



# SENTRY FILTRATION SYSTEMS

## MODELS: SV3 & SV5

OPERATION AND  
SERVICE GUIDE  
O-110C  
AUG. 1992

### SAFETY PRECAUTIONS BEFORE STARTING PUMP

1. Read operating instructions and instructions supplied with chemicals to be used.
2. Refer to Chemical Resistance Data Chart for compatibility of materials in pump with solution to be used.
3. Note temperature and pressure limitations.
4. Personnel operating pump should always wear suitable protective clothing: face mask or goggles, apron and gloves.
5. All piping must be supported and aligned independently of the pump.
6. Always close valves slowly to avoid hydraulic shock.
7. Ensure that all fittings and connections are properly tightened.

### BEFORE CHANGING APPLICATION OR PERFORMING MAINTENANCE:

1. Wear protective clothing as described in item 4 above.
2. Flush pump thoroughly with a neutralizing solution to prevent possible harm to personnel.
3. Verify compatibility of materials as stated in item 2 above.

### IMPORTANT

The following instructions are intended as a guide and apply to all standard systems with or without optional equipment or piping arrangements. Models are available with various linings, materials of construction, piping and pumps. Refer to additional operating instructions provided for pump and optional features or consult factory. Record model number, and all serial numbers for future reference. Read instructions thoroughly before starting filter.

Install all hoses (disconnected for shipping) and tighten hose clamps. Siphon breakers in the suction line to the pump and filter discharge to the tank should be installed as a further precautionary measure to limit and minimize the amount of liquid lost by back siphoning. An effective siphon breaker is a small hose drilled in suction and discharge line approximately 2" to 4" below normal solution level. Refer to Bulletin A-202 page 2.

### PRE-START-UP

1. Uncrate carefully. Do not use plastic piping as a handle or lift. CPVC pipe, fittings and valves are solvent sealed except at end points which are threaded. Consult factory when leak occurs.
2. Install those items, such as; pressure gauge assembly, davit cover lift, etc., which were packaged separately to avoid damage in shipping.
3. Locate the filter system so that valve operation, cartridge replacement, pump inspection and motor starter operation may be performed with safety and convenience.
4. Refer to drawing on page 2 for typical installation. Pipe, fittings, hose and adapters are available from SERFILCO stock to facilitate installation. Refer to P-110.
5. Suction line may be equal to filter system pipe size for short straight runs less than 4". For longer suction piping and when elbows and bends are necessary, the

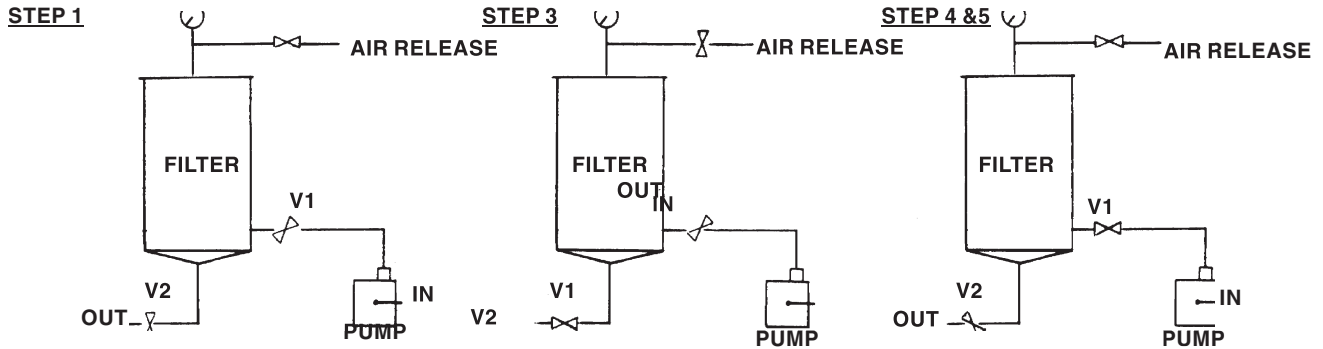
suction should be at least one pipe size larger. Only wire reinforced hose, hardwall hose or pipe should be used on suction.

6. Discharge lines may be equal to filter system pipe size if excessively long runs are avoided.
7. Avoid unnecessary bends in hose and pipe which cause friction and reduction in flow.
8. Avoid unnecessary strain on hose and adapters due to tension. System operating temperature may affect components not evident at room temperature.
9. Complete all installation piping. Verify that all fittings, adapter, flange bolts, hose clamps and unions are tight. A poor connection on the suction side of the pump can draw air into the filter to cause vibration, displace filter area and result in serious consequences to the plating bath.
10. Thoroughly read Pump Operating Instructions. Complete necessary piping for providing cooling water to double mechanical seal on SERFILCO pump.
11. Install motor starter if one was not furnished with filter assembly. Locate starter for convenience, safety and protection from solution and corrosive vapors. Verify all wiring at motor terminal and starter for conformation to supply voltage.
12. Install proper size heater (thermal overloads) in motor starter.
13. Do not energize motor until pump is primed and seal cooling water is connected. Refer to pump priming and start-up instruction.
14. Locate suction line in plating tank at position to avoid drawing air (from air agitation) into pump.
15. Install a strainer or screen on end of suction pipe.
16. Provide hole in suction and discharge pipe just below solution level to serve as a siphon break.
17. Install bulk carbon purification system, if not factory mounted, to filter base. Refer to operating instructions and diagram provided for bulk carbon purification.

### START-UP: BASIC SYSTEM

1. Open air release, throttle V1 to approximately half, close V2.
2. Suction lines, pump and filter should fill with plating solution by gravity, or insert a water hose into the suction line, pour plating solution into the suction lines, or remove vent assembly and fill filter and pump with water.
3. Energize motor and open V2, until chamber is full, vent air from chamber, close air release when chamber is filled.
4. Fully open V1, or adjust to desired flow rate by throttling V2.
5. Open air release as required to vent air collected in chamber.

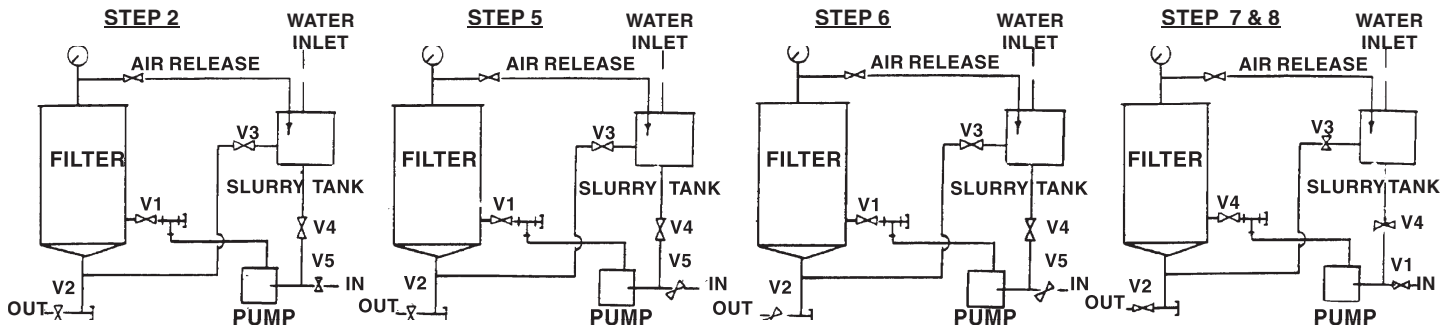
## BASIC SYSTEM



### START-UP: BASIC SYSTEM WITH -SV3 OR -SV5

1. Follow above procedure, or close all valves and fill slurry tank with water or plating solution.
2. Open valves V1, V3 and V4.
3. Energize motor to recirculate solution thru filter and slurry tank.
4. Add liquid as required to fill chamber and vent as necessary.
5. Open valve V5, slightly. By this manner a vacuum is drawn on the suction line and process solution will slowly be drawn into the filter.
6. As solution level rises in slurry tank, partially open V2 to balance flow with V5.
7. By pairs, open V5 and V2, close V3 and V4, vent air from chamber.
8. Plating solution is now recirculated through filter. Partially open V4, to empty slurry tank without drawing air into pump. Then close V4.

### BASIC WITH SV3



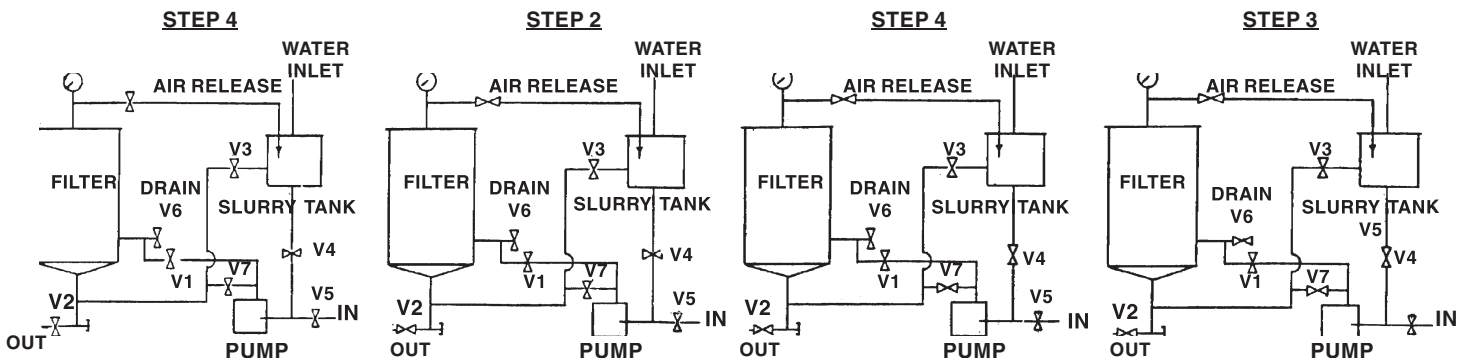
### TO BACKWASH SV-5 MODELS

1. Close all valves.
2. Open air vent and V2, to purge solution from filter into plating tank.
3. Open valves 4 & 7 (do not drain slurry dry).
4. Periodically open valve 6 to help flush cake out of drain port.
5. Revert back to start-up. When cartridges are properly and sufficiently back washed, the gauge pressure should be approximately 15 PSI. After repeated cycles of filtration, precoating, backwashing, etc. the cartridges will eventually reach a condition where they will not be returned to a like new condition of flow rate or operating life. At this point they should be discarded and replaced.

tually reach a condition where they will not be returned to a like new condition of flow rate or operating life. At this point they should be discarded and replaced.

**IMPORTANT:** Noting and recording initial flow rate and pressure across clean cartridges, clean precoat, dirty recoat and backwashed cartridges will be valuable information. Together with elapsed operating time of precoat life you will be easily able to determine when cartridges should be backwashed or replaced.

### BACKWASH SV5



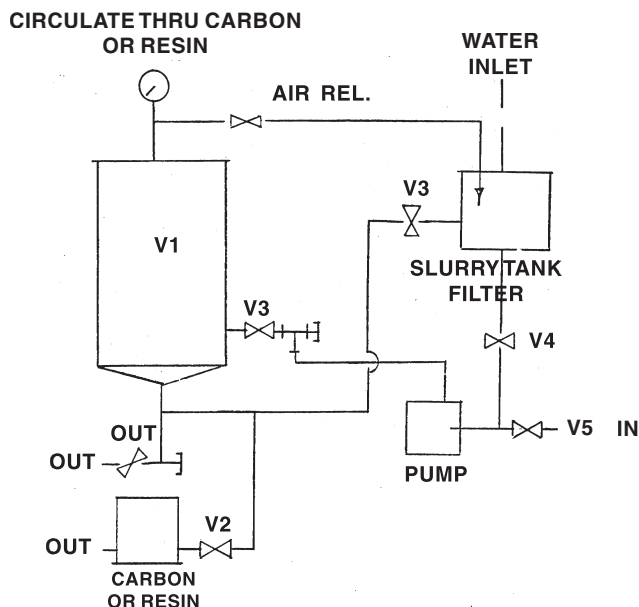
### TO REMOVE PRECOAT: -SV3 MODELS

Precoat on -SV3 models cannot be removed by backwashing with system pump. Precoat must be removed by opening chamber and hosing precoat out drain or removing cartridges, sleeve assemblies and clearing.

**IMPORTANT:** Thoroughly flush chamber carefully and properly replace cartridges ( or sleeve assemblies) and apply new precoat following above instructions.

### TO CIRCULATE THROUGH CARBON OR RESIN ONLY

Open valve V8 and slowly close valve V2 until desired flow through carbon chamber is attained. A flow of 3 to 5 gallons/minute through carbon or resin is appropriate.



### POWDERED CARBON

After precoating with filter aid, powdered carbon may be applied. A slurry of equal parts filter aid and carbon should be prepared dry and applied in a similar manner to previously precoated cartridges. Periodic additions of filter aid and carbon will be determined by bath requirements.

### ACID TREATMENT

The following procedure and chemical treatment is recommended where a crust of iron may be forming on the cartridges or over the filter aid hindering flow rate or a good complete backwash.

First remove the plating solution in the filter by pumping water from the slurry tank or adjoining rinse tank, (if piping is convenient). Force the solution out of the filter and back to the plating tank.

Adjust valves so you are recirculating water between the slurry tank and filter and add the necessary chemicals to bring up the strength to be equal to a 5% sulphuric acid

solution and add 1 oz. per gallon of sodium fluoroborate.

The use of warm water (125° -140°F) will speed the dissolving action. Recirculate with the mixture for about 30 minutes or until sufficient change occurs in the pressure drop shown on the gauge but at a point when no further reduction seems to be accomplished.

Follow with the usual clean water back flushing until all filter aid and chemicals have been removed from the filter before placing back in service.

### TO REPLACE DEPTH CARTRIDGES

Stop pump, open vent and drain chamber to liquid level in plating tank, or open drain cap or valve V2. Auxiliary pump (optional), can be used to pump solution from chamber to plating tank, slurry tank or storage tank when valves V1 and V2 are closed. To remove cover, loosen nuts on short swing bolts and drop bolts away from cover. Loosen nuts on three long swing bolts to raise cover, then swing clear of chamber. Turn davit handwheel to raise cover and swing clear of chamber. Remove top seat and spring assemblies and lift out top row of cartridges. Note, spacer washers may be used between new or used cartridges to provide a positive seal and proper cartridge column height. Remaining cartridges can likewise be removed, or lifted out with the V-Post. Middle tube divider is positioned above bottom separator plate to keep V-Posts and cartridges properly aligned. The divider is removable, but care should be taken to assure its proper replacement. When replacing new or cleaned cartridges, be sure of proper alignment and that all cartridge columns are installed. Replace top seat and spring assemblies. Swing cover over chamber, adjust cartridge positions if necessary, align cover slots over swing bolts, lower cover onto spring. **IMPORTANT**, now unscrew handwheel to top of stem before tightening down cover with swing bolts. Secure cover to chamber by drawing down on three long swing bolts until cover contacts top flange. **DO NOT OVER TIGHTEN**. Now position and gradually tighten the short swing bolts until all swing bolts are snug. Then secure (tighten) all bolts, making sure to work on alternate sides of cover until all bolts are tight. Adjust valves, start pump and vent as required.

**IMPORTANT:** Synthetic fiber cartridges (polypropylene, dynel, orlon, nylon, rayon) contain an anti-static agent necessary for cartridge winding during manufacture. This agent may be removed by flushing the cartridge in warm water or a dilute acid compatible with the filtration process. The more critical the filtration requirement, the greater care necessary in flushing and rinsing the cartridge.

**TO USE AS A PRECOAT FILTER -Lbs. of Filter aid  
Required for Each Model**

MODEL (R or S Prefix)	B240	520	B360	780	B510	810	B850	1350	B1750	3000	B3000	4450
Lbs. of Filter Aid	2	5	4	7	5	7	8	12	18	30	30	42

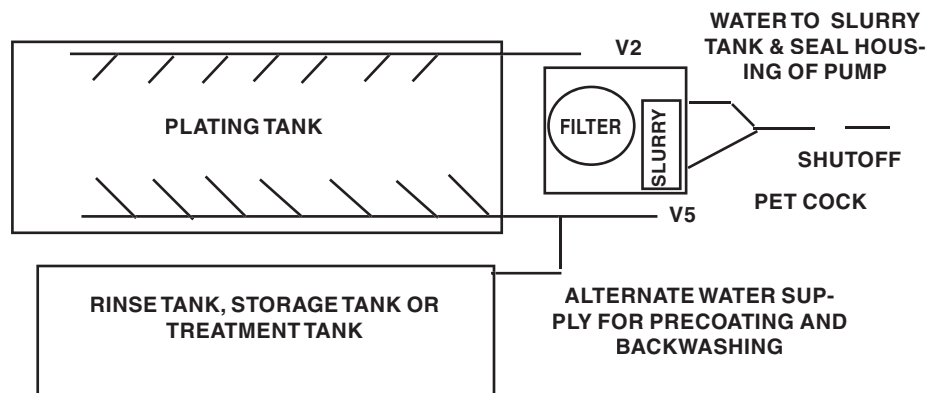
Type of Filteraid: diatomaceous earth.

Precoat SERFILCO Depth Cartridge of 15 micron or denser. When depth cartridges or sleeves are precoated, clarity of effluent is 1-5 micron, depending upon type of filteraid used. Refer to D-90, for various types of filter aid, and their equivalent ratings. SERFILCO filter sleeve assemblies are designed for precoating and should not be used without a precoat.

Precoating a Basic System without a slurry tank is not recommended. However, Basic Systems can be precoated under some circumstances when a tank has been installed with valves across the filter discharge and pump suction. Refer to Schematics.

MODEL R OR S PREFIX	GAUGE PRESSURE PSI							
	15	20	25	30	35	40	45	50
B240 520 B360 780	3000 " 3600 "	2500 " 3000 "	2100 " " "					
B540 870 1050	4800 " "	4600 " "	4400 " "	3100 " "	2100 " "			
B900 1450 1750	10000 " "	9000 " "	8400 " "	7800 " "	6500 " "	5100 " "	4000 " "	2100 " "
B1800 3000	12000 " "	12000 " "	10000 " "	9000 " "	8000 " "	6500 " "	4000 " "	2100 " "
B3000 4450	15000 " "	14500 " "	13500 " "	12500 " "	11400 " "	10500 " "	8400 " "	6000 " "

The chart on the left shows that initial flow rates are based on water, clean 15 micron cartridges and short suction and discharge piping. Select minimum flow rate acceptable for your plating tank and filter model and schedule filter servicing for the corresponding gauge pressure. Example: For model R105 on a 3000 gallon tank you may require a minimum flow of 3000 GPH, and filter should be serviced at 30 PSI.



**SERFILCO®**

2900 MacArthur Blvd  
Northbrook, IL 60062-2005  
www.serfilco.com

847-509-2900  
800-323-5431  
FAX: 847-559-1995