Aqua-Jet®
Surface Aerators

Often Imitated...Never Duplicated

Aqua-Aerobic Systems, Inc.

Often imitated...never duplicated

The Aqua-Jet aerator may possibly be the most imitated aerator in the world. But, as with other manufactured products, copies never equal the original in terms of reliability and durability. Consistency is a key component of the Aqua-Jet's success.

As the wastewater treatment industry continues to change, so do the needs of its customers. Efficiency and economical operation have always been determining factors in the selection of equipment, but recently the issue of *maintenance* is playing a more significant role in the selection process.

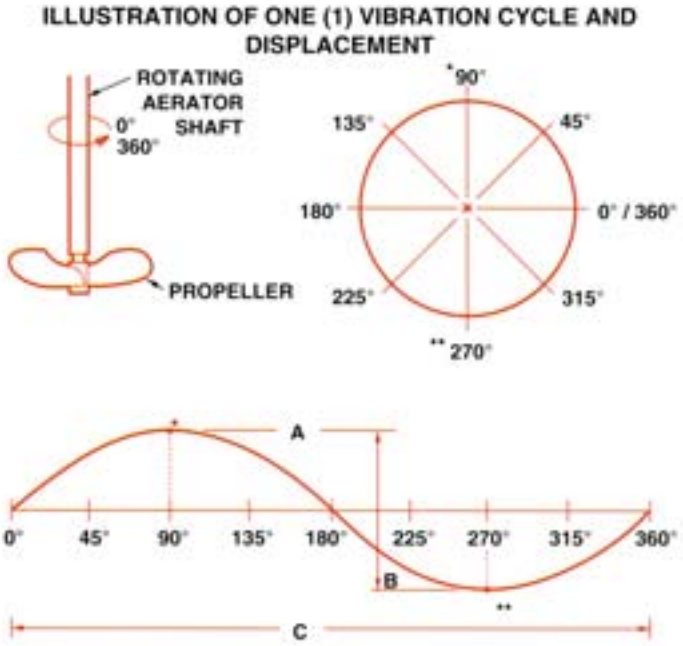
Realizing this, Aqua-Aerobic Systems, Inc. has developed and documented in long-term field testing a new line of maintenance-free products called the Endura® Series. This new line of aerators, mixers and spray coolers offer a five-year no-maintenance warranty. Each Endura product is available in a wide variety of horsepower.

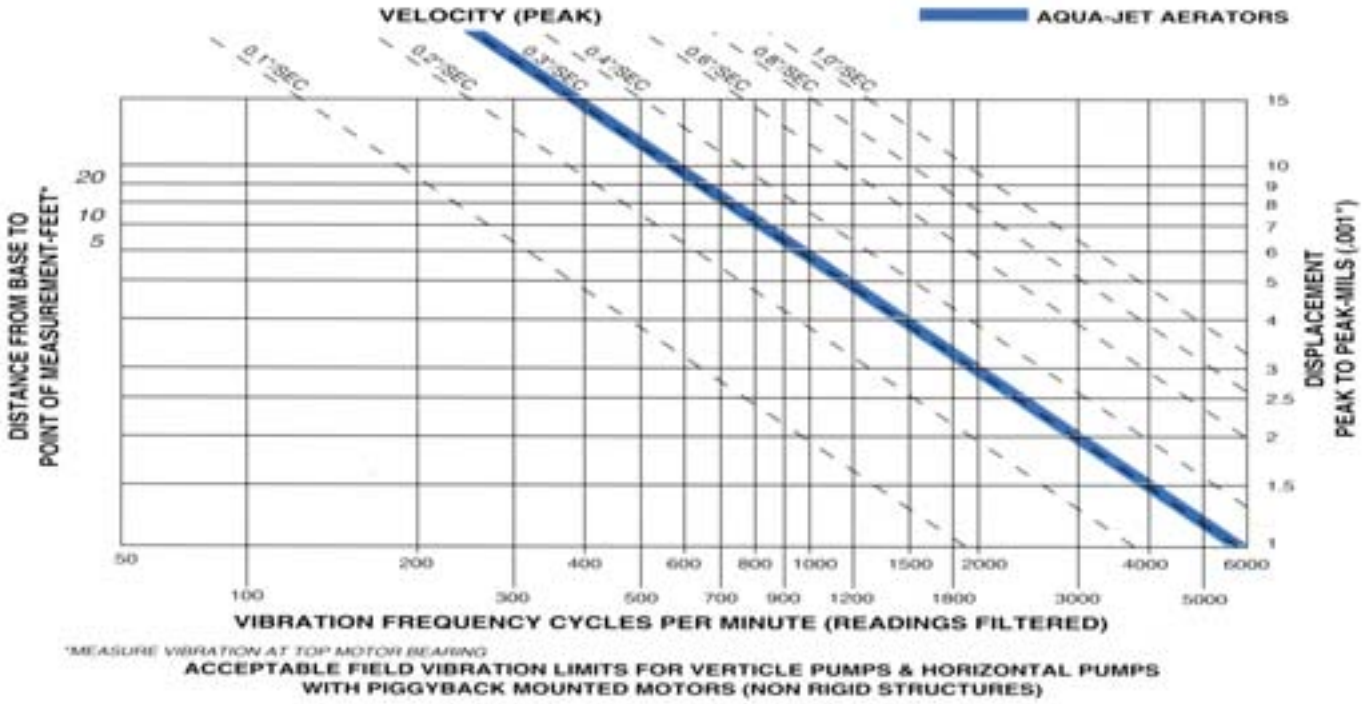
Vibration Controlled Design

The continuous heavy-duty operating life of rotating equipment, such as an aerator, demands a vibration-limiting design that will assure smooth operation long after the unit has been installed. The velocity must be controlled to 0.3in/sec. or less. If this limitation is not met, early machine failure is inevitable.

The high maintenance cost of some aeration equipment is directly related to the manufacturer's inability to control vibration in the aerations. High maintenance and equipment failure is a fact of life with many aerator installations, but not with those which employ Aqua-Jets.

Proper design and the use of the highest quality materials have made the Aqua-Jets the most durable and reliable aerators in the industry. On properly maintained units, Aqua-Jets outlast other aerators 2 to 1. On poorly maintained aerators, Aqua-Jets outlast other aerators by more than a 3 to 1 margin. Scheduled maintenance on Aqua-Jets consists only of motor bearing lubrication 2-4 times per year, depending on motor size.





ACCEPTABLE FIELD VIBRATION LIMITS FOR VERTICLE PUMPS & HORIZONTAL PUMPS WITH PIGGYBACK MOUNTED MOTORS (NON RIGID STRUCTURES)

Quality Components

Aqua-Jet® Components

A **Motors** are totally enclosed, fan cooled, and rated for severe duty. Motors are available in standard or high efficiency and vibration tested for optimum performance in the most stringent applications. Standard features include heavy-duty bearings and seals, class F insulation or better and a minimum 1.15 service factor.

B **Labyrinth Seal Guard** prevents upward migration of water from contacting the lower end bell of the motor and working into motor bearing.

C The **diffusion head** of an aerator must be able to support the weight of the motor, evenly distribute static and dynamic loads, and change the direction of the high velocity discharge flow, optimizing discharge pressure and spray pattern.

The Aqua-Jet's cast diffusion head is designed to withstand the constant stress created by the upflow spray of the aerator. Its strong flanged connection to the volute ensures that minimum stress is placed on the connections and that no vibration or fatigue results.

D **One-piece shaft** of 17-4 PH (precipitation hardened) stainless steel eliminates the use of couplings which require constant lubrication with water or wastewater. The one-piece design eliminates the vibration and constant maintenance problems inherent in coupled-shaft designs, providing much greater strength than 304 or 316 stainless steel.

E **Anti-Deflection Insert** provides support for the shaft should debris be ingested into the unit. Under normal operating conditions, the shaft runs free of support by the insert. Located in an optimum location allowing some flexing, yet protecting loads on bearings.

F The **volute** of an aerator must be able to withstand constant duty in corrosive, abrasive and high velocity propeller-induced flow. The volute of the Aqua-Jet is constructed of heavy wall stainless steel to resist this assault. The heavy construction of the Aqua-Jet volute will provide a long, trouble-free life.

G **Float** is filled with a closed cell polyurethane foam that adds to the structural stability of the AquaJet and prevents sinking if excessive damage to the float exterior should occur. Float exteriors are of 14 gauge stainless steel; with fiberglass available as an option on most sizes.

H **Propeller** is a two blade design cast of 316 stainless steel. It features an 1800 sweepback design for non-clog operation and greater operating efficiency.

I **Intake Cone** provides a smooth transition of flow with minimum headloss. Anti-vortex crosses are included as standard on all sizes 20 HP and larger.

J **Fluid Deflector** contains the thrust washer and protects the anti-deflection insert from the upward liquid flow.

K **Draft Tube/Anti-erosion Assembly** (optional). Draft tubes are volute extensions used to extend the intake of the aerator to a greater depth. Anti-erosion assemblies consist of a stainless steel plate attached to the bottom of the intake cone, via the anti-vortex cross. The assembly causes water to be drawn from the sides of the cone rather than from directly below it. See page 11 for application and dimension information.

Case Histories

To date more than 50,000 Aqua-Jet aerators representing over 1,000,000 HP have been installed throughout the world. No matter what the application, municipal or industrial, Aqua-Jets provide unequalled oxygenation and mixing.

Aqua-Jets have been installed in a wide variety of treatment schemes including oxidation ditches, SBRs, flow-through activated sludge systems, MSBRs, lagoons and extended aeration systems. Some of the many industrial applications for Aqua-Jets include: beverage, dairy, meat processing, pulp & paper mills, refineries and chemical waste treatment plants. Many international corporations use Aqua-Jets exclusively. They know that when it comes to performance and reliability, Aqua-Jets can't be beat.

A few of the thousands of Aqua-Jet installations are discussed on the following pages.

Woodruff Municipal Wastewater Treatment Plant
Woodruff, South Carolina

The Woodruff Wastewater Treatment Plant utilizes a system designed by Linvil G. Rich, Ph.D., P.E. and Lockwood-Greene Engineers. The system is based on a multi-cell design characterized by :

1. Sufficient power to maintain solids in suspension in the initial cell, which maximizes reduction of organic materials.
2. Effluent BOD5 and TSS less than 30mg/l
3. Shorter retention times which reduce algae growth
4. Less acreage for basins than lagoons of conventional aerated stabilization basin systems.

The Woodruff plant is designed for .700 MGD and currently treats .359 MGD. The plant utilizes four basins plus a post-aeration cell. A complete mix is attained in Cell No. 1 using four 7.5 HP Aqua-Jets and one 10 HP AquaDDM. A partial mix is attained in Cells 2-4 using six 1 HP Aqua-Jets per cell. By design, Cell No. 1 requires approximately 30 HP/MG in surface aeration to maintain solids in suspension. Cells 2-4 provide less aeration power (5-10 HP/MG) which allows the settleable fraction of the suspended solids from the effluent of Cell No. 1 to settle in Cells 2-4. The post-aeration basin (Cell No. 5) is equipped with a single 5 HP Aqua-Jet Aerator, and has a design hydraulic retention time of approximately 45 minutes.

The biodegradable materials from the settled solids decompose in a benthal environment. A low effluent concentration of TSS is achieved by limiting the retention time which reduces algae growth in Cells 2-4. Retention time in Cell No. 1 is 2.16 days; and 1.06 days/basin in Cells 2-4.

	Annual Averages	
	Inf.	Eff.
BOD_5	90.32 mg/l	24.75 mg/l
TSS	185 mg/l	27.25 mg/l

CPL Paperboard Ltd.
Burnaby, British Columbia

Secondary Treatment Systems
Six 60 HP Aqua-Jet Aerators

As a paper recycling plant, Paperboard Industries in Burnaby, British Columbia , makes an obvious impact in preserving our environment. This same impact is evident in the company's handling of the wastewater produced by the recycling process.

The company needed to implement a secondary treatment system to meet the toxicity requirements of its effluent discharge permit. At the time, no outside data was available regarding the treatment of waste water generated by the recycling process, so Paperboard Industries commissioned a detailed pilot study to determine the best method for treating this kind of waste. It was concluded that a complete mix aeration process without solids recycle would be an appropriate wastewater treatment system; however, the following criteria had to be met:

1. Because of the amount of land required, the company did not feel it was practical to install a large lagoon or system of lagoons. An alternate design was needed.
2. The process had to be a completely mixed system with no sludge accumulation.
3. Paperboard Industries wanted to meet its LC50 toxicity test without exception.

The first requirement was met by constructing a large concrete basin 265 feet in diameter and 18 feet deep. This basin was designed to handle up to 5 million gallons of wastewater per day. The second two criteria were easily met by installing six 60 HP Aqua-Jet aerators in the basin. Paperboard Industries' wastewater treatment system currently treats about 2 million gallons of recycling waste water daily. D.O. , BOD and toxicity levels fall well within the company's permit requirements for discharge in to the Fraser River.

Alberta Pacific Forest Products Boyle, Alberta Canada

The Alberta Pacific Forest Product (Alpac) mill in Boyle, Alberta was commissioned in late summer of 1992 and started-up in September, 1993.

This 1500 metric tons/day greenfield kraft pulp mill produces hardwood and softwood pulp. The annual production is 75% hardwood and 25% softwood.

A description of the mill's waste water treatment system is as follows:

Design Flow 800 l/ s -1000 l/ s
(18.3-22.8mgd)

Secondary activated sludge treatment plant which includes:

• **Primary treatment** - Mechanical screening and primary clarification, equalization/ cooling basin and spill basin.

• **Secondary treatment** - Primary effluent cooling using a two-cell crossflow cooling tower/pump station, a two-cell bioreactor with selector cells to provide an extended aeration - activated sludge process, phosphorus and nitrogen nutrient addition facilities, secondary clarification and return and waste activated sludge pumping.

• **Sludge Treatment** - Secondary waste activated sludge is thickened using a gravity belt thickener then blended with raw primary sludge. The blended mixture is dewatered using two screw presses. The dewatered waste sludge is burned in the mill power plant boiler.

• **Outfall Works** - A 5km, 1050mm (42") diameter discharge line delivers the treated effluent to a foam control facility prior to discharge through a submerged diffused outfall in the Athabasca River bed.

• **Bioreactors (2)**

Total Volume 100,000 m^3 (26.4MG)

21-75 HP Aqua-Jet Aerators
3-40 HP AquaDDM Mixers

• **Equalization/Cooling Pond**

6-75 HP Aqua-Jet Aerators
6-40 HP AquaDDM Mixers

Lakeside Foods Reedsburg, Wisconsin

Aerated Lagoon Systems
11-40 HP Aqua-Jet Aerators

In 1975 Reedsburg Foods needed a new waste water treatment system. The canning company had been using a spray irrigation system but ponding was creating unacceptable runoff in to the Baraboo River. Reedsburg Foods contracted Mid-State Associates of Baraboo, Wisconsin to design and install an aerated lagoon system.

The new system included a primary aeration lagoon with a design capacity of 7.5 MG, a secondary lagoon with a 7.4 MG capacity, and a 15.4 MG holding pond. Eight 40 HP Aqua-Jet aerators were installed; six in the first lagoon and two in the second.

In 1985, after ten years of consistent production increase, Reedsburg Food's wastewater treatment system had once again reached capacity. Three 40 HP Aqua-Jets were added to the system.

Mid-State's Dave Murphy explains that Reedsburg Foods requires a system that can handle the variable loads generated by food processing waste. "Corn, for example, creates an especially high oxygen demand," he explains. "The starches and other organics from corn create an average BOD of 5200 mg/ l, while peas average a BOD of only 2400 mg/ l."

With 11 Aqua-Jets now in operation, Reedsburg Foods finds that its wastewater treatment system efficiently handles the fluctuating biological demands placed upon it, and that operators can easily maintain final effluent discharge limits throughout the entire canning season.

More than 15 years of operation in central Wisconsin's climate extremes attest to the durability of Aqua-Jet aerators. Eight of Reedsburg Foods' 11 Aqua-Jets have been in use since 1976, and all of the units remain in the lagoons year round. The lagoons are allowed to freeze completely in the winter when the system receives no waste water flow and, according to operator Mike Lennon, "The Aqua-Jets start right up in the spring."

Flow:	Average .25 mgd Peak .30 mgd
$BOD_{5:}$	Influent 5210 mg/l (avg. corn) Effluent 40mg/l (avg. corn)
REQ Effluent:	45 mg/l BOD_5 (weekly avg.)
Temperature:	Winter (avg) 20ºF Summer (avg) 70ºF

Original upgrade of Reedsburg Foods as it appeared until 1985.

Mooring Arrangements

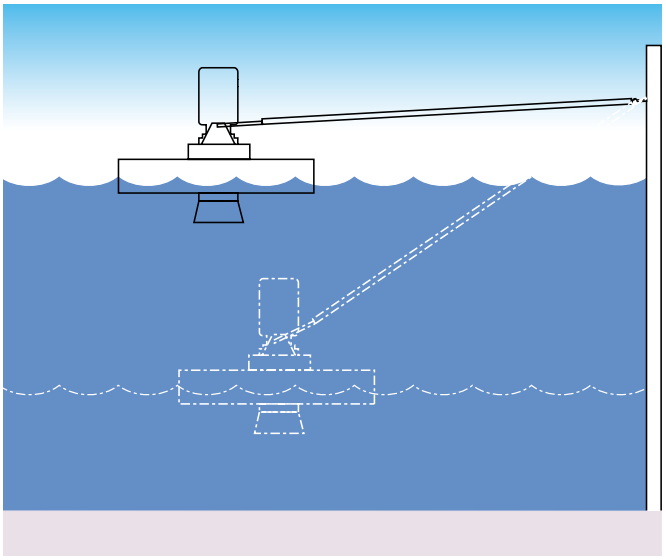
Dual Speed

Very few wastewater treatment systems are fully or evenly loaded at all times. Consequently, aeration systems sized to handle peak loads have excess capacity during periods of light loading. This results not only in an excessive dissolved oxygen residual, but also consumes more energy than is necessary.

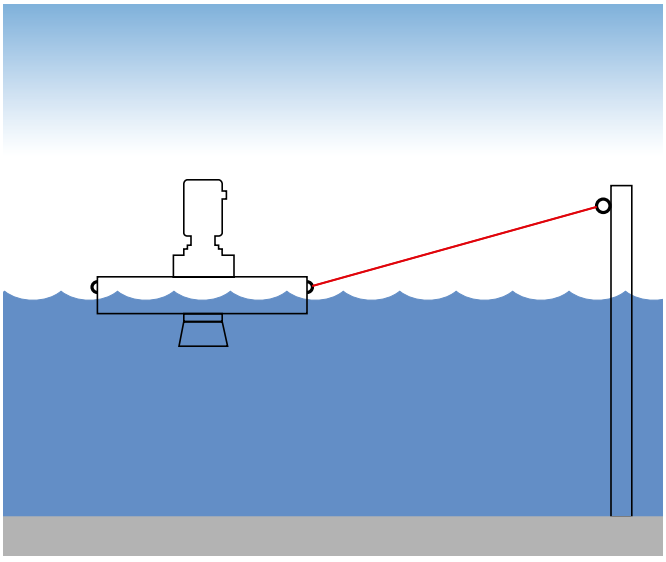
Aqua-Aerobic Systems' Dual Speed Aqua-Jet Aerators provide the option for speed reduction during periods of light loading, which results in reduced power consumption and operating costs. Control options are available to provide manual or automatic operation of your system.

Energy Efficient Motors

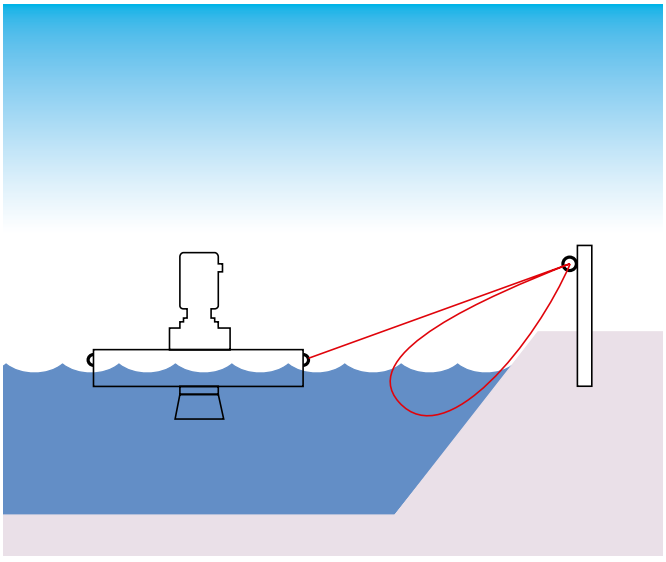
Optional energy efficient motors offer significant energy savings over standard industrial motors. The energy savings realized with the energy efficient design allow the initial price premium to be recovered in a relatively short period of time.



Pivotal Mooring arm is used in applications with varying water levels not exceeding arm length (lengths available up to 13 meters long). The Aqua-Jet pivotal mooring arm fits at the base of the motor allowing the aerator to adjust to varying water levels.

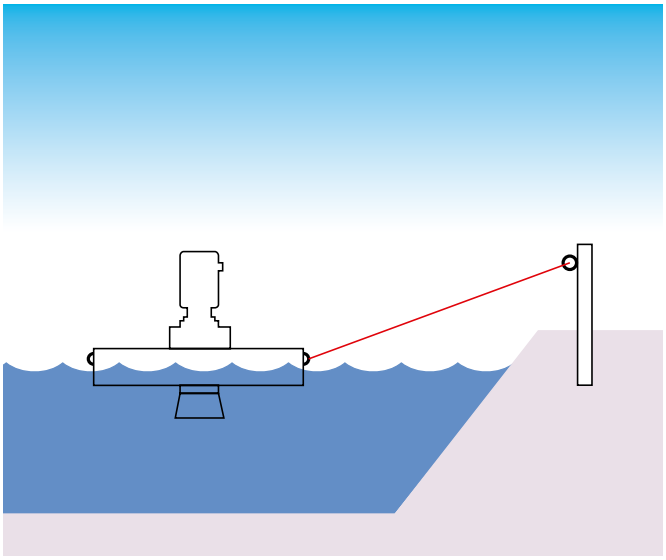


Post Mooring is used in larger lagoons where distances prohibit mooring the Aqua-Jet to the shore. A mooring post is installed into the lagoon floor and the mooring line is attached to an eyebolt in the post. For 3 or 4 point mooring.

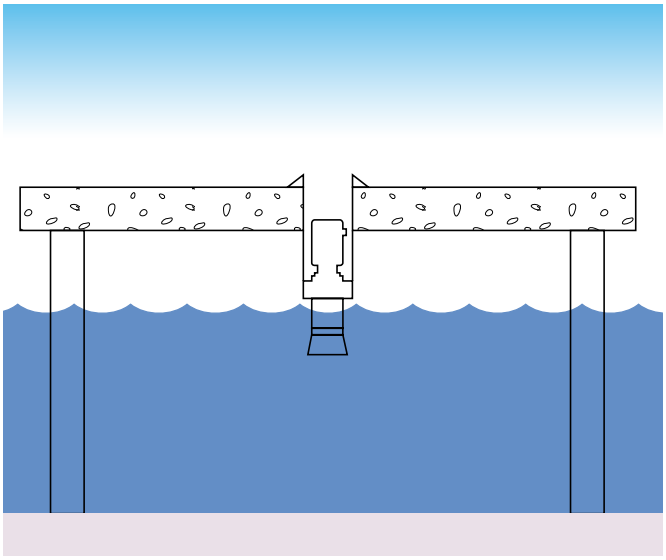


Maintenance Mooring enables the operator to easily move the aerator to the shore for maintenance. One or two mooring connection points are supplied with a disconnect device and a long length of cable. This allows the aerator to be moved to the opposite side of the basin without disconnecting the mooring line.

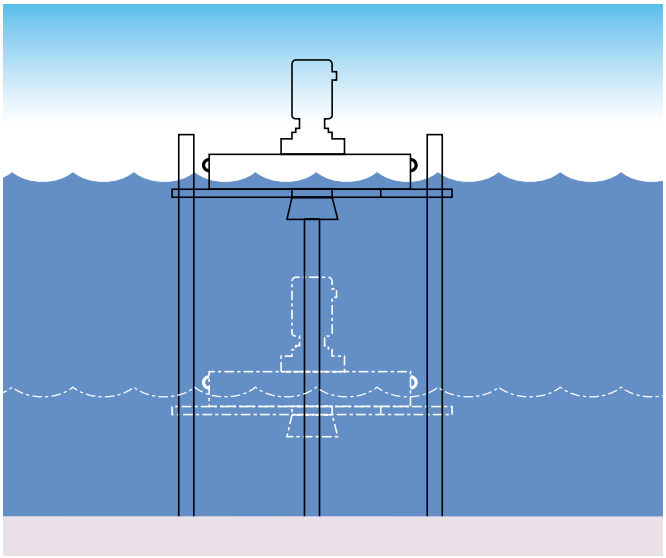
Mooring Arrangements (continued)



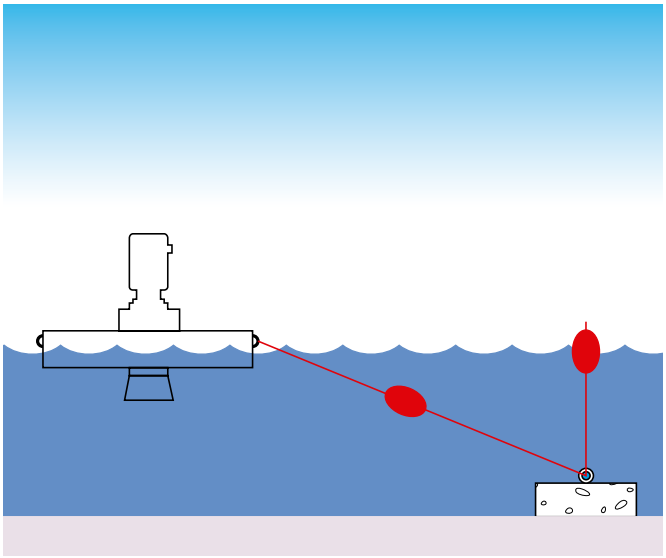
Shore Mooring, a three-point or four-point mooring to the shore, is the most common mooring configuration. Mooring cables are connected to the Aqua-Jet mooring eyes and to an eyebolt or embedded anchor on the shore.



Pier (Fixed) Mounting is used when the Aqua-Jet can be fixed-mounted to various platforms or structures. The hanging design shown here is one of the more common fixed-mounted arrangements. This mooring option is ideal for those installations where gear-reduced units are being replaced by the more efficient Aqua-Jet.



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

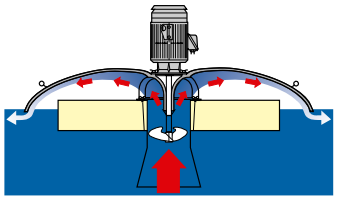


Bottom Mooring is another mooring arrangement for those installations where the distance from the Aqua-Jet to the shore would require longer lengths of cable than is practical and where the use of a mooring post is not feasible. The unit is moored from three or four points to concrete blocks on the lagoon floor.

Endura® Series

Endura® Series aerators offer a five-year no-maintenance warranty. This option is available on 3-150 HP Aqua-Jet® aerators. All Endura® Series are available in high efficiency, and each unit is vibration tested and hydraulically designed for optimum performance in the most stringent applications.

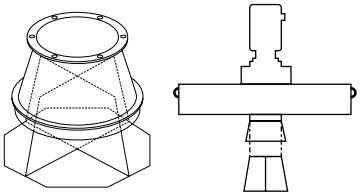
Aqua-Jet II® Contained Flow Aerator



The Aqua-Jet II® is designed for applications which require continued operation of aeration equipment during cold weather months, but are limited because of an inadequate heat sink due to process selection or environmental conditions. This aerator has proven to operate efficiently in a variety of applications, even in sub-zero temperatures.

The dome is essentially a spray control shield mounted to the diffusion head of the Aqua-Jet aerator.

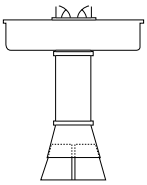
Anti-erosion Assemblies



Anti-erosion assemblies consist of a stainless steel plate attached to the bottom of the Aqua-Jet intake cone via an anti-vortex cross. The assembly causes water to be drawn from the sides of the intake cone, rather than from directly below it; and prevents the floor erosion that can sometimes occur in shallow basins.

Anti-erosion assemblies are available for all HP Aqua-Jets. Consult your Aqua-Aerobic representative or the factory for dimensions.

Draft Tubes



The Draft Tube accessory provides an extension of the intake cone and permits a deeper intake of water. The draft tube extension is available in lengths of three and six feet.

Arctic Pak

The Arctic Pak ring contains thermal resistance heaters which minimize the chance of icing on the exposed surfaces of the Aqua-Jet, such as the cast diffusion head.

The Arctic Pak is complete with its own junction box (which mounts on the Aqua-Jet motor fan cover) and automatic controls and control panel. Operation of the Arctic Pak is controlled by an ambient temperature thermostat. The unit is available in either 230 or 460 volts, and can be used on either floating or fix-mounted Aqua-Jets.

Drawings and wiring diagrams are available on request. Contact your Aqua-Aerobic Systems representative.

Low Trajectory Diffuser (L.T.D.) Assembly

The low trajectory diffuser (L.T.D.) is a high density polyethylene ring that is attached to the top of the diffusion head, increasing the diameter of the diffuser. This arrangement lowers the spray of the Aqua-Jet reducing windblown spray and misting.

Low trajectory diffusers are used in colder climates, and where a smaller, lower spray pattern is desired.

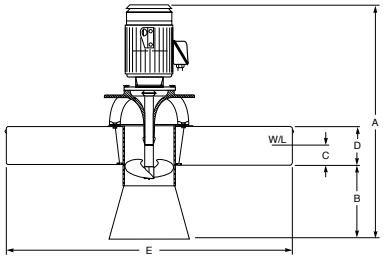
Selection of Electrical Service Cable

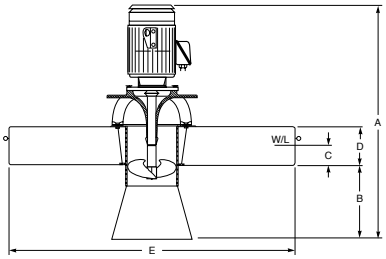
	HP	FULL-LOAD AMPS	AWG CABLE SIZE								
			12-4	10-4	8-4	6-4	4-4	2-4	0-4	00-4	000-4
230 VOLT	1	3.4	880	1240							
	2	6.6	540	930	1420						
	3	9	300	640	1000	1550					
	5	15	200	380	600	930	1420				
	7.5	22		260	410	635	970	1530			
	10	27			330	510	790	1250			
	15	40				350	530	840	1270		
	20	52					410	650	980	1200	
	25	64						525	790	975	
	30	78		Maximum Allowable Cable Length in feet based on 5% voltage drop and 90% power factor.				440	650	800	975
	40	104							490	600	730
	50	125								500	600
460 VOLT	1	1.7	2550								
	2	3.3	2100								
	3	4.5	1620								
	5	7.5	970	1535							
	7.5	11	665	1047	1635						
	10	14	520	820	1280	2000					
	15	20		575	900	1400	2120				
	20	26			690	1070	1635				
	25	32			560	875	1325	2250			
	30	39				715	1090	1860	2610		
	40	52					815	1390	1955		
	50	63						1150	1615	1984	
	60	75						965	1355	1660	2000
	75	93							1090	1340	1600
	100	130							769	961	1230
	125	160								781	1000
	150	190									842
575 VOLT	1	1.4	3180								
	2	2.6	2770								
	3	4	2330								
	5	6	1540	2440							
	7.5	9	1030	1630	2550						
	10	11	840	1330	2080						
	15	16		970	1430	2230					
	20	21		700	1090	1700					
	25	26			880	1370	2080				
	30	31			740	1150	1740				
	40	41				870	1320	2090			
	50	50				710	1080	1720			
	60	60					900	1430	1665		
	75	74					800	1250	1350		
	100	104							1200	1500	
	125	128							975	1200	
	150	152								1030	

Selection of Anchor Cable

DIAMETER	STRAND	MATERIAL	UNIT SIZE
3-16"	7 X 19	304 STAINLESS	1-30 HP
1/4"	7 X 19	304 STAINLESS	40-75 HP
3/8"	7 X 19	304 STAINLESS	100-150 HP

Single Speed and Dual Speed Units





Stainless Steel Series- SS and CSS

SS Model	CSS Model	HP	RPM	Apprx. Shpg. Wt. (lb)	DIMENSIONS A	B	C	D	E	Shaft Dia.	Mooring Cable Dia.
3900111	—	1	1800	325	34.69	8	4	7.5	46.75	.875	
3900211	—	2	1800	325	34.69	8	4	7.5	46.75	.875	
3900311	3900317	3	1800	525	44.13	8.5	5	11	59.5	1.250	
3900310	3900337	3/.9	1800/1200	525	46.63	8.5	5.5	11	59.5	1.250	
3900511	3900517	5	1800	525	44.13	8.5	5.25	11	59.5	1.250	
3900510	3900537	5/1.5	1800/1200	525	46.63	8.5	5.75	11	59.5	1.250	
3900711	3900717	7.5	1800	625	46.63	8.5	6.75	11	59.5	1.250	
3900710	3900737	7.5/2.2	1800/1200	625	49.13	8.5	7.25	11	59.5	1.250	3/16"
3901011	3901017	10	1800	945	51.69	10.38	6	12	70	1.750	
3901010	3901037	10/3.0	1800/1200	945	55.63	10.38	6.5	12	70	1.750	
3901511	3901517	15	1800	970	55.63	10.38	6.25	12	70	1.750	
3901510	3901537	15/4.4	1800/1200	970	59.56	10.38	6.75	12	70	1.750	
3902011	3902017	20	1200	1,300	67.94	16	6.5	13.5	82.88	2.125	
3902010	3902037	20/8.5	1200/900	1,300	68.81	16	7	13.5	82.88	2.125	
3902511	3902517	25	1200	1,350	68.81	16	6.75	13.5	82.88	2.125	
3902510	3902537	25/10.5	1200/900	1,350	69.69	16	7.25	13.5	82.88	2.125	
3903011	3903017	30	1200	1,845	86.94	*30.63	9.5	14.88	94.5	2.125	
3903010	3903037	30/12.7	1200/900	1,845	90.31	*30.63	10	14.88	94.5	2.125	
3904011	3904017	40	1200	1,870	90.31	*30.63	10	14.88	94.5	2.500	
3904010	3904037	40/17.0	1200/900	1,870	93.69	*30.63	10.5	14.88	94.5	2.500	
3905011	3905017	50	1200	2,850	101.06	*40.69	8.88	14.88	114.63	2.500	
3905010	3905037	50/21.0	1200/900	2,850	102.81	*40.69	9.38	14.88	114.63	2.500	
3905411	3905417	50	1200	1,900	90.31	30.63	10.5	14.88	94.5	2.500	1/4"
3905410	3905437	50/21.0	1200/900	1,950	93.69	30.63	10.75	14.88	94.5	2.500	
3906011	3906017	60	1200	3,000	102.81	*40.69	10	14.88	114.63	2.703	
3906010	3906037	60/25.0	1200/900	3,000	102.81	*40.69	10.5	14.88	114.63	2.703	
3907511	3907517	75	1200	3,000	102.81	*40.69	10	14.88	114.63	2.703	
3907510	3907537	75/31.5	1200/900	3,000	104.56	*38.69	10.5	16.88	114.63	2.703	
3910021	3910027	100	900	4,500	119.5	*48.5	9.5	17	131	3.930	
3910010	3910037	100/51	900/720	4,700	123.5	*46.5	10	19	131	3.930	
3910041	3910047	100	900	4,300	115.5	42.5	8.75	17	131	3.375	3/8"
3910040	3910049	100/51	900/720	4,475	119	42.5	9	19	131	3.375	
3912511	3912517	125	900	5,240	125.5	46.5	11.5	19	131	3.930	
3915011	3915017	150	900	5,390	128	46.5	11.63	19	131	3.930	

Dual Speed - Highlighted area indicates dual speed specifications.
All dimensions in inches.
* Includes allowance for anti-vortex cross.

FSS and CFSS Series

FSS Model	CFSS Model	HP	RPM	Apprx. Shpg. Wt. (lb)	DIMENSIONS A	B	C	D	E	Shaft Dia.	Mooring Cable Dia.
4200111	—	1	1800	325	34.69	8.5	4	7	46.75	.875	
4200211	—	2	1800	325	34.69	8.5	4	7	46.75	.875	
4200311	4200317	3	1800	550	44.13	8.5	4	11	64	1.250	
4200331	4200337	3/.9	1800/1200	550	46.63	8.5	4.5	11	64	1.250	
4200511	4200517	5	1800	550	44.13	8.5	5	11	64	1.250	
4200531	4200537	5/1.5	1800/1200	550	46.63	8.5	5.5	11	64	1.250	
4200711	4200717	7.5	1800	625	46.63	8.5	6	11	64	1.250	
4200731	4200737	7.5/2.2	1800/1200	625	48.25	8.5	6.5	11	64	1.250	
4201011	4201017	10	1800	900	51.69	10.38	5.5	12	71	1.750	3/16"
4201031	4201037	10/3.0	1800/1200	900	55.63	10.38	6	12	71	1.750	
4201511	4201517	15	1800	925	55.63	10.38	6	12	71	1.750	
4201531	4201537	15/4.4	1800/1200	925	58.25	10.38	6.5	12	71	1.750	
4202011	4202017	20	1200	1,100	67.94	15.5	7	14	84	2.125	
4202031	4202037	20/8.5	1200/900	1,100	68.81	15.5	7.5	14	84	2.125	
4202511	4202517	25	1200	1,150	68.81	15.5	8	14	84	2.125	
4202531	4202537	25/10.5	1200/900	1,150	70.13	15.5	8.5	14	84	2.125	
4203011	4203017	30	1200	1,845	86.94	*30	8	15.5	94.5	2.125	
4203031	4203037	30/12.7	1200/900	1,845	90.31	*30	8.5	15.5	94.5	2.125	
4204011	4204017	40	1200	1,845	90.31	*30	9	15.5	94.5	2.500	
4204031	4204037	40/17.0	1200/900	1,845	90.31	*30	9.5	15.5	94.5	2.500	
4205011	4205017	50	1200	1,900	90.31	*30	9	15.5	94.5	2.500	
4205031	4205037	50/21.0	1200/900	1,900	93.5	*30	9.5	15.5	94.5	2.500	1/4"
4205021	4205027	50	1200	2,350	101.06	40.69	5.5	15.25	114.75	2.500	
4205028	4205029	50/21.0	1200/900	2,450	102.81	40.69	6.12	15.25	114.75	2.500	
4206011	4206017	60	1200	2700	102.81	40.69	6.25	15.25	114.75	2.703	
4207517	4207517	75	1200	2700	102.81	40.69	6.25	15.25	114.75	2.703	

Dual Speed - Highlighted area indicates dual speed specifications.
All dimensions in inches.
* Includes allowance for anti-vortex cross.

Note: Endura® Series not available in some lower horsepower, single phase and special orders.

Materials of Construction

COMPONENT	MODEL SERIES			
	STAINLESS STEEL	CSS	FSS	CFSS
MOTOR SHAFT	ONE-PIECE, 17-4 STAINLESS STEEL (1-2 HP units use 303 stainless shaft)			
PROPELLER	316 STAINLESS STEEL, DYNAMICALLY BALANCED			
MONOLITHIC CAST DIFFUSION HEAD	304 S.S.	GRAY IRON, EPOXY COATED	304 S.S.	GRAY IRON, EPOXY COATED
FLOAT SKIN	14 GAUGE, 304 S.S.		FIBER REINFORCED POLYESTER (FRP)	
FLOAT CONTENT	CLOSED CELL POLYURETHANE FOAM			
VOLUTE	304 STAINLESS STEEL			
INTAKE CONE	304 STAINLESS STEEL			

Typical Aqua-Jet® Aerator Characteristics

UNIT SIZE (HP)	RPM	Zcm DIA. (FT)	D (FT)	ZOD DIA. (FT)	IMPINGEMENT DIA. (FT)
1	1800	20	6	65	6.5
2	1800	28		90	7.0
3	1800	40		145	14
.9	1200	27		87	
5	1800	45		150	15
1.5	1200	29		97	
7.5	1800	50	8	160	18
2.2	1200	32	10	104	
10	1800	51		172	18
3.0	1200	33		92	
15	1800	62		200	20
4.4	1200	39		129	
20	1200	72		230	20
8.4	900	46		149	

UNIT SIZE (HP)	RPM	Zcm DIA. (FT)	D (FT)	ZOD DIA. (FT)	IMPINGEMENT DIA. (FT)
25	1200	80	10	255	24
10.5	900	52		165	
30	1200	88		280	24
12.7	900	59		181	
40	1200	102		325	26
17.0	900	68		216	
50	1200	105	12	330	26
21.0	900	70		220	
60	1200	115		350	27
25.0	900	76		233	
75	1200	130		380	30
31.5	900	86		253	
100	900	135	15	395	36
51.0	720	96		280	
125	900	150		440	38
150	900	165		485	40

Note: These figures are typical performance rates as applied to operational systems, and they cannot be guaranteed on a random, non steady basis

D = normal operating depth in which the Zcm and Zod hold true

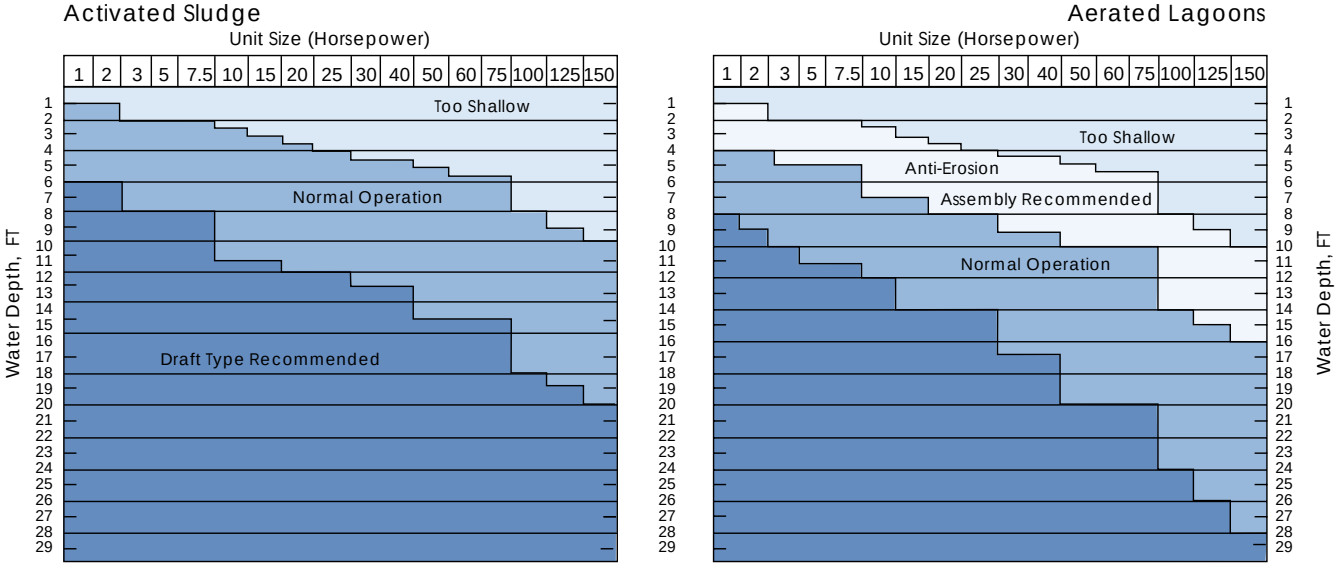
Zcm = Zone of complete mix(assumes conventional activated sludge mixed liquor solids)

Zod = Zone of complete oxygen dispersion

Impingement = diameter of spray pattern

Horsepower of lower speed of dual speed Aqua-Jet

Typical Aqua-Jet Aerator Operating Depths*



Warning: The Aqua-Jet has a high velocity, upward directed hydraulic flow directly below the unit. In addition, horizontal surface velocities persist for some distances from the unit. These flow patterns may in some instances, cause damage to basin bottoms or walls creating leaking potential. In earthen or linen basins, Aqua -Aerobic Systems recommends the use of a concrete pad on the basin bottom directly below the aerator. If concrete is known to be non-resistant to the waste, other material should be investigated. Rip rapping or similar means of bank protection can protect basin walls. If basin contains toxic wastes, user is advised to obtain engineering advice as to basin design and construction necessary to prevent possible erosion and leakage. Aqua-Aerobic systems assume no liability or responsibility for any damage to basin bottoms or walls, or for any injuries or damages resulting therefrom.

*** Note:** **These charts are intended for approximation purposes only. Requirements are dependent on basin geometry, etc., and Aqua-Aerobic System should be contacted for specific applications.**

*** Note:** **Consult Aqua-Aerobic Systems for information on larger horsepower units.**

Utilizing Aqua-Jet® Mechanical Surface Aerators

The MixAir System utilizes AquaDDM direct drive mixers in combination with any of several aeration sources, including Aqua-Jet aerators. As a brief description: the biomass is maintained in suspension, while the variable oxygen input keeps the system operating at the most efficient oxygen supply level.

Because mixing energy is separate from aeration energy, the MixAir System permits a greater choice of reactor sizes and shapes. The MixAir System simplifies the layout of the air distribution system by eliminating the need for tank baffles or full bottom coverage, as with typical diffused air systems. The system is well suited for new construction or for retrofit in existing aeration basins.

The combined use of a downflow AquaDDM mixer and an upflow aeration source, like the Aqua-Jet, creates complimentary flow patterns which result in optimum distribution of oxygen and substrate. Superior process efficiency can often be achieved with less overall horsepower which, in many applications, can result in significant energy savings. Short-circuiting and excess dissolved oxygen are eliminated.

Applications

- Retrofit in existing aeration systems including: extended aeration, aerobic digestion, equalization, aerated lagoons
- Oxidation ditches
- Variable load, activated sludge systems
- Diurnal flows, less than design conditions
- Batch reactor processes
- Municipal-industrial combinations
- long residence time processes in cold climates

Aqua-Jet®
Surface Aerators

Aqua-Jet II®
Contained Flow Aerators

AquaDDM®
Direct Drive Mixer-Blenders

Aqua MixAir®
Aeration Systems

Aqua EnduraDisc®
Fine Bubble Diffusers

Aqua EnduraTube®
Fine Bubble Diffusers

Aqua CB-12™
Coarse Bubble Diffusers

Aqua CB-24®
Coarse Bubble Diffusers

AquaSBR®
Sequencing Batch Reactors

AquaMB Process™
Multiple Barrier Membrane Systems

MSBR®
Modified Sequencing Batch Reactor

AquaDisk®
Cloth Media Filters

AquaDiamond™
Cloth Media Filters

AquaDrum™
Cloth Media Filters

AquaABF®
Automatic Backwash Filters

ThermoFlo®
Surface Spray Coolers

DynaBlend™
Polymer Blending and Metering Systems

Contact Your Local Representative:

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