

## **Specifications**

### **SUBMERSIBLE ROTARY POSITIVE BLOWER:**

This work shall be subject to the conditions of the general requirements and include the furnishing of labor, materials, tools, equipment, accessories and services necessary to provide and install and as shown on the contract drawings.

The equipment furnished and installed under this section shall be fabricated, assembled, erected and placed in proper operating condition in full conformity with detailed drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer and as approved by the engineer. The submersible blower complete as manufactured by Aeration Products, Inc. of Cincinnati, Ohio.

The manufacturer shall supply and deliver \_\_\_ submersible rotary positive displacement blowers, each having the capacity to deliver \_\_\_ SCFM against a discharge of \_\_\_ PSIG.

The submersible blowers shall be rotary lobe positive displacement type, of the two lobe involute design. The impellers, impeller casings, and end plates shall be of a close-grained, high strength cast iron.

The casing and end plates to be suitable ribbed for strength and to prevent distortion under the operating conditions.

The impellers shall be accurately, statically and dynamically balanced. The impellers shall be permanently secured by means of an adjustable timing hub, which is keyed to the shaft. The impellers shall be balanced by metal removal and not by adding counter weights. To ensure smooth operation without vibration, balancing to be at lobe base not on outer profile to avoid weakening of the lobe. The shafts shall be of alloy steel and shall run in an anti-friction bearings, having a minimum B-10 life expectancy of at least 60,000 hours. The anti-friction bearings will have bearing holders with retainers allowing positive bearing containment and with ground spacers to accurately and permanently locate rotor clearances within the blower casing.

The impellers shall operate without rubbing, or liquid seals, or lubrication, and shall be positively timed by a pair of accurately matched, hobbed, shaved, crowned hardened helical gears, keyed to the shafts.

The bottom bearings and gears shall run in a splash oil type housing.

The electric motor shall be of the squirrel-cage induction type design. The motor housing shall be gray cast iron equal to ASTM A48 Class 40. The motor shall be designed for continuous duty, completely submerged. Motor shall be suitable for 230/460 volts, 60 cycle, three phase power. The motors shall be 1750 RPM and have sufficient power to drive the blowers at their maximum required capacity and operating pressure. The motors shall have sufficient horsepower to discharge full blower capacity through the relief valve.

The motors shall be capable of delivering full rated horsepower continuously throughout the blower range and the motors shall not operate within the service factor.

Each phase of the motor shall contain a bi-metallic temperature monitor in the upper portion of the stator windings. The monitors shall be connected in series and shall be coupled to the motor contact coil such that any one switch opening will shut down the motor. The temperature setting shall be 140 degree C  $\pm$  5 degree C and shall automatically reset once the stator temperature returns too normal.

The pump motor cable shall be of type SOW-A, SOW, or MCA as required. The cable sizing shall conform to NEC, ICE and SA specifications. Standard cable length shall be 30 feet.

The cable entry design shall not require specific torque requirements to insure a watertight seal. The cable entry shall consist of a cylindrical elastomer grommet, flanked by stainless steel washers. A cable cap incorporating a strain relief shall mount to the cable cap incorporating a strain relief shall mount to the cable entry boss compressing the grommet ID to the cable while the grommet OD seals against the bore of the cable entry. The entry as part of the motor shall be rate as explosion proof for Class I, Division I, Group C & D locations.

The manufacturer shall provide inlet filters as required, suitable for mounting outdoors, with a weatherhood. The filters shall be arranged for bottom connection to a 125 lb. ASA pipe flange. The filter elements shall be of the dry, washable, synthetic media type, selected to filter 99% of 10 micron and above particles. The filter shall be complete with a filter restriction indicator.

The manufacturer shall provide an inlet silencer for each blower, designed for maximum silencing and submerged application. The submerged silencers to be of the chamber absorption type and shall be complete with matching 125 lb. drilled flanges and shall be of an all welded steel construction, with connections sized and located as shown on contract drawings.

The manufacturer shall provide a discharge silencer for each blower, designed for maximum silencing and submerged application. The submerged silencers shall be of the chamber absorption type and shall be complete with 125 LB. drilled flanges and shall be of an all-welded steel construction, with connections sized and located as shown on contract drawings.

Each blower shall be provided with a spring loaded, or weighted type, pressure relief valve, set at 1/2 PSIG above the maximum working pressure and capable of discharging total blower output with 10% pressure accumulation.

Each blower discharge line shall be furnished with a wafer split disc-type, check valve, designed for heavy duty type shut-off service.

Each blower discharge shall be provided with a lever operated butterfly valve, flanged or wafer, per blower manufacturer's recommendations.

Each blower suction and discharge line shall be provided with a 125 LB. ASA flange single arch type, multiple-ply, rubber or synthetic elastomer, reinforced flexible connection, and shall be complete with steel backing rings.

Each submerged blower shall be equipped with a high temperature safety switch to stop motor power in the event an unsafe blower temperature is reached. The switch shall be of the vapor pressure actuated type, and shall utilize a sealed, tilting type mercury switch to interrupt power.

The submerged blower manufacturer shall furnish the services of a factory based mechanic to check the installation of the blowers and make any field adjustments necessary to ensure proper mechanical operation. The blower manufacturer shall submit to the engineer, a written report certifying that the equipment has been satisfactorily installed and lubricated.

End