



Certified to NSF/ANSI/CAN 61 & NSF/ANSI 372

Specifications: Submersible Turbine Pump

A. Scope

This specification is for a deep set, submersible turbine pump, manufactured with Glide 400 bearings. The pumping unit shall be designed and manufactured in accordance with the latest Hydraulic Institute and AWWA specifications for turbine pumps. This pump must also have an NSF certification.

B. Service Conditions

The pumps shall be designed and built to operate satisfactorily with a reasonable service life, when installed in a proper submersible pump application. The product shall be manufactured by Integrity Pump and Motor or other manufacturers that can meet the required material standards and performance specifications.

C. Operating Conditions

Design conditions: _____ Gallons per minute
 Design head: _____ Feet TDH (total dynamic head)
 Minimum pump eff: _____ Percent
 Maximum Pump speed: _____ RPM
 Liquid pumped Water
 Pump Bowl setting: _____ Feet (From base plate to bottom of basket strainer)
 Well diameter I.D. _____ Inches
 Bowl Model: _____ Inches
 Bowl O.D. _____ Inches

D. Pump Construction

1. Bowl assembly: the intermediate bowls, discharge cases and suction bowls shall be flanged type constructed from ductile iron, and shall conform to ASTM A48, class 65-45-12. They shall be free from sand holes, blow holes or other faults and must be accurately machined and fitted to close tolerances. The intermediate bowls shall have glass lined enamel or epoxy enamel coated waterways for maximum efficiency and fitted with o-rings. All threaded discharge cases shall be threaded to an NPT standard. Bearings shall be Glide 400 NSF polymer material. All assembly bolting shall be stainless steel.

2. Impellers: the impellers shall be investment cast 201, ASTM A296 and shall be enclosed type. They shall be free from defects and must be investment cast, machined, back-filed and balanced for optimum efficiency and performance. They shall be securely fastened to the bowl shaft with stainless steel taper locks, C1045 steel will not be accepted. The impellers shall be adjustable by means of a top shaft adjusting nut or adjustable solid shaft coupling.

3. Bowl shaft shall be constructed from PSQ 416 stainless steel, ASTM A582 pump shaft material. It shall be precision machined and straightened within .002 - .004 tolerance.

4. Motor bracket shall be constructed from ductile iron and conform to ATST A48, class 65-45-12. The motor bracket bearing shall be Glide 400 polymer, NSF approved material

5. Motor Bracket suction strainer shall be 304SS.

E. Electric Motor

The motor shall be a submersible motor with a NEMA standard motor bracket fit. The motor shall operate at _____rpm and have a Kingsbury type thrust bearing assembly. The motor shall operate at _____ volts ____ phase and have a 1.15 service factor.

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Integrity Pump & Motor Group, LLC. 7112 Juniper Rd. Fairview, TN. 37062



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Specifications: Vertical Turbine Pump, Product Lubricated

A. Scope

This specification is for a short set lineshaft pump with an above ground discharge, manufactured for water lubrication of the lineshaft bearings by the water being pumped and furnished with a specified driver and accessories. The pumping unit shall be designed and manufactured in accordance with the latest Hydraulic Institute and AWWA specifications for lineshaft turbine pumps.

B. Service Conditions

The pumps shall be designed and built to operate satisfactorily with a reasonable service life, when installed in a proper turbine pump application. The product shall be manufactured by Integrity Pump and Motor, Inc. or other manufacturers that can meet the required material standards and performance specifications.

C. Operating Conditions

Design conditions: _____ Gallons per minute
 Design head: _____ Feet TDH (total dynamic head)
 Minimum pump eff: _____ Percent
 Maximum Pump speed: _____ RPM
 Liquid pumped Water
 Pump Bowl setting: _____ Feet (From base plate to bottom of basket strainer)
 Sump diameter I.D. _____ Inches
 Bowl Model: _____ Inches
 Bowl O.D. _____ Inches

D. Pump Construction

1. Bowl assembly: the intermediate bowls, discharge cases and suction bowls shall be flanged type constructed from ductile iron, and shall conform to ASTM A48, class 65-45-12. They shall be free from sand holes, blow holes or other faults and must be accurately machined and fitted to close tolerances. The intermediate bowls shall have glass lined enamel or epoxy enamel coated waterways for maximum efficiency and fitted with o’rings. All threaded discharge cases shall be threaded to an 8 TPI butt standard for product lubricated column assembly. Bearings shall be Glide 400 NSF polymer material. All assembly bolting shall be stainless steel.

2. Impellers: the impellers shall be investment cast 201, ASTM A296 and shall be enclosed type. They shall be free from defects and must be investment cast, machined, back-filed and balanced for optimum efficiency and performance. They shall be securely fastened to the bowl shaft with stainless steel taper locks, C1045 steel will not be accepted. The impellers shall be adjustable by means of a top shaft adjusting nut or adjustable solid shaft coupling.

3. Bowl shaft shall be constructed from PSQ 416 stainless steel, ASTM A582 pump shaft material. It shall be precision machined and straightened within .002 - .004 tolerance.

E. Discharge Head Assembly – Water Lubricated

1. Discharge head shall be of the high profile type and have a suitable motor base. It shall be constructed of high grade ductile iron, ASTM A536, class 65 or fabricated steel. The head shall have a ____ size

discharge flange, ASTM 150 lb., suitable for the capacity of water being pumped. The head shall allow the top shaft to couple above the stuffing box. The head shall be threaded to accept the desired column pipe in this specification.

2. The stuffing box shall be ductile iron and shall contain a minimum of five rings of John Crane 1345 packing. It shall have an available fitting for pressure relief if needed. The packing gland follower shall be stainless steel and secured in place by stainless steel studs and nuts. The packing box lantern ring shall be Glide NSF polymer. The packing box bearing shall be Glide 400 polymer material. A rubber slinger shall be provided to operate on the top shaft, above the packing gland.

F. Column Assembly – Water lubricated

1. Intermediate column lengths and lineshaft bearing spacing shall not exceed 10 feet with pump speeds up to 2200rpm. Pump speeds between 2200rpm and 3600rpm shall have column and bearing spacing no greater than 5 feet.

2. Column pipe shall be a minimum grade B steel pipe with flanged ends and faced. Pipe shall accept ¾" ring spider bearing retainers. Column pipe shall be made of schedule 40 or thicker material.

3. Spiders shall be stainless steel or welded in steel and furnished for shaft stabilization at each flange. A Glide 400 NSF polymer shall be installed in each spider.

4. Lineshaft shall be 416 stainless steel and be sized according to the horsepower requirements of the designed pump. The butting faces shall be machined square to the axis of the shaft, with the maximum permissible axial misalignment on the thread axis with the shaft axis .002" in 6". These shafts shall be coupled with 416 stainless steel lineshaft couplings.

G. Suction Strainer

A suitable size basket strainer of stainless steel (bolt on type) shall be provided.

H. Electric Motor

The motor shall be a heavy duty squirrel cage induction type, NEMA MG-1, Part 31 _____RPM, vertical hollow shaft motor or solid shaft motor, with a non-reverse ratchet to prevent reverse rotation. A suitable thrust bearing shall be required to meet the designed pump's hydraulic thrust load plus the weight of the rotating parts under the operating conditions. The motor shall be high efficiency with a WP-1 enclosure, a 1.15 service factor and match the required voltage and phase at 60HZ. Bronze B584-836 steady bushing shall be provided for speeds of 3450 rpm.

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Specifications: Vertical Turbine Pump, Product Lubricated

A. Scope

This specification is for a deep set, product lube lineshaft pump with an above ground discharge, manufactured for water lubrication of the lineshaft bearings by the water being pumped and furnished with a specified driver and accessories. The pumping unit shall be designed and manufactured in accordance with the latest Hydraulic Institute and AWWA specifications for lineshaft turbine pumps.

B. Service Conditions

The pumps shall be designed and built to operate satisfactorily with a reasonable service life, when installed in a proper turbine pump application. The product shall be manufactured by Integrity Pump and Motor, Inc. or other manufacturers that can meet the required material standards and performance specifications.

C. Operating Conditions

Design conditions: _____ Gallons per minute
Design head: _____ Feet TDH (total dynamic head)
Minimum pump eff: _____ Percent
Maximum Pump speed: _____ RPM
Liquid pumped Water
Pump Bowl setting: _____ Feet (From base plate to bottom of basket strainer)
Well diameter I.D. _____ Inches
Bowl Model: _____ Inches
Bowl O.D. _____ Inches

D. Pump Construction

1. Bowl assembly: the intermediate bowls, discharge cases and suction bowls shall be flanged type constructed from ductile iron, and shall conform to ASTM A48, class 65-45-12. They shall be free from sand holes, blow holes or other faults and must be accurately machined and fitted to close tolerances. The intermediate bowls shall have glass lined enamel or epoxy enamel coated waterways for maximum efficiency and fitted with o'rings. All threaded discharge cases shall be threaded to an 8 TPI butt standard for product lubricated column assembly. Bearings shall be Glide NSF polymer material. All assembly bolting shall be stainless steel.

2. Impellers: the impellers shall be investment cast 201, ASTM A296 and shall be enclosed type. They shall be free from defects and must be investment cast, machined, back-filed and balanced for optimum efficiency and performance. They shall be securely fastened to the bowl shaft with stainless steel taper locks, C1045 steel will not be accepted. The impellers shall be adjustable by means of a top shaft adjusting nut or adjustable solid shaft coupling.

3. Bowl shaft shall be constructed from PSQ 416 stainless steel, ASTM A582 pump shaft material. It shall be precision machined and straightened within .002 - .004 tolerance.

E. Discharge Head Assembly – Water Lubricated

1. Discharge head shall be of the high profile type and have a suitable motor base. It shall be constructed of high grade ductile iron, ASTM A536, class 65 or fabricated steel. The head shall have a " size

discharge flange, ASTM 150 lb., suitable for the capacity of water being pumped. The head shall allow the top shaft to couple above the stuffing box. The head shall be threaded to accept the desired column pipe in this specification.

2. The stuffing box shall be ductile iron and shall contain a minimum of five rings of John Crane 1345 packing. It shall have an available fitting for pressure relief if needed. The packing gland follower shall be stainless steel and secured in place by stainless steel studs and nuts. The packing box lantern ring shall be Glide NSF polymer. The packing box bearing shall be Glide 400 polymer material. A rubber slinger shall be provided to operate on the top shaft, above the packing gland.

F. Column Assembly – Water lubricated

1. Intermediate column lengths and lineshaft bearing spacing shall not exceed 10 feet with pump speeds up to 2200rpm. Pump speeds between 2200rpm and 3600rpm shall have column and bearing spacing no greater than 5 feet.

2. Column pipe shall be a minimum grade B steel pipe with ends machined with 8 TPI butt thread and faced. Pipe shall be connected with threaded sleeve type ductile iron couplings and accept ¾" ring spider bearing retainers. Column pipe shall be made of schedule 40 or thicker material.

3. Spiders shall be stainless steel and furnished for shaft stabilization at each column pipe coupling. A Glide NSF polymer shall be installed in each spider.

4. Lineshaft shall be 416 stainless steel or 1045 steel with 304SS sleeves and be sized according to the horsepower requirements of the designed pump. The butting faces shall be machined square to the axis of the shaft, with the maximum permissible axial misalignment on the thread axis with the shaft axis .002" in 6". These shafts shall be coupled with 416 stainless steel or 1045 steel line shaft couplings.

G. Suction Strainer

A suitable size cone strainer can be provided if required.

H. Electric Motor

The motor shall be a heavy duty squirrel cage induction type, NEMA MG-1, Part 31 (VFD DUTY RATED) _____ RPM, vertical hollow shaft motor or solid shaft motor, with a non-reverse ratchet to prevent reverse rotation. A suitable thrust bearing shall be required to meet the designed pump's hydraulic thrust load plus the weight of the rotating parts under the operating conditions. The motor shall be high efficiency with a WP-1 enclosure, a 1.15 service factor and match the required voltage and phase.

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Specifications: Vertical Turbine Pump, Oil Lubricated

A. Scope

This specification is for a deep set lineshaft pump with an above ground discharge, manufactured for oil lubrication of the lineshaft bearings by oil dripping from a surface oil reservoir. The pumping unit shall be designed and manufactured in accordance with the latest Hydraulic Institute and AWWA specifications for lineshaft turbine pumps.

B. Service Conditions

The pumps shall be designed and built to operate satisfactorily with a reasonable service life, when installed in a proper turbine pump application. The product shall be manufactured by Integrity Pump and Motor, Inc. or other manufacturers that can meet the required material standards and performance specifications.

C. Operating Conditions

Design conditions: _____ Gallons per minute
 Design head: _____ Feet TDH (total dynamic head)
 Minimum pump eff: _____ Percent
 Maximum Pump speed: _____ RPM
 Liquid pumped Water
 Pump Bowl setting: _____ Feet (From base to bottom of the bowl assembly)
 Well diameter I.D. _____ Inches
 Bowl Model: _____ Inches
 Bowl O.D. _____ Inches

D. Pump Construction

1. Bowl assembly: the intermediate bowls, discharge cases and suction bowls shall be flanged type constructed from ductile iron, and shall conform to ASTM A48, class 65-45-12. They shall be free from sand holes, blow holes or other faults and must be accurately machined and fitted to close tolerances. The intermediate bowls shall have glass lined enamel or epoxy enamel coated waterways for maximum efficiency and fitted with o’rings. All threaded discharge cases shall be threaded to an 8 TPI butt standard for oil lubricated column assembly. Bearings shall be Glide NSF polymer material. All assembly bolting shall be stainless steel.

2. Impellers: the impellers shall be investment cast 201, ASTM A296 and shall be enclosed type. They shall be free from defects and must be investment cast, machined, back-filed and balanced for optimum efficiency and performance. They shall be securely fastened to the bowl shaft with stainless steel taper locks, C1045 steel will not be accepted. The impellers shall be adjustable by means of a top shaft adjusting nut or adjustable solid shaft coupling.

3. Bowl shaft shall be constructed from PSQ 416 stainless steel, ASTM A582 pump shaft material. It shall be precision machined and straightened within .002 - .004 tolerance.

E. Discharge Head Assembly – Oil Lubricated

1. Discharge head shall be of the high profile type and have a suitable motor base. It shall be constructed of high grade ductile iron, ASTM A536, class 65 or fabricated steel. The head shall have a ” size

discharge flange, ASTM 150 lb., suitable for the capacity of water being pumped. The head shall allow the top shaft to couple above the stuffing box. The head shall be threaded to accept the desired column pipe in this specification.

2. The stretch assembly shall be ductile iron and shall have a tension nut to allow for proper tension on the oil tube. The tension nut shall be made of silicon bronze. A ductile iron dust plate shall be provided with a bronze bearing and oil line connection. An oil reservoir must be provided.

F. Column Assembly – Oil Lubricated

1. Column pipe shall be a minimum grade B steel pipe with ends machined with 8 TPI butt thread and faced. Pipe shall be connected with threaded sleeve type ductile iron or steel couplings. Column pipe shall be made of schedule 40 or thicker material and not exceed 20 foot sections. Black widow spiders shall be provided to center the oil tube assemblies every 20 feet.

2. Enclosing tubes shall be made of ASTM A120 schedule 80 pipe in interchangeable sections not over 5 feet. The top section shall be provided as a stretch tube section for the assembly. Bronze, grooved line shaft bearings shall be used at the 5 foot sections for alignment, lubrication and to prevent vibration of assembly line shaft.

3. Lineshaft shall be 1045 steel and be sized according to the horsepower requirements of the designed pump. The butting faces shall be machined square to the axis of the shaft, with the maximum permissible axial misalignment on the thread axis with the shaft axis .002" in 6". These shafts shall be coupled with 1045 steel line shaft couplings.

G. Suction Strainer

A suitable size cone strainer can be used if required.

H. Electric Motor

The motor shall be a heavy duty squirrel cage induction type, NEMA MG-1, Part 31 (VFD DUTY RATED) _____ RPM, vertical hollow shaft motor or solid shaft motor, with a non-reverse ratchet to prevent reverse rotation. A suitable thrust bearing shall be required to meet the designed pump's hydraulic thrust load plus the weight of the rotating parts under the operating conditions. The motor shall be high efficiency with a WP-1 enclosure and a 1.15 service factor and match the required voltage and phase.

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