گروه توسعه ساختمان بومرنگ

NAFFCO
PASSION TO PROTECT

Fire Pump Products

مقدمه

گروه شرکت‌های بومرنگ به‌عنوان نماینده رسمی شرکت NAFFCO امارات در ایران، مجموعه‌ای کامل از محصولات تخصصی درحوزه‌های اطفای حریق ،اعلام حریق ، فوم های آتشنشانی ، مدیریت و تخلیه دود، و پرده‌های حریق و دود ارائه می‌دهد.

ما با اتکا به تجربه صنعتی گسترده و همکاری مستقیم با یکی از معتبرترین برندهای بین‌المللی این حوزه، راهکارهایی مطابق با استانداردهای UL، NFPA، FM و CE عرضه می کنیم.

در چارچوب این همکاری، گروه بومرنگ خدماتی شامل طراحی، تأمین، اجرا، نصب و پشتیبانی فنی را برای پروژه‌های ساختمانی، صنعتی و زیرساختی فراهم می‌سازد و تلاش می کند نیاز کارفرمایان را با ترکیبی از کیفیت، ایمنی و فناوری روز برآورده سازد.

محصولات تولیدی در گروه شرکت های بومرنگ، مطابق با شرایط عملیاتی کشور و نیاز سازمان‌های آتش‌نشانی، سفارشی‌سازی شده و امکان تجهیز به پیشرفته‌ترین سیستم‌های اطفای حریق، فوم‌پاش، مانیتورهای هوشمند، مخازن ویژه و ابزارهای امداد سریع را دارند.

اعتقاد ما بر این است که کیفیت واقعی تنها با رعایت اصول مهندسی، استفاده ازفناوری‌های روز و پایبندی به استانداردهای جهانی حاصل می‌شود. ازاین‌رو ، بومرنگ کیش ضمن تکیه بر تجربیات گسترده و پشتیبانی فنی برند نافکو، مأموریت خود را تأمین مطمئن‌ترین خودروها و تجهیزات برای سازمان‌های ایمنی، آتش‌نشانی و مجموعه‌های صنعتی کشور قرار داده است. هدف ما ارائه محصولاتی قابل اتکا است که در لحظه‌های حساس، بیشترین توان عملیاتی و ایمنی را برای کاربران فراهم سازند.

گروه توسعه ساختمان بومرنگ

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NAFFCO
ISO 45001 | ISO 14001 | ISO 9001
20002009

FP/2414

0086/XXXX

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2797/yy

2797

END SUCTION FIRE PUMPS

NAFFCO's UL and/or FM approved fire pumps provide you with a reliable solution for your fire firefighting pump needs by combining the stringent quality measures of UL and/or FM and NFPA standards with our proven experience in the fire protection field.

We can offer you a complete package of services starting from engineering assistance to field start-up and periodic maintenance.

Each pump set is tested at our factory, prior to dispatch, as per NFPA standards. These pumps are covered by a warranty of one year subject to standard terms and conditions.

UL LISTED

FM APPROVED

FEATURES

- Performance characteristics as per NFPA 20
- Complete unit responsibility.
- Complete in-house fabrication capabilities.
- Hydrostatic testing facilities.
- Operation run test as per NFPA 20.
- Horizontal End Suction pumps for capacities up to 750 USGPM
- Drivers: Electric motor drive or diesel engine drive.
- Electrical testing capabilities for motors and controllers connected to fire pumps as per NFPA standards.
- Capable to supply additional accessories wherever required.

PUMP CASING

The casing is designed for back pull-out which permits the removal of complete rotor unit without removing suction and discharge pipe. The casing is of robust design with integrally cast feet, vertical top centerline discharge with axial suction incorporating cast inlet vane to give best flow to impeller eye.

IMPELLER

The impeller is double shrouded type and dynamically balanced. It is hydraulically balanced and positively driven by a shaft key and axially locked between sleeve and impeller nut.

BEARINGS

Driven end / non-driven end bearings are grease lubricated deep groove ball bearing.

SERIES: NF-E, PERFORMANCE RATINGS: COMPREHENSIVE RANGE

Flow Rate *(Min. - Max.)*	50 - 750 US GPM**
Pressure Ratings *(Min. - Max.)*	3.4 - 15.4 BAR**
Speed Ratings *(Min. - Max.)*	2900 - 3550 RPM**

*** These values only indicates overall range available in this series. For availability of any specific ratings , please contact factory.*

HORIZONTAL SPLIT CASE FIRE PUMPS

NAFFCO's UL and/or FM approved fire pumps provide you with a reliable solution for your fire firefighting pump needs by combining the stringent quality measures of UL and/or FM and NFPA standards with our proven experience in the fire protection field.

We can offer you a complete package of services starting from engineering assistance to field start-up and periodic maintenance.

Each pump set is tested at our factory, prior to dispatch, as per NFPA standards. These pumps are covered by a warranty of one year subject to standard terms and conditions.

FEATURES

- Performance characteristics as per NFPA 20
- Complete unit responsibility.
- Complete in-house fabrication capabilities.
- Hydrostatic testing facilities.
- Operation run test as per NFPA 20.
- Horizontal Split case pumps for capacities up to 8000 USGPM*
- Drivers: Electric motor drive or diesel engine drive.
- Electrical testing capabilities for motors and controllers connected to fire pumps as per NFPA standards.
- Capable to supply additional accessories wherever required.

PUMP CASING

The casing is axially split, which permits removal of the complete rotor without moving either piping or driver. Pumps generating high heads have double volutes to reduce radial forces, ensuring minimal shaft deflection and low bearing loads. Replaceable wear rings protect the casing at the impeller running clearances.

IMPELLER

The closed impeller has double suction design which gives practically zero axial forces. Each impeller is dynamically balanced according to ISO 1940-1 standard.

BEARINGS

Grease lubricated high quality bearings are provided on both sides.

SERIES: NF-S, PERFORMANCE RATINGS: COMPREHENSIVE RANGE

Flow Rate *(Min. - Max.)*	300 - 8000 US GPM**
Pressure Ratings *(Min. - Max.)*	5.4 - 33.3 BAR**
Speed Ratings *(Min. - Max.)*	1470 - 3550 RPM**

** For Selected Capacities with optional material suitable for Sea Water Application is also available, contact factory for more info.*
*** These values only indicates overall range available in this series. For availability of any specific ratings , please contact factory.*

VERTICAL TURBINE FIRE PUMPS

NAFFCO's UL and/or FM approved fire pumps provide you with a reliable solution for your fire firefighting pump needs by combining the stringent quality measures of UL and/or FM and NFPA standards with our proven experience in the fire protection field.

We can offer you a complete package of services starting from engineering assistance to field start-up and periodic maintenance.

Each pump set is tested at our factory, prior to dispatch, as per NFPA standards. These pumps are covered by a warranty of one year subject to standard terms and conditions.

FEATURES

- Performance characteristics as per NFPA 20
- Complete unit responsibility.
- Complete in-house fabrication capabilities.
- Hydrostatic testing facilities.
- Operation run test as per NFPA 20.
- Vertical Turbine models pumps for capacities upto 6000 USGPM*
- Drivers: Electric motor drive or diesel engine drive.
- Electrical testing capabilities for motors and controllers connected to fire pumps as per NFPA standards.
- Capable to supply additional accessories wherever required.
- Rugged Construction for longer service life
- Specially designed for fire fighting applications as per NFPA 20.

SUCTION BELL

Suction bell is furnished with an extra long bearing that strengthens and provides rigid support for the lower end of the pump shaft. Suction bell provides efficient flow into the eye of the first stage impeller.

BOWL

The pump bowls have vanes cast integrally in them. These vanes are designed to match accurately with the impeller, and are smoothly contoured to guide the flow to next stage with maximum efficiency.

IMPELLER

Each impeller is dynamically balanced as per ISO 1940-1 to insure highest efficiency and vibration free operation.

COLUMN

Pump column pipe shall be in section not longer than 10ft each. Column pipe is flanged type. Flanged connections are accurately machined to accept bearing retainers and are bolted together securely for proper sealing.

DISCHARGE HEAD

It has smooth passageways that ensures efficient overall operation and provides an above ground connection to discharge piping.

SERIES: NF-VT, PERFORMANCE RATINGS: COMPREHENSIVE RANGE

Flow Rate *(Min. - Max.)*	50 - 6000 US GPM**
Pressure Ratings *(Min. - Max.)*	2.76 - 26 BAR**
Speed Ratings *(Min. - Max.)*	1450 - 2950 RPM**

** For Selected Capacities with optional material suitable for Sea Water Application is also available, contact factory for more info.*
*** These values only indicates overall range available in this series. For availability of any specific ratings , please contact factory.*

FIRE PUMP MOTORS - ODP

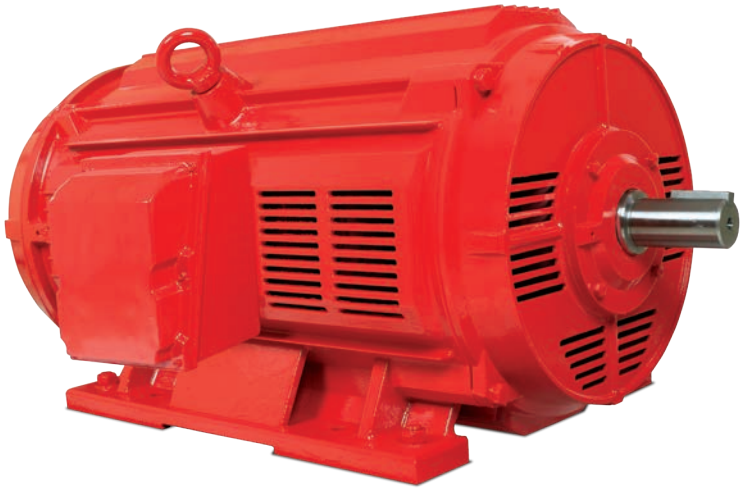
National Motors' NM Series consists of motors designed for fire pump applications as specified in NFPA 20. These three phase horizontal low-voltage squirrel-cage medium induction motors are constructed and manufactured as per the requirements of NEMA MG 1 standard Design B.

With Open Drip Proof enclosures, they provide the best possible ventilation suitable for environments having minimal airborne contaminants and better cooling that contribute to the most efficient performance available from these motors.

OPEN DRIP PROOF

FEATURES

- Frequency: 50 & 60 Hz
- 1.15 Service Factor
- 50°C Ambient Temperature rating
- High Quality Ball Bearing
- UL File No. EX26863
- Stainless Steel name plate
- RAL 3000 Standard red painted
- IP23 Degree of Protection
- Altitude rating of 1000 meters above sea level
- F1 foot mounting
- Suitable for various standard starters such as across the line, wye-delta, soft starter etc.



SERIES: NM, ODP ENCLOSURE

2 POLE

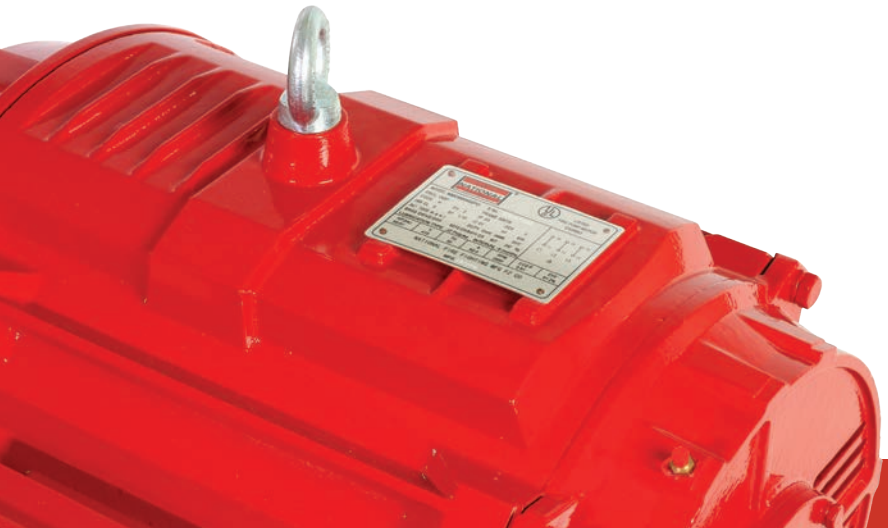
Rated Output	15 HP - 500 HP
Rated Voltage	380-400-415v (50Hz), 208-230v* (60Hz), 380-400v (60 Hz), 440-460v (60Hz) & 575 (60Hz)
Rated Speed	2861 - 2985 RPM (50Hz) & 3429 - 3585 RPM (60Hz)

** Motors rated at this voltage are available only for power ratings from 15 to 100 Hp.*

4 POLE

Rated Output	15 HP - 400* HP
Rated Voltage	380 - 415V (50Hz), 208 - 230v** (60Hz), 380-400v (60Hz), 460v (60Hz) & 575v (60 Hz)
Rated Speed	1440 - 1485 RPM (50Hz) & 1728 - 1785 RPM (60Hz)

** Up to 450 Hp for 60 Hz*
*** Motors rated at this voltage are available only for power ratings from 15 to 100 Hp.*



UL LISTED

FIRE PUMP MOTORS - TEFC

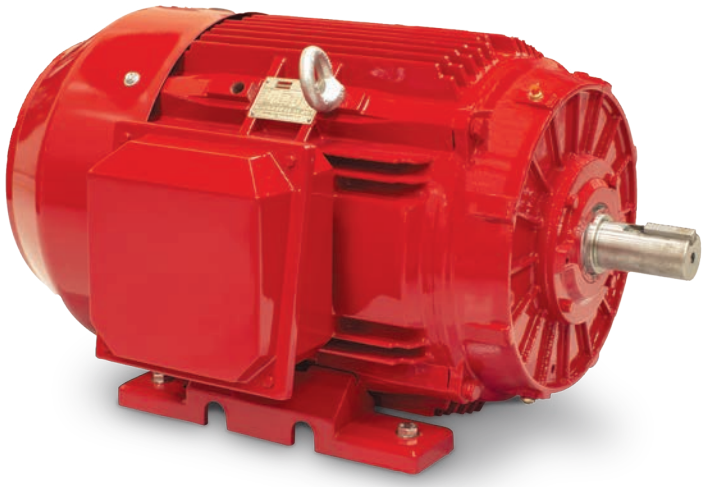
National Motors' NM Series consists of motors designed for fire pump applications as specified in NFPA 20 (Standard for the Installation of Stationary Pumps for Fire Protection). They are designed as per the requirements of NEMA MG-1 standard Design B.

Totally Enclosed Fan Cooled Enclosures provide better protection and seals inner windings, contacts and bearings from outside environment including dust, airborne contaminants and many other weather disturbances.

TOTALLY ENCLOSED FAN COOLED

FEATURES

- Frequency : 50 & 60 Hz
- 1.15 Service Factor
- 50°C Ambient Temperature rating
- High Quality Ball Bearing
- UL File No. EX26863
- Stainless Steel name plate
- RAL 3000 Standard red painted
- IP55 Degree of Protection
- Altitude rating of 1000 meters above sea level
- F1 foot mounting
- Suitable for various standard starters such as across the line, wye-delta, soft starter etc.



SERIES: NM, TEFC ENCLOSURE

2 POLE

Rated Output	10 HP - 500 HP
Rated Voltage	380-400-415v (50Hz), 208-230v* (60Hz), 380-400v (60Hz), 440-460v (60Hz) & 575 (60Hz)
Rated Speed	2923 - 2980 (50Hz) & 3506 - 3575 (60Hz)

** Motors rated at this voltage are available only for power ratings from 10 to 100 Hp.*

4 POLE

Rated Output	10 HP - 400 HP
Rated Voltage	380 - 415V (50Hz), 208 - 230v* (60Hz), 380-400v (60Hz), 460v (60Hz) & 575v (60 Hz)
Rated Speed	1460 - 1480 RPM (50Hz) & 1750 - 1780 RPM (60Hz)

** Motors rated at this voltage are available only for power ratings from 10 to 100 Hp.*

FIRE PUMP MOTORS - VHS

National Motors' NMVHS Series consists of motors designed for fire pump applications as specified in NFPA 20 (Standard for the Installation of Stationary Pumps for Fire Protection). They are certified by UL as per the requirement of UL 1004-5 'Standard for Fire Pump Motors'. These Vertical Hollow Shaft three-phase asynchronous motors are constructed and manufactured as per the requirements of NEMA MG 1 standard Design B.

The Weather Protected Type I Enclosure of these motors minimizes the entrance of rain and air-borne particles to the electric parts. Steel mesh screens are added to the enclosure at appropriate locations to further enhance the protection

VERTICAL HOLLOWSHAFT MOTOR

FEATURES

- Frequency : 50 & 60 Hz
- 1.15 Service Factor
- 50°C Ambient Temperature rating
- Angular Contact Ball Bearing
- 2 / 4 Pole
- UL File No. EX26863
- Stainless Steel name plate
- RAL 3000 Standard red painted
- Non - Reversible Ratchet Device
- Altitude rating of 1000 meters above sea level
- NEMA MG1 Design Standard
- Low Noise & Low Vibration
- Suitable for various standard starters such as across the line, wye-delta, soft starter etc.

SERIES: NM, WP1 ENCLOSURE

2 POLE

Rated Output	20 HP - 100 HP
Rated Voltage	380 - 415v (50 & 60Hz)
Rated Speed	2929 - 2941 RPM (50Hz) & 3515 - 3529 RPM (60Hz)

4 POLE

Rated Output	15 HP - 400 HP
Rated Voltage	380 - 415v (50 & 60Hz), 208 - 230v (60 Hz), 460v (60 Hz)
Rated Speed	1465 - 1488 RPM (50Hz) & 1758 - 1789 RPM (60Hz)

FIREDRIVER™

Fire Driver diesel engines are specifically designed and manufactured for firefighting applications according to UL 1247 standard. Fire pump engines are required to start immediately based on the system demand signals without any hindrance and these engines have been consistently proven reliable in meeting this criterion. The better torque characteristics of these engines ensure reliable operation in emergency conditions. These engines are UL listed and comply with the requirements for diesel engine drives as detailed in NFPA 20.

These engines go through stringent quality checks and are run tested for their performance ratings at the factory prior to dispatch, only those engine that pass through stringent quality checks are supplied to our valuable customers

FEATURES

- Reliable performance
- Easily serviceable type construction
- Accurate instrumentation facilities
- Reduce noise level
- Dependable controlling systems
- Better fuel efficiency – Economic fuel Consumption rate
- Efficient lubrication system
- Cooling system designed for optimum heat transfer
- Air intake system constructed for efficient air cold weather
- Longer engine life
- Heavy duty construction

DIESEL ENGINE RANGES (SERIES : FD - R / FD - H)

Power Ratings	18 – 1207 HP*
Speed Ratings	1470 – 3000 RPM

** These values only indicate the overall range available in this series. For the availability of any specific ratings, please contact the factory.*

VERTICAL MULTISTAGE PUMPS

NF-VL / NF-VLS / NF-VL-T is a vertical multistage in-line pump series with all wetted parts made of stainless steel. It is suitable for a variety of different applications involving various liquids from potable water to industrial effluent and cover a wide range of flow and pressure requirements.

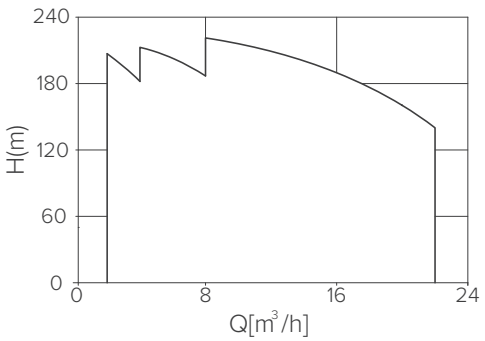
The major features of this series pumps are efficient operation, low noise, compact structure, light weight, easy to service, good seal performance etc. Its high head low capacity performance range makes it especially suitable for using as a pressure maintenance pump (Jockey Pump) in firefighting applications and it meets NFPA 20 requirements for Jockey Pumps. Each pump set is tested in our factory, prior to dispatch, to confirm that the performance is achieved per the specified requirements.

FEATURES

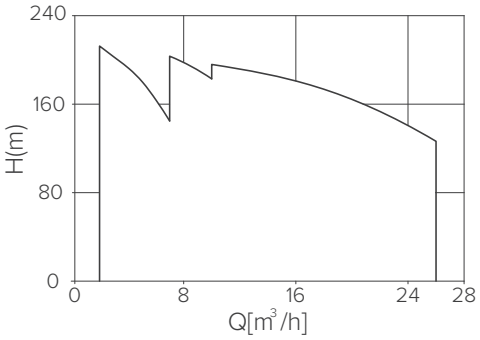
- Reliable Performance
- Easy to Service
- Efficient Operation
- Stringent Test
- Quality Materials
- Longer Service Life

ELECTRIC MOTOR DATA

Enclosure	V18 (“C” Type Face at Drive End) < 4 kW V1 (“D” Type Flange at Drive End) > 5.5 kW Shaft Down, No Feet
Standard	IEC 60034
Voltage	380-415 V 460 V
Phase	3
Frequency	50 / 60 Hz
Insulation Class	F
Enclosure IP Rating	IP55
Efficiency Class	Eff. 2
Noise Level	85 dB(A) @ 1 m.
Ambient Temperature	Standard: 40°C
	High: 50°C with 0.95 & 55°C with 0.92 derating factors
Altitude	Standard: 1000 m
	High: 2250 m with 0.95 & 3500 m with 0.88 derating factors
Motor Coupling	Rigid Coupled to Pump



Model: NF-VL | 50 Hz | Speed: 2900 RPM



Model: NF-VLS | 60 Hz | Speed: 3500 RPM

PUMP DATA

Pump Design Test Standard	ISO 9906
Nozzle Connections	Flanged
Nozzle Connection Design Standard	EN 1092-2
ANSI/HI 2.1-2.2 Designation	Vertical in-line casing diffuser pump (VS8)
Pump Bearing Lubrication	Pumped Liquid
Shaft Shape (for securing impeller on to the shaft)	Double-D
Mechanical Seal	Cartridge Type

** For higher ratings please contact factory.*

SUBMERSIBLE VERTICAL PUMPS

NF-SL / NF-SLS is a submersible vertical pump series with radial impellers. These pumps are directly coupled with NEMA standard submersible motors. Stainless steel construction of these pumps ensures long lasting reliable operation. The water lubricated rubber bearings provided in the pumps are specifically designed for applications where the pump is submerged in the water.

In order to protect the pump from water hammer a non-return valve is built into discharge head that prevent the back flow when the pump is stopped.

The range of pumps available in this series includes pumps that are capable of delivering high pressure at low capacity and it makes them especially suitable for pressure maintenance pump (Jockey Pump) applications in fire pump units.

LIQUID DATA

Pumped Liquid Type	Clean, Thin, non-explosive liquids, not containing fibers or abrasive particles.
	Maximum content of sand about 50 g/m³
Temperature	60˚C

PUMP DATA

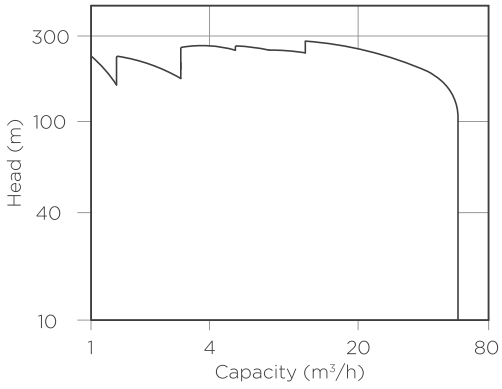
Maximum Installation Depth of the Pump	350m below the water level

ELECTRIC MOTOR DATA

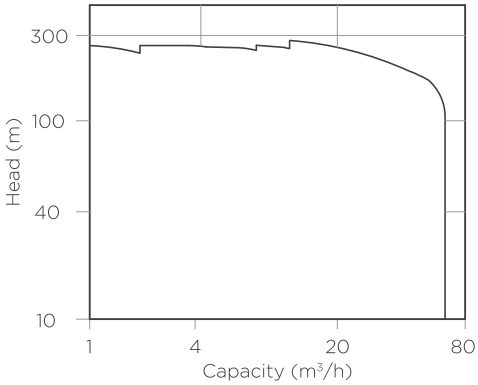
Type	Submersible Motor
Construction	Oil-Filled Rewinding/Water Filled Rewinding
Standard	NEMA

FEATURES

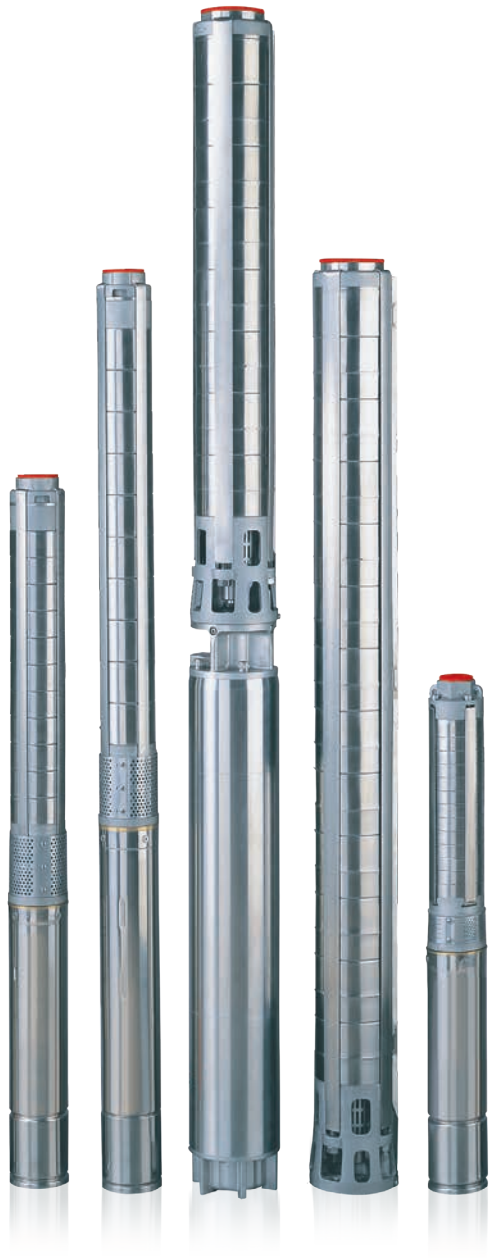
- Efficient Performance
- Quality Components
- Reliable Operation
- Longer Service Life
- Proven Design
- Stringent Test



Model: NF-SL | 50 Hz | Speed: 2900 RPM



Model: NF-SLS | 60 Hz | Speed: 3500 RPM



** For higher ratings please contact factory.*

INDUSTRIAL PACKAGED FIRE PUMP SETS

PACKAGE:

NAFFCO packaged fire pump system consists of pumps, drivers, controllers and accessories mounted on a common base frame. High quality UL / FM certified components are used in these systems. This engineering packaged pump units meets various requirements for such pumps sets as detailed in Packaged Fire Pump Assemblies section of NFPA 20. All necessary wiring between controllers and drivers are done at factory prior to shipment. The automatic air release valve, casing relief valve, suction gauge & discharge gauge are mounted on fire pumps and other accessories are mounted on pre-constructed interconnecting piping as required by NFPA 20.

Pressure sensing lines are pre-installed on Electric, Diesel, and Jockey Controllers as per NFPA 20 requirements. These systems are subjected to rigorous performance tests at factory as per UL, FM & NFPA standards to ensure proper performance of the system as per the design requirements. For completing the installation of these pre-engineered 'ready to install' packages the installing contractor only needs to grout the structural base, connect the suction & discharge pipes and incoming power.

ADVANTAGES

- Easy to install fire pump set at site.
- Easy to commission.
- Reduced installation time.
- Pre-wired electrical connections.
- Less space requirement.
- All (pumps, drivers & controllers) on single base.

SECURITY

- Single manufacturing source.
- Single unit responsibility
- 100% system operational integrity.
- 100% secure system.
- Convenience in procuring spare parts .
- All major components are listed products.
- Complying with NFPA 20

TESTING FACILITY

- Individual components test facility.
- Pump performance test.
- Pump hydrostatic test.
- Complete package test with automatic operation.
- String test.
- Driver load test.
- Simulating field test.

FIRE PUMP HOUSE UNITS

*** THE PACKAGED SYSTEM:**

NAFFCO Fire Pump House Units are designed as per customers' specification and NFPA 20 requirements. Complete fire pump set assembly is fixed inside an intermodal container with all fire pump related standard accessories, valves and fittings and pump testing instruments. In addition to these fire pump set components the container also includes lighting and necessary fire protection equipment for the pump house such as a standalone heat detector and fire extinguishers. All internal wiring and piping is done at factory and external connectors are provided external to the side of the container that enables easy piping connections and gland plate is welded on the bottom edge at one side of the container for power supply cable entry at field.

All the major fire pump components such as Fire Pumps, Drivers, Controllers, Valves, Pressure Gauges and Flow Meter are UL and / or FM Certified as required by the NFPA 20 standard. Only high quality components and fittings are used in order to ensure reliable performance and long life. Only suction and discharge piping, diesel engine exhaust line, test line return, drain pipe and power input connections need to be made at field. The complete package is thoroughly tested and inspected prior to dispatch.

PRE-FABRICATED PUMP HOUSE WITH ALL SYSTEMS RELATED TO FIRE PUMP OPERATION PRE-INSTALLED IN IT.

* *Actual components may vary subject to individual project requirements and commercial offer. We reserve the right to change the specifications without any prior notice.*

* *Only those NFPA 20 requirements will be complied that are possible within the space limitations of pump house design.*

*** THE STANDARD COMPONENTS INCLUDED IN THESE HOUSED FIRE PUMP SYSTEMS ARE AS FOLLOWS:**

- Electric Pump
- Electric Motor
- Diesel Engine
- Diesel Pump
- Jockey Pump
- Gate Valve – Suction
- Gate Valve – Discharge
- Gate Valve – Test Header
- Non Return Valves (Fire Pumps)
- Flow Meter
- Internal Exhaust Pipe Line
- External cable entry provision
- Electric Fire Pump Controller
- Diesel Fire Pump Controller
- Jockey Pump Controller
- Pressure Sensing Line
- Drain Pipe Lines
- Pump Shaft Drain
- Floor Drain
- Battery
- Pressure Gauge on Discharge
- Header
- Fuel Tank with Drip Tray
- Fuel Tank Air Vent Pipe Line
- Non Return Valve (Jockey)
- Gate Valve – Discharge
- Suction Pressure Gauge
- Discharge Pressure Gauge
- Discharge Header
- Emergency Light
- Interior Weather Proof Lights
- CO_2 – 5 Kg
- DCP – 6 Kg
- ADCP – 6 Kg
- Sprinkler System with ZCV.
- Casing Relief Valve.
- Ventilation Fans with Louvers
- Sand trap Louvers
- Suction Pipe Line
- Discharge Pipe Line
- Complete Internal Conduit Wiring

ADVANTAGES

- Comparably less project site space requirement
- Easy field installation
- Shortened installation time
- Reduced on-site labor cost
- Trouble free commissioning
- Optimum inside free space allocation
- Single unit responsibility
- Single manufacturing source
- Pre-connected internal piping
- Complete equipment on single base
- Perfect system operational integrity
- In-built auxiliary systems as per NFPA standard
- Convenience in obtaining parts and services
- Certified major components
- Assured compliance with NFPA 20
- Eliminates on-site assembly of components
- Long lasting pump house enclosure
- Superior quality painting of pum house
- High strength lifting lugs
- Extensive range of component selections
- Wide variety of configurations

FUEL TANKS

NAFFCO certified primary containment tank offers you a reliable solution for your fuel storage requirements. Design and fabrication of these tanks are done as per UL standard (UL 142), and installation and use shall be in accordance with NFPA 30. Each tank is subjected to thorough structural inspections and leakage test as specified by the design standard.

The tanks that successfully pass the inspection and test are labelled as per UL specifications confirming their UL certification. These cylindrical, horizontally mounted, tanks are provided with necessary fittings and openings to facilitate quality service at field. All tanks are provided with openings for filling, connecting to diesel engine fuel system, fuel return line connection and drain. Lifting lug, provided on the top center of the tank, facilitates easy transportation and installation.

These tanks are also provided with opening for connecting to a direct reading fuel level gauge that is supplied as part of standard fire pump package.

FEATURES

- Meets NFPA 30 requirements.
- Sized as specified by NFPA 20 for fire pump applications.
- Designed and Fabricated in accordance with UL 142 (Steel Aboveground Tanks for Flammable and Combustible Liquids) standard.
- Tested for tightness against leakage.
- Top quality fittings and fabrication materials.
- Sturdy lifting lug and legs.
- Vent opening to prevent build-up of pressure or vacuum inside the tank during filling, emptying or due to atmospheric temperature changes.
- Approved welding process.

Applicable welding processes are Gas Metal Arc Welding (GMAW) and/or Shielded Metal Arc Welding (SMAW). Shell, Dish Head and Lift Lug material is carbon steel, ASTM A36 and legs shall be of carbon steel pipe, with a minimum height of 500 mm. The actual height of the tank leg will vary depending up on the size of the tank.

** Construction of the tanks above 750 US Gallons will be different from the above picture.*

FUEL TANK CAPACITY

Type	Cylindrical, Horizontal
Fuel Tank Size	70 - 750 US Gallons

** Above ground tanks for capacities up to 9000 US Gallons and above are also available. Please contact factory.*

FITTINGS

Item	Description	Material	Quantity
1	½" Nipple	Carbon Steel	2
2	½" NPT Ball Valve	Brass	1
3	½" NPT Plug	Carbon Steel	1
4	4" Nipple	Carbon Steel	1
5	2" Nipple	Carbon Steel	2

UL® LISTED

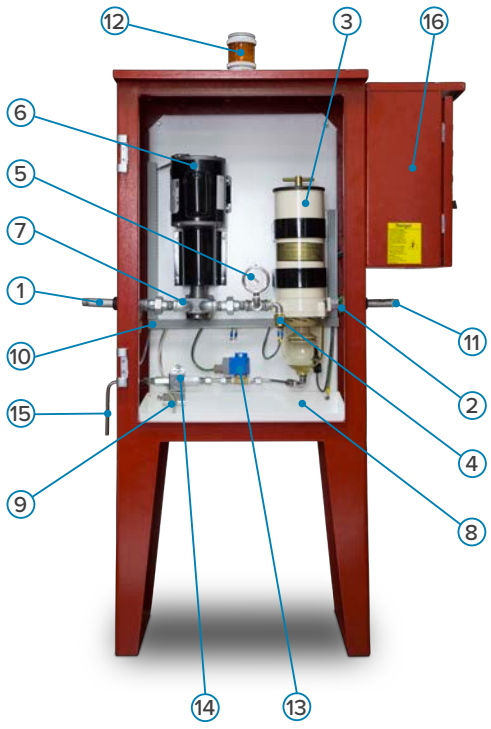
AUTOMATIC FUEL FILTRATION SYSTEM

MODEL: YH-UFFS-01

Specialists have proven that stored diesel fuel can start to deteriorate within just 28 days of refining. Researchers also confirmed that after 8 - 10 months, diesel fuel will start to form sludge if it stays still in the tanks increasing the chances of engine failure or damage, when required to operate.

Fuel contamination is a major cause of premature shutdown for standby engines, generator sets, fire pump engines, and other diesel engine support functions. Contamination commences as soon as the storage tanks are filled and continues until the fuel is used. As the length of storage period increases, the probability for premature engine shutdown due to either clogged filters, or excessive water entrainment, increases. And here comes the high need of smart fuel filtration systems.

NAFFCO YH-UFFS-01 programmable automated fuel filtration system is self-contained, stand-alone system that removes and prevents the build-up of water, sludge and contaminants in tanks. It stabilizes diesel and bio-fuels, eliminates microbial contamination to optimize and maintain fuel quality. It is designed to fulfill NFPA requirements related to maintaining and cleaning fuel stored in fuel tanks.



PACKAGE:

1. Fuel Outlet.
2. Magnetic Fuel Conditioner.
3. Fuel Filter.
4. Vacuum Pressure Switch.
5. Vacuum Pressure Gauge.
6. Electric Motor.
7. Fuel Gear Pump.
8. Drip Tray.
9. Float Switch.
10. Pressure Switch.
11. Fuel Inlet.
12. Pilot Lamp
13. Solenoid Valve
14. Water Drain Pump
15. Water Drain Outlet
16. Manual Water Drain Valve

UL LISTED

NFPA CODES & REQUIREMENTS

NFPA 20

STANDARD FOR THE INSTALLATION OF STATIONARY PUMPS FOR FIRE PROTECTION. 2019 EDITION.

Chapter 11: Fuel Supply Maintenance

11.6.4.3 states that "The tanks shall be designed and installed so that they can be maintained by means that will ensure removal of water and foreign material".

11.6.4.4 An active fuel maintenance system listed for fire pump service shall be permitted to be installed for the maintenance of the fuel in the supply tank.

NFPA 110

STANDARD FOR EMERGENCY AND STANDBY POWER SYSTEMS, 2019 EDITION.

Chapter 7: Installation and Environmental Considerations,

7.9.1.2 states that: "Fuel system design shall provide for a supply of clean fuel to the prime Mover".

7.9.1.3 states that "Tanks shall be sized so that the fuel is consumed within the storage life, or provision shall be made to remediate fuel that is stale or contaminated or to replace stale or contaminated fuel with clean fuel".

NFPA 25 - 2020 EDITION

A.8.3.4.2 Where environmental or fuel quality conditions result in degradation of the fuel while stored in the supply tank, from items such as water, microorganisms and particulates or destabilization, active fuel maintenance systems permanently installed on the fuel storage tanks have proven to be successful at maintaining fuel quality. An active fuel maintenance system will maintain the fuel quality in the tank, therefore preventing the fuel from going through possible cycles of degradation, risking engine reliability, and then requiring reconditioning.

UL / FM CERTIFIED ELECTRIC MOTOR CONTROLLER

MICROPROCESSOR BASED CONTROLLER

NAFFCO Electric Motor Controllers for fire pumps are listed by Underwriters Laboratories (UL file number EX15064), in accordance with UL 218 (Standard for Fire Pump Controllers), UL 508 (Standard for Industrial Control Equipment), NFPA 20 (Standard for the Installation of Stationary Pumps for Fire Protection), NFPA 70 (National Electrical Code) and relevant NEMA standards.

Also approved by FM approvals (Factory Mutual), in accordance with FM standard 1321/1323 (Approval Standard for Controllers for Electric Motor Driven and Diesel Engine Driven Fire Pumps).

Only high quality UL listed or UL recognized components are used in these panels to guarantee the best possible reliability. Also high quality UL listed enclosures are used.

ELECTRIC CONTROLLER STARTER TYPES:

- **NFY-DOM1** *(Direct on Line)*
- **NFY-SDM1** *(Star Delta)*
- **NFY-SSM1** *(Soft Starter)*

ENCLOSURE OPTIONS :

- **NEMA 2, NEMA 4, NEMA 4x, NEMA 12**

DOL, Y-DELTA & SOFT STARTER CONTROLLER SUMMARY RATINGS

Power Rating	15 - 400 HP
Voltage	230 / 380 / 415 v AC (UL/FM), 480 V (UL)
Frequency	50 / 60 Hz
Short Circuit Rating	100 kA

ADVANTAGES OF SOFT STARTER FIRE PUMP CONTROLLER

Low starting current during startup of motor (Around 150% of rated current), with soft gradual ramp (no current peak).
Smooth soft starting and soft stopping.
Significant reduction in mechanical stresses of the coupling and transmission devices (gearboxes, pulleys, gears, conveyors, etc.) during start (no torque peak).
Increases motor and equipment lifetime due to the elimination of mechanical shock.
Avoids the “Water Hammer” in pumps, and pressure surges, and so having longer life for pipe lines.
Using power electronic semiconductors (Thyristors) to control the motor voltage at starting up and at stopping, and a built in single contactor for continuous steady operation.
Connected to motor through 3 terminals, so it requires less cabling (3 cables), and easier setup and installation.
Fire pump controller is rated 50 degree ambient, and soft starter unit is rated 55 degree ambient (UL Listed).
Limitation of voltage drop during start up, so less rated power source is needed.
Controls the variation of the firing angle of thyristor bridge generating a gradual and continuous effective voltage at its output and it is increased until the rated line voltage is reached.
Gradually reduces the output voltage to a minimum value in a preset time thus providing a highly controlled and highly secure stop of the connected firefighting pump.

UL / FM CERTIFIED AUTO TRANSFER SWITCH WITH ELECTRIC FIRE PUMP CONTROLLER

AUTO TRANSFER SWITCH MODEL NFY-ATS

NAFFCO Electric Fire Pump Controllers with Auto Transfer switches are UL / FM certified (Standards – UL 218, UL 508 & FM 1321 / 1323). And it meets the requirements of NFPA 20 (National Fire Protection Association Standard for the Installation of Stationary Pumps for Fire Protection), NFPA 70 (National Electric Code) and corresponding NEMA standards.

ELECTRIC FIRE PUMP CONTROLLER MODELS

NFY- ATS -DOM1 - DIRECT ON LINE
NFY- ATS -SDM1 - STAR DELTA
NFY- ATS- SSM1 - SOFT STARTER
NFY-ATS-VFD-DOM1 - VARIABLE SPEED W/ DIRECT ON LINE
NFY-ATS-VFD-SSM1 - VARIABLE SPEED W/ SOFT STARTER

ENCLOSURE OPTIONS : NEMA 2, NEMA 4, NEMA 4x, NEMA 12

RATING

Motor Power (HP)	Rated Voltage (V)	Frequency (Hz)	Short Circuit Rating (KA)
15	NFY - ATS - DOM1 NFY - ATS - SDM1 NFY - ATS - SSM1 230 / 380 / 415 (UL & FM) 480 (UL) NFY - ATS - VFD - DOM1 NFY - ATS - VFD - SSM1 230 (FM) 380 / 415 (UL & FM)	50 / 60	100
20			
25			
30			
40			
50			
60			
75			
100			
125			
150			
200			
250			
300			
350			
400			

UL / FM CERTIFIED VARIABLE FREQUENCY DRIVE FIRE PUMP CONTROLLER

MODEL: NFY-VFD

NAFFCO Variable Frequency Drive Controllers are listed by Underwriters Laboratories (UL file number EX15064), in accordance with UL 218 (Standard for Fire Pump Controller), UL 508 (Standard for Industrial Control Equipment), NFPA 20 (National Fire Protection Association Standard for the Installation of Stationary Pumps for Fire Protection), NFPA 70 (National Electric Code) and applicable NEMA standards. Also approved by FM approvals (Factory Mutual), in accordance with FM standard 1321 / 1323 (Approval Standard for Controllers for Electric Motor Driven and Diesel Engine Driven Fire Pumps). This controller is completely wired, assembled, programmed and tested at the factory before shipment, and ready for immediate installation.

STARTING TYPE OPTIONS:
NFY-VFD-DOM1 - VARIABLE SPEED W/ DIRECT ON LINE
NFY-VFD-SSM1 - VARIABLE SPEED W/ SOFT STARTER

ENCLOSURE OPTIONS: NEMA 4, NEMA 4x, NEMA 12

RATING

Motor Power (HP)	Rated Voltage (V)	Frequency (Hz)	Short Circuit Rating (KA)
15	230 (FM) 380 / 415 (UL & FM)	50 / 60	100
20			
25			
30			
40			
50			
60			
75			
100			
125			
150			
200			
250			
300			
350			
400			

- Fixed stable controlled pressure from no flow till full flow, therefore reduce or eliminating the need for PRVs, and drain risers.
- Eliminate the need for NFPA 25 quarterly testing for PRVs, and so more reliable system.
- Significant Power Saving since motor is not running at full speed.
- When used with soft starter the soft start and soft stop will considerably reduce the mechanical stress over couplings, shafts etc.
- Eliminate water hammer phenomena.
- Reduce the size of power supply (Genset or Transformer).
- Maintenance costs can be lowered, since lower operating speeds result in the reduction of pump wear, particularly on bearings and seals & longer life for motors.
- Ramp-time can be adjusted for controlled ramp-up speed and this can eliminate the problems of water hammer and excess power draw on start-up, and reduce or avoid flow or pressure surges.

UL / FM CERTIFIED DIESEL ENGINE CONTROLLER

MICROPROCESSOR BASED CONTROLLER (NFY-DM1)

NAFFCO Fire Diesel Engine Controller are listed by Underwriters Laboratories (UL file number EX15064), in accordance with UL 218 (Standard for Fire Pump Controller), UL 508 (Standard for Industrial Control Equipment), NFPA 20 (National Fire Protection Association Standard for the Installation of Stationary Pumps for Fire Protection), NFPA 70 (National Electric Code) and relevant NEMA standards.

Also approved by FM approvals (Factory Mutual), in accordance with FM standard 1321 / 1323 Approval Standard for Controllers for Electric Motor Driven and Diesel Engine Driven Fire Pumps. Controllers are rated for 12/24 V DC operating voltage, 110 / 220 volts AC input voltage, 50/60 Hz. These controllers are compatible with most types of diesel engines that are used in firefighting applications.

Only high quality UL listed or UL recognized components are used in these panels to guarantee the best possible reliability. Also high quality UL listed enclosures are used. This controller is completely wired, assembled and tested at the factory before shipment, and ready for immediate installation.

ENCLOSURE OPTIONS:
NEMA 2, NEMA 4, NEMA 4x, NEMA 12

c UL US LISTED

NFPA®

FM APPROVED

NEMA

CONTROLLER RATINGS

Line Voltage (VAC)	DC Voltage (VDC)
220/110	12/24

UL LISTED JOCKEY PUMP CONTROLLER

NAFFCO Electric Motor Controllers for Jockey Pump are listed by Underwriters Laboratories (UL file number E309408) in accordance with UL508a (Standard for Industrial Control Panel), NFPA70 (National Electric Code) and relevant NEMA standard.

Power ratings vary from 1.5 to 40 horsepower, 380 to 415 volts, 50 or 60 Hz. Only high quality UL listed or UL recognized components are used in these panels to guarantee the best possible reliability. Also high quality UL listed enclosures are used.

The controller is completely wired, assembled and tested at the factory before shipment, and ready for immediate installation.

STANDARD FEATURES

- Main disconnect switch with rotary handle, sized for disconnecting motor horsepower and voltage.
- Motor Starter (DOL) or Over Load Relay (Star-Delta) rated to motor's horsepower, with thermal and short circuit protection.
- Rated motor connectors.
- Circuit breaker for protection of control circuit and motor.
- Star—Delta starting timer. (in Model NFY-JSD1 & NFY-JSD1-T1)
- Power ON/Healthy indicator/free contact.
- Pump Run indicator/free contact.
- Pump Trip indicator/free contact.
- Adjustable pressure switch.
- Run Period Timer

MODELS :

NFY-JDO1 Direct On-Line & NFY-JSD1 Star-Delta.
Selector switch for Hand-Off-Automatic Operation.

NFY-JDO1-T1 Direct On-Line & NFY-JSD1-T1 Star-Delta

- Touch control panel to operate, monitor, and set up the controller.
- Automatic and manual selection on the touch panel screen.
- Real-time voltage and pressure reading on screen.
- Real-time pump running status, alarm details, and time delay on screen.
- Password protection.
- Screen saver mode.
- Up to 4 auxiliary inputs and 3 output ports.
- Up to 5 predefined options to select on input auxiliary.
- Up to 24 predefined options to select on output auxiliary.

ENCLOSURE OPTIONS:
NEMA 2, NEMA 4, NEMA 4x, NEMA 12

SUMMARY OF RATINGS

Power Rating	1.5 - 7.5 HP DOL Starter & 10 - 40 HP Star Delta Starter
Voltage	230/380/415/480 V
Frequency	50 / 60 Hz

** Dual Jockey Pump Controller (Models JD02 - Direct On Line - 1.5 - 7.5 hp & JSD2 - Star - Delta - 10 - 40 hp) are also available.*

CUSTOM DESIGNED FIRE PUMP SET

NAFFCO custom designed fire pumps meet the minimum requirements for fire fighting applications and several requirements of various Civil Defence authorities. It follows an in-house design developed by NAFFCO which draws from various internationally accepted norms, concepts and standards and applies them with required modifications to suit individual project demands without strictly adhering to all requirements of any particular standard. Pumps are covered by a standard one year warranty as per standard terms and conditions.

NPH Series

NPH Series consists of one electric motor driven Fire Pump, diesel engine driven Fire Pump, one common Fire Pump Controller, pressure vessel, standard accessories and base frame. The fire pump shall be end suction/vertical multistage, single/twin impeller type. The electric motor is squirrel cage induction type, suitable for 3 phase power supply, with required horse power rating and close/ rigid/ flexibly coupled to the pump. The diesel engine is fixed on the base with anti-vibration rubber pads and the pump is close/flexibly coupled to diesel engine. According to the power output of the engine the electrical system can be either 12V or 24V DC. The diesel engine consists of starter motor, fuel system, lubricating system, exhaust system, etc.

NPH Series - Operating Range

Flow Rate	Pressure
30 - 80 US GPM	3 - 10 BAR

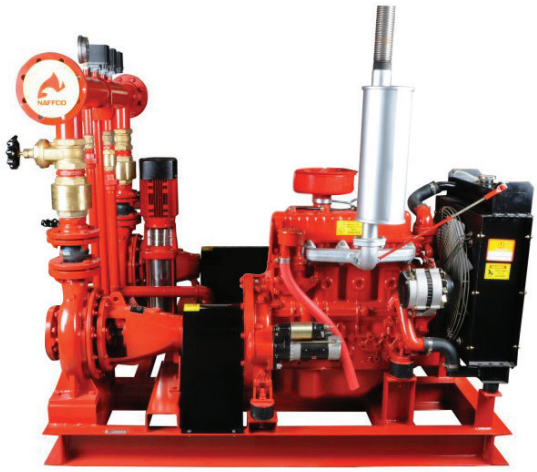
NPS Series consists of one main pump coupled to electric motor, one stand by pump coupled to diesel engine, jockey pump, controller(s) for manual or automatic operation of the system and standard accessories on base frame(s).

The fire pump shall be End Suction or Single/Multi Stage Horizontal Split Case or Horizontal Multistage Centrifugal type depending on the system capacity and head requirements.

Flexible coupled electric motor is squirrel cage induction type and foot mounted suitable for 3 phase power supply, with required horse power rating. Electric fire pump is flexibly coupled to the motor.

The diesel engine is fixed on the base with anti-vibration rubber pads and the pump is directly coupled to a diesel engine through flexible coupling. According to the power output of the engine, the electrical system can be either 12V or 24V DC.

Variations of this series is available in two electric pump (NPSE) or two diesel pump (NPSD) combinations also instead of standard main electric pump and standby diesel pump construction.



NPS Series

NPS Series - Operating Range

Flow Rate	Pressure
100 - 5000 US GPM	5 - 25 BAR

**Note: Higher ranges are available upon request.*

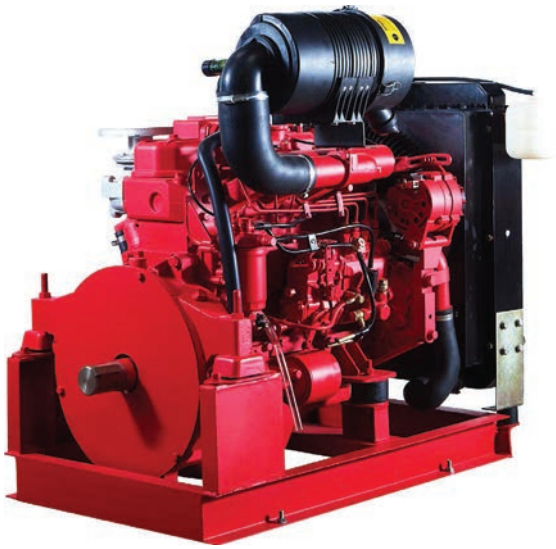
DRIVERS AND CONTROLLERS

FOR CUSTOM DESIGNED FIRE PUMP SETS

National Motors® totally enclosed fan cooled squirrel-cage induction motors are designed and manufactured to meet or exceed the latest IEC standards. These motors have high efficiency, superior speed-torque and excellent electrical characteristics. These multi-purpose motors are the ideal choice for installation in arduous environment conditions.

This range offers a variety of induction motors with a power rating of 0.75 kW to high powered motor providing 315 kW (higher power rating are also available).

These motors are highly engineered to cope up with sudden load increase, longer thermal life, higher altitudes and voltage variations.



Fire Driver® diesel engines are specifically designed for fire pump applications. This standard engine product line includes Air Cooled engines and Radiator Cooled engines.

Air-cooled direct injection diesel engines are smaller in volume, lighter in weight and lower in fuel consumption. The improved cooling and combustion properties results in the highly efficient performance of this engine. This series comprises of single cylinder 4 stroke air cooled diesel engines.

Radiator cooled series comprises of 3, 4, 8, 6 & 12 cylinder 4 stroke compression ignition type engines. These engines have improved performance and combustion efficiency. The characteristics such as high torque ad heavy duty construction makes these engines a right choice for firefighting applications. Heat Exchanger cooled engines are also available.

NAFFCO common controller is fabricated from G.I. and epoxy powder coated to red color. These Control panels include the necessary features for automatic and manual operation along with alarms and indications for a number of critical conditions.

- All the components / accessories are of trusted brands.
- Less maintenance cost and easily available spares.
- Standard cable marking for easy maintenance.
- Automatic or manual (test) operation.
- Dry run protection
- DOL/star delta starter – (soft start upon special request)
- IP54 standard strong and reliable enclosures.
- Remote alarm signals for various conditions (optional)
- Indication – Pump run, pump trip, power on
- (DC healthy and dry run – above 25hp engines)
- Over crank protection circuit for diesel engine (above 25hp engines)
- Auto battery charging system
- 12 or 24v DC engine starting system
- Tacho meter (above 25hp engine) with over speed shutdown above 60hp – 24 VDC)

TOP-CLASS FACILITY

MANUFACTURING OF FIRE PUMP SET ASSEMBLIES WITH UL CERTIFIED QUALITY MANAGEMENT


FABRICATION OF BASE FRAME


FIRE PUMP UNIT ASSEMBLY


IMPELLER TRIMMING

UL / FM FIRE PUMPS PRODUCTION LINE

HIGH QUALITY UL & FM STANDARD PRODUCTION PROCESS OF FIRE PUMP CONTROLLERS

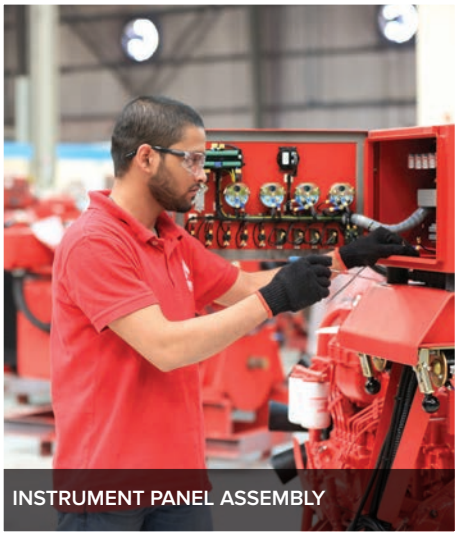

MANUFACTURING PROCESS OF PCB


DESIGN PROCESS OF PCB


CONTROLLER ASSEMBLY

UL / FM FIRE PUMP CONTROLLERS PRODUCTION LINE

UL STANDARD FIRE PUMP ENGINE PRODUCTION FOLLOWING STRINGENT QUALITY CONTROL


INSTRUMENT PANEL ASSEMBLY

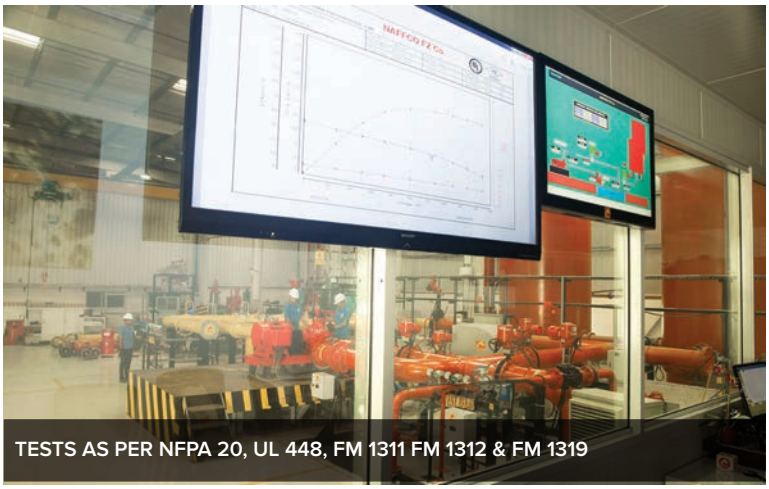

ENGINE ASSEMBLY


COOLING LINE INSTALLATION

UL / FM CERTIFIED DIESEL ENGINE PRODUCTION LINE

HIGH-END FACILITIES

FIRE PUMPS



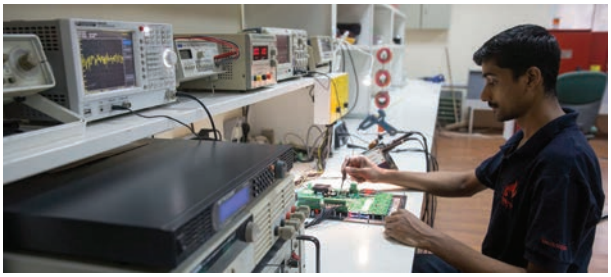
TESTS AS PER NFPA 20, UL 448, FM 1311 FM 1312 & FM 1319

HYDROSTATIC TEST
MECHANICAL RUN TEST
PERFORMANCE TEST

CONTROLLERS

TESTS AS PER NFPA 20, UL 218, UL 508A, FM 1321 / 1323

PCB HARDWARE FUNCTIONALITY TEST
SOFTWARE FUNCTIONALITY TEST
ALARMS AND INDICATIONS TEST



DIESEL ENGINE

TESTS AS PER NFPA 20, UL 1247, FM 1333

ENDURANCE TEST
OPERATIONAL TEST
ROTATIONAL SPEED TEST

In addition to the above mentioned tests for individual components a string test for complete package is also be done at our factory. The above given test lists are not exhaustive; special tests to meet particular project requirements can also be done at our facility. Please contact factory for more information.

NAFFCO ADVANTAGES

1. All major components certified from one factory.
2. Complete unit responsibility for total package.
3. Single source contact from design to maintenance.
4. High-end comprehensive testing facility.
5. Ready availability of spare parts for minimum 10 yr.
6. Global presence with immense experience.
7. Manufacturing facility ISO certified by UL for the manufacturing of fire pump set assemblies.
8. Facility to handle mass production for large scale orders.

NAFFCO®

Serving Over 100 Countries Worldwide

گروه توسعه ساختمان بومرنگ تنها به عرضه محصول محدود نمی‌شود؛ بلکه با ارائه خدمات کامل شامل سرویس، نگهداری و آموزش، از تجهیزات فروخته‌شده نیز به‌طور کامل پشتیبانی می‌نماید.

گروه توسعه ساختمان بومرنگ

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