



SECTION DAF1-XXX DISSOLVED AIR FLOTATION (DAF) SPECIFICATIONS

PART 1 – GENERAL

1.1 EQUIPMENT PERFORMANCE AND OPERATION

- A. The M.W. Watermark Dissolved Air Flotation (DAF) clarifier will remove fats, oils, grease (FOG), suspended solids, metals and non-soluble BOD from a waste stream. Typical removal rates, with proper chemical pre-treatment, are typically 95% and greater.

Microscopic air bubbles are produced and mixed with the incoming wastewater. The air bubbles attach themselves to the contaminants giving them buoyancy. The buoyant mixture of particles and air bubbles float to the surface where they are skimmed and removed from the tank.

1.2 SYSTEM DESCRIPTION

- A. Inlet Diffusion Chamber: The raw influent enters the DAF with the pressurized recycle flow through a distribution baffle that spans the entire width of the tank. Initial mixing takes place as the two flows merge. A distribution baffle shall be provided in PVC Sch.80 material and distribute the flow evenly across the width and depth of the separation chamber.
- B. Separation Chamber: As the pressurized recycle flow reaches atmospheric pressure, millions of small bubbles are released and attach themselves to the contaminants in water, floating them to the surface. The design shall utilize a velocity reducing chamber to enhance the rise rate of the contaminant/bubble mixture.
- C. Skimmer Assembly: A surface skimmer is used to move the floating solids (float) from atop the separation chamber into an isolated float chamber. The assembly shall include 304 SS flight skimmers that move in a counter direction of the flow, with adjustable Neoprene wipers and variable speed gear drive. Varying the speed of the skimmer drive allows for the driest float possible.
- D. Float Chamber: The skimmer assembly shall continuously move float into an isolated float chamber. The chamber shall be beveled to allow for near complete removal of float from the chamber. Chamber to include a 4" 150# discharge nozzle.
- E. Solids Chamber: Heavy solids that settle descend into an area below the separation chamber for temporary storage of settled solids. The sides of the sludge chamber shall be sloped to allow for near complete removal of sludge from the chamber. Chamber shall include one or more 150# discharge nozzles, based on tank size.



- F. Effluent Chamber: Clean water passes under a retention baffle and cascades into the effluent chamber via an adjustable 304 SS weir. The weir adjusts the water level in the tank.
- G. Recycle Pressurization System: A recycle pump is provided to super saturate water with air and blend with the influent waste stream. The pump shall draw air from atmosphere, no dedicated air source required. The pump shall utilize a flooded suction; have cast iron housing with a SUS 403 stainless steel impeller. Pump and piping are to be pre-mounted to DAF tank prior ship; piping shall be PVC Sch.80 material.
- H. Control Panel: A UL-508A labeled Nema 4X 304 stainless steel control panel is mounted to the side of the DAF tank, pre-wired and tested.

1.3 SUBMITTALS

- A. Shop Drawings: M.W. Watermark shall provide shop drawings for review and approval prior to the equipment being released for production. Shop drawings shall include information such as scope of supply, tank size and weight, material of construction, openings sizes, coatings, etc. Shop drawings shall be provided after receipt of written order and deposit.
- B. Instruction, Operation and Instruction (IOM) manuals: One electronic copy shall be provided prior to delivery of the equipment.

1.4 MANUFACTURER AND WARRANTY

- A. The Dissolved Air Flotation clarifier shall be manufactured, assembled and warranted by **M.W. Watermark, Holland, MI.**
- B. M.W. Watermark warrants all new equipment of its manufacture to be free from defects in material and/or workmanship under normal use and service for a period of 12 months from the date of shipment.

1.5 QUALITY ASSURANCE

- A. All materials used in the manufacture and assembly of the equipment shall be first quality. All welds are to be double welded and dye penetrant tested. All electrical devices supplied by M.W. Watermark shall be tested prior to ship. All equipment shall be tarped prior to shipping to prevent damage during transit.



PART 2 – MATERIALS OF CONSTRUCTION

2.1 TANK CONSTRUCTION

- A. A-36 Carbon Steel: DAF tank shell, internal baffles and structural support are to be constructed of A-36 carbon steel material. Weld joints are to be double welded and tested.
- B. 304 Stainless Steel: DAF tank shell, internal baffles and structural support are to be constructed of 304 stainless steel material. Weld joints are to be welded and tested.
- C. 316 Stainless Steel: DAF tank shell, internal baffles and structural support are to be constructed of 316 stainless steel material. Weld joints are to be welded and tested.

2.2 COATING SYSTEMS

- A. 304 and 316 stainless steel tanks shall not receive coatings.
- B. Interior Coatings: Interior surfaces shall be prepared to SSPC-SP10, near white metal blast, and coated with coal tar epoxy, 14-16 mils dry film thickness.
- C. Exterior Coatings: Exterior surfaces prepared to SSPC-SP6 commercial blast. Exterior coating shall include a primer coat followed by an industrial polyurethane enamel coat, 6 mils dry film thickness, finish color MWW blue.

2.3 PIPING AND HARDWARE

- A. Carbon Steel Tanks: Integral piping to be ASTM A53 black steel.
- B. Stainless Steel Tanks: Integral piping shall match tank material, either 304 SS or 316 SS.
- C. Recycle System Piping and piping not integral to the tank: PVC Sch.80 material.
- D. Flanges: 150# F.F. flange with bolt holes straddling centerline.
- E. All hardware to be 304 stainless steel material

END OF SECTION