

# SPECIFICATIONS

## MASTERS® GRAND SERIES FLOATING FOUNTAIN AERATOR SYSTEM (7.5HP)

### 1.0 GENERAL

#### 1.1 DESCRIPTION

- A. Manufacturer shall furnish a floating fountain aerator system capable of pumping water from below the surface of a body of water.
- B. A submersible motor shall draw water into an impeller housing where it shall be pumped into the atmosphere in the form of a decorative spray - type fountain.
- C. The water droplets shall become oxygen enriched and return to the surface, therefore transferring oxygen from the atmosphere into the body of water. Surface area of water body shall also be increased through constant wave action resulting in additional atmospheric oxygen transfer.
- D. This repeated action shall effectively mix and de-stratify the body of water and distribute the dissolved oxygen continuously.
- E. Fountain aerator system shall include an oil-cooled motor sealed in a stainless steel housing, with shaft mounted 316 Stainless Steel impeller, attached to a float. This assembly shall be connected to an electrical control panel by underwater power cable, all of which as specified in SECTION 1.2.

#### 1.2 AERATOR COMPONENTS DESCRIPTION

- A. **7.5HP Float** shall be made of linear low density polyethylene, with a minimum 14" discharge area. This area shall be protected by a discharge guard. Four series 316 stainless steel brackets shall be attached to the float, around which a protective series 316 stainless steel intake screen shall be mounted. The motor housing shall be attached to the brackets. Four anchoring point shall be part of the float. Up to eight optional lights shall be capable of being installed onto an optional accessory ring around the float.
- B. **Impeller** shall be precision machined and balanced, formed using 316 Stainless Steel. The impeller is connected to the motor shaft by a series 316 stainless steel bolt and lock washer.
- C. **Tube Support Assembly** shall be assembled from an adapter plate (PVC) and a lower ring (Acetal). The tube support assembly shall be assembled to accept the float tube and capable of being bolted to the motor housing. The tube support assembly shall house the 316 Stainless Steel impeller.
- D. **Flow Straightener (where applicable)** shall be precision machined from acetal material and shall have numerous curved vanes. The vanes shall take the spinning discharge water from the impeller and convert it to a straight, vertical flow. The gap between the vanes shall be at least 9/16" wide and have a total length not less than 3" long. It shall be factory installed for various optional spray patterns.
- E. **Motor Housing** shall be Series 316 Stainless Steel. 7.5HP shall have a permanent series 316 stainless steel electrical hub welded on the side of the housing to allow electrical cable entry.
- F. **Motor** shall contain a 316 Stainless Steel shaft for superior corrosive resistance. Single Phase shall be a permanent split phase capacitor run motor and Three Phase shall be an induction motor. The rotor shall be dynamically balanced and run in a ball bearing supported system. The stator windings shall be single dipped and baked with a Class F insulation, designed for oil immersion operation. The oil shall be of a synthetic food grade quality, specially formulated for lubrication, meeting FDA Regulations. The oil shall provide continuous lubrication of bearings

and internal seals and further function as an efficient heat transfer medium, allowing the motor to operate at 3450 RPM, at relatively low temperatures. The motor shall be contained in the motor housing by a series 316 stainless steel top plate.

- G. **Seals** used to protect the motor against water or oil leakage shall be a mechanical rotating type assembly composed of Silicon carbide and Series 316 Stainless Steel positive drive system. The positive drive assembly shall be attached to the motor shaft with four allen head set screws. These set screws shall be tightened into pre-drill dimples drilled into the shaft to prevent the seal assembly from slipping at any time the motor shaft is rotating, thus creating a non-slip positive drive system. All elastomers shall meet UL 778 requirements. This assembly shall then be encapsulated and protected within a series 316 stainless steel cartridge assembly. This assembly shall be filled with a synthetic food grade oil meeting FDA regulations.
- H. **Underwater Power Cable** shall be UL Listed and specifically designed for underwater use. The conductors are flexible, stranded copper wire sized for the amp draw and length of run. The conductors shall be resistant to oil, water and cracking. Power cable shall be fitted with a cable strain relief device, located within five feet of motor housing, capable of being attached to the latch mounted on the frame. This will ensure that no potential damage can occur to any cable connections, due to tension on the cable.
- I. **Underwater Power Cable Disconnect** shall be located approximately five feet from the series 316 stainless steel motor housing. It is a two piece molding assembly made of thermoplastic material meeting the UL 778 requirements. The cap half of this disconnect shall be permanently attached to a wire reinforced braided hose assembly. The other end of this hose assembly shall be attached to a series 316 stainless steel hub which is welded to a series 316 stainless steel motor housing. This complete assembly shall be sealed with a flexible potting compound.
- J. **Fasteners and Anchor Connectors** shall be Series 316 Stainless Steel.
- K. **Electrical Control Panel** specifications, see SECTION 3.
- L. **Intake Screen** shall be made of 18 Gauge, Series 316 Stainless Steel. The intake screen shall have a minimum of 51% open area.
- M. **Nozzles** (where applicable) shall be interchangeable without the use of tools, in most cases. Nozzles will be sealed to the float tube utilizing an o-ring to prevent leakage.

## FOUNTAIN AERATOR DETAIL SPECIFICATIONS

### 2.0 DETAILED INFORMATION

- 2.1** This specification is intended to provide prospective bidders the necessary information pertaining to the fountain aerator(s) specified for the \_\_\_\_\_ Project.
- 2.2** The MOTOR(S) shall be 7.5HP, operating at \_\_\_\_\_ Volts, 60Hz, \_\_\_\_\_ Phase at 3450 RPM.
- 2.3** The MASTERS® GRAND SERIES MODEL(S) specified shall be the \_\_\_\_\_ MODEL NUMBER \_\_\_\_\_ capable of creating a \_\_\_\_\_ pattern. It shall come complete with an electrical control panel, protective intake screen to be attached to a float assembly and \_\_\_\_\_ feet of \_\_\_\_\_ gauge, 4 conductor underwater power cable.
- 2.4** The fountain aerator shall produce a SPRAY PATTERN \_\_\_\_\_ feet in diameter and \_\_\_\_\_ feet in height.

Please refer to TABLES 1, 2 and 3 to assist in the completion of SECTION 2.0

## FOUNTAIN AERATOR DETAIL SPECIFICATIONS (cont.)

### 3.0 ELECTRICAL CONTROL PANEL COMPONENTS DESCRIPTION

- A. **Electrical Enclosure** shall be NEMA 3R type, galvanized and powder-coat painted gray in color. Panel shall be both lock and mount capable.
- B. **Ground Fault Protection**  
GFCI Breaker shall provide overload protection and be capable of disconnecting all incoming electricity from the control panel or a molded case breaker shall provide overload and short circuit protection, while a residual current device or ground fault relay kit rated at 30 mA shall provide ground fault protection.
- C. **Control Breaker** shall provide overload protection and be capable of disconnecting all incoming electricity from the control panel.
- D. **Motor Contactor** shall provide a means for disconnection of all motor leads. It shall be a magnetic, across the line starter type.
- E. **Overload Relay** shall provide overload protection by means of a bi-metallic element. It is adjustable over the full load amperage draw of the motor. It shall have a visual trip indicator, test button and manual/auto reset modes.
- F. **Soft Start (three phase ONLY)** shall provide ramped starting and stopping to minimize electrical and mechanical stresses to the motor and power source.
- G. **Digital Timer** shall be a single pole type, rated at 120 Volts, 16 Amps, capable of 8 ON / OFF functions per day for 7 days. Digital timer has a lithium battery to retain the programming when power is disconnected.

### 3.1 SAFETY TESTING CONTROL PANEL

The electrical control panel shall be tested and approved as a complete unit. It is inspected and listed by Underwriters Laboratories, Inc. under Category 778: Submersible Aerators and Aerating Fountain Pump Systems.

### 3.2 ACCEPTABLE MANUFACTURER

This fountain aerator electrical control panel, as specified in Section 3.0, shall be manufactured by AQUAMASTER® FOUNTAINS AND AERATORS, 16024 County Rd X, Kiel, WI 53042, (800) 693-3144 or approved equal.

### 3.3 INSTALLATION

The electrical control panel must be installed in accordance with the installation instructions, in compliance with all local and National Electrical Code requirements. This should be done by a licensed electrical contractor. Any alterations to or substitution for items in this system, unless allowed by the installation instructions, will void the Underwriters Laboratories Listing and will void the product warranty. It may also create a hazardous installation. Read the instructions thoroughly before starting the installation and follow them carefully throughout.

### 3.4 ELECTRICAL CONTROL PANEL WARRANTY

All control panels and their components have a 3 year warranty on parts and labor.

## FOUNTAIN AERATOR DETAIL SPECIFICATION (cont.)

### 4.0 SAFETY TESTING

The floating fountain aeration system shall be tested and approved as a complete unit. This approval must meet Underwriters Laboratories Inc. requirements in compliance with Category 778: Submersible Aerators and Aerating Fountain Pump Systems. Individual component testing and wet niche environment equipment approval are not acceptable.

### 4.1 ACCEPTABLE MANUFACTURER

This fountain aerator, as specified in Sections 2.2, 2.3 and 2.4, shall be manufactured by AQUAMASTER® FOUNTAINS AND AERATORS, 16024 County Rd X, Kiel, WI 53042, (800) 693-3144, or approved equal.

### 4.2 INSTALLATION

All AQUAMASTER® FOUNTAIN AERATORS are designed and built to be installed with an AQUAMASTER® UL Listed control panel and to be operated as a complete system. Any alterations to or substitution for items in this system, unless allowed by the installation instructions, will void the UL Listing and will void the product warranty. It may also create a hazardous installation. Read the instructions thoroughly before starting the installation and follow them carefully throughout.

### 4.3 WARRANTY

All 7.5HP AQUAMASTER® MASTERS® GRAND SERIES FOUNTAIN AERATORS motor, seal assembly, float and underwater power cable (referred to as in-water components) are covered under warranty at 100% replacement cost should it fail due to defects in materials or workmanship for a period of 4 years on parts and labor. This is in effect from the date of shipment, when given normal and proper usage as determined by The Seller upon examination, and when owned by the original user.

## FOUNTAIN AERATOR LIGHTING SYSTEMS AND OPTIONS SPECIFICATIONS

**5.0 LIGHTING SYSTEM** shall be LED/RGBW \_\_\_\_\_ Volt/Watts, Model #s)\_\_\_\_\_. There are \_\_\_\_\_ total fixtures, containing \_\_\_\_\_ (choose color(s) if applicable: white, warm white, amber, blue, red, or green) color board assemblies.

**5.1** A total length of \_\_\_\_\_ feet of \_\_\_\_\_ gauge 3(LED) or 5(RGBW) conductor underwater power cable is required. Reference cable sizing chart.

Please refer to TABLE 4 to assist in the completion of SECTION 5.

## 6.0 DESCRIPTION - LIGHTING

- A. **Light Set** shall consist of line voltage (120 VAC) 22W LED, 35W LED, or 40W RGBW LED lighting system with either 4, 6, or 8 lights.
- B. **Lights** shall consist of a power supply/driver module with a 22W, 35W, or 40W RGBW (10W red, 10W green, 10W blue, 10W white) LED light engine.
- C. **Light Fixture** shall be of Series 316 Stainless Steel construction. They shall have a permanent series 316 stainless steel electrical hub welded on the bottom of the housing to allow electrical cable entry and be mounted with series 316 stainless steel brackets and fasteners.
- D. **Light Fixture Assembly** shall consist of a lens made of tempered glass with a clear non-diffusing surface with a minimum of 5/32<sup>nd</sup> thickness and sealed with "V" shaped lens gasket made of silicon. Clamp ring shall be of series 316 stainless steel. Fasteners and mounting hardware shall be of series 316 stainless steel.
- E. **Underwater Pin and Socket Connector** shall consist of a Series 900, IP68 pin and socket connector. It shall be of a 3(LED) or 5(RGBW) pin configuration rated 32 Amps at 600 VAC. The pin and socket ends shall each be attached to a UL Listed underwater power cable rated at 600 Volts. They both shall be permanently secured to their UL Listed power cables by an integrated neoprene grommet and compression nut assembly. These assemblies shall be epoxy filled to prevent entry of water or any other foreign matter. The pin end assembly shall be permanently attached to the light fixture with a nonmetallic connector and potted using a flexible approved potting compound. The socket end assembly shall be permanently attached to the power cable. Both the pin end and socket end assemblies come with protector caps.
- F. **Underwater Power Cable** shall be UL Listed and specifically designed for underwater use. The conductors are flexible, stranded copper wire sized for the amp draw and length of run. The conductors shall be resistant to oil, water and cracking. Power cable shall be fitted with a cable strain relief device, located within five feet of the first light fixture. This will ensure that no potential damage can occur to any cable connections, due to tension on the cable.
- G. **Light Controls** shall consist of a GFCI (Ground Fault Circuit Interrupter), overcurrent protection (fuse), digital timer with battery back-up. The RGBW controller (optional) is pre-programmed with assorted color, shows and holiday themed selectable programs. The controller can also adjust program speed and brightness. The standard controller shall consist of a programmable controller with push button interface.
- H. **Safety Testing** shall be tested and approved as a complete assembly. This approval must meet Underwriters Laboratories Inc. requirements in compliance with UL category 676: Underwater Luminaires.
- I. **Warranty** on all AQUAMASTER LIGHTING SYSTEMS are covered under warranty at 100% replacement cost should it fail due to defects in materials or workmanship for a period of 3 years.

**TABLE 1: MASTERS® GRAND SERIES PERFORMANCE SPECIFICATIONS**

**TECHNICAL DATA  
REFERENCE MATERIAL FOR SECTION 2.0 DETAILED INFORMATION**

Model Number	HP	Voltage and Phase	Running Amp Draw	Minimum Operating Depth	Ship Weight LBS.	LAKEWOOD FULL FLOW (no nozzle)	MGS BASIC FLOW PATTERN
							Biscayne
MGS5472-SC	7.5	220-240V 1PH	42	4'	675 lbs.	17.6 x 40 GPM 700	Upper 29 Lower 16.6 x 32 GPM 480
MGS5472-3SC		220-240V 3PH	26.4				
MGS5474-3SC		440-480V 3PH	13.2				
Model Number	HP	Voltage and Phase	Running Amp Draw	MGS BASIC FLOW PATTERNS			
				Crown & Geyser	Crown & Wide Geyser	Crystal Geyser	Wide Geyser
MGS5472-SC	7.5	220-240V 1PH	42	Geyser Ht 28 x 2 Crown 10 x 50 GPM 505	Geyser Ht 28 x 6 Crown 11 x 54 GPM 505	28 x 40 GPM 489	36 x 10 GPM 330
MGS5472-3SC		220-240V 3PH	26.4				
MGS5474-3SC		440-480V 3PH	13.2				
Model Number	HP	Voltage and Phase	Running Amp Draw	MGS STRAIGHTENED FLOW PATTERNS			
				Augusta	Valhalla	Medinah	Firestone
MGS5472-SC	7.5	220-240V 1PH	42	20 x 50 GPM 532	Upper 29 Middle 15.6 x 42 Lower 10 x 65 GPM 465	20 x 26 GPM 555	Upper 22 Middle 12 x 26 Lower 8 x 60 GPM 562
MGS5472-3SC		220-240V 3PH	26.4				
MGS5474-3SC		440-480V 3PH	13.2				
Model Number	HP	Voltage and Phase	Running Amp Draw	MGS STRAIGHTENED FLOW PATTERNS			
				Prestwick			
MGS5472-SC	7.5	220-240V 1PH	42	Upper 16 x 32 Lower 8 x 48 GPM 574			
MGS5472-3SC		220-240V 3PH	26.4				
MGS5474-3SC		440-480V 3PH	13.2				

Your overall performance may vary due to actual voltage, intake restrictions and cable lengths.



## TABLE 2: CABLE SIZING CHARTS

**Maximum recommended length (in feet) from fountain aerator to control panel**  
**AquaMaster® recommends consulting a Licensed Electrician to properly size any underground cable from the main power source to our control panel. Cable runs to the panel located away from main power source requires recalculating voltage drop to insure proper cable sizing. Please contact AquaMaster® if assistance is required.**

**Cable must be purchased in 50ft increments**

4 conductor: Required on all 7.5HP Single Phase & Three Phase Aerators									
Single Phase 4 conductor			4 conductor Copper Wire Gauge Size						
Unit	Volts	Approx Amps	#14	#12	#10	#8	#6	#4	#2
7.5HP	220-240 *	42.0	--	--	--	150	250	400	650

\* Requires a minimum voltage of 220.

Three Phase 4 conductor			4 conductor Copper Wire Gauge Size						
Unit	Volts	Approx Amps	#14	#12	#10	#8	#6	#4	#2
7.5HP	220-240 *	26.4	--	--	--	300	450	750	1200
7.5HP	440-480	13.2	--	450	800	1200	1950	3100	4800

\* Requires a minimum voltage of 220.

**Actual voltage to motor will affect your fountain's performance.**

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**TABLE 3: FOUNTAIN AERATOR SPRAY PATTERN DESCRIPTIONS**

1. **Masters® Grand Series AUGUSTA – Straightened Flow Pattern (SFP)**  
Beautiful multi-tiered streamered pattern with a center geyser to add height.  
SPECIFICATION DESCRIPTION: FAN SHAPE INDIVIDUAL STREAMS WITH CENTER GEYSER
2. **Masters® Grand Series BISCAYNE – Basic Flow Pattern (BFP)**  
Variation of classic two-tier with taller, narrower lower spray.  
SPECIFICATION DESCRIPTION: UPRIGHT FAN & COLUMN
3. **Masters® Grand Series CROWN & GEYSER – Basic Flow Pattern (BFP)**  
A beautiful, dramatic pattern still achieves aeration results. This nozzle combines the Lakewood Full Flow with the vertical Geyser column of water through its center.  
SPECIFICATION DESCRIPTION: COMBINED FAN & COLUMN
4. **Masters® Grand Series CROWN & WIDE GEYSER - Basic Flow Pattern (BFP)**  
A variation on our CROWN & GEYSER pattern. This nozzle produces a wider, less dense geyser column with a Lakewood Full Flow.  
SPECIFICATION DESCRIPTION: COMBINED FAN & COLUMN
5. **Masters® Grand Series CRYSTAL GEYSER– Basic Flow Pattern (BFP)**  
This nozzle produces a very decorative crystalline spray pattern in an abstract, multi-tiered formation.  
SPECIFICATION DESCRIPTION: FROTHY SPRAY
6. **Masters® Grand Series FIRESTONE – Straightened Flow Pattern (SFP)**  
Beautiful tri-tier, perfect for smaller area applications.  
SPECIFICATION DESCRIPTION: TRI-TIER MULTIPLE STREAMS
7. **LAKWOOD FULL FLOW – Basic Flow Pattern (BFP)**  
Internal impeller technology creates this full, more upright cone pattern, **without a nozzle**. This is the base model for The Masters Grand Series®.  
SPECIFICATION DESCRIPTION: FAN SHAPE
8. **Masters® Grand Series MEDINAH – Straightened Flow Pattern (SFP)**  
Upright funnel shape creates a stunning full profile pattern.  
SPECIFICATION DESCRIPTION: NARROW FAN SHAPE
9. **Masters® Grand Series PRESTWICK – Straightened Flow Pattern (SFP)**  
Dramatic multi-streamed two-tiered pattern.  
SPECIFICATION DESCRIPTION: TWO-TIERED MULTIPLE STREAMS

10. **Masters® Grand Series VALHALLA – Straightened Flow Pattern (SFP)**  
Stunning tri-tier resulting in both excellent height and diameter.  
SPECIFICATION DESCRIPTION: TRI-TIER SPRAY

11. **Masters® Grand Series WIDE GEYSER – Basic Flow Pattern (BFP)**  
A modification of the Geyser nozzle produces a less dense, more decorative version.  
SPECIFICATION DESCRIPTION: WIDE VERTICAL COLUMN

**TABLE 4: FOUNTAIN AERATOR LIGHTING SYSTEMS**

AQUAMASTER® FOUNTAIN AERATORS are even more dramatic at night, with the addition of a UL and cUL Listed NIGHT GLOW LIGHTING SYSTEM.

Any lighting system choice includes stainless steel lamp housings, ready to be installed in the float, sealed with clear tempered glass lenses in a stainless steel clamp ring. Minimal installation is required. All lights remain water-cooled and out of sight below the surface.

All necessary electrical controls, including timer, are pre-wired into the fountain aerator’s existing UL Listed control panel. Color board assemblies (Cool White, Warm White, Red, Green, Blue, or Amber) must be selected for each light.

**For uniformity of spray pattern coverage, 4 lights minimum is recommended.**

**LINE VOLTAGE:** 120 Volt LED Lighting Systems

<b>22 Watt LED Fixtures</b>	<b>Each system includes:</b> <ul style="list-style-type: none"> <li>• 22 or 35 Watt LED light engine</li> <li>• GFCI Protection</li> <li>• Digital Timer</li> <li>• Clear lenses</li> <li>• UL and cUL Listing</li> <li>• Choice of Cool White, Warm White, Red, Green, Blue, or Amber Light Engine (35 Watt LED)</li> <li>• 22 Watt LED Light Engine Available in Cool White Only</li> </ul>
4 light system: Model # 3000934-316	
6 light system: Model # 3003976-316	
8 light system: Model # 3003977-316	
<b>35 Watt LED Fixtures</b>	
4 light system: Model # 3000936-316	
6 light system: Model # 3003978-316	
8 light system: Model # 3003979-316	

**LINE VOLTAGE:** 120 Volt RGBW LED Lighting Systems

<b>40 Watt Fixtures</b>	<b>Each system includes:</b> <ul style="list-style-type: none"> <li>• 40 Watt RGBW LED light engine</li> <li>• GFCI Protection</li> <li>• Digital Timer</li> <li>• Clear lenses</li> <li>• UL and cUL Listing</li> </ul>
4 light system: Model # 30000938-316	
6 light system: Model # 3003980-316	
8 light system: Model # 3003981-316	

**TABLE 4: FOUNTAIN AERATOR LIGHTING SYSTEMS (cont.)**

**CABLE SIZING CHART FOR LED LIGHTS**

*Maximum recommended length (in feet) from fountain lights to control panel.*

*AquaMaster® recommends consulting a Licensed Electrician to properly size any underground cable from the main power source to our control panel. Cable runs to the panel located away from main power source requires recalculating voltage drop to insure proper cable sizing. Please contact AquaMaster® if assistance is required.*

*Cable must be purchased in 50ft increments*

3 Conductor				Copper Wire Gauge Size		
Watts Per Fixture	# of Fixtures	Volts	Approx Amps	#14	#12	#10
22	4	120	0.567	1700	2600	4400
22	6	120	0.850	1100	1750	2900
22	8	120	1.133	850	1300	2200
35	4	120	1.167	800	1250	2100
35	6	120	1.750	550	850	1400
35	8	120	2.333	400	600	1050

**CABLE SIZING CHART FOR RGBW LED LIGHTS**

5 Conductor				Copper Wire Gauge Size	
Watts Per Fixture	# of Fixtures	Volts	Approx Amps	#14	#10
40	4	120	1.333	700	1850
40	6	120	2.000	450	1250
40	8	120	2.667	350	900