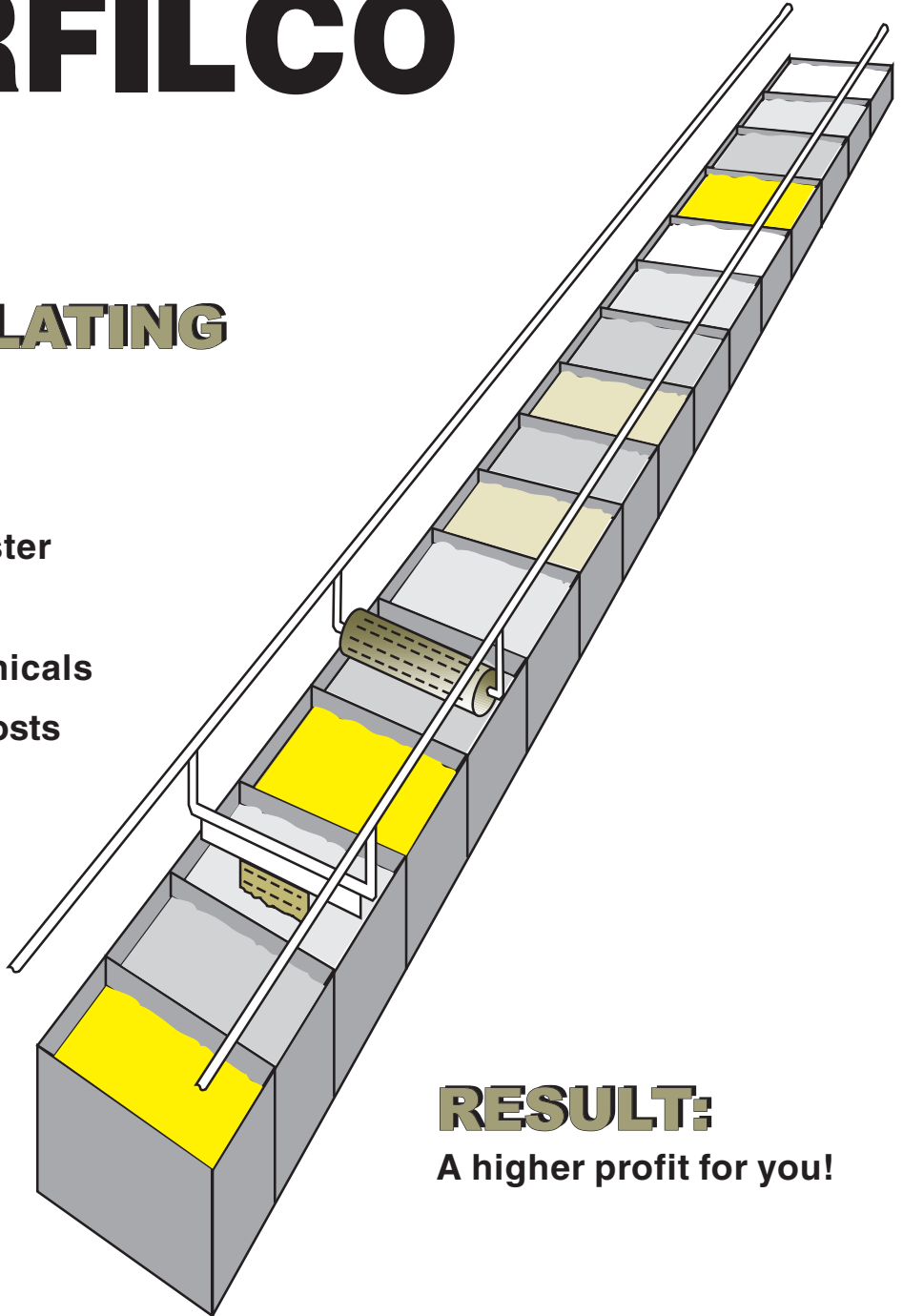


SERFILCO®

IDEAS FOR BETTER PLATING TO HELP YOU:

- Achieve better plating faster
- Reduce rejects
- Conserve water and chemicals
- Reduce waste treatment costs
- Deliver a lower end use cost per piece



RESULT:

A higher profit for you!

SERFILCO helps you get better quality results and lower costs all along your plating line from soak cleaner to final rinse and beyond to waste treatment.

More than 35 years of experience in providing effective solutions to plating problems is yours for the asking. Our large staff of qualified application engineers can help you choose the appropriate filtration, fluid handling and waste treatment equipment from SERFILCO's wide variety of products designed to meet your particular needs for quality plating and compliance with environmental regulations.

ON A TYPICAL PLATING LINE . . . BETTER PLATING

FILTRATION and CARBON PURIFICATION



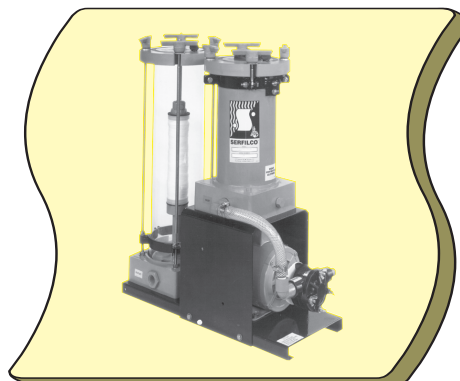
SERFILCO offers a full line of complete systems for all solutions and tank sizes, featuring "unattended" filtration and high flow rates. Unique "building-block" approach allows you to choose materials of construction, type of pump and filter media such as depth type cartridges, cleanable sleeves or discs. Optional carbon purification chambers on filter discharge or separate systems offer efficient organic removal.

Filtration systems offer flow rates from 345 to 67,800 GPH.

Use SERFILCO Filtration Systems at tanks

① ④ ⑦ ⑧ ⑨ ⑬

COALESCERS and OIL SKIMMERS



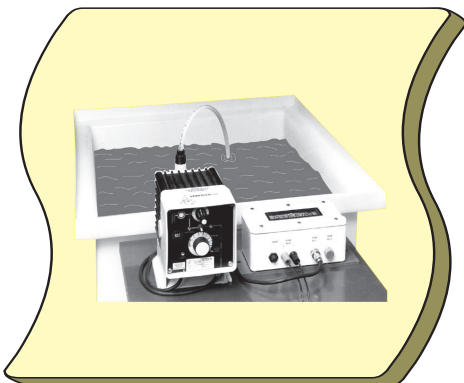
Coalescing systems extend the life of cleaning solutions and enhance cleaning action by removing free oil and other immiscible fluids from cleaner and rinse tanks. Standard systems include a prefilter and are available in plastic, steel or stainless steel, with capacities up to 1500 GPH.

Oil skimmers can be combined with the coalescer to continuously remove floating oils from the solution surface.

Use at tanks ① ② ④ ⑤

SOAK	CLEANER STATIC	RINSE RUNNING	RINSE ELECTRO-	CLEANER	RINSE	RINSE ACID	DIP
①	②	③	④	⑤	⑥	⑦	⑧

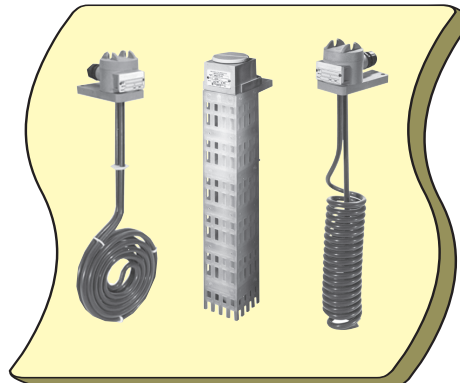
BRIGHTENER FEEDER SYSTEMS



Integrating ampere-time totalizer / controller replenishes brighteners and additions at precise rate of consumption in relation to metal deposited, automatically compensating for variation of work load or rate. System verifies metal consumption. Compact solid state circuitry is protected in a corrosion resistant plastic case. Models are available for one, two or up to eight rectifiers on one tank.

Use at tank ⑨

IMMERSION HEATERS and HEAT EXCHANGE COILS

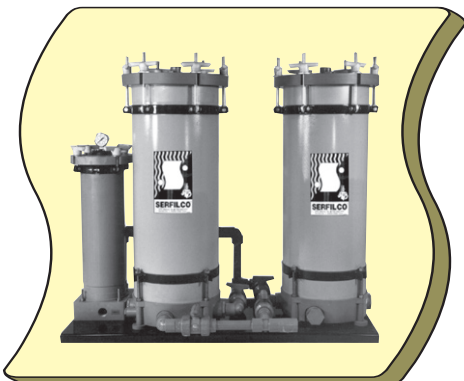


For heating or cooling cleaners, plating baths and virtually all acids and alkalies. Safeguard protector cuts off power in over-temperature conditions. Available in over-the-side, L-shaped or side entry. Quartz, stainless steel, titanium or TFE.

Use at tanks ① ④ ⑨

STARTS WITH SERFILCO QUALITY PRODUCTS

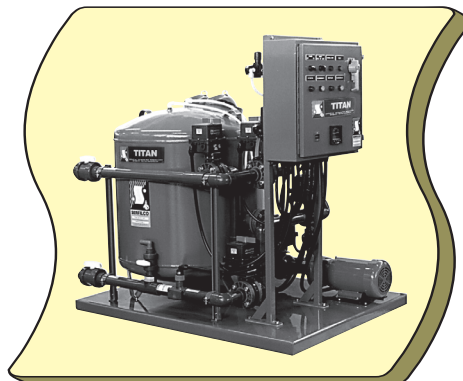
ION EXCHANGE RESIN SYSTEM



Recover heavy metals from rinse water. Effluent is suitable for discharge or bath replenishment. Concentrated regenerate can be chemically treated for disposal or possible recovery. Choice of systems with or without prefilters (prefilter removes suspended solids that decrease resin capacity). Flow rates to 480 GPH.

Use at tanks **10** **11** **12** **14** **16**

TITAN PERMANENT MEDIA AUTOMATIC FILTRATION SYSTEMS

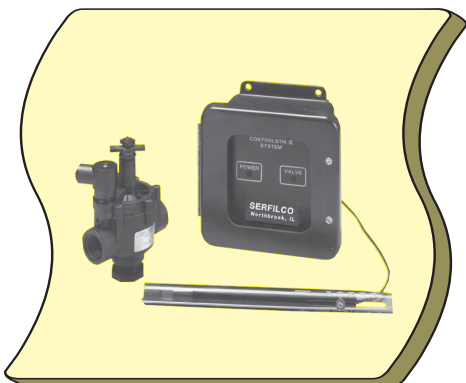


Titan automatic backwash filtration systems feature permanent media for solids removal from cleaner baths, process solutions and treated waste.

Use at tanks **1** **4** **9** **13**

RINSE PLATING TANK	(typical) STATIC	RINSE	RINSE RINSE	POST TREATMENT (if necessary)	RINSE	RINSE	RINSE
9	10	11	12	13	14	15	16

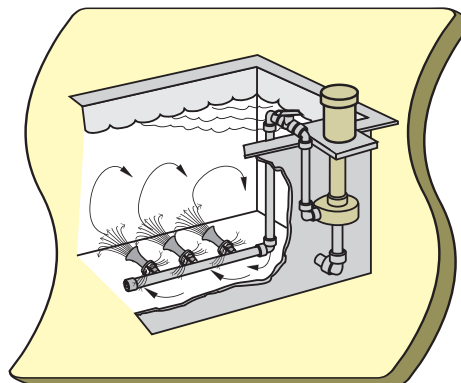
CONDUCTIVITY CONTROLLERS



Rinse tank conductivity controllers automatically improve rinse water quality and reduce flow, resulting in water savings as high as 85% on some rinses.

Use at tanks **3** **6** **8** **12** **16**

SER-DUCTOR® AIR-FREE AGITATION



Ser-Ductor air-free agitation prevents solution contamination from dirty air. It also prevents thermal and evaporative losses as well as excess brightener consumption associated with air agitation. Leveling is improved, high current density burning is reduced and stratification and settling are prevented.

Use at tanks

1 **2** **4** **5** **9** **10** **13** **14**

We're ready to help. Call us today toll-free at 800-323-5431. You'll be glad you did!

BETTER PLATING STARTS HERE . . .

IDEAS FOR BETTER PLATING TO HELP YOU:

- Achieve better plating faster
- Reduce rejects
- Conserve water and chemicals
- Reduce waste treatment costs

FILTRATION and CARBON PURIFICATION



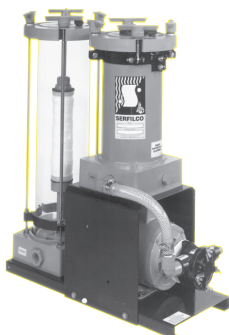
SERFILCO offers a full line of complete systems for all solutions and tank sizes, featuring "unattended" filtration and high flow rates. Unique "building-block" approach allows you to choose materials of construction, type of pump and filter media such as depth type cartridges, cleanable sleeves or discs. Optional carbon purification chambers on filter discharge or separate systems offer efficient organic removal.

Filtration systems offer flow rates from 345 to 67,800 GPH.

Use SERFILCO Filtration Systems at tanks

1 4 7 8 9 13

COALESCERS and OIL SKIMMERS



Coalescing systems extend the life of cleaning solutions and enhance cleaning action by removing free oil and other immiscible fluids from cleaner and rinse tanks. Standard systems include a pre-filter and are available in plastic, steel or stainless steel, with capacities up to 1500 GPH.

Oil skimmers can be combined with the coalescer to continuously remove floating oils from the solution surface.

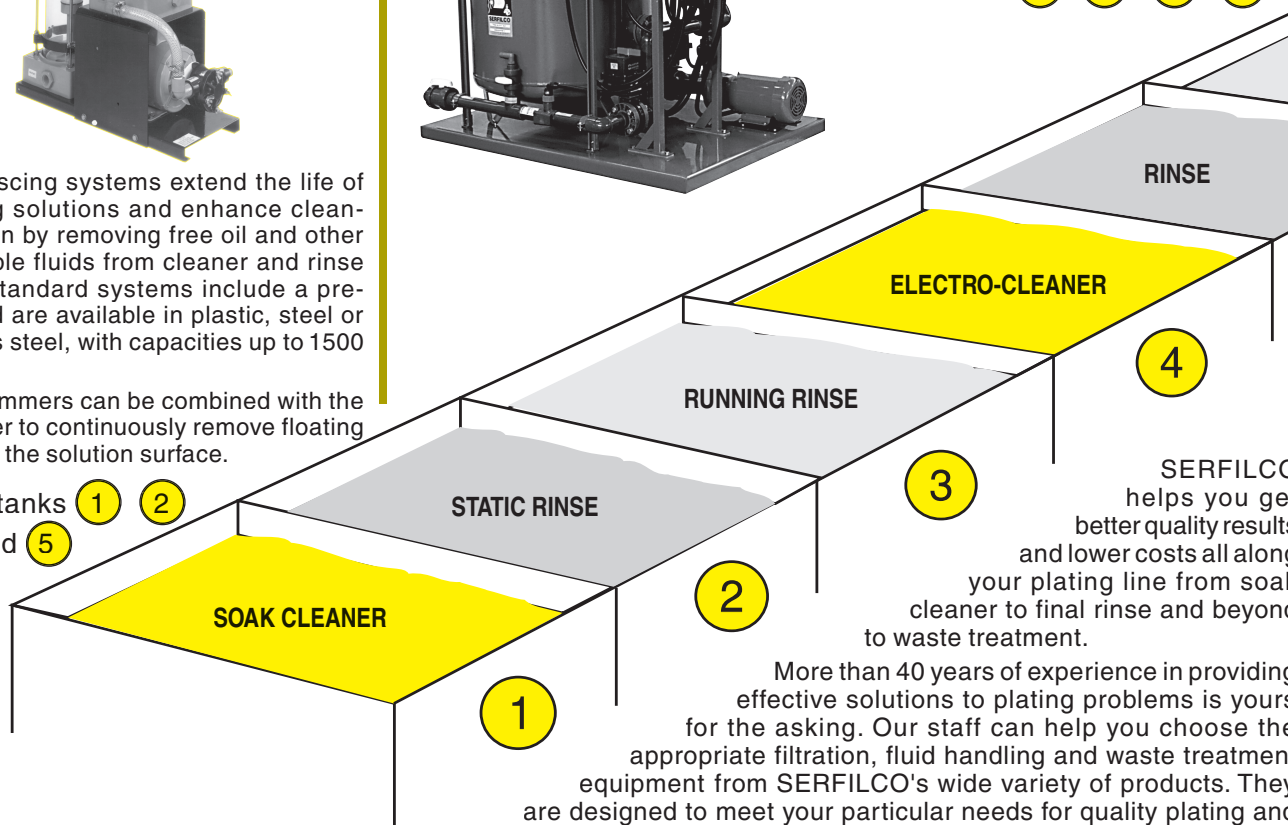
Use at tanks 1 2 4 and 5

TITAN PERMANENT MEDIA AUTOMATIC FILTRATION SYSTEMS



Titan automatic backwash filtration systems feature permanent media for solids removal from cleaner baths, process solutions and treated waste.

Use at tanks 1 4 9 13



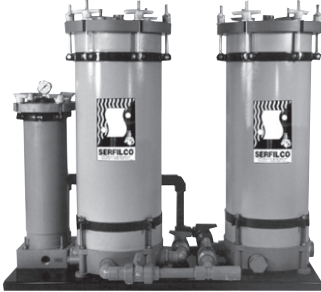
SERFILCO helps you get better quality results and lower costs all along your plating line from soak cleaner to final rinse and beyond to waste treatment.

More than 40 years of experience in providing effective solutions to plating problems is yours for the asking. Our staff can help you choose the appropriate filtration, fluid handling and waste treatment equipment from SERFILCO's wide variety of products. They are designed to meet your particular needs for quality plating and compliance with environmental regulations.

WITH SERFILCO QUALITY PRODUCTS

ION EXCHANGE RESIN SYSTEM

Recover heavy metals from rinse water. Effluent is suitable for discharge or bath replenishment. Concentrated regenerate can be chemically treated for disposal or possible recovery. Choice of systems with or without prefilters (prefilter removes suspended solids that decrease resin capacity). Flow rates to 480 GPH.



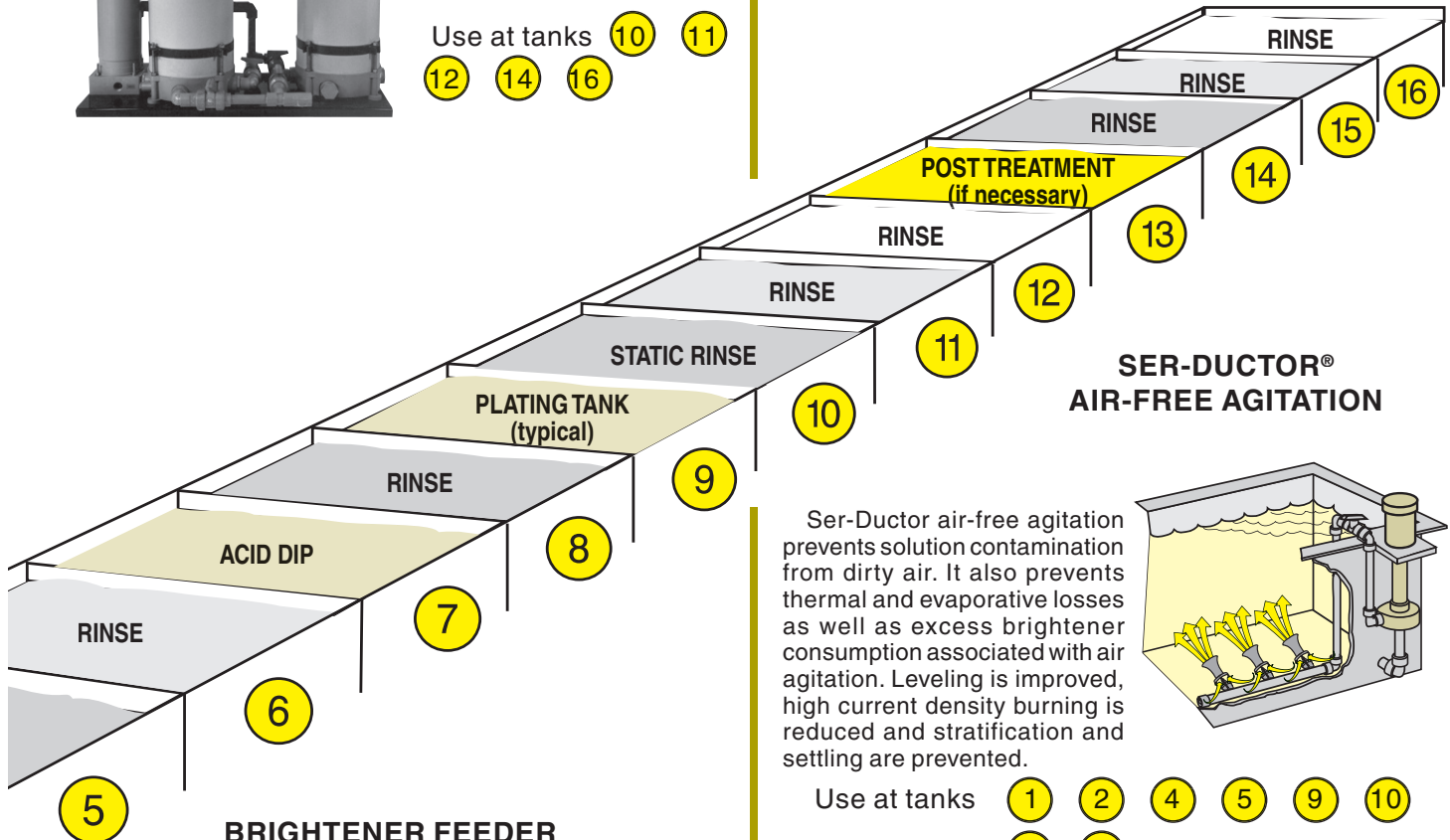
Use at tanks 10 11
12 14 16

CONDUCTIVITY CONTROLLERS



Rinse tank conductivity controllers automatically improve rinse water quality and reduce flow, resulting in water savings as high as 85% on some rinses.

Use at tanks 3 6 8
12 16



BRIGHTENER FEEDER SYSTEMS

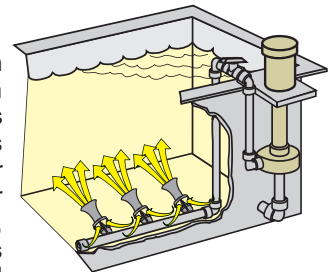


Integrating ampere-time totalizer / controller replenishes brighteners and additions at precise rate of consumption in relation to metal deposited, automatically compensating for variation of work load or rate. System verifies metal consumption. Compact solid state circuitry is protected in a corrosion resistant plastic case. Models are available for one, two or up to eight rectifiers on one tank.

Use at tank 9

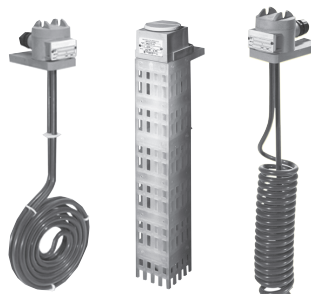
SER-DUCTOR® AIR-FREE AGITATION

Ser-Ductor air-free agitation prevents solution contamination from dirty air. It also prevents thermal and evaporative losses as well as excess brightener consumption associated with air agitation. Leveling is improved, high current density burning is reduced and stratification and settling are prevented.



Use at tanks 1 2 4 5 9 10
13 14

IMMERSION HEATERS and HEAT EXCHANGE COILS



For heating or cooling cleaners, plating baths and virtually all acids and alkalis. Safeguard protector cuts off power in over-temperature conditions. Available in over-the-side, L-shaped or side entry. Quartz, stainless steel, titanium or TFE.

Use at tanks 1 4 9

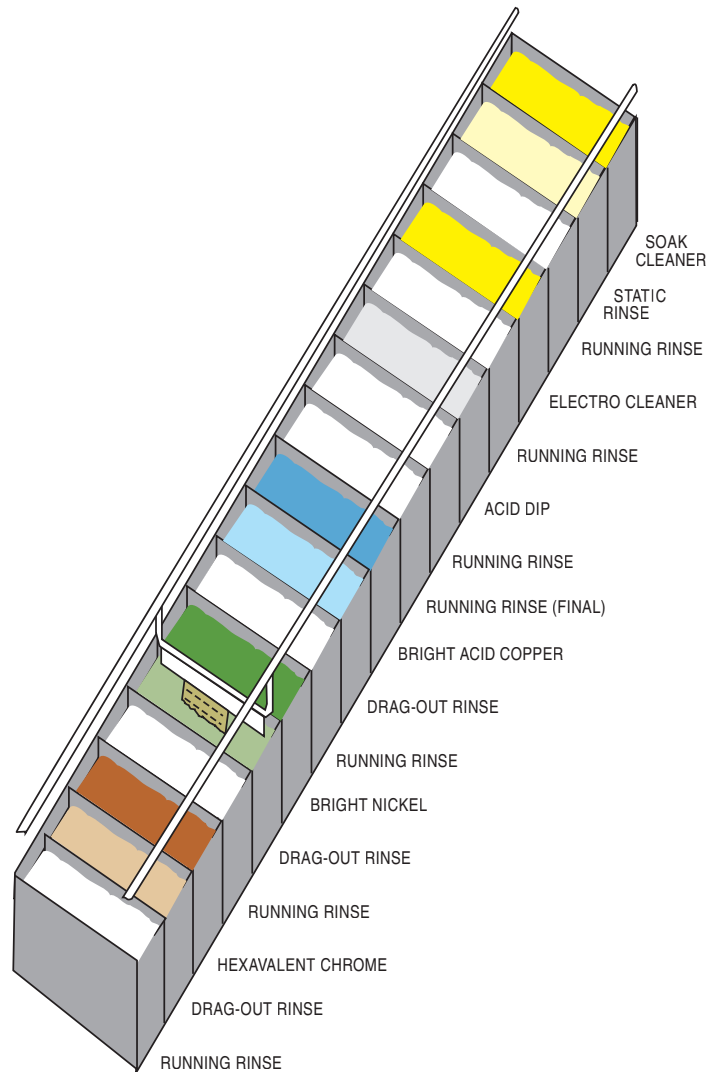


SERFILCO®

"ENHANCED" AUTOMATIC CU-NI-CR PLATING LINE

SOAK CLEANER 3000 gals. 180°F		
TITAN CLN 50 S-2934-1		\$14,449
or Knight filter K12HSS315		3,954
or DF filter DFS-16.5-SS (49-1043A)		21,667
with Coalescing system S-1434		8,280
Skimmer assembly SK ¾ (99-0498)		163
and SER-DUCTOR® agitation system		
RC300-5L(M1)-D3.0 (62-0551 M) Pump	1,041	
26-MES 3/8" SER-DUCTOR® nozzles (33-1732F)	879	
STATIC RINSE		
RUNNING RINSE		
Conductivity controller CC-97 (56-0552)		335
ELECTRO-CLEANER 1500 gals. 150°F		
SER-DUCTOR® agitation system		
RC200-2L(M1)-D.75 (61-0521 H) Pump	723	
14-MES 3/8" SER-DUCTOR® nozzles (33-1732F)	473	
RUNNING RINSE		
Conductivity controller CC-97 (56-0552)		335
ACID DIP 1500 gals. 100°F		
Space-Saver® canister carbon filter (w/pre-filter) S-0414 AA	2,789	
with SER-DUCTOR® agitation system		
HE2x1½ CE4V(M2)-D5.0 (42-0142D) Pump	1,841	
18-ME 3/8" SER-DUCTOR® nozzles (33-1732)	330	
RUNNING RINSE		
Conductivity controller CC-97 (56-0552)		335
RUNNING RINSE (FINAL)		
Space-Saver® canister carbon filter (w/pre-filter) S-0414 AA	2,789	
with SER-DUCTOR® agitation system		
HE2x1½ CE4V(M2)-D5.0 (42-0142D) Pump	1,841	
18-ME 3/8" SER-DUCTOR® nozzles (33-1732)	330	
BRIGHT ACID COPPER 3000 gals. 80°F		
Guardian® filter S-GC36HE330H	5,024	
with carbon purification chamber O-3428	1,785	
with SER-DUCTOR® agitation system		
6x4Fx8 CTV(M8)-H15.0 (47-3127S) Pump	6,845	
66-ME 3/8" SER-DUCTOR® nozzles (33-1732)	1,212	
and Brightener controller / Totalizer Series 1200 (56-0578)	740	
(2) Metering pumps A141-155	1,018	
DRAG-OUT RINSE		
RUNNING RINSE		
Conductivity controller CC-97 (56-0552)		335
BRIGHT NICKEL 3000 gals. 145°F		
Mega-Flo® filter S-PPJ 54HE450	7,800	
with carbon purification chamber O-3432PP	4,430	
with SER-DUCTOR® agitation system		
6x4Fx8 CTV(M8)-H15.0 (47-3127S) Pump	6,845	
66-ME 3/8" SER-DUCTOR® nozzles (33-1732)	1,212	
and Brightener controller / Totalizer Series 1200 (56-0578)	740	
(2) Metering pumps A141-155	1,018	
DRAG-OUT RINSE		
RUNNING RINSE		
Conductivity controller CC-97 (56-0552)		335
HEXAVALENT CHROME 1500 gals. 100°F		
Space-Saver® 'J' filter S-CJ18HE610	3,480	
with SER-DUCTOR® agitation system		
HE2x1½ CE4V(M2)-D5.0 (42-0142D) Pump	1,841	
18-MEC 3/8" SER-DUCTOR® nozzles (33-1732C)	385	
DRAG-OUT RINSE		
SER-DUCTOR® agitation system		
HE2x1½ CE2V(M2)-D2.0 (42-0122B) Pump	1,266	
8-MEC 3/8" SER-DUCTOR® nozzles (33-1732C)	171	
Total \$72,920 to \$94,587		

**How much should you pay
for reject-free plating?**



*Send us a drawing of your line. We will send
a proposal that will drastically reduce your
rejects — WE GUARANTEE IT!*

Ask for our new
catalog 'Z'

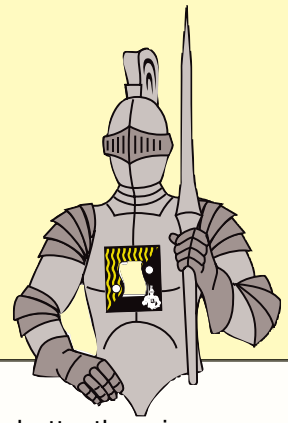


SERFILCO, LTD.

2900 MacArthur Blvd. 847-509-2900
Northbrook, IL 60062-2005 U.S.A. 800-323-5431
e-mail: sales@serfilco.com FAX: 847-559-1141
www.serfilco.com

SERFILCO

ANSWERS YOUR QUESTIONS ABOUT PLATING FILTRATION



Q. Exactly what can the proper filter do for me?

A. A lot. It can reduce plating roughness, reduce plating time from increased agitation, provide better throwing power, remove solution surface scum, eliminate tank pump-out, and prepare your solution for organic impurity removal.

Q. How can all these benefits be accomplished?

A. It's important to pump the solution at a high enough flow rate so that the solution passes through the filter frequently, for optimum clarity. If dirt load is high, increase the amount of filter surface or select a type of media that better meets the specific situation.

Q. What are some of the media choices?

A. There are surface types such as flat sheets of paper cloth, or cylindrical types, such as tubes of fiber, ceramic, or sintered metal. There are also bags, discs, sleeves and, of course, depth cartridges.

Q. What might work best for me?

A. It depends on your particular problem, and an individual analysis is required. Generally speaking, the coarser the filter the better, because it means increased dirt holding capacity, less frequent cleaning or changing of media, and less restriction to flow.

Q. Exactly what is coarse filtration?

A. It refers to the openness of the weave or winding of the filter media. Coarseness is a relative term; even very dense filter media might be referred to as coarse in an individual context. A 0.45 micron filter traps fine particles but it would be referred to as coarse compared to a 0.25 micron filter. A 10 micron is coarse compared to a 5 micron, and so on. Generally speaking, 15 micron works very well for most plating baths.

Q. How can I best use coarse media?

A. Increase your tank turnover rate to compensate for the lower particle removal efficiency. This can be done by increasing the flow rate of the solution through the filter, or increasing the size (capacity) of the filter, or both. The result is higher particle removal and a cleaner solution.

Q. What happens if I filter too fine?

A. Too many people think that a fine filter automatically provides more efficient filtering. Fine filters tend to plug quickly, much sooner than a coarse filter. This reduces flow rate which in turn reduces tank turnover which results in reduced solution clarity. The concentration of contamination will increase to the point where ultimately batch treatment may be required. Batch filtration was a common practice in years past; with modern filtration techniques, it's not necessary to shut down for batch treatment. Filters and plating baths can stay in operation indefinitely with no loss of solution clarity or plating efficiency.

Q. What if I need carbon for purification of my solution?

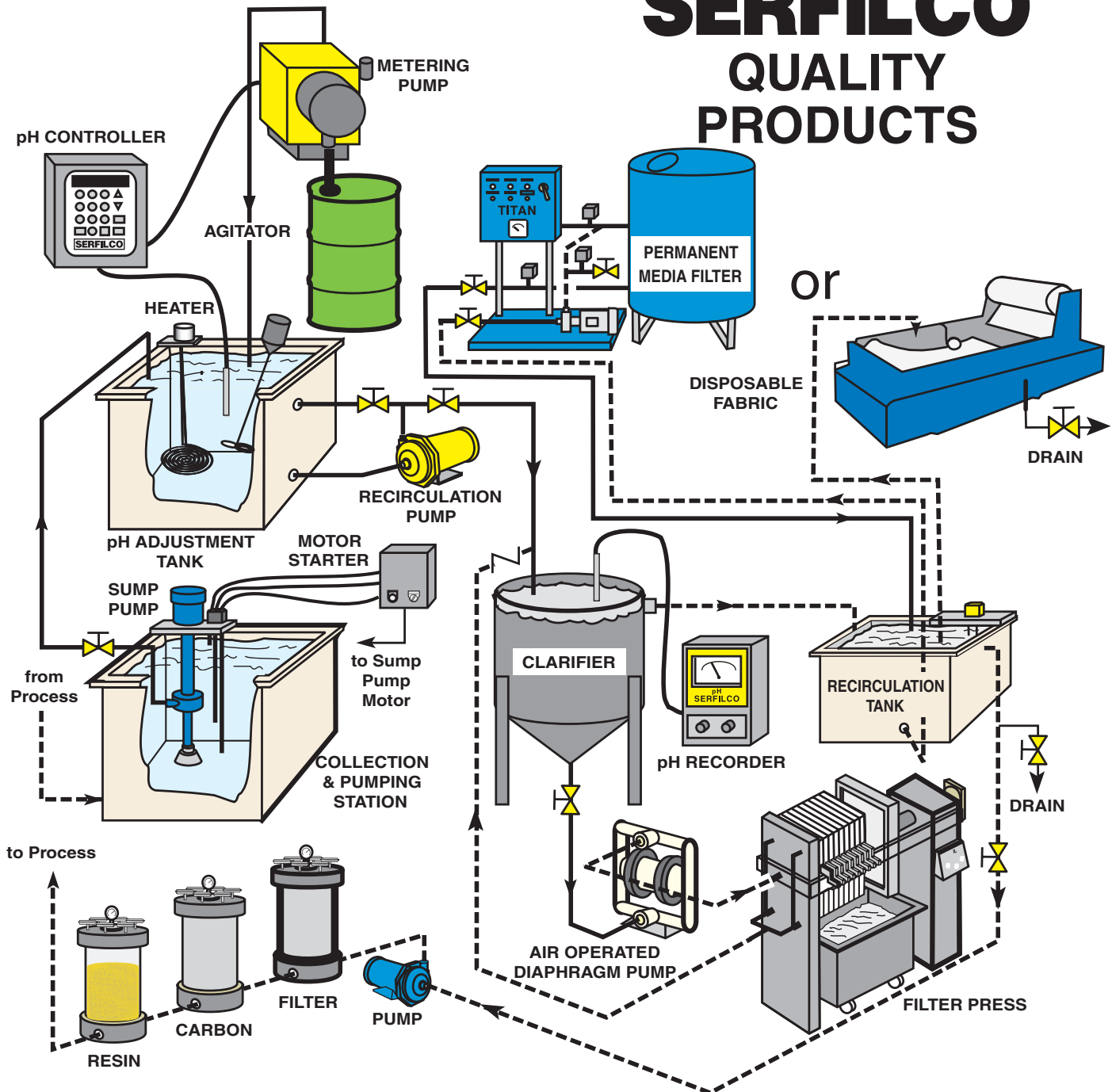
A. Chambers for purification provide for the most convenient adsorption of organic impurities with the use of granular carbon. Adsorbency of the granular carbon is assured of reaching the maximum when the solutions are prefiltered for the removal of solids prior to passing the liquid over the carbon; this makes it possible for only clean solution to come in contact with the granular carbon, which prevents the carbon surface and pores from becoming coated or plugged with solids. Carbon adsorbency is thus assured of retaining its maximum efficiency until all of the adsorbency afforded by the granular carbon is used right down to the very core.

Q. Is granular carbon as adsorptive as powdered carbon?

A. Yes - tests have shown that. Surface area of activated carbon is the internal pore surface area which is compared to a complex network of caverns and accomplishes the adsorptive phenomena. Surface area of SERFILCO Hi-Surf 8 x 30 mesh is 1000 sq. meters per gram. Surface area of one commonly used powdered carbon is 650 sq. meters per gram.

Get the ultimate in continuous
performance & service from your
waste treatment system . . .

always specify
SERFILCO®
QUALITY
PRODUCTS



SERFILCO®

SERFILCO, Ltd.
2900 MacArthur Blvd.
Northbrook, IL. 60062-2005
U.S.A.
(800) 323-5431
(847) 509-2900
Fax: (847) 559-1141
sales@serfilco.com
www.serfilco.com

DISTRIBUTED BY