



# PUMP SPECIFICATIONS

## 20FS Pump End

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### DETAILED SPECIFICATIONS

#### **SPECIAL NOTE:**

When preparing the specifications for your new pumper, assure the use of a Hale pump by incorporating these pump specifications as written. No competitive pump can match Hale's construction or performance.

#### **Pump Assembly**

1. The pump shall be of a size and design to mount on industrial, gasoline or diesel engines and have the capacity of \_\_\_\_ PSI (\_\_\_\_ BAR) at \_\_\_\_ gallons per minute (U.S. GPM) performance.
2. The entire pump shall be manufactured and tested at the pump manufacturer's factory.
3. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 1000 PSI. The pump shall be fully tested at the pump manufacturer's factory. Pump shall be free from objectionable pulsation and vibration.
4. The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI. All moving parts in contact with water shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.
5. Pump body shall be horizontally split, on a single plane, for easy removal of the impeller assembly.
6. Pump shaft to be rigidly supported by three bearings for minimum deflection.
7. The pump shaft shall have only one mechanical seal. The mechanical seal shall be spring loaded, maintenance free and self-adjusting. (No exceptions.)
8. The two pump impellers shall be hard, fine grain bronze of the mixed flow design; accurately machined, hand-ground and individually balanced. The vanes of the impeller intake eyes shall be hand-ground and polished to a sharp edge, and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.
9. The pump shaft shall be electric furnace heat-treated and corrosion resistant with a positive impeller lock. Pump shaft must be sealed with double lip oil seal to keep road dirt and water out of gearbox.

#### **Gearbox**

1. The gearbox shall be manufactured and tested at the pump manufacturer's factory and close coupled to the pump assembly.
2. Pump gearbox shall be of sufficient size to withstand the torque of the engine in pump operating conditions. The gearbox shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature. The gear box shall be close coupled to the engine bell housing.
3. The gearbox drive shaft shall be of heat-treated chromium steel and shall withstand the torque of the engine in pump operating conditions. The drive shaft shall be splined to accept a drive disc to connect to the engine flywheel.



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4. All gears shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated, crown-shaved and hardened, to give an extremely accurate gear for long life, smooth, quiet running and higher load carrying capability. An accurately cut spur design shall be provided. (No exceptions.)
5. The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine selected.

## **Priming Pump**

1. The priming pump shall be a positive displacement, oil-less rotary vane electric motor driven pump conforming to the requirements of NFPA 1901. The pump body shall be manufactured of heat treated anodized aluminum for wear and corrosion resistance.
2. The pump shall be capable of producing a minimum 24 Hg vacuum at 2000 feet above sea level.
3. The electric motor shall be a 12 VDC (or 24 VDC) totally enclosed unit.
4. The priming pump shall not require lubrication.
5. The priming pump shall be operated by a single push-pull control valve mounted on the pump operator panel. The control valve shall be of all bronze construction.

## **Drive Disc**

1. A drive disc to connect to the engine flywheel shall be provided. Spring dampened disc shall be supplied for gasoline or 2-cycle diesel engines and an elastometric drive disc for 4-cycle diesel engines.