

Immersion Cleaning

We understand there's more to your immersion cleaning system than just choosing the right cleaner. Tank design is also important. The following are a few critical elements to consider when designing a good immersion cleaning system. BioChem Systems customer service representatives have considerable experience in designing these types of cleaning systems. We are more than happy to help you design a Bio T 300B system to meet your specific requirements. Call us at 800-777-7870 to schedule an appointment.

Immersion Tank Design

Immersion tanks should be sized to fit the parts or baskets being cleaned. Design your tank to allow several inches of clearance on all sides of the parts. This permits adequate liquid circulation and ensures parts will not hit the sides of the tank when being submerged or removed.

Immersion Tank Materials

Stainless steel is the material of choice for wash tanks containing Bio T 300B. However, for small tanks (less than three cubic feet), high-density polypropylene (HDPP) may be used. Thick walled plastic tanks are preferable to minimize warping. Mild steel may also be used, but corrosion may occur on the tank walls above the liquid level.

Agitation

Immersion cleaning systems work best when the parts are submerged in the liquid with good agitation. Good agitation is defined as complete turnover movement of the liquid in the tank. This is accomplished by pumping into the bottom of one end of the tank and removing liquid from the top opposite end of the tank. The liquid should turn over in the tank at least once every five minutes.

Bath Maintenance

Maintaining the proper Bio T 300B concentration is critical to an effective cleaning system. Control Charts like the one shown below are used to adjust the strength of the Bio T 300B bath once the proper concentration is determined. If proper concentration is maintained, a 300B bath can be filtered and reused for 12 months or longer. The strength of the wash bath is easily determined by measuring the specific gravity and using the adjustment chart below.

Bio T 300 B



TYPICAL ADJUSTMENT CHART - 150-Gallon Working Capacity/10 Percent Concentration

SPECIFIC GRAVITY	BIOT 300B CONCENTRATION	BIOT 300B/GALLONS	WATER/GALLONS
0.9913	5%	7.5	0
0.9898	6%	6.0	0
0.9883	7%	4.5	0
0.9868	8%	3.0	0
0.9853	9%	1.5	0
0.9838	10%	0	0
0.9823	11%	0	1.5
0.9807	12%	0	3.0
0.9792	13%	0	4.5
0.9777	14%	0	6.0
0.9762	15%	0	7.5

Note: Measure specific gravity with a .950-1.000 range hydrometer.

Rinse Tank Design

Parts can be rinsed by spraying them directly with water. This is accomplished by moving the parts through a tank where spray nozzles are directed on parts. If the parts have blind holes or are stacked on top of one another preventing the spray from completely removing the wash liquids, dip tanks with circulating water should be used. Mechanical agitation (up and down motion of parts or baskets) may also be helpful. In some processes, water spots (white spots or rings) are cause for rejection. Water spots can be prevented by using deionized (DI) water.

Rinse Tank Materials

Stainless steel, HDPP or painted mild steel is recommended when constructing a proper rinse tank. For large systems (500-gallons or larger), metal tanks are preferred.

Rinse Tank Maintenance

When rinse water becomes cloudy, the concentration of organic compounds is approximately 30 parts per million and should be replaced with clean water. At this concentration, rinse water can be disposed of directly into most municipal waste treatment facilities. (Contact your local or state water treatment authority to determine allowable discharge levels for organic materials.)

Pumps

All wash tanks should be equipped with a circulating system in order to achieve effective cleaning. A circulation pump should be chosen based on several factors: size of the tank, size of piping, amount of agitation needed to give good circulation through the tank. Suggestions for choosing the proper pump relative to tank size are provided in the following table.

Tank Size, Gallons	50-200	100-200	200-300	300-500
Circulation Pump Flow Rate, GPM	50 GPM	100 GPM	100 GPM	300 GPM
Circulation Pipe Size	1.25" - 1.5"	1.5" - 2"	2"	2.5"
Distribution Pipe				
Pipe Size	1.5"	2"	2"	2.5"
Hole Size	1/8"	1/8"	3/16"	3/8"

Pump Construction

Centrifugal type pumps are very effective and economical. To be compatible with 300B, pumps should be constructed from stainless steel or hard plastic. Additionally, pump seals should be made of Viton, EDPM, or Kynar, or other elastomeric material such as Nitrile. Natural rubber seals such as SBR are to be avoided due to swelling and early failure.

Filters

All immersion systems should include a filter system to remove particulate and oil contaminants. Bag filters, such as FSI (POMF OA) filters are very effective on large high flow systems. Particulate such as metal fines and other dirt contamination are easily taken out of the system to keep the wash bath clean. The bags are easily removed and disposed of as solid waste.

Bag filters using cotton or polypropylene are used to remove oil and other petroleum products from the bath. For bag filters to be effective in removing oils, the liquid flow needs to be low (less than 15 gallons per minute). High flow pumping systems cause oils to be washed off the filter media and returned to the bath. For large systems, oil can be removed from the bath by using a side stream from the main circulating lines and a smaller pump, to feed through a separate, "low flow filter" that will remove the oil from the bath.

Bio T 300B is available:

- 5-gallon pails
- 55-gallon drums



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