

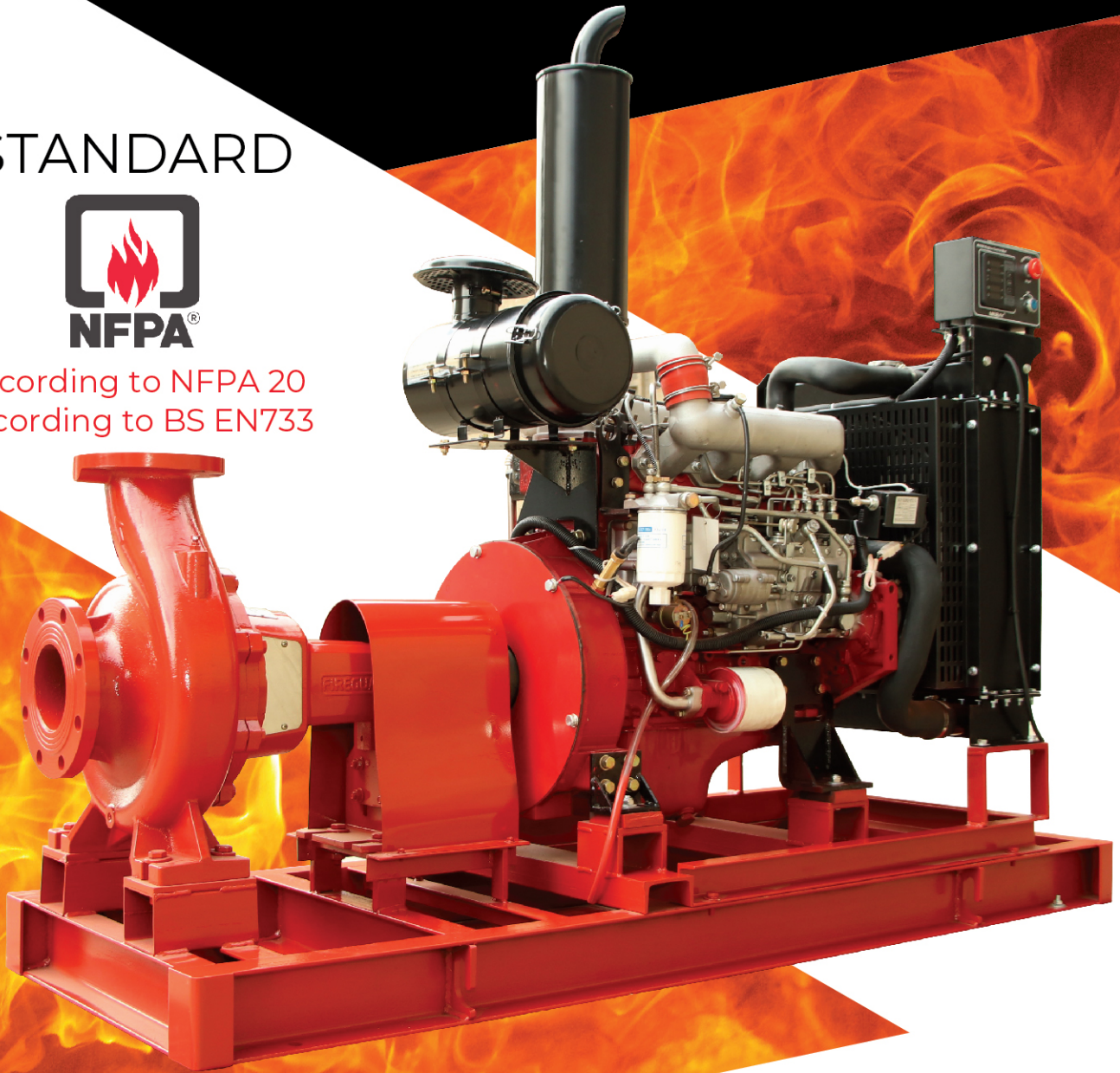


# FIRE FIGHTING PUMP SYSTEM

STANDARD



According to NFPA 20  
According to BS EN733



## 500GPM@8Bar

**FIREGUARD GLOBAL LTD.**

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## Fire fighting pumping station

### MODEL FGEDJ 500-8-60-61-7.5

Elctrical Pump Model FGSM 80-250/450

Diesel Pump Model FGSD 80-250/450

Jockey Pump Model FGVT 12-9

#### DESCRIPTION

- **FGEDJ** Fire pumps are designed for long term operational life, the maximum reliability is always our first priority.
- The components are installed on high rigidity steel structure.
- Each controller has its own individual pressure sensing line or pressure switch.
- The suction line doesn't include a strainer(Prefer anti vortex plate).
- Each pump has a dedicated controller.
- Each pump is tested for performance per the designed system requirments before dispatching from the factory.

**FGEDJ** Fire Pump Set consists of End Suction Centrifugal Pump driven by Electric Motor, Diesel Motor, and Vertical multistage Jockey Pump. Pumps are assembled with discharge line and suction header accessories as well as controls.

The capacity from 250GPM up to 2500GPM and other capacity can be customized.

Accessories include Battery, OS&Y Gate Valves, Check Valves, Flexible Expansion Joints, Pressure Switches, Pressure Gauge, Base Frame, etc.

#### Advantages

- Working Automatically among the three pumps.
- Both Manual and Automatic operation modes are available.
- Diesel Pump work when the power is off.
- Easy Installation.
- Customized size: Pump set or individual are available based on client requirement.
- FGYE high efficient motor with protection degree IP55.
- Insulation class F.
- High performance and low power consumption.
- Pump case with Anti-corrosive coating with quality NSK bearings, wear resistance mechanical seal.
- Control available upon request.
- Low maintenance cost and available spare parts.
- Electronic battery charger.

#### TECHNICAL DATA

| MODEL                                | DN<br>mm | Power |     | GPM | H(bar) | H(max)<br>m | V   | V   | Cl | IP | A         | Hz | T max | ph | min-1 |
|--------------------------------------|----------|-------|-----|-----|--------|-------------|-----|-----|----|----|-----------|----|-------|----|-------|
|                                      |          | kw    | hp  |     |        |             |     |     |    |    |           |    |       |    |       |
| <b>Electric Pump</b> FGSM 80-250/450 | 100x80   | 45    | 60  | 500 | 8      | 88          | 380 | 660 | F  | 55 | 83.9/48.4 | 50 | 100   | 3  | 2900  |
| <b>Diesel Pump</b> FGSD 80-250/450   | 100x80   | 45    | 61  | 500 | 8      | 88          | /   | /   | /  | /  | /         | 50 | 100   | 3  | 2900  |
| <b>Jockey Pump</b> FGVT 12-9         | 50x50    | 5.5   | 7.5 | 50  | 9      | 108         | 380 | 660 | F  | 55 | 11.1/6.4  | 50 | 100   | 3  | 2900  |

| Suction Side Size |            | Discharge Side Size |            |
|-------------------|------------|---------------------|------------|
| Pipe              | Valve      | Pipe                | Valve      |
| 4"-(DN150)        | 4"-(DN100) | 6"-(DN150)          | 4"-(DN100) |



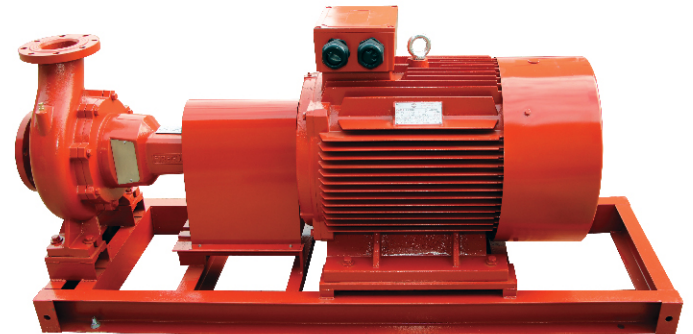


## TECHNICAL SHEET

|                                |                                    |
|--------------------------------|------------------------------------|
| Model                          | FGSM 80-250-450                    |
| Capacity                       | 500 GPM                            |
| Head                           | 8 bar                              |
| H max (Cut off head)           | 8.8 bar                            |
| DN                             | 100*80 mm                          |
| Speed                          | 2900 rpm                           |
| T max                          | 100°C                              |
| Power                          | 60HP - 45kW                        |
| Casing                         | Gray cast iron                     |
| Impeller                       | Bronze - DN: 240 mm                |
| Shaft                          | Stainless steel 304                |
| Sealant                        | Mechanical Seal                    |
| Bearing                        | Grease lubrication rolling bearing |
| Voltage                        | 380v/3ph/50hz                      |
| Protection degree              | IP55                               |
| Motor winding insulation class | F                                  |
| Power connection               | Star/Delta                         |
| Current                        | 83.9/48.4                          |
| HZ                             | 50                                 |

## Electric Motor Driven Pump

A standby provider of flow and pressure to the system in case of failure of the main pump and/or power supply is off.

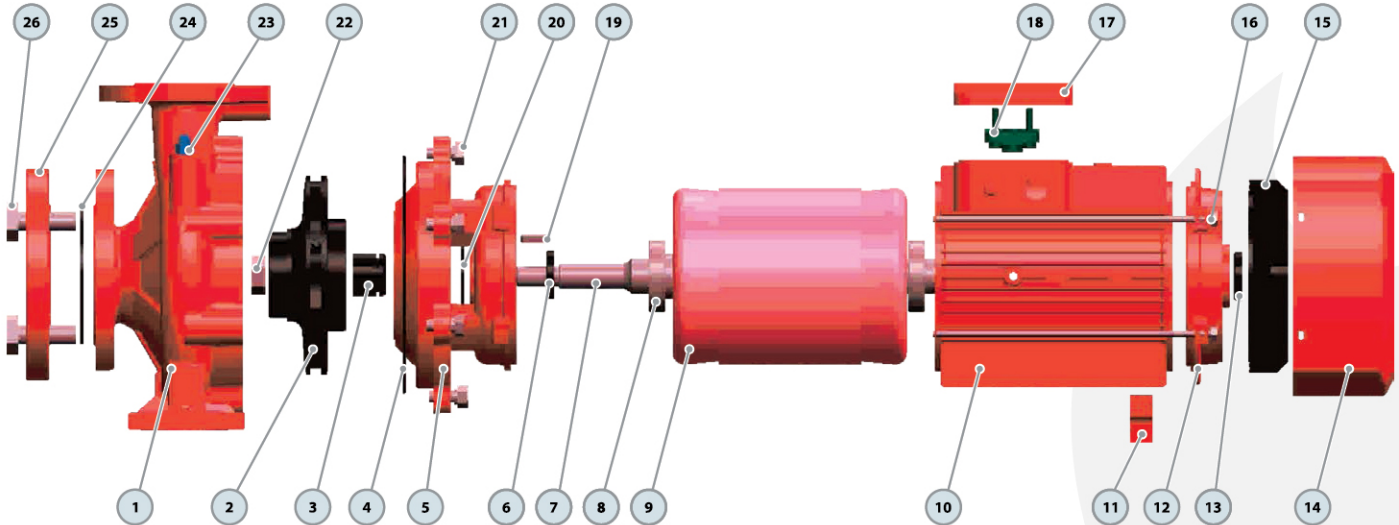


## End Suction Centrifugal Pump FGSM

## DESCRIPTION

- Designed according to EN733 standard centerifugal pump.
- Available complete with electric motor or diesel engine.
- Easily back pull-out from driver.
- Pump case with anti-corrosive coating.
- Quality NSK bearing, wear resistance mechanical seal.
- According to NFPA 20, water fire centrifugal pump shall be of the overhung impeller design with close or separate coupled end suction type.
- Pump capacities are available based on the required calculated system demand.
- Fire pump shutoff head dosen't exceed 140% of the duty point.
- Recommended the maximum system demand flow correlate to a point on pump curve between 90% to 140% of the pump capacity.
- Pump head not less than 65% @flow rate equal to 150% of the operating point.

## Pump dismantle

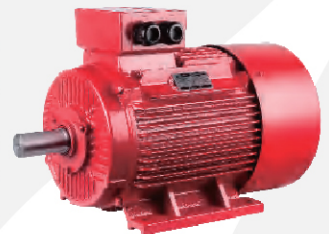
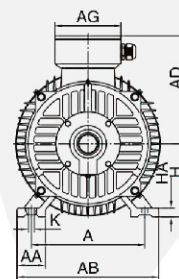
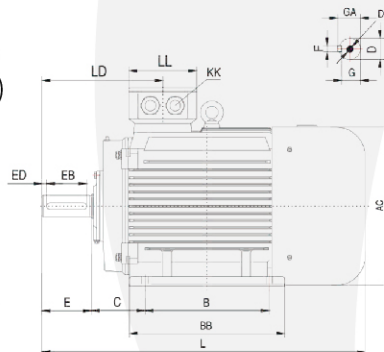


### MATERIAL DESCRIPTION

| No. | Description        | Material             | No. | Description     | Material  | No. | Description     | Material             |
|-----|--------------------|----------------------|-----|-----------------|-----------|-----|-----------------|----------------------|
| 1   | Pump Case          | Cast iron            | 10  | Motor Case      | Aluminum  | 19  | Impeller Key    | Iron                 |
| 2   | Impeller           | Bronze               | 11  | Support Foot    | Plastic   | 20  | Water Deflector | Rubber               |
| 3   | Mechanical Seal    | SiC/Carbon/SS304     | 12  | Back Cover      | Cast iron | 21  | Connection Bolt | Steel                |
| 4   | O-ring             | Rubber               | 13  | Reinforced Seal | Rubber    | 22  | Impeller Nut    | Galvanized Steel     |
| 5   | Connection         | Cast iron            | 14  | Fan Cover       | Aluminum  | 23  | Release Valve   | Brass                |
| 6   | Reinforced Seal    | Rubber               | 15  | Fan             | Plastic   | 24  | Gasket          | Rubber               |
| 7   | Shaft              | SS304/45# Steel      | 16  | Through Bolt    | Steel     | 25  | Counter Flange  | Galvanized Cast iron |
| 8   | Bearing            | Ball Bearing         | 17  | Terminal Box    | Aluminum  | 26  | Flange Bolt     | Steel                |
| 9   | Wound Stator/Rotor | Silicon Steel/Copper | 18  | Terminal Board  | Plastic   |     |                 |                      |

## FGYE

- Design according to IEC60034 standard
- Total enclosed fan cooling type motor(TEFC)
- FGYE high efficient motor
- Protection degree IP55
- Motor winding Insulation Class F
- Quality NSK bearing
- Continuous duty S1
- Reliable used for fire fighting system etc.
- Ambient temperature up to +50°C
- Service of factor (1.15)



### TECHNICAL DATA

50 Hz n=2900 1/min

| MODEL       | Power<br>kw<br>hp | RPM<br>1/min | $\eta$<br>% | $\eta$<br>75% | $\eta$<br>50% | $\cos \Phi$ | A         | Nm    | Ts/Tn | Tmax/<br>Tn | Is/In | dB(A) | Kgs |
|-------------|-------------------|--------------|-------------|---------------|---------------|-------------|-----------|-------|-------|-------------|-------|-------|-----|
| FGYE-225M-2 | 45<br>60          | 2965         | 94          | 94            | 92.1          | 0.9         | 83.9/48.4 | 144.9 | 2     | 2.3         | 7.7   | 93    | 323 |

### DIMENSIONS mm

| MODEL       | A   | AA | AB  | AC  | AD  | AG  | B   | BB  | C   | D  | DH     | E   | EB  | ED  | F  | G  | GA | H   | HA | K              | KK        | L   | LD  | LL  |
|-------------|-----|----|-----|-----|-----|-----|-----|-----|-----|----|--------|-----|-----|-----|----|----|----|-----|----|----------------|-----------|-----|-----|-----|
| FGYE-225M-2 | 356 | 75 | 431 | 446 | 322 | 210 | 311 | 393 | 149 | 55 | M20X42 | 110 | 100 | 7.5 | 16 | 49 | 59 | 225 | 28 | 4- $\Phi$ 18.5 | 2-M50X1.5 | 819 | 299 | 190 |

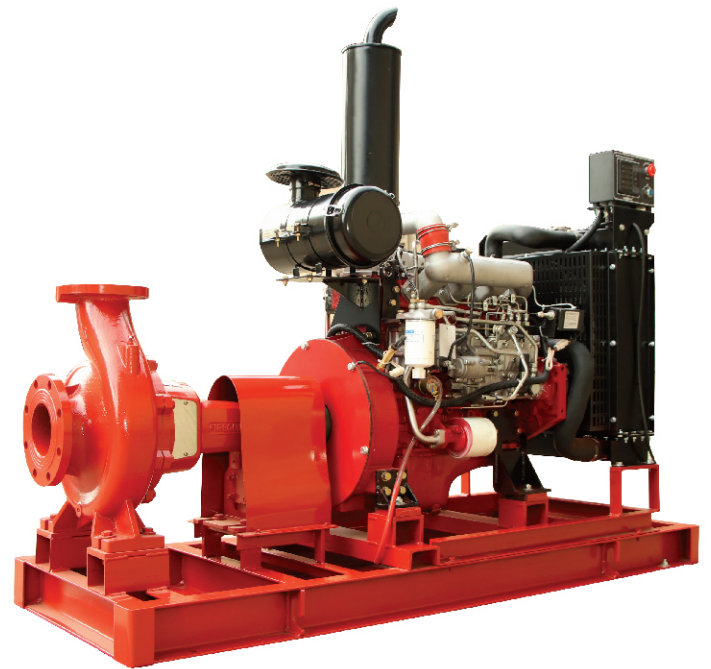


## TECHNICAL SHEET

|                         |                                    |
|-------------------------|------------------------------------|
| Model                   | FGSD 80-250/450                    |
| Capacity                | 500 GPM                            |
| Head                    | 8 bar                              |
| Head Max (Cut off head) | 8.95 bar                           |
| DN                      | 100*80 mm                          |
| Speed                   | 3000 rpm                           |
| T max                   | 100°C                              |
| Power                   | 45kW - 61HP                        |
| Casing                  | Gray cast iron                     |
| Impeller                | Bronze - DN: 25mm                  |
| Shaft                   | Stainless steel 304                |
| Sealant                 | Mechanical Seal                    |
| Bearing                 | Grease lubrication rolling bearing |
| Voltage                 | 12 VDC                             |
| HZ                      | 50                                 |

## Diesel Engine Driven Pump

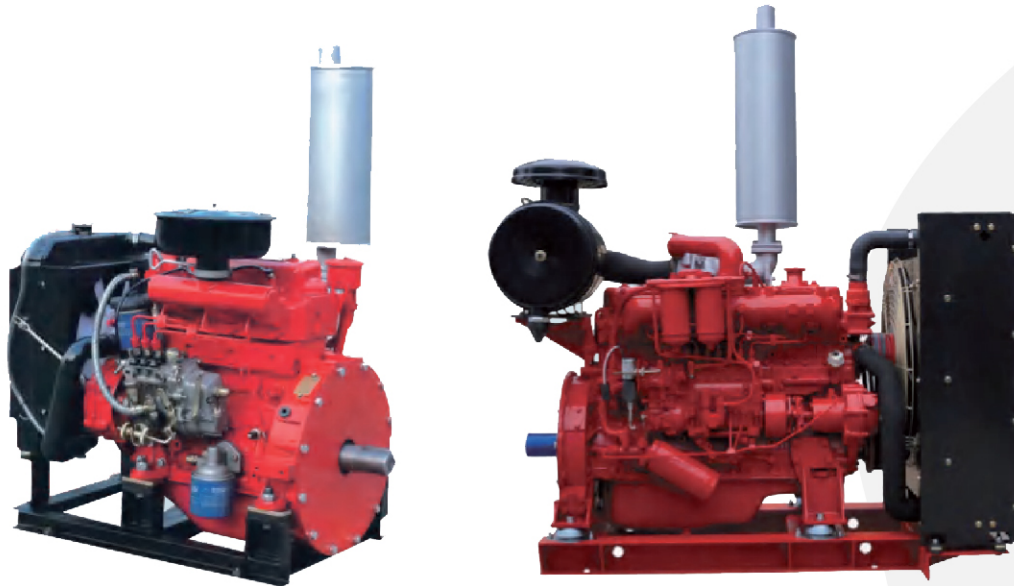
A standby provider of flow and pressure to the system in case of failure of the main pump and/or power supply is off.



## DESCRIPTION

- Diesel engines have proven to be very reliable and effective for driving standby fire pump.
- Diesel engines are from type of internal combustion engine permitted by NFPA 20.
- Each engine is provided with battery unit according to NFPA20.
- Advanced direct injection combustion chamber.
- Turbo charger for large capacity.
- Dedicated chassis for easy transportation, installation and handling.
- Dedicated Controller.
- Dedicated monitoring unit to follow up working parameters .
- Low vibration and Low noise design.
- Protection guard for moving parts.

## Diesel Engine FGD



### DESCRIPTION

- Water-cooling 3-to 6-cylinder naturally or turbo charging aspiration.
- Advanced direct injection combustion system.
- Extremely compact dimensions, easy to maintain and low space occupation.
- Noise reduction optimized technology and stronger power.
- Low fuel consumption and environmental protective.

### TECHNICAL DATA

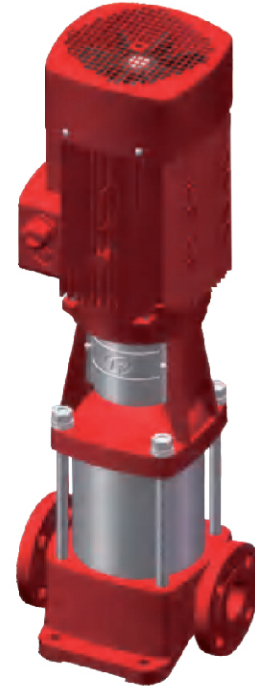
| Model                     | 178  | 186            | 188            | 192            | 380                                       | 385    | 480   | 485    | 490N   | 490    | 495    | 498    | 4102    | 4105    | 4108    |  |
|---------------------------|--|----------------|----------------|----------------|---|--------|-------|--------|--------|--------|--------|--------|---------|---------|---------|--|
| Type                      | 4 strokes,Air cooling  |                |                |                | Direct Injection,4 strokes, Water-cooling |        |       |        |        |        |        |        |         |         |         |  |
| Intake Type               | Naturally Aspirated  |                |                |                |   |        |       |        |        |        |        |        |         |         |         |  |
| Bore*Stroke(mm)           | 78*62  | 86*72          | 88*75          | 92*75          | 80*90                                     | 85*90  | 80*90 | 85*100 | 90*100 | 90*105 | 95*105 | 98*105 | 102*118 | 105*118 | 108*118 |  |
| Cylinder No.              | 1  | 1              | 1              | 1              | 3   | 3      | 4     | 4      | 4      | 4      | 4      | 4      | 4       | 4       | 4       |  |
| Displacement              | 0.296L   | 0.41 8L        | 0.456L         | 0.499L         | 1.357L                                    | 1.532L | 1.8L  | 2.27L  | 2.54L  | 2.67L  | 2.977L | 3.168L | 3.857L  | 4.087L  | 4.324L  |  |
| r/min                     | 3000<br>3600   | 3000<br>3600   | 3000<br>3600   | 3000<br>3600   | 3000                                      | 3000   | 3000  | 3000   | 3000   | 3000   | 3000   | 3000   | 3000    | 3000    | 3000    |  |
| Rated kW                  | 3.7kW<br>4.0kW   | 5.7kW<br>6.3kW | 6.6kW<br>7.2kW | 7.5kW<br>8.2kW | 20kW                                      | 24kW   | 28kW  | 36kW   | 42kW   | 45kW   | 50kW   | 54kW   | 62kW    | 67kW    | 73kW    |  |
| Rated HP                  | 5.0HP<br>5.5HP   | 7.8HP<br>8.6HP | 9HP<br>10HP    | 10.2HP<br>12HP | 27HP                                      | 32HP   | 38HP  | 49HP   | 58HP   | 61HP   | 68HP   | 73HP   | 85HP    | 91HP    | 99HP    |  |
| Fuel Consumption (g/kw.h) | 280.3<br>282.5   | 273.5<br>285.7 | 273.5<br>285.7 | 275<br>281     | 228                                       | 228    | 215   | 228    | 228    | 228    | 228    | 228    | 228     | 238     | 238     |  |
| Start Voltage             | 12V  | 12V            | 12V            | 12V            | 12V                                       | 12V    | 12V   | 12V    | 12V    | 12V    | 12V    | 12V    | 12V     | 24V     | 24V     |  |
| Speed regulation type     | Mechanical   |                |                |                |   |        |       |        |        |        |        |        |         |         |         |  |
| Including                 | Radiator, Fan, Starter, charge alternator, Air filter, Muffler, Stop Solenoid, PTO shaft, Fuel Tank, Meter Panel |                |                |                |   |        |       |        |        |        |        |        |         |         |         |  |

## TECHNICAL SHEET

|                                |                                    |
|--------------------------------|------------------------------------|
| Model                          | FGVT 12-9                          |
| Capacity                       | 50 GPM                             |
| Head                           | 9 bar                              |
| H max (Cut off head)           | 108 mtr                            |
| DN                             | 50*50 mm                           |
| Speed                          | 2900 rpm                           |
| T max                          | 100°C                              |
| Power                          | 5.5kW - 7.5HP                      |
| Casing                         | Gray cast iron                     |
| Impeller                       | Stainless steel 304                |
| Shaft                          | Stainless steel 304                |
| Sealant                        | Mechanical Seal                    |
| Bearing                        | Grease lubrication rolling bearing |
| Voltage                        | 220/380 V                          |
| Protection degree              | IP55                               |
| Motor winding insulation class | F                                  |
| Power connection               | D.O.L                              |
| Current                        | 11.1/6.4                           |
| Duty                           | S1 continuous                      |
| HZ                             | 50                                 |

## Jockey

Jockey pump maintains the necessary pressure in the system and make up leakage.

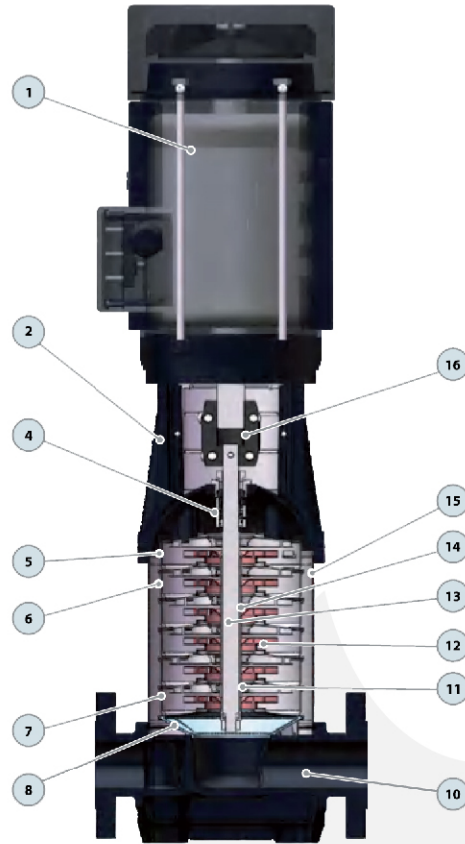


## DESCRIPTION

- The jockey pump is designed to maintain the pressure on the fire fighting piping network pressure system.
- Rated capacity not less than 1 sprinkler flow rate and not more than 10% of main pump flow.
- Discharge pressure sufficient to maintain the desired fire fighting system pressure.
- SS304 vertical, multistage centrifugal pump.
- The suction and discharge ports are on same level.
- FGVT pump head and base are cast iron.
- FGVS pump all wetted parts are in stainless steel.
- Quality bearing and wear resistance mechanical seal.
- Liquid temperature between -10°C and +120°C.



## MATERIAL DESCRIPTION



**FGVT**

| No. | Description      | Material     | No. | Description          | Material                |
|-----|------------------|--------------|-----|----------------------|-------------------------|
| 1   | Motor            | IP55 Class F | 9   | Base Plate           | Cast iron               |
| 2   | Pump Case        | Cast iron    | 10  | Inlet&Outlet Chamber | PVT:Cast iron PVS:SS304 |
| 3   | Seal Base        | SS304        | 11  | Bearing              | Tungsten Carbide        |
| 4   | Mechanical Seal  | SS304        | 12  | Impeller             | SS304                   |
| 5   | Top Diffuser     | SS304        | 13  | Shaft                | SS304                   |
| 6   | Diffuser         | SS304        | 14  | Impeller Sleeve      | SS304                   |
| 7   | Support Diffuser | SS304        | 15  | Cylinder             | SS304                   |
| 8   | Inducer          | SS304        | 16  | Coupling             | Carbon Steel            |



## Controller

The fire pump control panel performs the following functions:

A) Input: Receives signals from alarm devices such as pressure operated switches or remote fire alarm equipment.

B) Output:

- a. Provides electrical power to actuate the motor.
- b. Sends signal to actuate the diesel engine.

C) Monitoring: Monitors the fire pump operation and performance.

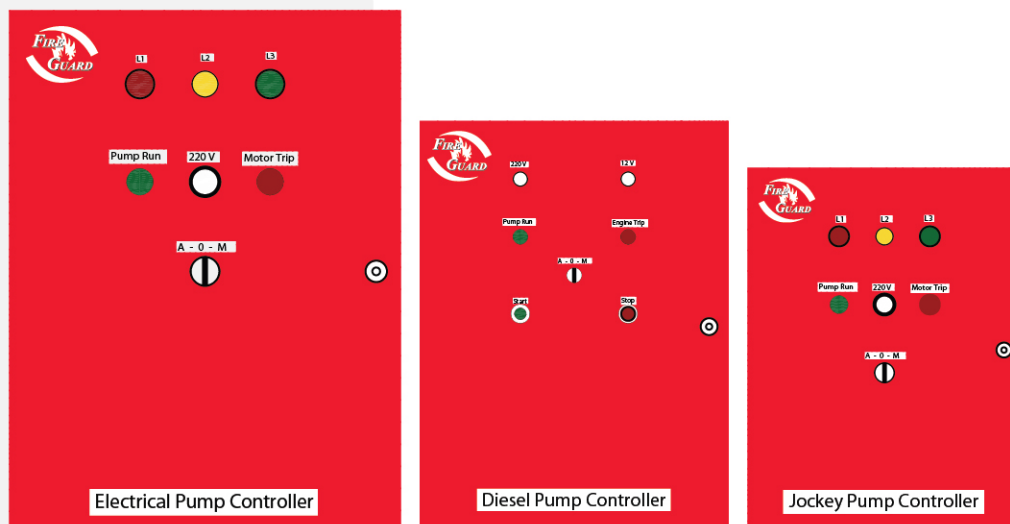
All controllers are completely assembled, wired and tested by the manufacturer before shipment from factory.

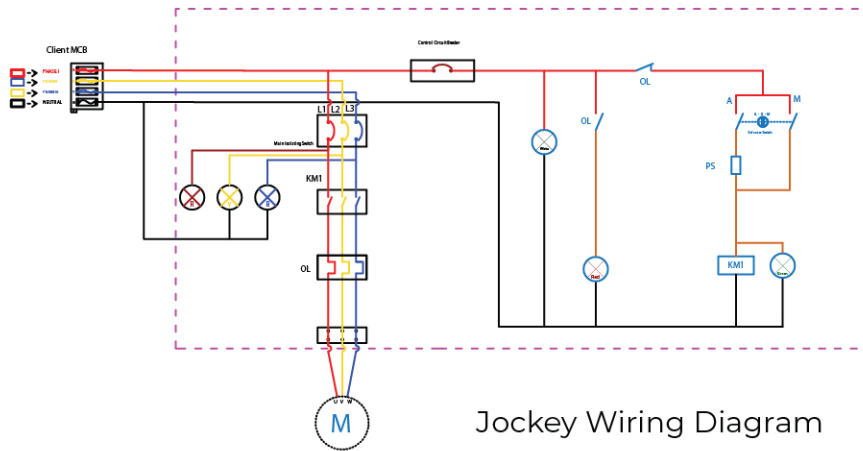
The pump consists of three separate controllers; electric, diesel and jockey controllers.

Electrical components such as circuit breaker, switches, relays and other devices dedicated to the operation of fire pumps are SCHNEIDER products.

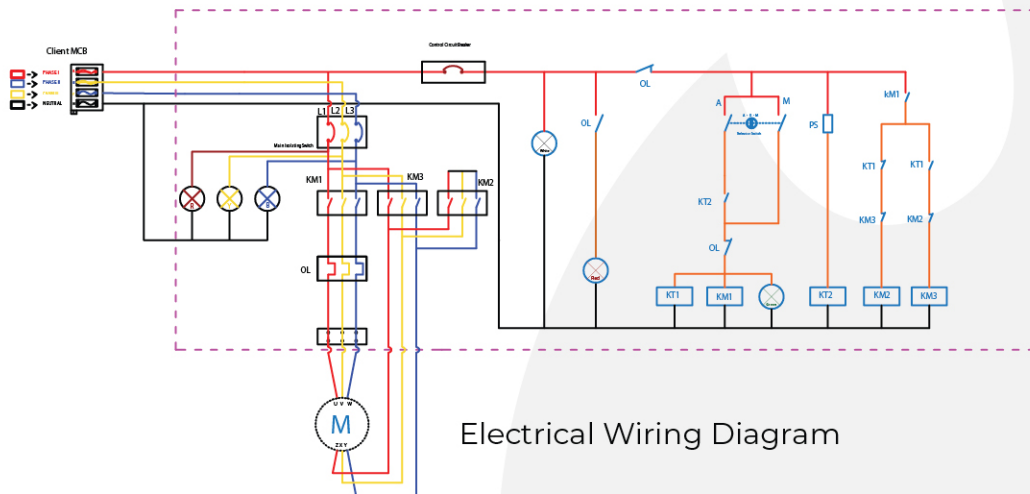
## DESCRIPTION

- Equipped with integrated digitalization, and network technologies for precise data measurement, alarm protection, remote control, measuring and communication.
- DOL, Star Delta starter or soft starter based on load or client requirement.
- All controllers are completely assembled, wired and tested .
- Self-acting to start, run and protect the driver.
- Automatic or manual operation options.
- Degree of protection IP55.
- 3 indicating lamp for phase status.
- Available phase failure/phase sequence relay for larger capacity.
- Available ammeter and voltmeter for larger capacity.
- Available over/under voltage relay for larger capacity.
- Custom made design based on request.
- Soft starter for larger capacity or upon request.

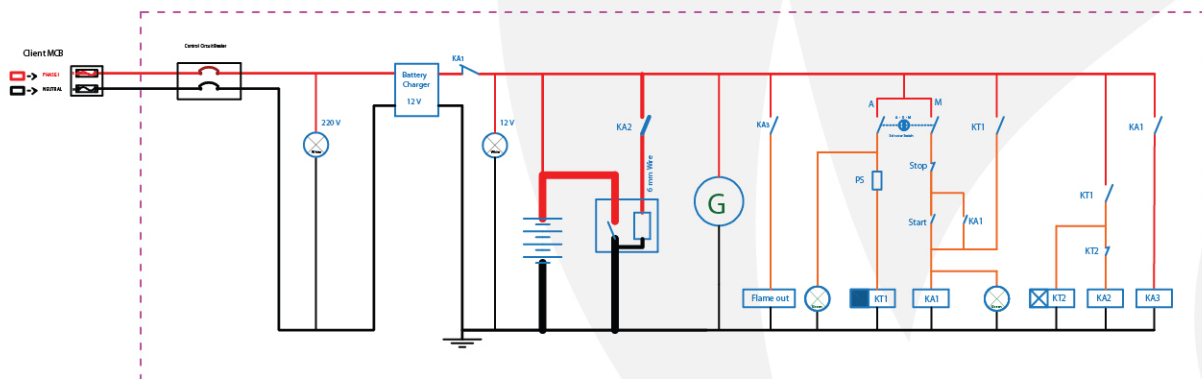




Jockey Wiring Diagram



Electrical Wiring Diagram



Diesel Wiring Diagram



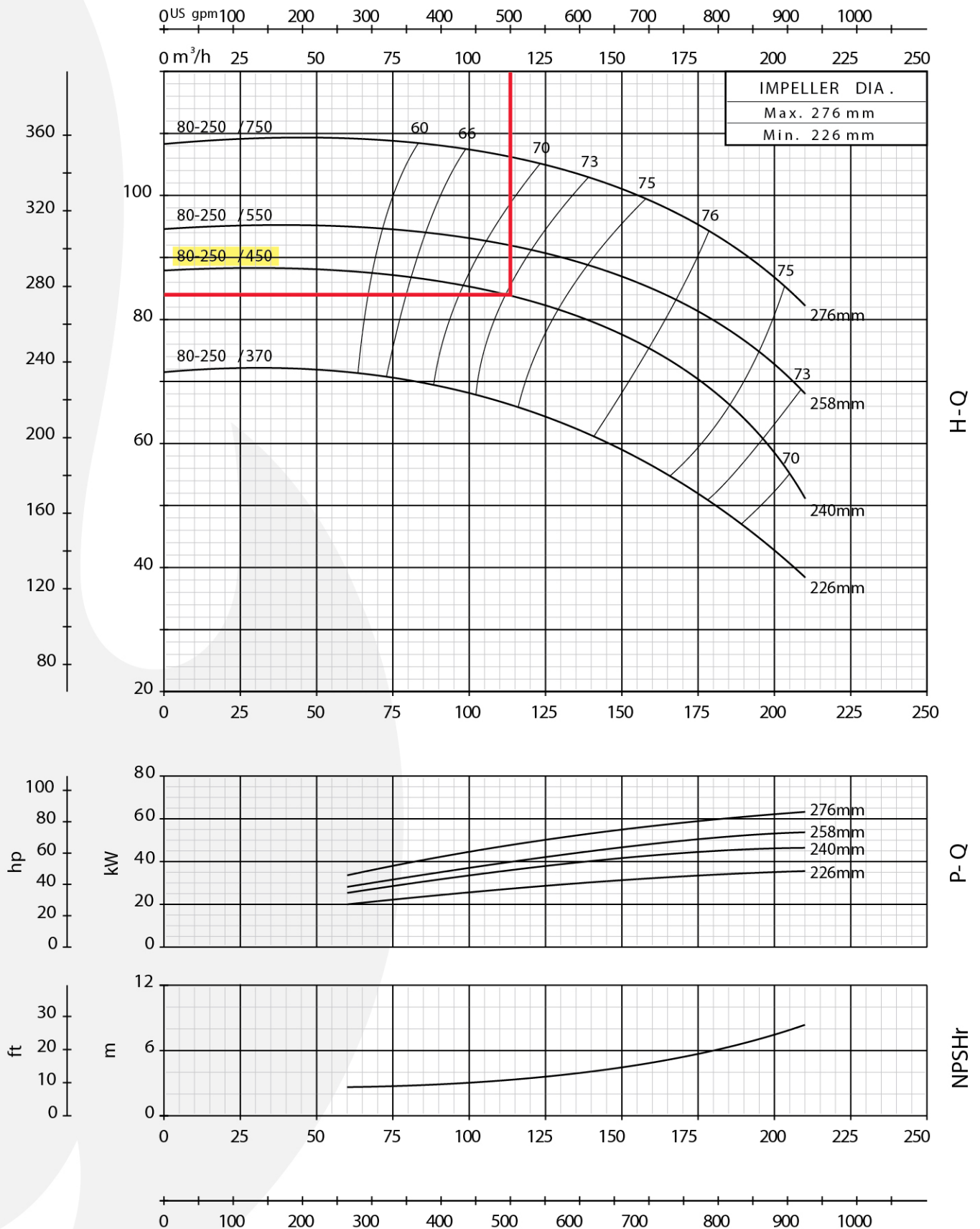


# PUMP SYSTEM



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2900rpm





## FGVT 12

2900rpm

