**DIVISION 13 – SPECIAL CONSTRUCTION**

**SECTION 13 12 13 – EXTERIOR FOUNTAINS**

**Kasco J Series Fountains - 2HP through 7-1/2HP**

1. GENERAL
	1. Summary

Section includes furnishing and the installation of the following equipment:

Floating fountains and aeration systems.

* 1. REFERENCES

Reference Standards:

1. ETL – Edison Testing Laboratories (Intertek).

2. UL – Underwriters Laboratory.

3. CSA – Canadian Standards Association.

4. NEC – National Electrical Code.

5. NEMA – National Electrical Manufacturer’s Association.

* 1. SUBMITTALS

Shop Drawings and Product Data: Submit detailed specifications, drawings, unit anchorage details, pattern dimensions, and data covering all materials, parts, devices, equipment, and other accessories forming part of the equipment for the complete operational system. Mark each submittal to show which products and options are applicable to the project.

Include the following information, as applicable:

Manufacturer catalog cut sheets.

Installation, start-up, operation, and maintenance manuals/instructions from the equipment manufacturer.

Notation of coordination requirements.

Availability and delivery time information.

Manufacturer’s Instructions: Furnish manufacturer’s printed instruction for delivery, handling, storage, assembly, installation, start-up, wiring diagrams, and factory-recommended maintenance schedule, as appropriate.

Operations and Maintenance Data: Submit data on all parts, devices, equipment, and other accessories furnished forming the complete operational system.

* 1. quality assurance

The equipment manufacturer must have at least 50 continuous years’ experience in the design, application and manufacture of mechanical agitation, mixing, and aerator assemblies of similar size and capacity. All material and equipment shall be new and of the highest quality.

Manufacturer must have a dedicated engineering team including design, mechanical, quality, and electrical qualifications.

Manufacturer must have documented quality requirements and procedures which include component sampling and testing, build instructions, Hi Pot and pressure decay testing, as well as bench rotation verification.

Manufacturer must have dedicated service and repair department in house.

Manufacturer must have dedicated customer service team.

Fountains, complete with motor, float with screen(s), power cable, anchoring lines, and control panel shall be furnished by the aerator manufacturer to ensure compatibility and integrity of the individual components and provide the specified warranty for all components.

In order to assure uniform quality, ease of maintenance, and minimal parts storage, it is the intent of these specifications that all floating fountain assemblies and accessories called for under this section shall be supplied by a single manufacturer or authorized sales representative. The authorized sales representative shall, in addition to the Contractor, assume the responsibility for proper installation and functioning of the equipment if contracted for the installation and maintenance of the aerators.

* 1. factory testing

Each fountain shall be tested and pass a Hi Pot test, pressure decay test, and direction of rotation check prior to shipment.

1.06 THIRD PARTY TESTING

A. Fountains shall be third party tested by an accredited testing facility such as ETL, ETL-C, CSA, or UL, as a complete package assembly. Individual component testing only is not allowed.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Delivered materials shall be stockpiled and stored at locations approved by the Owner until required for installation. Materials shall be stored in accordance with manufacturer’s instructions.

Contractor shall inspect materials upon delivery for loss or damage in transit. Contractor shall be responsible for the replacement of damaged materials. All damaged materials shall be removed from the Site.

Delivery and start-up shall be supplied by a factory trained and authorized equipment distributor representative.

1. Products
	1. acceptable Manufacturer

Approved Manufacturers:

Kasco Marine, Inc. of Prescott, Wisconsin (Contact factory at 715-262-4488).

Or be a pre-approved equivalent by the Engineer. To offer equipment as a pre-approved equivalent, a written application from the alternative supplier shall be submitted to the Engineer a minimum of TEN (10) days prior to the scheduled bid opening. Provide a list of at least five (5) installations of the proposed equipment in a similar application for review by the Engineer. The list shall include the contact name and phone number for each installation. Alternates must meet or exceed the oxygen transfer.

2.02 PERFORMANCE

A. Floating fountain units shall be designed for the following operating, performance, and design requirements:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Quantity | Model Number | Horsepower | Voltage/Phase/Frequency | Power Cord Length | Optional Lighting Kit |
|  |  |  |  |  |  |

2.03 GENERAL

A. Each floating fountain unit shall be complete with a close-coupled, high-efficiency, submersible electric motor.

B. Each floating fountain shall be saltwater compatible.

Provide each fountain complete with all accessories, controls, and appurtenances, as required, for a complete operational system.

The power source for the fountain shall be ~~2~~08/240VAC single phase or 240VAC or 460VAC 3 phase (3 phase only available in 2HP and larger) grid power to allow the unit to operate continuously.

2.04 CONSTRUCTION

1. Motor

Shall contain a 316 Stainless Steel shaft incorporating a permanent split phase capacitor run-on single-phase motors and a polyphase induction on three phase motors. The rotor shall be dynamically balanced and run in a ball bearing supported system. The stator windings shall be double dipped and baked with a Class B insulation, designed for oil immersion operation. 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 1750 RPM, at low temperatures. A thermal overload shall be attached to the motor winding and shall stop the motor if motor winding temperature reaches 140 degrees C (applies only to single phase motors). Thermal overload shall reset automatically when motor cools. The motor shaft shall be protected by a sacrificial zinc anode installed on the 316 series stainless steel motor shaft.

1. Motor Housing

The motor housing shall be 300 Series stainless steel. The motor top on 2HP & 3HP shall be sealed with an O-ring and the shaft area shall be sealed with a composite top plate with an internal, two-piece, carbon-ceramic mechanical seal. The motor top on 5HP and 7.5HP shall be sealed with an O-ring and the shaft area shall be sealed with a 300 Series stainless steel top plate with internal and external two-piece, carbon-ceramic mechanical seals. All fasteners exposed to the pumped liquids will be 300 series stainless steel.

1. **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 that will ensure that no potential damage can occur to any cable connections, due to tension on the cable.

1. Underwater Cable Quick Disconnect

Underwater Power Cable Disconnect shall be located depending upon HP required, approximately three feet to six feet from the motor housing. Underwater Pin and Socket Connector shall consist of a Series 900 IP68 pin and socket connector. It shall be of a 3 or 4-pin configuration rated 32 amps at 600 volts AC. This assembly shall be attached to the UL Listed underwater power cable. It shall be completely epoxy potted to prevent entry of water or any other foreign matter. The other end of this assembly is permanently attached to the cap end of the underwater cable disconnect.

1. Suction Intake Screen

Intake Screen on 2hp and 3hp floating fountains shall be made of 18-gauge, 300 series stainless steel. The screen shall have 41% intake flow-through area. Total screen must be 538.8 square inches total in surface area.

Intake Screens on 5hp and 7.5hp floating fountains shall be a protective coated, 300 series stainless steel screen with 84 vertical screening bars with gaps tapered from .875” to .188” to protect the unit and keep debris out. Additional ¼” and ¾” plastic mesh overlay screens will also be provided as standard.

1. Float

Float shall be made of linear high-density polyethylene. The motor shall be attached to the float with 300 series stainless steel hardware.

1. Fasteners

Fasteners shall be 300 series stainless steel.

1. Nozzles/Displays

 J Series fountains shall include a set of nozzles to create multiple display patterns. Nozzles shall be interchangeable without the use of tools.

**I.** **Control Panel**

1. **Electrical Enclosure** shall be a NEMA UL Type 3R/4X type and constructed of high impact polycarbonate. Panel shall be both lock and mount capable.

**B**. **Ground Fault & Overcurrent Protection**

1. Single phase applications shall use a GFCI breaker to provide overload and short circuit protection, combined with Class A ground fault protection.

2. 230V three phase applications shall use a 5mA trip point ground fault device. Overcurrent and overload protection will be provided by a contactor and overload device or motor start motor protective switch (MPS) and contactor.

3. 480V three phase applications overcurrent and overload protection will be provided by a contactor and overload device or motor start motor protective switch (MPS) and contactor. 30 mA equipment rated GFCI shall provide ground fault protection.

**C. Control Breaker** shall provide overload protection and be capable of disconnecting the control circuit power.

**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 an electronic overload relay. It is adjustable over the full load amperage draw of the motor. It shall have a visual trip indicator, test button and manual/automatic reset modes.

1. **Mechanical Timers** shall be a single pole type, rated at 120 Volts, 15 Amps.
2. **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 508A to USA and Canadian requirements.

1. **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.

1. **ELECTRICAL CONTROL PANEL WARRANTY**

 All control panels and their components have a 3-year warranty.

1. **Lighting: (Optional)**

A. Each fountain shall be available with optional lighting packages for nighttime displays.

B. LED lighting shall operate on 120VAC power and be connected into the controller provided with the fountain.

C. LED Packages available in 3 or 6 light packages.

1. C11 lights; 11-watt, composite white lights with colored lenses included.

2. S19 lights; 19-watt, stainless steel white lights with colored lenses included.

3. RGB lights; 5-watt, composite RGB lights with controller and remote.

1. Execution
	1. EXAMINATION AND PREPARATION

Contractor shall inspect all equipment immediately upon receipt.

The equipment shall not be installed, if damaged, until repairs have been made in accordance with the manufacturer’s written instructions.

* 1. INSTALLATION

Contractor shall furnish the unit(s) and install per manufacturer’s recommendations. Coordinate work with the Electrical Contractor for all wiring and controls work to make a complete and operational system. Installation, start-up, and on-site water testing of all equipment shall be per the manufacturer's recommendations. Contractor shall:

Ensure proper machine spatial placement in the reservoir.

Coordinate locations of each fountain with Owner and Engineer prior to installation.

The fountain system shall be installed in accordance with manufacturer’s procedures, unless otherwise approved in writing from the manufacturer.

Systems shall be installed complete with all necessary floats, controllers, mooring, cords, cables, and anchors for the intended application.

Contractor shall be responsible for providing and installing a complete and functional system.

3.03 FIELD SERVICE

## A. Contractor (or a representative of the manufacturer) shall check and inspect the fountain unit(s) after installation, place the fountain unit(s) in operation, and make necessary adjustments.

## B. The fountain unit manufacturer shall instruct designated Owner personnel in the safe and proper operation of the fountain system. This training shall reference the operations manual provided and demonstrate proper function of the equipment.

3.04 SPARE PARTS

1. Contractor shall provide spare parts as recommended or supplied with this fountain assembly by the equipment manufacturer.

3.05 warranty requirements

A. Warranty: A written manufacturer's warranty shall be provided for the equipment specified in this Section. The Fountain shall be warranted to be substantially free from defects in material and workmanship for: 3-years for 2HP and 5-years for 3HP and larger fountains from the date of delivery. This equipment warranty shall be directly from the manufacturer of the equipment to the Owner. Such warranty shall cover all defects or failures of materials or workmanship that occur as the result of normal operation and service.

END OF SECTION