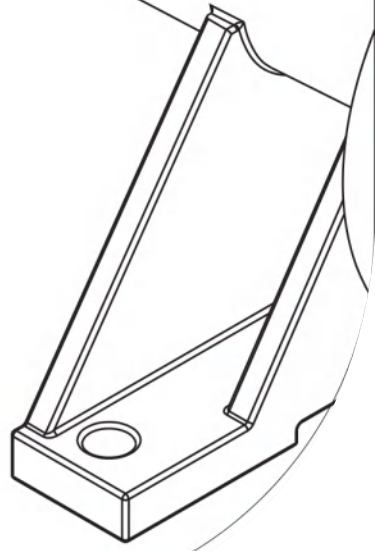


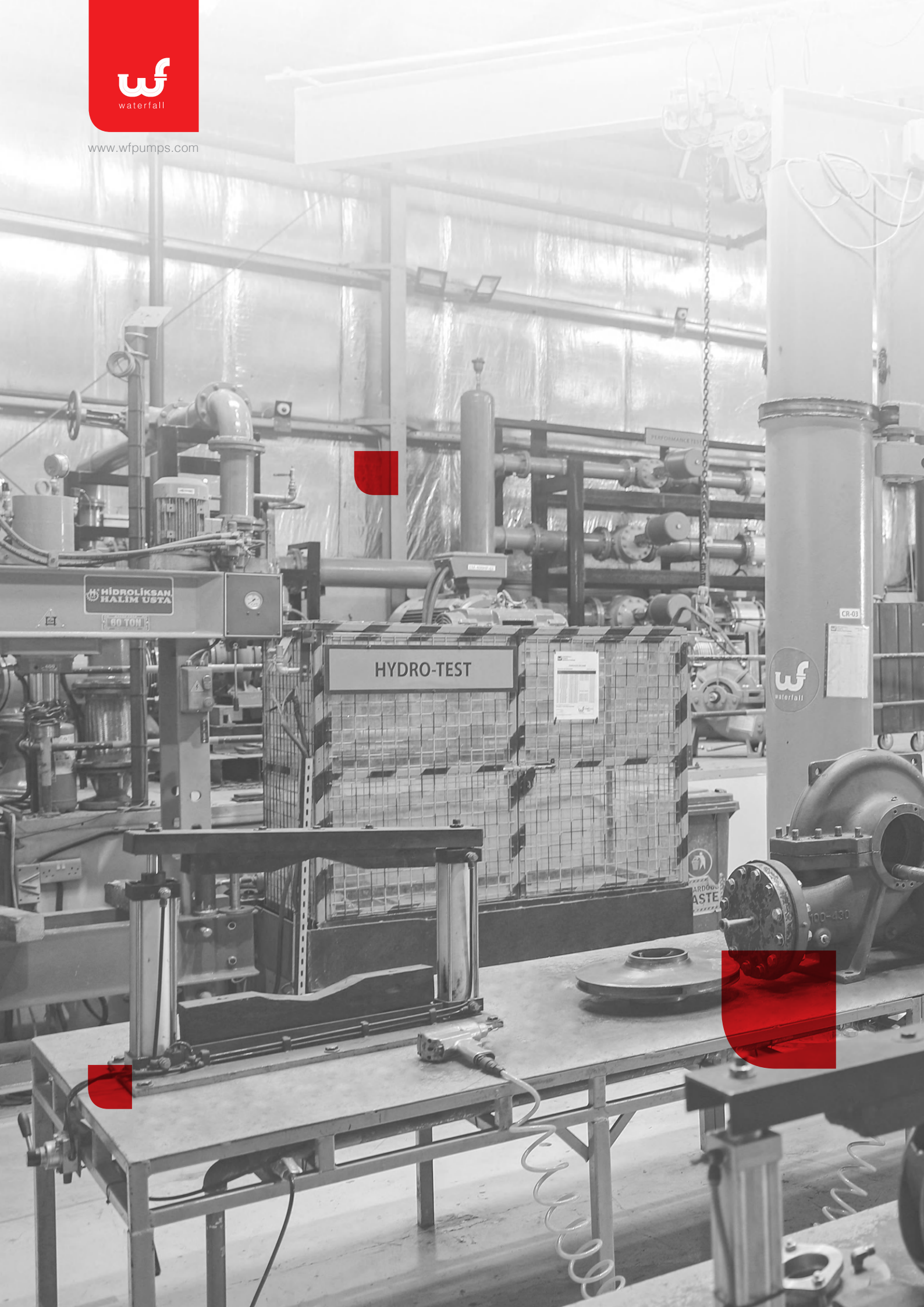
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# OVERVIEW

Waterfall Pumps Manufacturing is an innovative and technology based centrifugal fire protection pump manufacturer committed to protection of lives and properties by offering wide range of high-quality centrifugal fire pumps and packages according to the market needs.

Fire pump is the heart of any water-based fire protection system. It is the component responsible for supplying water at adequate pressure to any water-based suppression system in order to control and suppress fire. At Waterfall Pumps Manufacturing, we manufacture fire pumps with utmost precision and quality to meet the extreme requirements in case of fire.

All our fire pumps are tested in a fully equipped ISO 9001, ISO 14001, ISO 45001 factory environment backed with a highly trained and experience team for conducting the testing as well as the inspections. Our fully automated and advanced fire pump test facility is equipped with precisely calibrated equipment to ensure that the pumps tested meets or exceeds the requirements of the most demanding quality standards and industry specifications such as UL, FM and NFPA 20. Our fire pumps are listed by Underwriters Laboratories (UL) and approved by Factory Mutual (FM). The complete range includes the Horizontal Split Case, End Suction and Vertical Turbine fire protection pumps. These fire pumps are available in electric motor and diesel engine driven configuration. Waterfall Pumps Manufacturing also offers a containerized fire system, WF Fire Pump House (Pre-packaged Systems), which can be designed as per the site requirement or client's preferences while complying to the standard requirements.

Intensive research and development ensure that our products are continuously improve to meet the latest technical requirements and to introduce new products that will bring valued solutions to the fire protection industry.

## HORIZONTAL SPLIT CASE FIRE PUMP

Horizontal Split Case Fire Pumps typically offer wide range of hydraulic coverage while operating at higher efficiencies. Rugged, heavy duty construction coupled with superior design features make this type of pumps very reliable while requiring low maintenance. Fully enclosed double suction impellers practically eliminate axial thrust while radial load is equally shared by the bearings located at each end of the shaft. The simplicity of design allows service without disturbing piping at site. It can be driven by either an electric motor or a diesel engine with a full range of options and accessories available to comply fully to NFPA standards. Heavy fabricated steel base plates are used to mount the pump and driver along with flexible coupling which connects driver to pump. Horizontal Split Case Fire Pumps are ideal when the source of water is located above the ground as it provides a positive suction pressure to the pump at any performance point.

### PUMP PERFORMANCE

- Flow ranges from 300 GPM up to 5000 GPM
- Pressure ratings from 81 PSI up to 345 PSI

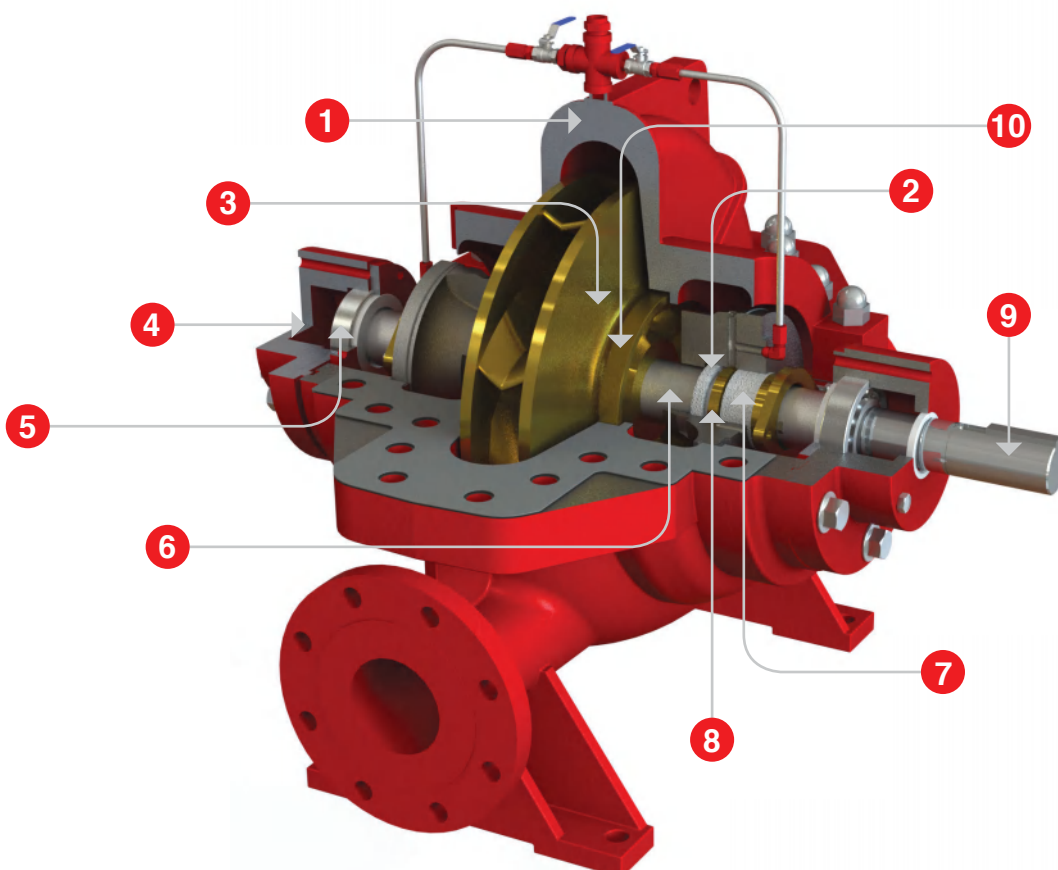
### DESIGN FEATURES

- Underwriters Laboratories (UL) – 448
- Factory Mutual (FM) – 1311
- NFPA 20



## CROSS SECTIONAL

1. **PUMP CASING:** Rugged heavy duty, volute type, compact casing split horizontally along the centerline of the shaft. Supporting feet integrally cast with flanged suction and discharge connections located in the lower half casing allows inspection and maintenance without disturbing piping.
2. **STUFFING BOX:** Designed to accommodate a minimum of five packing rings with a lantern ring. Provided with internal passages to allow water for cooling and lubrication.
3. **IMPELLER:** Double suction, fully enclosed, cast in one piece, dynamically and hydraulically balanced prior to the assembly. Impellers are firmly keyed and locked to the shaft.
4. **BEARING HOUSING:** Rigid bearing housings provided with grease inlets and drains and protected by lip seals to keep contaminants out of bearings while allowing easy greasing. Designed to allow bearing to be replaced without disturbing any other part of the rotating assembly.
5. **BEARING:** Grease lubricated stainless steel radial and thrust bearings maintains impeller in their central position. Bearings are selected to offer very high operating life.
6. **SHAFT SLEEVE:** Centrifugally cast renewable stainless steel-shaft sleeves that are accurately positioned, sealed and locked in place protects the shaft against packing wear, corrosion and leakage.
7. **GLAND PACKING:** Packing rings selected to offer maximum tightness while allowing smooth and friction free running of the shaft.
8. **LANTERN RING:** Perforated hollow ring made of corrosion resistant material designed to allow flow of cooling water uniformly around the shaft to provide lubrication and cooling.
9. **SHAFT:** Made of high strength alloy steel, accurately machined and polished to a smooth surface. Sized with a liberal safety factor to transmit full driver horsepower while offering minimum deflection in full range operation.
10. **CASING WEAR RING:** Replaceable casing wear ring sized to minimize pressure leakage from discharge toward suction.



## END SUCTION FIRE PUMP

End Suction Fire Pumps are engineered to last with a precision-cast, dynamically balanced and enclosed impeller that minimizes the vibration and maximizes bearing life. Due to its back-pull-out design, the complete bearing assembly including impeller and casing cover can be dismantled without removing the volute casing from the pipe system. It can be driven by either an electric motor or diesel engine with a full range of options and accessories available to complete the NFPA-compliant fire pump. Heavy fabricated steel base is available to mount the pump and driver along with flexible coupling connects driver to pump. End Suction Fire Pumps are ideal when the source of water is located above the ground as it provides a positive suction pressure to the pump at any performance point.

### PUMP PERFORMANCE

- Flow ranges from 50 GPM up to 1000 GPM
- Pressure ratings from 80 psi up to 309 psi

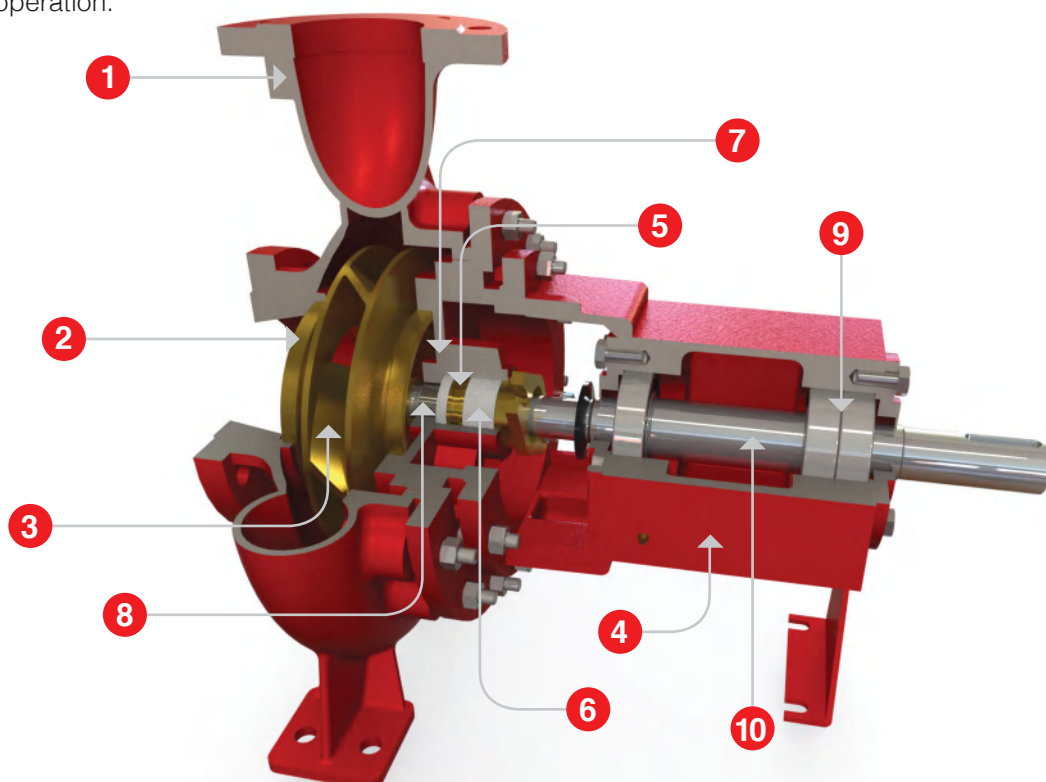
### DESIGN FEATURES

- Underwriter Laboratories (UL) – 448
- Factory Mutual (FM) – 1319
- NFPA 20



## CROSS SECTIONAL

1. **PUMP CASING:** Rugged heavy duty, integrally cast supports, volute type, centerline discharge and self-venting. Back-pull-out design allows removal of bearing assembly and impeller without disturbing the pipe connection. Provided with O-ring seals between pump casing and back cover to avoid any leakage.
2. **CASING WEAR RING:** Standard enclosed impellers are designed with integral casing wear rings to reduce end thrust.
3. **IMPELLER:** End suction type, enclosed, dynamically and hydraulically balanced prior to the assembly. Impellers designed with back rings to minimize axial thrust. Impellers are firmly keyed and locked to an accurately finished oversized shaft to absorb all shock loads.
4. **BEARING HOUSING:** Two anti-friction, grease lubricated stainless steel bearings selected to carry design loads while offering higher life than specified by standards. Both the inboard and outboard bearings are protected by lip seals to keep contaminants out of bearing.
5. **LANTERN RING:** Perforated hollow ring made of corrosion resistant material designed to allow flow of cooling water uniformly around the shaft to provide lubrication and cooling.
6. **GLAND PACKING:** Packing rings selected to offer maximum tightness while allowing smooth and friction free running of the shaft.
7. **CASING COVER:** Casing cover with integral stuffing box designed for maximum working pressure. Stuffing box sized to house five rings of packing along with lantern ring.
8. **SHAFT SLEEVE:** Centrifugally cast renewable shaft sleeves protect the shaft from corrosion, packing wear and are sealed to prevent leakage. Sleeves are accurately positioned and locked in place.
9. **BEARING:** Grease lubricated stainless steel radial and thrust bearings maintains impeller in their central position. Bearings are selected to offer very high operating life.
10. **SHAFT:** Made of high strength alloy steel accurately machined and polished to a smooth surface. Sized with a liberal safety factor to transmit full driver horsepower while offering minimum deflection in full range operation.





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## **VISION**

To become the world's premier manufacturer of fire protection pumps.

## **MISSION**

To create an innovative fire protection product that brings high quality services, valued solutions and recognized as client's first choice.



## VERTICAL TURBINE FIRE PUMP

Vertical Turbine Fire Pumps are specially designed to pump from water source located underground or below deck, where there is no possibility to install a horizontal fire pump. The flexibility of its design allows the use of a wide range of materials. Vertical Turbine Pumps use multi stage configuration to meet the specific requirements of the user and can be customized according to specific installation requirements. The space saving vertical design minimizes the floor space requirements. It can be driven by either an electric motor or diesel engine with a full range of options and accessories available to complete the NFPA-compliant fire pump. Waterfall vertical turbine fire pumps are available in a wide range of flow rates, pressure heads and material of construction.

### PUMP PERFORMANCE

- Flow ranges from 150 GPM up to 2000 GPM
- Pressure ratings from 49 psi up to 402 psi

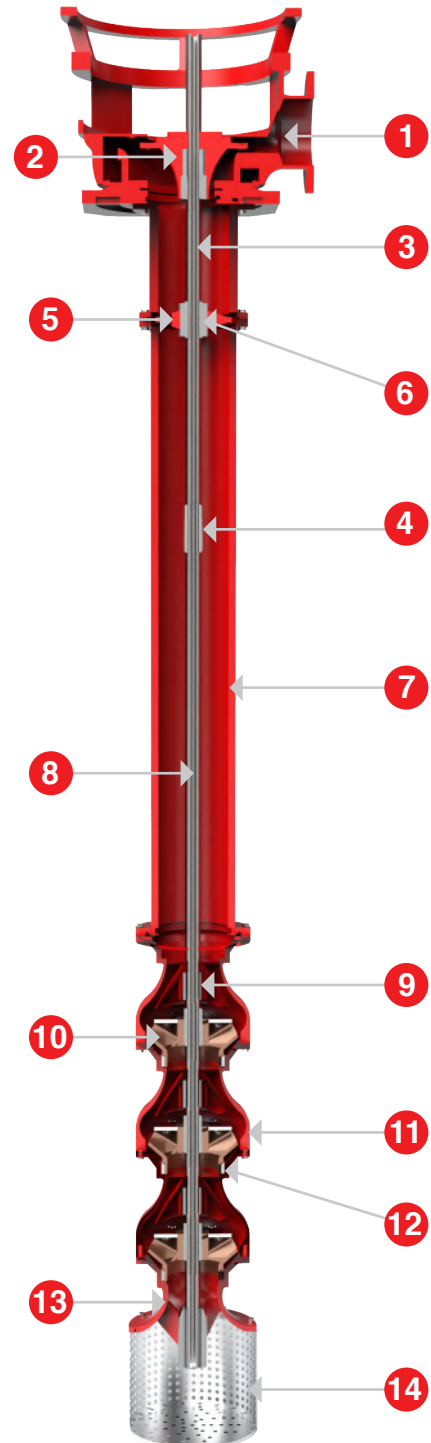
### DESIGN FEATURES

- Underwriter Laboratories (UL) – 448
- Factory Mutual (FM) – 1312
- NFPA 20



## CROSS SECTIONAL

1. **DISCHARGE HEAD:** Designed to direct the flow from vertical column pipe towards the system piping while supporting the entire pump and column pipe assembly on the load bearing surface. The top of the discharge head is machined precisely to accommodate hollow shaft motors or right-angle gear drives.
2. **STUFFING BOX:** Stuffing box is provided with bushing to maintain shaft alignment. Packing rings are provided to ensure smooth rotation.
3. **LINE SHAFT:** Stainless steel shaft, precisely machined and threaded at the end for accurate alignment. Shafts are sized and selected with high factor of safety to withstand high thrust and stresses for the entire operating range of the pump.
4. **SHAFT COUPLINGS:** Shaft couplings bored and threaded from precision forged steel bar.
5. **BEARING RETAINERS:** These are sandwiched within female spigot of column pipes which enables proper bearing alignment and more support & stability to shafts.
6. **BEARING INSERTS:** Water lubricated bearing inserts made of PTFE ensures smooth operation of pumps.
7. **COLUMN PIPE:** Steel column pipes are connected by flanges with flange faces machines for parallel, rabbet fit to ensure accurate alignment. Column pipe material can be selected according the corrosiveness of water and environment for which the pump is intended for.
8. **IMPELLER SHAFT:** Stainless Steel shaft, machined and polished to a smooth surface. Different Engineered alloys for aggressive/corrosive water applications.
9. **BOWL BEARING INSERTS:** Made of PTFE, self-lubricated type, designed to operate in conjunction with impeller shaft to provide long life and low friction.
10. **IMPELLER:** Fully enclosed, dynamically balanced Impellers designed for high performance and efficiency. Impellers are secured to shaft using collets or keys with plates to ensure the impellers are centralized and secured to the shaft and runs smoothly within the bowls.
11. **PUMP BOWL ASSEMBLY:** The pump bowl assembly with multiple diffuser vane design eliminates radial loading and provides down thrust to maintain shaft in tension. This design reduces shaft deflection and vibration. Bowls are also designed to house bearing inserts to ensure alignment and lubrication of the shafts.
12. **CASING WEAR RING:** Renewable wear rings are fitted in the bowls, which seal against the front shrouds of the impellers.
13. **SUCTION BELL:** Provides rigid support of the lower end of the pump shaft and allows smooth entry of liquid into the first stage impeller eye.
14. **STRAINER:** Prevents entry of solid particles in to the pump. Sized to allow maximum flow without causing obstruction for the entry of the water.





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## **FIRE PUMP HOUSE (PRE-PACKAGED FIRE SYSTEMS)**

WF Fire Pump House (Pre-packaged fire systems) designed according to the site or client's preferences while complying standard requirements. Due to its single source responsibility and compact feature, the on-site installation of the system can be completed in as little as 6 hours which reduces the installation cost, labor hours, project timelines and eliminates potential field installation and interface problems. Pre-wired, factory tested and assembled with components selected from the most reliable manufacturers across the globe in order to ensure that the best functionality of the equipment will be delivered. Consist of UL Listed or FM Approved fire pumps, controllers, valves, pressure gauges, flowmeter, fuel tanks etc. and is ensure to undergo for quality checks, inspections and factory tests before the package assembly. Electrical connection, piping lines and installation of the component is completed in the factory. Complete system is tested to eliminate on-site leaks.



Enclosures are made from wall and roof panels that are fire resistant, weather proof and with thermal insulation which makes its suitable to any climate and site condition. This type of enclosure panel is specially selected not only to ease the installation but because of the advantages it offers. It is made from rock, blast furnace slag and other raw materials which are melted and spun into fibers to resemble the texture of wool which made it non-combustible or fire resistant. It also helps to reduce the heat transfer due to its thermal insulation which prevents problems such as mold, humidity resulting from heat movements and condensation, which give assurance that product will be robust and long lasting. Skid covered in non-slip checkered mild steel plate with drain port provided to assure that the pump house will have its proper draining system especially during its operation.





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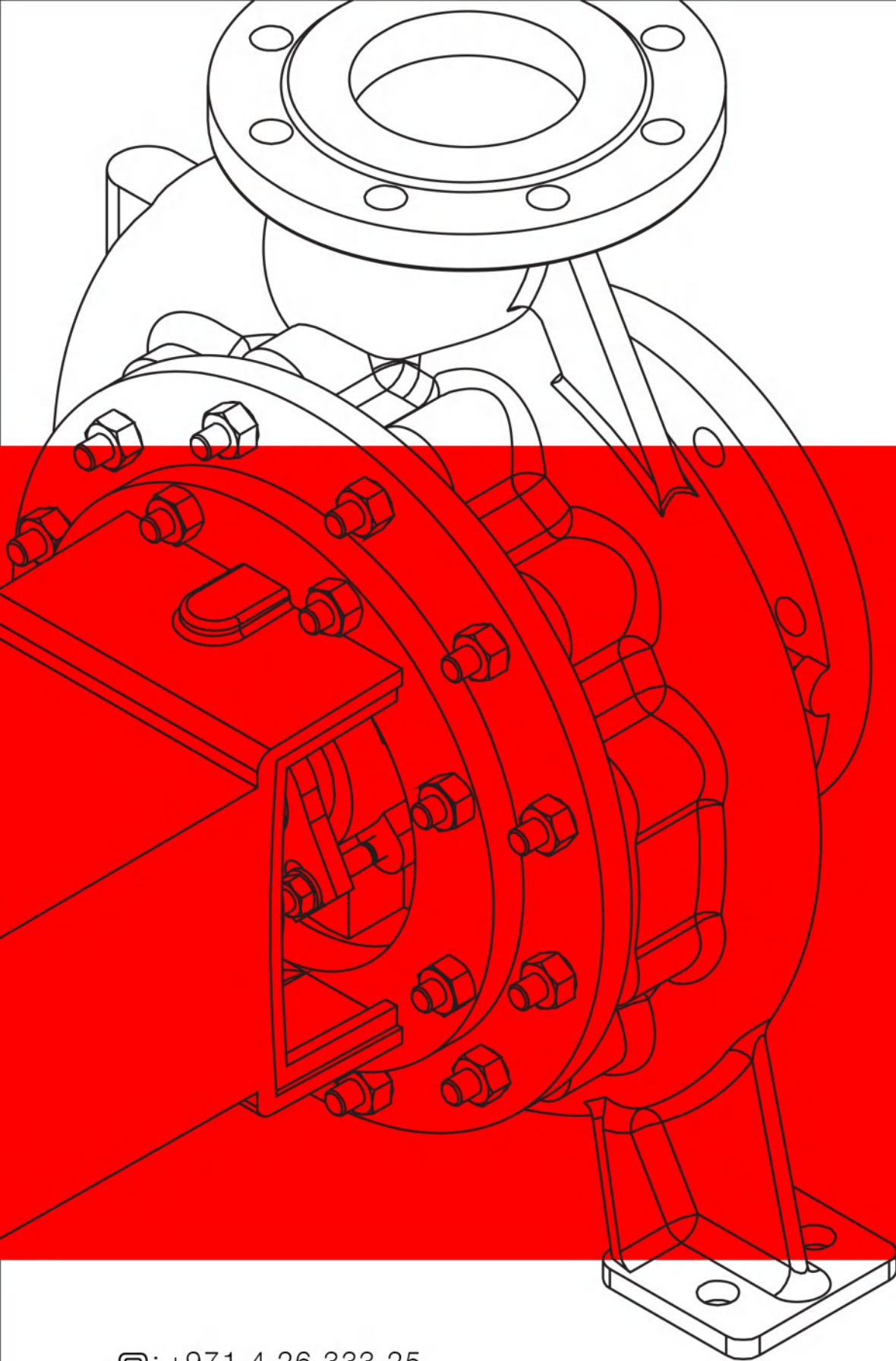
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