

VERTICAL TURBINE FIRE PUMPS ADVANTAGES |

GENERAL INFORMATION

File No: F51.10
Date: FEBRUARY 07, 2025
Supersedes: F51.10
Date: JULY 12, 2013

No Priming Required

NFPA 20 requires that centrifugal pumps be installed under a flooded suction condition. Vertical turbine pumps should be applied for any underground water source where the supply water level is below the pump suction. Vertical turbine impellers remain submerged in the water supply at all times. Start-up is instantaneous and requires no supervision.

Steep pump performance curves

Vertical turbine pump performance curves are steeper than those of horizontal pumps. This results in smaller changes in capacity during pressure changes.

Adaptable to different water levels

Because the column length may be varied to fit the application, a vertical turbine fire pump can be tailored to meet virtually any water level. This is important when the pump support floor or foundation is above the suction lift of a horizontal fire pump. A vertical turbine fire pump can be installed in wells, offshore platforms, rivers, or wherever a fluctuating water level exists.

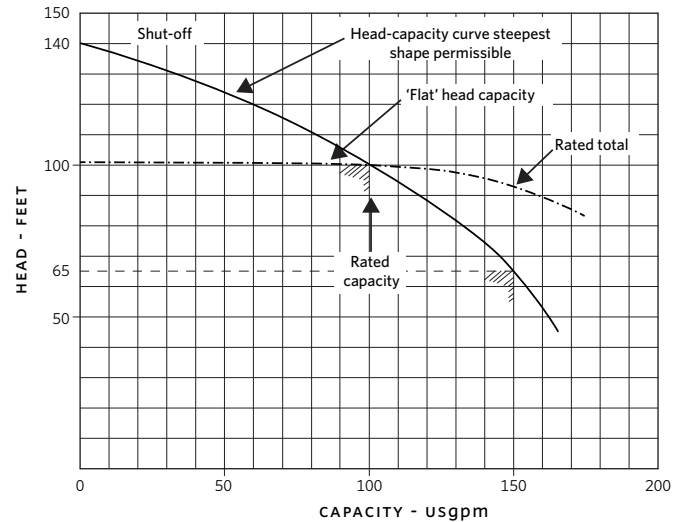
Adaptable to a wide range of water supplies

Approved water supplies range from municipal water systems to sea water including wells, underground and above ground reservoirs, open ponds, streams, and above and below ground storage tanks.

Available to meet a wide range of capacity and pressure requirements

By varying the number of stages and sizes of bowls and impellers, a full range of system pressures and capacities can be obtained from virtually any water level. This allows the system designer maximum flexibility in designing the most effective and reliable fire protection system.

Fire pumps designed and manufactured in accordance with NFPA 20, UL/FM standards must satisfy specific pressure/capacity requirements. These guidelines insure that adequate pressure is provided over a wide capacity range and that maximum pressure at shut-off does not exceed the limits of the system.



Low maintenance

Our pump designs provide for radial hydraulic balance. The hydraulic forces are equalized by multi-vane bowl diffusers. This reduces sleeve bearing radial loading and provides exceptional bearing life.

The weight of all rotating elements (including axial hydraulic thrust) is supported by a single thrust bearing at the top of the driver. Maintenance is minimal, but when required the bearing is easily accessible.

ENGINEERING FEATURES

Pressure ratings: from 40 to 500 psi.

Capacity ratings: Labeled from 250 through 5,000 USgpm.

Intermediate bearings: 0-50 feet product lubricated column and shaft assembly. Greater than 50 feet oil lubricated column & shaft assembly.

Testing: Testing includes a non-witnessed performance test and a non-witnessed hydrostatic test of the discharge head and bowl assembly.

DISCHARGE HEAD ASSEMBLY

Discharge head: ASTM A48, class 30, cast iron fitted with 125# ANSI flanged discharge for use where maximum pressure (shut-off) is 175 psi. For higher pressures, a discharge head with 250# ANSI discharge flange rating is used. Fabricated steel discharge heads are also available.

Stuffing Box: ASTM A48, class 30 with ASTM B505 alloy 932 bearing, braided acrylic packing, 316ss gland, cast in grease chamber below packing for maximum pressures to 150 psi. Above 150 psi a bypass style stuffing box is provided with two bronze, ASTM B505 alloy 932 lantern rings. Gland bolts are 304 stainless steel with stainless steel nuts.

Head Shaft: Two piece ASTM A582, 416 stainless steel with threaded coupling in the discharge head. With bronze ASTM B584 alloy 838 adjusting nut.

COLUMN ASSEMBLY

Pipe: Steel ASTM A53, type S, grade B with threaded steel couplings. Maximum lengths are 10 feet. Flanged column is also available. Product Lubrication: Bearing retainers - ductile iron A536 GR60 or bronze ASTM B584, neoprene lineshaft bearings - D2000-77a. Oil lubrication optional.

Lineshaft: ASTM A108, C-1045 carbon steel with ASTM A269, type 304 stainless steel; sleeves at bearing journals. Couplings are steel ASTM, A108, grade 1215.

BOWL ASSEMBLY

Bowls: ASTM A48, porcelain enamelled class 30 cast iron or A536 GR60 ductile cast iron.

Bowl Wear Ring: ASTM B505-943 bronze.

Bowl Bearings: ASTM B505-932 bronze.

Bowl Shaft: ASTM A582, type 416 stainless steel.

Impellers: Enclosed type, all bronze ASTM B584-838 except 19F ASTM 148-952 bronze, dynamically balanced.

Impeller Collets: ASTM A108, grade 1215 steel.

Strainer: Non-ferrous clip-on basket type, ASTM B584 red brass. For well pumps a cone type strainer can be applied.

TYPICAL SPECIFICATIONS

Supply and install as indicated on plans one (1) fire pump system consisting of:

PUMP

One model _____ vertical turbine fire pump listed by Underwriters Laboratories Inc. (UL) and approved by Factory Mutual (FM) having a capacity of _____ USgpm for a pressure boost of _____ psig.

DIESEL ENGINE

The pump shall be direct connected through flexible coupling to a diesel engine, manufactured by _____, model _____ UL and FM listed and approved with a net continuous rating of _____ hp at _____ rpm at _____ ft. of elevation above sea level. The diesel engine shall conform to the requirements of the National Fire Protection Association, Pamphlet #20 and shall be specifically approved for fire pump service. It shall operate at a rated speed not exceeding the above RPM and shall develop sufficient horsepower to drive the pump with 10% reserve power.

Cooling Water System

The cooling water supply for the heat exchanger shall be from the discharge of the pump, taken off prior to the pump discharge valve. The pipe connection shall include four (4) manual shut-off valves (including by-pass line), two strainers, two pressure regulators, a listed automatic solenoid valve and a pressure gauge, piping and fittings all fitted to engine, per NFPA 20, by the pump manufacturer.

Storage Batteries

Two heavy duty lead acid batteries shall be provided and furnished in a dry charge condition with electrolyte liquid in separate containers. Suitable battery rack and 60" of battery cables shall be included.

Right Angle Gear Drive

FM approved right angle gear drive shall be supplied with drive shaft rated for the maximum bhp of the pump. A suitable coupling guard shall be supplied to enclose rotating assemblies.

Fuel System

The fuel system shall be UL listed and shall consist of an above ground storage tank of _____ gallons as recommended per NFPA 20, fill pipe and cap, manual shut-off cock, flame arrestor, oil level gauge and braided flexible connectors. The tank shall be supplied with legs for floor mounting. Approved steel tubing and miscellaneous pipe and fittings shall be supplied by the mechanical contractor.

ELECTRIC MOTOR

The fire pump shall be coupled to a vertical hollow-shaft electric motor with a maximum hp of _____ at _____ rpm, _____ Volt, _____ phase, _____ cycle. Motor shall be open drip proof, standard efficiency with 1.15 service factor.

MINIMUM FITTINGS

The pump shall be supplied with the following accessories:

- One (1) discharge gauge, 3½" (89 mm) dial type
- One (1) 1½" (38 mm) air release valve

OTHER ACCESSORIES

Pump shall be supplied with one (1) outside test header 2½" (63.5 mm) hose valves with caps and chains to suit the rated pump flow. One (1) main relief valve and one (1) waste cone shall be supplied.

AUTOMATIC DIESEL ENGINE CONTROLLER

The Fire Pump Controller shall be manufactured by _____ model _____ built strictly in accordance with the latest requirements of the NFPA. Controller shall be listed and labeled by Underwriters Laboratories of Canada (ULC) and/or Underwriters Laboratories (UL) and/or approved by Factory Mutual (FM).

JOCKEY PUMP

The jockey pump shall be model _____ for a capacity of _____ USgpm and a pressure boost of _____ psig. The jockey pump shall be driven by an open drip proof electric motor of _____ hp, _____ rpm, _____ Volt, _____ phase, _____ cycle.

JOCKEY PUMP CONTROLLER

The jockey pump shall be controlled by an automatic jockey pump controller model _____ with full voltage starter.

MOUNTING AND TESTING

The pump shall be suitable for a maximum working pressure of _____. Pump shall be hydrostatically tested at twice the maximum working pressure for at least 5 minutes.

The pump shall be performance tested at rated speed. The pump shall furnish not less than 150% of rated capacity at a pressure not less than 65% of rated head. The shut-off total head of the pump should not exceed 140% of total rated head. A certified test curve, indicating the flow, head, power and efficiency shall be supplied.

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