SECTION 22 1123

DOMESTIC WATER PUMPS - DAB PUMPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Modular electronic booster system.

1.02 RELATED REQUIREMENTS

A. Section 23 0923 - Direct-Digital Control System for HVAC.

B. Section 25 1500 - Integrated Automation Software.

C. Section 25 3500 - Integrated Automation Instrumentation and Terminal Devices for HVAC.

D. Section 26 0583 - Wiring Connections.

1.03 ABBREVIATIONS AND ACRONYMS

A. BAS: Building Automation System; controls.

B. BMS: Building Management System; controls.

C. ECM: Electronically Commutated Motor.

D. LCD: Liquid Crystal Display.

E. NFC: Near-Field Communication.

F. NPSH: Net Positive Suction Head.

G. VFD: Variable Frequency Drive.

H. VSD: Variable Speed Drive.

1.04 REFERENCE STANDARDS

A. ICC (IPC) - International Plumbing Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

B. NSF 61 - Drinking Water System Components - Health Effects; 2020.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data:

1. Provide certified pump curve with duty point marked over pump and system operating conditions; NPSH curve and power requirement by pump tag.

2. Manufacturer's catalog sheets for <<fixtures; fittings; accessories; supplies

C. Shop Drawings: Include dimensions and performance data.

D. Test Reports: Plumbing fixture operational tests.

E. Operation and Maintenance Data: Include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.

F. Executed warranty.

G. Project Record Documents: <<Indicate actual locations of components; Not required; or \_\_\_\_\_\_\_\_\_\_\_\_>>.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project:

1. See Section 01 6000 - Product Requirements for additional provisions.

2. Extra Pump Seals: <<One; Two; or \_\_\_\_>> of each type and size.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing type of products specified in this section, with minimum <<three; or \_\_\_\_\_\_\_>> years of<< documented; \_\_\_\_\_\_\_\_\_; or None - N/A>> experience.

B. Certifications: Certify that products requiring electrical connection are listed and classified by Underwriters Laboratories Inc; testing firm acceptable to authority having jurisdiction; or CSA as suitable for purpose specified and indicated.

C. Identification: Provide pumps with manufacturer's name, model number, and rated capacity identified by permanently attached label.

1.07 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 7419 - Construction Waste Management and Disposal for packaging waste requirements.

B. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for pumps except for circulator type. Complete forms in Owner's name and register with manufacturer.

C. Manufacturer Warranty: Provide 2-year; manufacturer warranty for circulators.

Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MODULAR ELECTRONIC BOOSTER SYSTEM

A. Manufacturers:

1. DAB Pumps USA, Inc; 1 ESYBOX MAX: www.dabpumps.us/#sle.

2. DAB Pumps USA, Inc; 2 ESYBOX MAX: www.dabpumps.us/#sle.

3. DAB Pumps USA, Inc; 3 ESYBOX MAX: www.dabpumps.us/#sle.

4. DAB Pumps USA, Inc; 4 ESYBOX MAX: www.dabpumps.us/#sle.

5. \_\_\_\_\_\_\_\_\_\_.

6. Substitutions: <<See Section 01 6000 - Product Requirements; or Not permitted>>.

B. Description: Packaged with <<one; two; three; four; or \_\_\_>> pumps, factory assembled, tested, and adjusted. Ship to site as integral unit consisting of self-priming, multistage pump with VFD; management inverter electronics; Wi-Fi; LCD display; integral expansion tank; nonreturn valve; pressure sensors; flow sensors; and integral piping connections. Provide unit with ESYDOCK and power connections.

C. Installation Position: Vertical.

D. Package Performance:<< As indicated on drawings.; \_\_\_\_\_\_\_\_\_\_.; or None - N/A>>

1. Flow: 66 gpm at 150 feet (65 psi) head.

2. Operating Range per Pump: Up to 76.6 gpm (348.2 L/min); head up to 371 feet (1108 kPa).

3. Maximum Ambient Temperature: 131 degrees F (55 degrees C).

4. Maximum Inlet Pressure: 73 psi (503 kPa).

5. Nominal Pressure (PN): 174 psi (1199 kPa).

6. Constant Pressure Range: 15 to 174 psi (103 to 1199 kPa); 44 psi (303 kPa) by default.

7. Maximum Liquid Temperature: 122 degrees F (50 degrees C).

8. Motors: 3.6 hp IPX5.

E. Electrical Characteristics:

1. 208-240 VAC 60 Hz, single phase, 60 Hz. 11.7 Amps per pump

2. Wiring Connections: See Section 26 0583.

F. Controls: Provide with ESY I/O.

1. ESY I/O: Electronic expansion module to allow interface of ESYBOX MAX with building management systems (BMS). Unit equipped with four digital inputs, one analog input, and one serial port with Modbus RU protocol.

G. Unit provided with integral DAB connectivity.

H. Lead Pump: Operate continuously with lag <<pump; pumps; or \_\_\_\_>> running on system demand. If lead pump fails to function, next pump in sequence starts automatically.

I. Time-Delay Relay: Prevent lag <<pump; pumps; or \_\_\_\_>> short cycling on fluctuating demands.

J. Low-Pressure Control: Stop pump operation if incoming water pressure drops to atmospheric pressure.

K. Pump Switch: Permit manual or automatic operation.

L. Valving: Provide <<each pump outlet; system discharge; or \_\_\_\_\_\_\_\_\_\_\_\_\_>> with combination pressure-reducing and check valve to maintain constant system pressure. Provide gate or butterfly valves on suction and discharge of each pump.<< Provide check valve on each pump discharge.; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.; or None - N/A>>

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products with related fittings and accessories according to manufacturer instructions.

B. Potable and Drinking Water Service: Provide [NSF 61](http://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=NSF%2061) certified; comply with [ICC (IPC)](https://global.ihs.com/doc_detail.cfm?rid=BSD&document_name=ICC%20I-CODE%20IPC).

C. Pumped Liquid: Clean, free from solid or abrasive substances, non-viscous, nonaggressive, uncrystallized, and chemically neutral.

D. Prime pump per manufacturer instructions.

E. Electrically Driven Pump Work:

1. Provide electric-motor-driven equipment specified, complete with local disconnect switch and control panel with starter, controls, safety devices, and related wiring.

2. Provide <<manual; automatic; or \_\_\_\_\_\_\_\_\_\_>> control and protective devices field wired to interface-related devices required for specified operation.

F. Pressure Booster Pump Systems:

1. Provide air cock and drain connection. Align and verify alignment of base prior to start-up.

2. Provide line-sized isolating valve with strainer or triple-duty valve on suction end and line-sized, soft-seated check valve with balancing valve on discharge end.

3. Decrease from line size with long radius reducing elbows or reducers. Support piping adjacent to pump such that no weight is carried on pump casings. Provide supports under elbows on pump suction and discharge line sizes 4 inches (100 mm) and over.

G. Hot Water Service: Install small pressure-temperature gauges on upstream and downstream ends.

H. Pump Controls: <<Factory-provided. ; Hardwired.; Division 23 provided.; Division 25 provided.; \_\_\_\_\_\_\_\_\_\_\_.; or None - N/A>>Tested for use.

I. Cycle Duty Controlled Pumps: <<Set to operate as indicated on drawings; Set manually to ON for continuous operation; Set to cycle by local time-clock switch; Set to cycle by remote pressure switch; Set to cycle by remote aquastat temperature setpoint; Set to cycle by local aquastat temperature setpoint; or \_\_\_\_\_\_\_\_\_>>.

J. ECM, VSD, or VFD Controlled Motors: Configure unit to operate within manufacturer-listed pump curve points unless factory set to do so. Then adjust to operate <<as indicated on drawings; manually at specified duty point; in automatic to maintain downstream pressure setpoint; in automatic to maintain remote aquastat temperature setpoint; in automatic to maintain local aquastat temperature setpoint; or \_\_\_\_\_\_\_\_\_>>.

K. Performance: Ensure pumps operate at specified system fluid temperatures without vapor binding and cavitation, without overloading in parallel or individual operation, and within 25 percent of midpoint of published maximum efficiency curve.

L. Coordinate BAS, BMS, or Integrated Automation linking between unit controller and remote <<software app or terminal; see Section 25 3500; front-end interface; see Section 25 1500; front-end interface; see Section 23 0923; or \_\_\_\_\_\_\_\_\_\_\_>>.

3.02 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Conduct operational tests to demonstrate satisfactory, functional operating efficiency after completing and sterilizing plumbing systems.

3.03 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Thoroughly clean plumbing fixtures and equipment.

3.04 PROTECTION

A. Protect installed <<products from damage due; or \_\_\_\_\_\_\_\_\_\_\_>> from subsequent construction operations.

B. Repair or replace products damaged before Date of Substantial Completion.

END OF SECTION