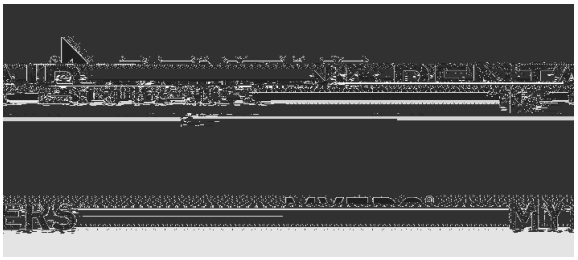


Specifications

SHA Series

Basin System with Centrifugal Grinder Pump and Electrical Junction Box

1.

GRINDER PUMP SYSTEMS: Low pressure sewer systems (LPS) grinder pump shall be a **Myers**® **MG200 GRINDER PUMP SYSTEM** or pre-approved equal.

1.2. GRINDER PUMPS shall be of the centrifugal type. Motors shall be a minimum of two (2) hp rotating at no less than 3450 rpm pumps shall not be considered or approved equal.

1.3. GRINDER PUMP SYSTEMS shall be of the factory quick ship package type and shall carry a full factory supplied warranty. Locally fabricated packages that do not carry factory warranty shall not be considered or approved equal.

2. GENERAL

2.1. 8.0 1 Tf24 446.16cm BT 0.0108 Tc 4nENERAL

2.4.2.2. Complete flow, velocity and pressure requirements for each pipe segments.

2.4.2.3. A complete written report and design drawing must be submitted.

2.5. SUBMITTALS

2.5.1.

3.1.2.2. The power cable entry into the cord cap assembly shall first be made with a rubber compression washer and compression nut. Each individual lead shall be stripped down to bare wire, at staggered intervals, and each strand shall be individually separated. A heat shrink tube filled with epoxy shall seal the outer cable jacket and the individual leads to prevent water contamination to gain entry even in the event of wicking or capillary attraction.

3.1.3. Motor

3.1.3.1. Pump motor shall be of the oil-filled type to promote superior cooling and longevity. Air-filled motors shall not be

3.1.5. Mechanical Seals

3.1.5.1. Motor shall be protected by one carbon ceramic type 21 mechanical seal. Seal shall permanently lubricate seal face and to transmit heat from shaft to outer shell.

3.1.5.2.

3.2.2.2. Check valve shall be of the ball type with a corrosion resistant neoprene ball. The ball shall be the only moving part and shall move automatically out of the path of flow, thus providing an unobstructed smooth flow through the valve body. Upon

pump shut-off the ball shall automatically roll to the closed position to provide a positive seal against back pressure or back flow.

3.2.2.3.

3.3. ELECTRICAL CONTROL PANEL

3.3.1. Control Panel Model / General Construction

3.3.1.1. Control panel shall be Myers 27682A000 for simplex 230V/60HZ/1PH operation. **Panel shall be equipped for two normally open weighted float switches. Float switches mounted to the pump shall not be considered an equal and will not be allowed.** Enclosure shall be NEMA 4X and have a front mounted high intensity LED alarm light.

3.3.2. General Operation / Construction

3.3.2.1. A complete wiring diagram and installation instructions will be provided. The control panel assembly shall be completely factory tested.

3.3.2.2. A hand run button shall be provided for convenient control of the pump manual state. The push to run button shall manually run the pump while the hand run button is being pushed. The momentary operation of the hand run button will help

3.3.3.2. The cover shall have a molded hinge allowing the door to be quickly removed to allow for better access or replacement if necessary. The cover shall be lockable by

3.3.6.2. Float Controls

3.3.6.2.1. Simplex control panel operation shall be automatically controlled float switch type level controls. Float switches shall control pump and high-level alarm functions.

3.3.6.2.2. Float switch shall be capable of operating at temperatures between 32 and 170 degrees F. Float switches shall activate and deactivate between 5 degrees above horizontal and 5 degrees below horizontal. Float switch shall be constructed with a polypropylene outer shell for durability and resistance to wastewater environment. Outer shell shall be filled with polyurethane foamed interior to provide best buoyancy, water tight integrity and protect the switch.

3.3.6.2.3. Float switches shall be of normally open type.

3.3.6.2.4. Float switch cables shall be a minimum of 18 gauge, jacketed cable. Float switch contacts and shall be capable of handling 10 amps at 115 VAC or 3 amps at 240 VAC.

3.3.6.2.5. Float switch shall be third party safety recognized by UL and certified by CSA.

3.3.6.2.6. Float switches shall have an external zinc plated cast iron weight. Weight shall be of the split design and shall be easily adjustable for tether length. Float switch weights made of heavy metals which may contaminate the waste flow stream shall not be acceptable.

4. EXECUTION

4.1. QUALITY ASSURANCE

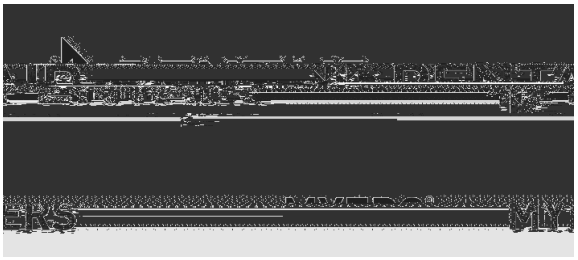
4.1.1. The grinder pump shall be free from electrical and fire hazards as required in a residential environment. As evidence of compliance with this requirement, the grinder pump shall be listed by Underwriters Laboratories, Inc., to be safe and appropriate for the intended use.

4.1.2. The grinder pump shall have an industry standard commercial test, which consists of a run test, Hi Pot test and hermetic leak decay test.

4.2. DELIVERY, STORAGE AND HANDLING

4.2.1. The manufacturer shall furnish and deliver assembled grinder pump stations to the contractor or owner. Simplex units, containing one grinder pump and all necessary parts and equipment, shall be installed in fiberglass reinforced polyester tanks for outside installations. All equipment shall be factory installed, except for externally mounted control panel, gravity sewer inlet hubs and pump assembly, which are to be installed in the field. Each simplex

4.2.2.



Specifications

SHA Sereo4

7.1.2.2. The power cable entry into the cord cap assembly shall first be made with a rubber compression washer and compression nut. Each individual lead shall be stripped down to bare wire, at staggered intervals, and each strand shall be individually separated. A heat shrink tube filled with epoxy shall seal the outer cable jacket and

7.1.5. Mechanical Seals

7.1.5.1. Motor shall be protected by one, carbon ceramic type 21 mechanical seal. Seal shall permanently lubricate seal face to transmit heat from shaft to outer shell.

7.1.5.2. Seal face shall be carbon and ceramic and lapped to a flatness of one light band.

7.2.2.3. The ball type shutoff valve shall be furnished and installed as an integral part of the internal pipe assembly. Valve shall be of the single-union type to ease installation and removal of the pump.

7.2.2.4. Pump shall rest on basin floor mounted to a stainless steel base.

7.2.3. Inlet Flange

7.2.3.1. A one-piece, flexible basin inlet fitting for 4” SCH 40 plastic pipe shall be shipped loose for field installation. Optional fittings include:

A. 4" SDR35

B. 6" SCH40

C.

7.3.2.3. The control must provide “zero crossing” technology. This monitors the AC sine wave and only allows the relay contacts to close at zero voltage and open at zero current reducing damage caused by inrush loads.

7.3.2.4. The control panel must include an elapsed time meter and cycle counter for each pump. A counter for high level conditions and float status indication must also be provided.

7.3.2.5. Control Panel Testing

Factory Tests – Each control panel shall receive a test to ensure proper operation prior to shipment. Factory tests shall include at a minimum:

7.3.2.5.1. All control logic functions, including: manual pump run, auto pump on, auto pump off and all alarm functions.

7.3.2.5.2 All fuses and circuit breakers.

7.3.2.5.3 All indicator lights and switches.

7.3.2.5.4 Audible and visual alarm indicators.

7.3.2.5.5 Power transfer circuit to pump motor.

7.3.2.5.6 Float switch input circuits.

7.3.3. Enclosure

7.3.3.1. The durable NEMA 4X enclosure, made from a durable polycarbonate material and intended for indoor or outdoor. The enclosure is primarily to provide a degree of protection against corrosion, windblown dust, rain, splashing water and hose directed water. The enclosure shall remain undamaged by the formation of ice on the enclosure. To maintain maximum enclosure integrity no holes shall be drilled

7.3.4.2. Green power (control and alarm) and pump run indicator lights shall be located on the front of the enclosure with no penetration through the door. A green pump run light, and red control and alarm power short lights shall be provided and mounted on the inside of the door.

7.3.4.3. The alarm circuitry must utilize touch pad technology that allows the alarm to be silenced and tested from the outside of the enclosure without penetrating the enclosure for a button or switch.

7.3.5. Circuit Breakers

7.3.5.1. Motor Circuit Breaker. The pump circuit breaker shall be thermal magnetic trip device and provide for individual motor disconnect and overcurrent and short circuit protection as required by the NEC rating for motor branch circuit protection. Breaker shall be rated 10,000 amps interrupt current (10KAIC). The voltage rating shall match that of the panel incoming service.

7.3.5.2. Control Circuit Breaker. The 120-volt control circuits shall be protected by an auxiliary single (1) pole circuit breaker. Breaker shall be rated 10,000 amps interrupt current (10KAIC).

7.3.5.3. Motor Power Relay. The motor relay shall be rated for 5 hp – 230v and 2 hp – 115v when used with “zero crossing” technology. It shall provide the electrical start/stop control for each pump and have 12-volt dc operating coil.

7.3.6. Level Controls

7.3.6.1. Float Switch Level Control Operation

7.3.6.1.1. The control panel shall provide terminal strip inputs for pump float and alarm float controls.

7.3.6.1.2. The controller shall provide a pump run indicator light. The LED indicator shall activate to indicate the pump is running.

7.3.6.2. Float Controls

7.3.6.2.1. Simplex control panel operation shall be automatically controlled float switch type level controls. Float switches shall control pump and high-level alarm functions.

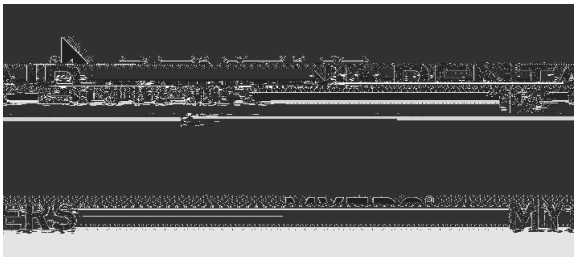
7.3.6.2.2. Float switch shall be capable of operating at temperatures between 32 and 170 degrees F. Float switches shall activate and deactivate between 5 degrees above horizontal and 5 degrees below horizontal. Float switch shall be constructed with a polypropylene outer shell for durability and resistance to wastewater environment. Outer shell shall be filled with polyurethane foamed interior to provide best buoyancy, water tight integrity and protect the switch.

7.3.6.2.3. Float switches shall be of normally open type.

7.3.6.2.4. Float switch cables shall be a minimum of 18 gauge jacketed cable. Float switch contacts and shall be capable of handling 10 amps at 115 VAC or 3 amps at 240 VAC.

7.3.6.2.5. Float switch shall be third party safety recognized by UL and certified by CSA.

7.3.6.2.6. Float switches shall have an external zinc plated cast iron weight. Weight shall be of the split design and shall be easily adjustable for tether length. Float switch weights made of heavy metals, which may



Specifications

SHA Series

SHA Basin System with Semi-Positive Displacement Grinder Pump and Electrical Junction Box

9. INTRODUCTION

9.1. GRINDER PUMP SYSTEMS: Low pressure sewer systems (LPS) grinder pump shall be a **Myers GRINDER PUMP SYSTEM** or pre-approved equal.

9.2. GRINDER PUMPS shall be of the high head semi-positive displacement. Motors shall be a minimum of two (2) hp rotating at no less than 1750 rpm pumps shall not be considered or approved equal.

9.3. GRINDER PUMP SYSTEMS shall be of the factory quick ship package type and shall carry a full factory supplied warranty. Locally faN -5 5 (y) 1 ( ) 5 (f) 5 (aND8 (m BT 05 (y)) Tj 5 (Tj 5 (Tj) 5 (f) 5 (aN)

10.4.2. The sewer system hydraulic analysis shall include the following:

10.4.2.1. Color-coded piping schematic of the entire system.

10.4.2.2. Complete flow, velocity and pressure requirements for each pipe segments.

10.4.2.3. A complete written report and design drawing must be submitted.

10.5. SUBMITTALS

10.5.1.

damage to the pump stator boot will result; glass; metal; seafood shells; plastic objects (toys, utensils, etc.) or other like sharp objects.

11.1.2. Electrical Power/Control Cord

11.1.2.1. The motor power cord shall be SJOOW water resistant and CSA/UL approved.

11.1.2.2. The power cable entry into the cord cap assembly shall first be made with a rubber compression washer and compression nut. Each individual lead shall be stripped down to bare wire, at staggered intervals, and each strand shall be individually separated. A heat shrink tube filled with epoxy shall seal the outer cable jacket and the individual leads to prevent water contamination to gain entry even in the event of wicking or capillary attraction.

11.1.3. Motor

11.1.3.1. Pump motor shall be of the oil-filled type to promote superior cooling and longevity. Air-filled motors shall not considered equal or allowed. Motor shall be at a minimum two (2) hp and shall rotate at a minimum of 1750 rpm.

11.1.3.2. The stator, rotor and bearings shall be mounted in a sealed submersible frame. The stator winding shall be of the open type with Class F insulation, (155 degrees C or 311 degrees F) and NEMA B design (3 (,)6 BT 0.0098 Tc 41 0 0 41 0q 0.245 q 0edg

be pressed into iron holding flange for easy removal. Flange shall be provided with tapped back-off holes so that screws can be used to push the shredding ring from housing. All grinding of solids shall be from action of the 16 rotating cutter impeller against the 27 stationary shredding ring cutters, producing 24,840 cuts per seconds. All grinder cutters and shredding ring shall be of 440 F stainless steel hardened to 57–60 Rockwell C and ground to close tolerance.

11.2. PACKAGE SYSTEM

11.2.1. Fiberglass Basin

11.2.1.1. Basin – The diameters and depths shall be based on the system layout.

11.2.1.2. Basin shall be made from a fiberglass reinforced polyester resin. Resins used shall

11.3.2.4. The control panel must include an elapsed time meter and cycle counter for each pump. A counter for high level conditions and float status indication must also be provided.

11.3.2.5. Control Panel Testing

Factory tests – Each control panel shall receive a test to ensure proper operation prior to shipment. Factory tests shall include at a minimum:

11.3.2.5.1. All control logic functions, including: manual pump run, auto pump on, auto pump off, and all alarm functions.

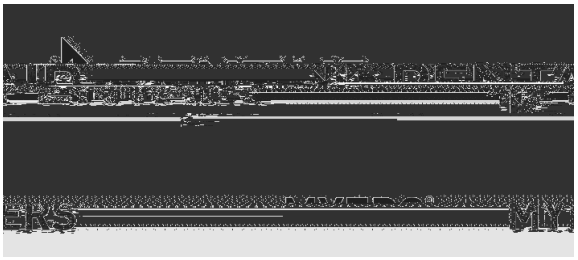
11.3.2.5.2. All fuses and circuit breakers.

11.3.2.5.3. All indicator lights and switches.

11.3.2.5.4. Audible and visual alarm indicators.

11.3.2.5.5

11.3.4.3. The alarm circuitry must utilize touch pad technology that allows the alarm to be



Specifications

SHA Series

Basin System with Semi-Positive Displacement Grinder

13.INTRODUCTION

13.1. GRINDER PUMP SYSTEMS: Low pressure sewer systems (LPS) grinder pump shall be a **Myers GRINDER PUMP SYSTEM** or pre-approved equal.

13.2. GRINDER PUMPS shall be of the **high head semi-positive displacement.** Motors shall be a minimum of two (2) hp rotating at no less than 1750 rpm pumps shall not be considered or approved equal.

13.3. GRINDER PUMP SYSTEMS shall be of the factory quick ship package type and shall carry a full factory supplied warranty.

NOTE: The following objects should not be introduced into the grinder as damage to the pump stator boot will result; glass; metal; seafood shells; plastic objects (toys, utensils, etc.) or other like sharp objects.

15.1.2. Electrical Power/Control Cord

15.1.2.1. The motor power co

15.1.4.2. The common motor pump and grinder shaft shall be machined from solid #400 series stainless steel and be designed for minimum shaft overhang to reduce shaft deflection and prolong bearing life.

15.1.4.3. The shaft shall be threaded to mount the pump impeller and grinder impeller.

15.1.5. Mechanical Seals

15.1.5.1. Motor shall be protected by one type 21 carbon ceramic mechanical seal. Seal shall permanently lubricate seal face to transmit heat from shaft to outer shell.

15.1.5.2. The seal housing shall be equipped with a moisture sensing probe installed between the seals, and the sensing of moisture in the seal chamber shall be automatic, continuous, and not require the pump be stopped or removed from the wet well. Single seal protection will not be considered equal.

15.1.5.3. Seal face shall be carbon and ceramic and lapped to a flatness of one light band. All hardware is to 300 series stainless steel and sealing elastomers are to Buna-N Rubber.

15.2.1.2. Basin shall be made from a fiberglass reinforced polyester resin. Resins used shall be of commercial grade polyester and shall be evaluated as a laminate test or determined by previous service to be acceptable for the intended environment. The reinforcing material shall be a commercial grade of glass fiber having a coupling agent to provide a suitable bond between the glass reinforcement and the resin. The manufacturer may supply either (continuous strand, chopped-strand, continuous mat and/or non-continuous mat) or (non-continuous glass strands having fiber lengths from 0.5 to 2.0 inches). The completed material shall be inert and acceptable to the environment. The basin shall be water tight.

15.2.1.3. Inner Surface – The inner surface shall be smooth and resin rich, free of cracks, exposed fibers, porosity and crazing.

15.2.1.4. Exterior Surface – The exterior surface shall be relatively smooth with no exposed fibers or sharp projections. If a pigment is added, color should be relatively equal throughout. Foreign inclusions, dry spots, pinholes or pits, de-laminations, large dimples not meeting thickness requirements and air bubbles are not acceptable.

15.2.1.5. Tank Wall – Wall thickness shall vary with the basin height to provide the

15.2.1.8.

15.3. ELECTRICAL CONTROL PANEL

15.3.1. Control Panel Model / General Construction

15.3.1.1. Control panel shall be Myers 27682A001 for simplex 230V/60HZ/1PH operation. **Panel shall be equipped for two normally open weighted float switches. Float switches mounted to the pump shall not be considered an equal and will not be allowed.** Enclosure shall be NEMA 4X and have a front mounted high intensity LED alarm light.

15.3.2. General Operation / Construction

15.3.2.1. A complete wiring diagram and installation instructions will be provided. The control panel assembly shall be completely factory tested.

15.3.2.2. A hand run button shall be provided for convenient control of the pump manual state. The push to run button shall manually run the pump while the hand run button is being pushed. The momentary operation of the hand run button will help

15.3.3.2. The cover shall have a molded hinge allowing the door to be quickly removed to

15.3.6.2. Float Controls

15.3.6.2.1. Simplex control panel operation shall be automatically controlled float switch type level controls. Float switches shall control pump and high-level alarm functions.

15.3.6.2.2. Float switch shall be capable of operating at temperatures between 32 and 170 degrees F. Float switches shall activate and deactivate between 5 degrees above horizontal and 5 degrees below horizontal. Float switch shall be constructed with a polypropylene outer shell for durability and resistance to wastewater environment. Outer shell shall be filled with polyurethane foamed interior to provide best buoyancy, water tight integrity and protect the switch.

15.3.6.2.3. Float switches shall be of normally open type.

15.3.6.2.4.

failure, alarm loss of power, shutoff valve and discharge piping. In addition, an external alarm and pump control panel is to be provided for the unit.

16.2.2. All packaged tank assemblies will include all the necessary equipment to make a complete turnkey system ready for installation except the grinder pump and control panel.

16.2.3. Upon receipt of packaged tank assemblies, the contractor or owner will visually inspect to