

26. SERIES i SPECIFICATIONS

26-2 SYSTEM COMPONENT SPECIFICATIONS

1] Filter Pack

Membrane:	Varies from Reverse Osmosis to Microfiltration
Membrane Area:	~ 100 to 1500 square ft. (up to 139 Square Meters)
Maximum Operating Temperature:	120 °F (50°C) (As a rule, higher for some membranes)
Allowable Feed Slurry Ph Range:	2-12 (Wider Range for some membranes)
Elastomers (O-rings):	EPDM,(Options for Buna, Viton, Kalrez - Depending on Process)
Filter Pack Housing:	Vinyl Ester 8084 Durethane Fiberglass
Housing to Module Adhesive:	TC-1600 High Temperature Epoxy Resin
Wetted Steel Trays:	304 or 316 Stainless Steel .018 Gauge
Wetted Plastic End Plates:	1-1/2" Thick Polypropylene, (Options for Kynar, Teflon)
Steel Pressure Plates:	17-4 Heat Treated Stainless Steel
Center Bolt:	B-7 All Thread w/ Stainless Sleeve
Filter Pack Bolts & Washers:	Grade 8 Hex Head Alloy Finish
Feed Channels:	304 Stainless Steel Grommets

2] Piping

Maximum Working Pressure:	500 psi
Pressure Process Piping:	2" 304L Stainless Steel Schedule 40 1-1/4" 316L Stainless Steel .065 Neoprene Lined Reinforced Flex Hose Hi-Temp CPVC (Chlorinated Polyvinyl Chloride) Schedule 80 "Zero-Flex" Victaulic Sytle 07
Atmospheric Piping:	EPDM,(Options for Buna, Viton - Depending on Process)
Pipe Clamps:	300 Gallon Cross Linked Polyethylene w/ Lid (36" ø x 74")
Elastomers (Gaskets):	316L SS Ball Valves & CPVC Ball Valves w/ Teflon seats
Clean in Place Tank:	316L SS Ball Valves & CPVC Ball Valves w/ Teflon seats
Flow Control Valves:	"Bi-Torq" Model IS3PS2085SR Spring Return
Check Valves:	TIG Weld .060" 316 SS Wire Argon Gas Backing
Pneumatic Actuators:	Section IX ASME 31.3
Weld Process:	2 inch 150# Flange
Feed Inlet Connection:	2 inch 150# Flange
Permeate Outlet Connection:	1-1/2" 150# Flange
Concentrate Exit Connection:	1-1/2" 150# Flange
Flush Drain Connection:	1-1/2" 150# Flange
House Water Connection:	3/8" NPT Port for 90lb Instrument Grade Air
Pneumatic Air Supply:	

3] Vibration System

Motor:	Baldor Custom Unit, 20HP, 3525 RPM
Motor Speed Controller:	"ABB" ACS401601635
Maximum Vibration Amplitude:	7/8 inch (peak to peak measured at the Filter Pack)
Frequency Range:	49.0 hz to 55.0 hz (Approximate)
Maximum Allowable Decibels:	95
Maximum Torsion Spring Temp:	205°F
Maximum Bearing Temperature:	185°F
Bearing RPM:	2800 to 3100
Bearing Oil:	~750 ml "Sullube" Compressor Oil
Bearing O-rings:	2-263 & 2-270 Buna

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4] Electrical Specifications:

Power Supply Voltage:	460VAC 3PHASE 4WIRE 50/60Hz
Recommended Power Source:	60 Amp Dedicated Circuit w/ Disconnect
Full Load Amp Rating:	60 Amps
Normal Load Amperage (RLA):	24-36 Amps
Electrical Schematic Version:	I. EL. V3.02
Programmable Controller Type:	Allen-Bradley SLC503 Model 1747-L532
Memory Module (EEPROM):	Allen Bradley Model 1747-M11
Touch Screen Display Type:	Allen-Bradley PV550 Model 2711-B5A2
Control Transformer:	Jefferson 636-1131
Enclosures:	Hoffman NEMA 4 Powdercoat Finish
Switches, Relays, & Contactors:	110 Volt Allen Bradley
Pressure Transducers:	4-20 mA, 0-1000 psi
Transducer Model:	Foxboro IGP10-A20E1F-M1
Motor Load Transducer:	0-10 VDC (0-200%) output from speed controller
Temperature Transmitter:	4 to 20 mA Foxboro RTT20-1WAQFNL3 w/ Local Display
Tank Level Sensor:	4 to 20 mA Foxboro IDP10-A22D21F-M1 0-72"
pH Probe & Meter:	Sensorex Electrode 970213, Signet Meter 5924.757
Tank Level Sensor:	4 to 20 mA Foxboro IDP10-A22D21F-M1 0-72"
Solenoid Valve:	Gang Mounted Valve Rack, 15 Port 3 way 24 Volt
Disconnect Switch:	Allen Bradley 194R 60 Amp 480 Volt 4 Wire

5] Feed Pump Specifications:

Feed Pump Type:	G&L SSV Series Vertical Multi Stage Pump # 4SVB1M9G5 VIC
Power Supply Voltage:	460VAC 3PHASE 4WIRE 50/60Hz
Motor:	Baldor Custom Unit, 15HP, 3500 RPM, TEFC Premium Efficiency
Motor Speed Controller:	"ABB" ACS401601635
Pump Rating:	100 GPM at 160 psi

Note: Standard Model is shown. Feed Pumps will vary depending on the application

6] Pre-Screen Bag Filter:

Filter Housing Type (or equal):	Rosedale Model 8 Inline Basket Strainer # 8302P1150NSNVSB
Bag Filter:	Rosedale 100 Mesh Nomex Bags (2) # HT 100P2S-SS
Capacity:	120 GPM Each, 240 GPM total w/ 1 psi pressure drop
Filter Housing Material:	304L Stainless Steel (or Option for 316L)
Elastomers (Seals):	EPDM,(Options for Buna, Viton - Depending on Process)

7] 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)
Relative Humidity:	<95%, non-condensing
Elevation:	3300 ft maximum without derating (above 3300 derate Vibration Drive power output by 5% per thousand ft.)

V_≤ SEP Series i 84” Description

The Base

The base includes the frame, motor and torsion spring assembly. The frame is welded tubular steel, used to support the vibration drive system. A seismic mass is mounted on a rubber isolator (bearing). An eccentric weight drive bearing is attached to the seismic mass, offset from the center. The drive bearing is mounted below a vibration drive motor, which spins the bearing assembly. As the bearing spins, it induces a wobble that vibrates the seismic mass. The seismic mass is bolted to a stainless steel torsion spring that transmits the vibrational energy to the filter pack that is connected to the top of the spring.

The Piping

The system piping is also connected to the frame. There is one inlet to the system for the feed material and two outlets; one for the concentrate removal and one for the permeate removal. The standard piping included: 1” schedule 40, 316 stainless steel tubes for the feed inlet and permeate outlet, 3/4” stainless steel NPT termination, 1” Victaulic tubing to help isolate vibration from the filter pack, 14” Teflon lined flexible hose. The piping can vary depending on the application.

The Electrical Circuitry

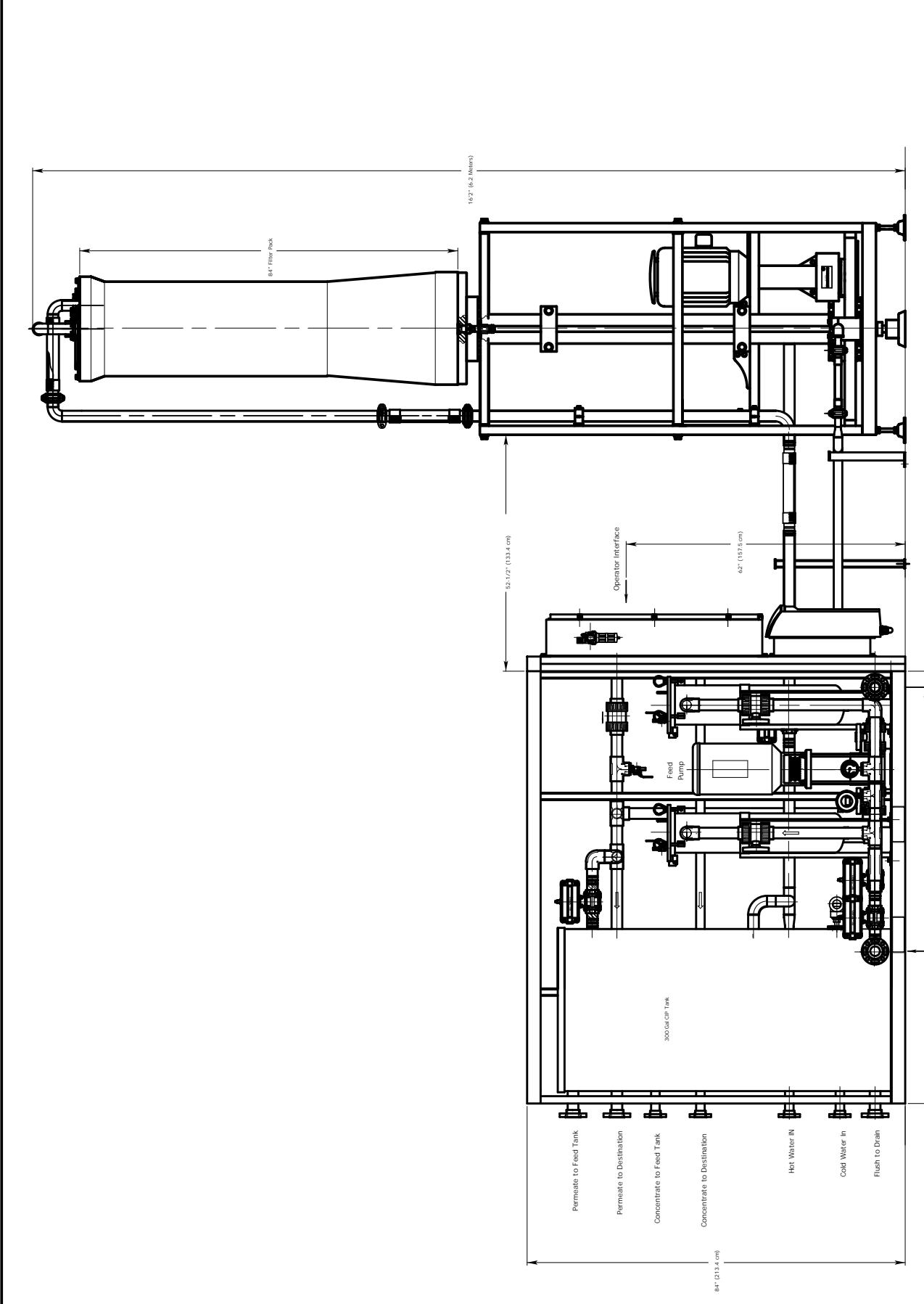
The electrical circuitry contains three enclosures; two of the enclosures are mounted on an electrical control stand. There is a motor speed controller, which is a solid state control device used to run the vibration drive motor. The speed of the motor controls the vibration amplitude. There is also a control circuitry cabinet which contains the programmable logic controller, touch / keypad display, and the AC and DC control circuitry. There is a junction box on the V_≤ SEP unit that contains connection points for the sensors, valves and remote inputs that are used with the industrial machines.

The Filter Pack

Within the filter pack are the membranes disc trays which perform the separation / filtration. The filter pack is a modular unit which is pre-assembled and secured in a fiberglass reinforced plastic tube (F.R.P.). The exact inner design of the filter pack module varies depending on whether the application is a product dewatering or a wastewater stream and whether there are high or low suspended solids.

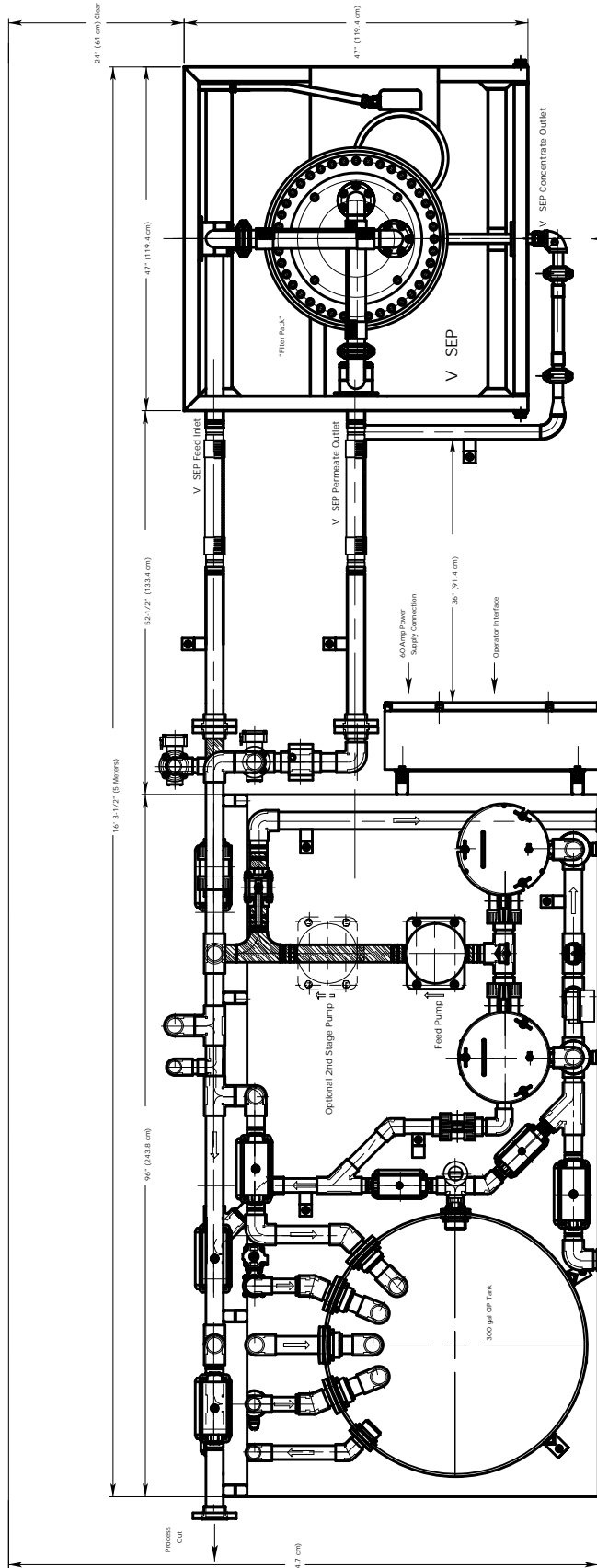
The membrane trays consist of a stainless steel disc, drainage cloth and the membrane. The trays are separated by rubber O-ring gaskets, which provide the spacing for the feed to flow over the trays. The assembly is compressed so that the gaskets form a seal to prevent leaking.

The feed material is pumped to the filter pack through a pipe that connects to the top of the filter pack. The feed then cascades down several membrane trays until it reaches a diverter tray, where the flow is sent across the trays to another opening. At that opening, the liquid again cascades down several trays until it again hits a diverter tray. This process continues through the length of the filter pack until the rejected material exits the system. The feed flows tangential to the membrane surface at a rate of approximately 2 gallons per minute. The permeate, which passes through the membrane media is then withdrawn via a drainage cloth to the center of the tube where it exits the system.



V SEP System Layout	
Sheet Two	
C Scale: 1:18	i-000
01/20/00	B. Cuijkin
G. Johnson	

Revision
Tolerance Unless Otherwise Indicated x/x = +/- 1/16" x = +/- .100 .xx = +/- .030 .xxx = +/- .005 x° = +/- .30°



V SEP must be lockoff accessible on this side for maintenance and Filter Pack Replacement

System Specifications as Shown:

- Single V SEP Filtration System
 - Innograph Purification System
 - up to 150,000 GPD (568 L/min)
 - Production Rate: up to 216,000 GPD (816 Gals/Meters/Ds)
 - Pressure Range: 4 PSI to 150 PSI (207 kPa to 3,448 kPa)
 - Footprint Area: 6'4" x 16'4" (2 Meters x 5 Meters)
 - Power Consumption: up to 28 HP (Motor (21 Kilowatts) at full speed)
 - Power Supply: 180 Volts, 3 Phase
 - Membrane Area: 3000 SF to 15000 SF (278 SM to 139 SM)*
 - Pressure Rating: 30.4 Schedule 40 Stainless Steel
 - Other Piping: CPVC, Schedule 40

System Features as Shown:

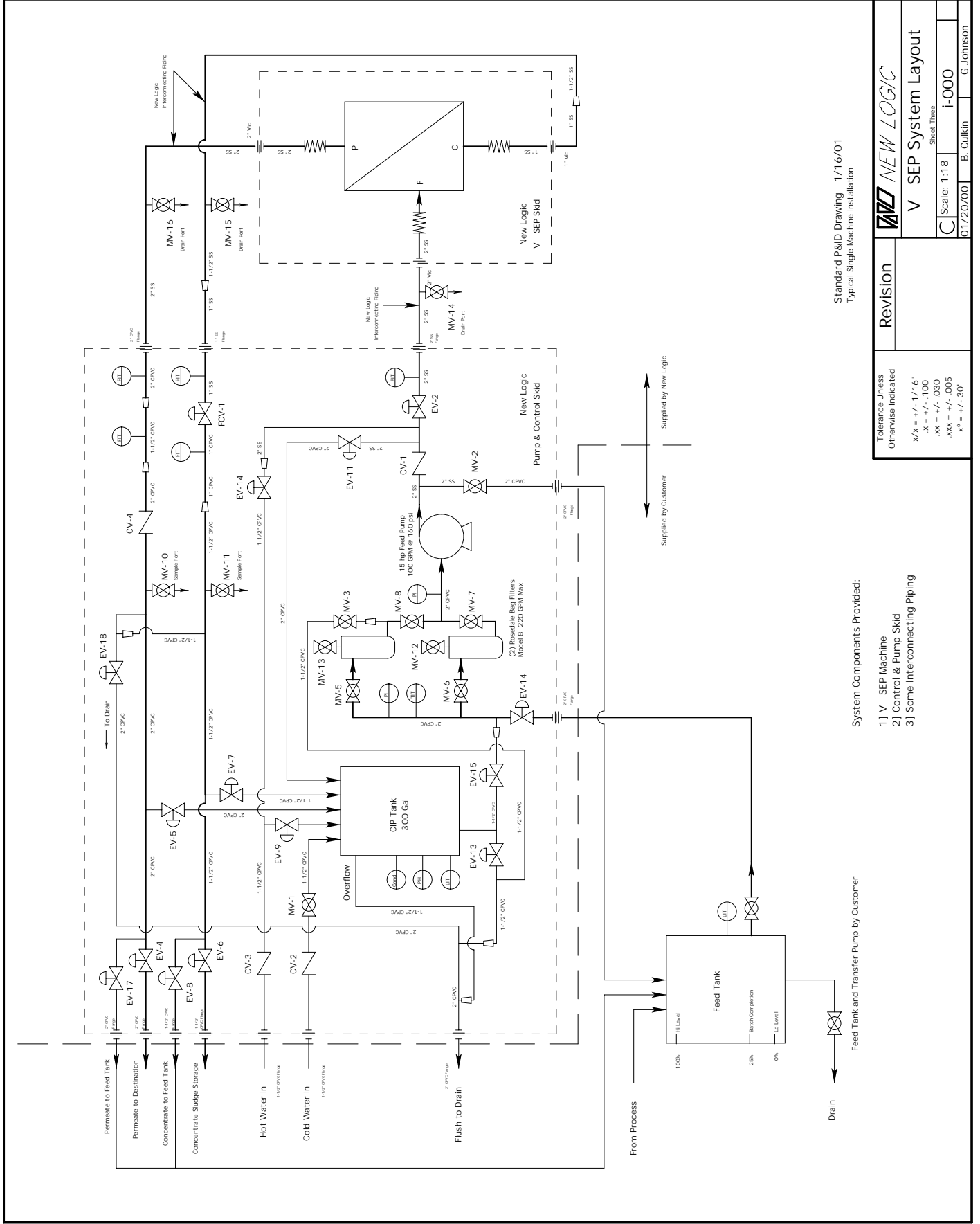
- Single V SEP Filtration System
 - PLC Controlled Automation with Touch Screen Interface
 - Variable Speed Controllers on all motors
 - Pump & Filter Pack protected by 100 Mesh Pre-Screen Bag Filters
 - Membrane Cleaning Tank is included
 - Transmitters for pH, Pressure, Flow rates, Temperature, & Conductivity
 - Interconnecting Piping, Valves, Pumps, & SEP
 - System Purchase includes Pumping Skid, V SEP & Interconnecting Piping
 - System Purchase includes installation of the items shown above plus start up assistance

Customer Requirements:

- Single V SEP Filtration System
 - Connect Feed, Permeate, and Concentrate Piping to this V SEP System
 - Connect 60 Amp, 180 VAC 3-Phase Power to Disconnect on Skid
 - Connect 70 psi Instrument Grade Supply Air to Regulator on Skid
 - Provide 3 Ton Lift & Forklift and access for installation
 - Provide feed tank and any other ancillary equipment

Tolerance Unless Otherwise Indicated	Revision	
	NEW LOGIC	
x/X = +/- .1/16"	V SEP System Layout	
.X = +/- .100	Sheet One	
.XX = +/- .030	C Scale: 1:18	i-000
.XXX = +/- .005	01/20/00	B. Culklin
X* = +/- .30'	G. Johnson	

* 2000 SF (185 SM) is under development



Standard P&ID Drawing 1/16/01
 Typical Single Machine Installation

		V SEP System Layout <small>Sheet Three</small>	
		C Scale: 1:18	i-000
Revision		01/20/00	B. Cuiquin
Tolerance Unless Otherwise Indicated X/A = +/- 1/16" X = +/- .030 XX = +/- .005 X* = +/- .30'		G. Johnson	

System Components Provided:
 1] V SEP Machine
 2] Control & Pump Skid
 3] Some Interconnecting Piping

Feed Tank and Transfer Pump by Customer

Supplied by Customer

Supplied by New Logic