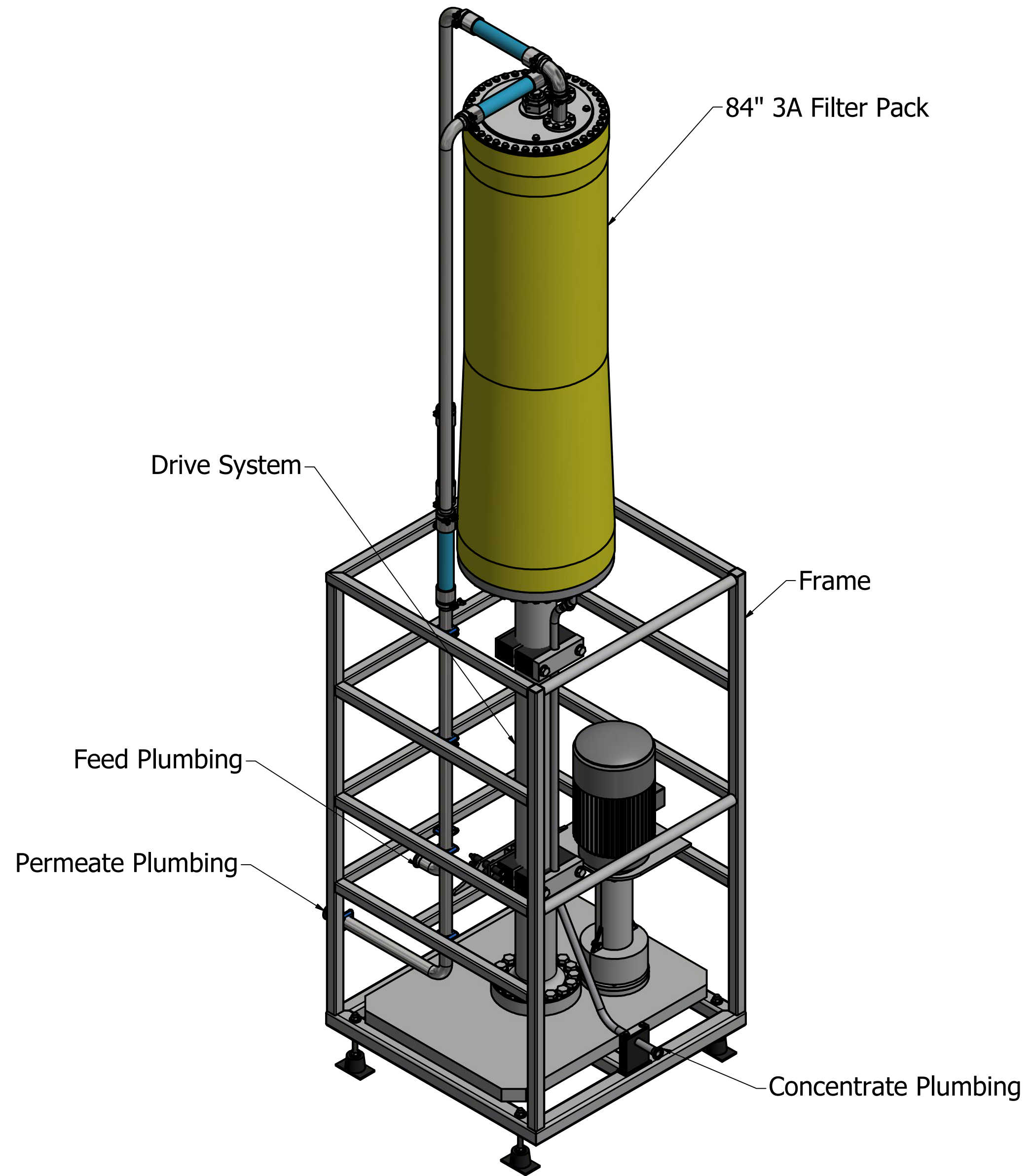
C

B

B

A

A



84" 3A Filter Pack

Drive System

Frame

Feed Plumbing

Permeate Plumbing

Concentrate Plumbing

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84" 3A Standard System

4

3

2

1

VSEP SYSTEM COMPONENT SPECIFICATIONS

84" VSEP 3A Sanitary System

1] Filter Pack:

Membrane:	MF, UF, NF, RO (depends on application and pilot testing)
Allowable Process Temperature:	5°-60°C (some membranes have higher limits up to 120°C)
Max Process Pressure:	550 psi (3,800 kPa)
Allowable Feed Slurry pH Range:	2-12 (some membranes have different limits 1-13)
O-ring and Seal Material:	FG EPDM (option for Viton)
Filter Pack Housing:	Glass impregnated epoxy resin (FRP)
Wetted Steel Trays:	304 Stainless Steel (option for 316)
Wetted Plastic End Plates:	Polypropylene

2] Vibration System:

Vibration Drive Motor:	Baldor 460VAC, 3phase, 20HP, 3525 RPM
Motor Speed Controller:	Danfoss 20HP 380-480VAC, NEMA 4 (or Equal)
Max. Vibration Amplitude:	3/4 inch (peak to peak measured at the Filter Pack)
Frequency Range:	43.0 Hz to 55.0 Hz (Approximate)
Maximum Decibels:	<85
Bearing RPM:	2800 to 3100
Bearing Oil:	Sullube ~750 ml Compressor Oil
Bearing O-rings:	2-263 & 2-270 Buna

3] Pump Specifications:

Feed Pump Type:	Waukesha 316SS Horizontal Centrifugal
Feed Pump Motor:	Baldor 158TC 460VAC, 3phase, washdown
Motor Speed Controller:	Danfoss 380-480VAC, NEMA 4 (or Equal)
Chemical Metering Pump:	Bran+Luebbe Diaphragm pump with manual stroke adjust

4] Pre-Screen Basket Strainer:

Filter Housing Type:	Sanimatic Short Angle Line Strainer
Basket Strainer:	17 Mesh 316 SS
Capacity:	120 GPM, 1 sqft
Elastomers (Seals):	FG EPDM (option for Viton)

5] Operating Site Conditions:

Equipment Rating:	NEMA 4, Indoor/Outdoor protect from sunlight & rain.
Ambient Temperature:	5° - 37°C
Storage Temperature:	2° - 70°C (Protect Filter Pack from Freezing)
Max Relative Humidity:	<95%, non-condensing
Elevation:	3300 ft maximum without derating VFD/Motor

VSEP SYSTEM COMPONENT SPECIFICATIONS (continued)**6] Piping:**

High Pressure Piping:	Polished Tubing 316 SS
Low Pressure Piping:	Polished Tubing 316 SS
Special VSEP Concentrate Pipe:	1-1/4" OD 316L Stainless Steel Polished Tubing .065 wall
Flexible Hoses:	Teflon Lined Reinforced Flex Hose
Pipe Clamps:	S-Line/I-Line FG EPDM
Pneumatic Air Supply:	90lb Instrument Grade Air (3/8" connection)
Tubing Fittings:	none
Clean in Place Tank:	none
On/Off Valves:	316 SS ball valve
Manual Valves:	316 SS
Flow Control Valves	316 SS V-port ball valve
Check Valves	316 SS
Pneumatic Actuators	Waukesha Cherry-Burrell L-type W61
Positioners:	Waukesha Cherry-Burrell Throttling W68
Skid Pipe Terminations:	S-Line 316 SS Clamps

4] Electrical:

Controls Voltage:	120/220VAC, 1phase, 15A, 50/60Hz
Enclosures:	Hoffman NEMA 4 304 SS Finish, 30x30x8
Switches, Relays, & Contactors:	Allen Bradley 120/220 Volt
Remote Access:	Ewon Cosy 131
Programmable Controller:	AB CompactLogix 1769
Operator Display:	AB Versa View 5400
IO Link Masters and Hubs:	IFM Efector AL1122
Pressure Sensors:	Anderson Neegle SR075G004G1100
Mag Flow Tube and Transmitter:	Endress and Hauser 53H501F0BEAB0BBAACBZ1
Temperature Sensor:	Anderson Neegle TD 2813
Solenoid Valves:	Festo Manifold Gang Mounted Dual 3/2 24 VDC, IO Link

Utility Summary				New Logic Research		
VSEP System						
AIR COMPRESSOR SIZING INFORMATION						
	# of Valves	In ³ Air/stroke	Strokes/day	CFM	M3/hr	
VSEP						
2" Pneumatic Valves	2	60	20	0.0010	0.0016	
1" Flow Control Valves	1	35	20	0.5003	0.8505	
System Air Totals			System Totals	0.50	0.8521	
Supply instrument grade dry air at 80-90 psi (560-630kPa)						
Supply air to enclosure mounted regulator/filter 3/8" NPT connection						
Totals do not include air for tools or other sources.						
HOT WATER SIZING INFORMATION						
Estimate for filter pack cleaning, does not include system CIP						
	# /Day	Temp degC	Gallons/Day	GPM	M3/hr	
VSEP						
Cleanings	1	50-60	1000	0.69	0.1576	
Rinse filter pack at 60gpm for 5mins	1	50-60	150	0.10	0.0236	
Intermittent need of additional cleaning or flush of filter pack	0.14	50-60	21	0.01	0.0033	
System Water Totals			System Totals	0.81	0.1846	
Supply chlorine free water at >300 uS/cm						
Supply water at 50-60degC and 30gpm (6.8m ³ /hr)						
Supply water at 15 psi to 2" Hot Water S-Line connection on Combo Skid						
ELECTRICAL LOAD PANEL SIZING INFORMATION						
Circuit Breaker Sizing 1.25-2x Nameplate Current						
3-Phase Power Voltage VAC	400-460	50/60 Hz				
1-Phase Power Voltage VAC	220-120	50/60 Hz				
	# Motors	Rated Motor HP	Nameplate Current	Nameplate Current	Recommended CB Sizing	
VSEP Drive Motor	1	20	400V 26.3	460V 24.0	40	
VSEP Feed Pump	1	20	26.3	24.0	40	
Totals		2				
Supply 3-Phase power from customer supplied load panel (with circuit breakers, disconnects, line filters, etc.) to the inlet of each VFD provided by New Logic.						
	# Connections	Rated Motor	Nameplate	Nameplate	Recommended	
			220V	120V		
Main Control Enclosures	1	NA	10	8.0	20	
Supply 1-phase power from customer supplied load panel (with circuit breakers, ups, etc.) to New Logic provided circuit breakers inside the Main VSEP control enclosure (PLC/HMI/24VDC Power Supply).						
Note: These are estimates only based on very preliminary data. These calculations are subject to change and do not include equipment offskid of VSEP system (ie: Transfer Pumps, Generators, Heaters, Lighting, Cranes, etc). For power consumption estimates refer to the operating cost spreadsheet.						