

# AquaDDM<sup>®</sup>

Direct-Drive Mixer



AQUA-AEROBIC SYSTEMS, INC.  
A Metawater Company

# AquaDDM<sup>®</sup>

## Direct-Drive Mixer

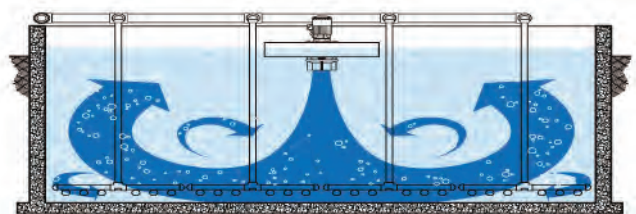
Since 1973, Aqua-Aerobic Systems has installed more than 10,000 AquaDDM<sup>®</sup> Direct-Drive Mixer units in a variety of municipal and industrial applications. The mixer has also been incorporated into several Aqua-Aerobic processes including the AquaSBR<sup>®</sup> Sequencing Batch Reactor, Aqua-Aerobic<sup>®</sup> MBR Membrane Bioreactor, and AquaMB Process<sup>®</sup> Multiple Barrier Membrane System. The AquaDDM mixer is designed to provide maximum mixing efficiency. When mixing requirements are the controlling factor, the mixer can reduce power costs, while delivering 3-4 times the mixing of any aerator of the same size.

## System Features and Advantages

- Available in FSS and SS models ranging from 1-75 HP
- Suitable for most basin configurations
- Floating mixer operates in varying liquid depths
- Anti-fouling impeller
- High volume, downflow mixing pattern and near surface intake eliminates short circuiting
- Eliminates or greatly reduces surface splashing and foaming
- Submerged intake volute eliminates air entrainment
- Lower initial cost, and less expensive to install and maintain than gear reduced (slow speed) units
- More reliable service than submerged directional mixers
- High efficiency mixing reduces power consumption
- One-piece stainless steel shaft; no couplings or submerged bearings
- High efficiency and Endura<sup>®</sup> Series motor options are available



AquaDDM<sup>®</sup> mixer with mechanical aeration.



AquaDDM<sup>®</sup> mixer with diffused aeration.

## Anoxic Basins

The AquaDDM mixer is ideal for use in anoxic basins for denitrification and phosphorus reduction. The mixer provides unrivaled mixing and uniform top-to-bottom blending of the basin. Unlike horizontal, side-entering, and submersible mixers, the AquaDDM provides efficient intermixing of the basin contents resulting in increased nutrient reduction.

## Aqua MixAir<sup>®</sup> System

The AquaDDM mixer, in combination with mechanical aeration or diffused aeration, composes the Aqua MixAir system. The combined use of downflow AquaDDM mixers and upflow Aqua-Jet<sup>®</sup> surface aerators creates complementary flow patterns, and results in better suspension of solids and better distribution of oxygen and substrate. This improved process efficiency can result in energy savings of 30-40% in many applications.

When combined with diffused aeration, the AquaDDM mixer provides a full range of aeration control without compromising mixing. This combination enables the operator to operate the diffused air systems only when oxygen is required. Full scale tests and operation in various installations have demonstrated that the addition of AquaDDM mixers to diffused aeration systems improves aeration efficiency by up to 30%.



AquaDDM<sup>®</sup> mixer with restrained mooring.



# Typical AquaDDM® Applications

The AquaDDM mixer can be utilized in a number of applications: anoxic systems, back mixing, equalization, disinfection, neutralization, denitrification, directional mixing, blending combined streams, and sequencing batch reactors (SBRs).



## Anoxic Mixing

This plant installed (54) 7.5 HP AquaDDM mixers in its (18) anoxic mixing basins to meet new permit requirements for denitrification and phosphorus prior to tertiary filtration in order to provide 25 MGD of reclaimed water.



## Denitrification

(20) 7.5 HP AquaDDM mixers are divided among five anoxic basins to provide a completely mixed environment for successful denitrification, without aeration, in this 65 MGD wastewater treatment facility.



## Sequencing Batch Reactors

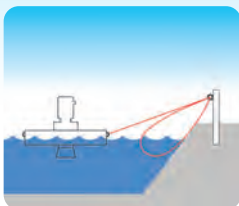
AquaDDM mixers are utilized in this dual-basin AquaSBR system to meet the plant's strict permit effluent levels (mg/l) of 8.0 BOD, 30 TSS, 1.5 Total Kjeldahl Nitrogen, 1.0 Ammonia Nitrogen, and 0.75 Total Phosphorus.



## Aerobic Digesters

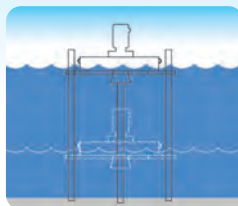
This plant replaced (16) submersible mixers with four (4) AquaDDM mixers in its two anoxic basins and one (1) Aqua MixAir system in its two aerobic digesters (consisting of an AquaDDM mixer combined with diffused aeration.)

# AquaDDM® Mooring Options



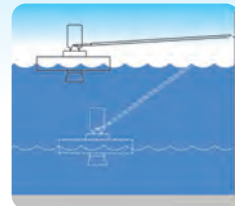
## Cable Mooring

A mooring post is installed on shore and the mooring line is attached to an eyebolt in the post. A maintenance loop enables the operator to pull the unit to shore or opposite side of the basin without disconnecting the line. Available for 3 or 4 point mooring.



## Restrained Mooring

Restrained Mooring is used in applications with varying water levels. The Aqua-Jet mooring frame fits around the mooring posts and allows the mixer to slide up and down the posts as the water level changes.



## Pivotal Mooring

A Pivotal Mooring arm is used in applications with varying water levels with arm lengths up to 40 feet. The arm fits at the base of the motor allowing the mixer to adjust to varying water levels.

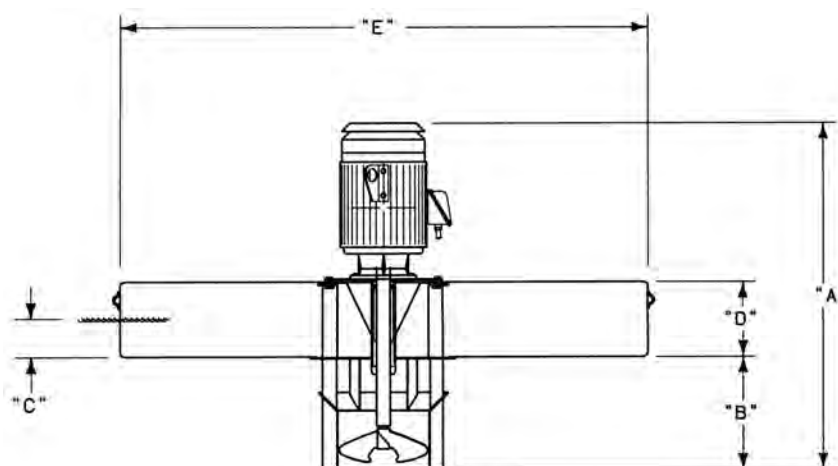
# AquaDDM® Unit Sizes and Dimensions (Standard)

## Fiberglass (FSS) Series (60 hz US Units)

FSS Model	HP	RPM	Approx. Ship Wt. (lbs)	Dimensions (inches)					Shaft Dia. (inches)	Mooring Cable Dia. (inches)
				A	B	C	D	E		
5700131	1	1200	462	44.375	14.812	4	11	64	1.5	3/16"
5700231	2	1200	472	44.375	14.812	4	11	64	1.5	
5700331	3	1200	577	51.187	18.563	7	12.25	71	2	1/4"
5700531	5	1200	691	51.187	18.563	7	12.25	71	2	
5700731	7.5	1200	722	56.125	18.563	7	12.25	71	2	
5701031	10	900	857	60	19.75	6	12.25	84	2.25	
5701531	15	900	887	60	19.75	6	12.25	84	2.25	
5702031	20	900	1227	65.938	22.563	7	12.75	94.5	2.75	
5702531	25	900	1267	65.938	22.563	7	12.75	94.5	2.75	3/8"
5703031	30	900	1676	74.312	27.812	7	13.25	114.5	2.75	
5704031	40	900	1780	74.312	27.812	7	13.25	114.5	2.75	

## Stainless Steel (SS) Series (60 hz US Units)

SS Model	HP	RPM	Approx. Ship Wt. (lbs)	Dimensions (inches)					Shaft Dia. (inches)	Mooring Cable Dia. (inches)
				A	B	C	D	E		
5900131	1	1200	518	44.375	15.062	5	11.188	59.5	1.5	3/16"
5900231	2	1200	528	44.375	15.062	5	11.188	59.5	1.5	
5900331	3	1200	647	51.312	18.938	7	12	70	2	1/4"
5900531	5	1200	762	51.312	18.938	7	12	70	2	
5900731	7.5	1200	792	56.125	18.938	7	12	70	2	
5901031	10	900	952	59.625	19.75	6	12	83	2.25	
5901531	15	900	982	59.625	19.75	6	12	83	2.25	
5902031	20	900	1319	65.812	22.563	7	12.625	91	2.75	
5902531	25	900	1359	65.812	22.563	7	12.625	91	2.75	3/8"
5903031	30	900	1806	74.063	27.812	7	13	114.625	2.75	
5904031	40	900	1910	74.063	27.812	7	13	114.625	2.75	
5905031	50	900	2641	83	31.25	8	16	114.625	3.5	
5906031	60	900	2711	83	31.25	8	16	114.625	3.5	
5907031	75	900	2801	88.625	31.25	8	16	114.625	3.875	



# AquaDDM® Unit Sizes and Dimensions (Metric)

## Fiberglass (FSS) Series (50 hz Metric Units)

FSS Model	KW	RPM	Approx. Ship Wt. (kg)	Dimensions (mm)					Shaft Dia. (mm)	Mooring Cable Dia. (mm)
				A	B	C	D	E		
5100131	.75	1500	210	1127	376.2	101.6	279.4	1625.6	38.1	4.8mm
5100231	1.5	1500	214	1127	376.2	101.6	279.4	1625.6	38.1	
5100331	2.2	1500	262	1300.2	471.5	177.8	311.2	1803.4	50.8	6.35mm
5100531	3.7	1500	313	1300.2	471.5	177.8	311.2	1803.4	50.8	
5100731	5.6	1500	327	1425.6	471.5	177.8	311.2	1803.4	50.8	
5101031	7.5	1000	389	1524	501.7	152.4	311.2	2133.6	57.2	
5101531	11.2	1000	402	1524	501.7	152.4	311.2	2133.6	57.2	
5102031	14.9	1000	557	1674.8	573.1	177.8	323.9	2400.3	69.9	
5102531	18.6	1000	575	1674.8	573.1	177.8	323.9	2400.3	69.9	
5103031	22.4	1000	760	1887.5	706.4	177.8	336.6	2908.3	69.9	9.5mm
5104031	29.8	1000	807	1887.5	706.4	177.8	336.6	2908.3	69.9	

## Stainless Steel (SS) Series (50 hz Metric Units)

SS Model	KW	RPM	Approx. Ship Wt. (kg)	Dimensions (mm)					Shaft Dia. (mm)	Mooring Cable Dia. (mm)
				A	B	C	D	E		
5000131	.75	1500	236	1127	382.6	127	284.2	1511.3	38.1	4.8mm
5000231	1.5	1500	240	1127	382.6	127	284.2	1511.3	38.1	
5000331	2.2	1500	293	1303.3	481.0	177.8	304.8	1778.0	50.8	6.35mm
5000531	3.7	1500	346	1303.3	481.0	177.8	304.8	1778.0	50.8	
5000731	5.6	1500	359	1425.6	481.0	177.8	304.8	1778.0	50.8	
5001031	7.5	1000	432	1514.5	501.7	152.4	304.8	2108.2	57.2	
5001531	11.2	1000	445	1514.5	501.7	152.4	304.8	2108.2	57.2	
5002031	14.9	1000	598	1671.6	573.1	177.8	320.7	2311.4	69.9	
5002531	18.6	1000	616	1671.6	573.1	177.8	320.7	2311.4	69.9	
5003031	22.4	1000	819	1881.2	706.4	177.8	330.2	2911.5	69.9	9.5mm
5004031	29.8	1000	866	1881.2	706.4	177.8	330.2	2911.5	69.9	
5005031	37.3	1000	1198	2108.2	790.6	203.2	406.4	2911.5	88.9	
5006031	44.7	1000	1230	2108.2	790.6	203.2	406.4	2911.5	88.9	
5007031	55.9	1000	1271	2251.1	790.6	203.2	406.4	2911.5	98.4	

## AquaDDM® Component Parts

Component	SS*	FSS*	Component	SS*	FSS*
Impeller	316 S.S.	316 S.S.	Flotation Assembly	304 S.S.	Fiberglass
Impeller Shaft	17-4 PH S.S.	17-4 PH S.S.	All Chassis Fasteners	18-8 S.S.	18-8 S.S.
Motor Base Assembly	304 S.S.	304 S.S.	Float Center Structure	304 S.S.	304 S.S.
Intake Volute Assembly	304 S.S.	304 S.S.	Float Filler	Closed Cell Polyurethane	

**Since 1969**, Aqua-Aerobic Systems, Inc. has led the industry by providing advanced solutions in water and wastewater treatment. As an applied engineering company serving both municipal and industrial customers, we work collaboratively with consulting engineers, owners, plant managers, and operators to design and manufacture the best treatment solution with the lowest lifecycle cost.

# Providing **TOTAL** Water Management Solutions

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