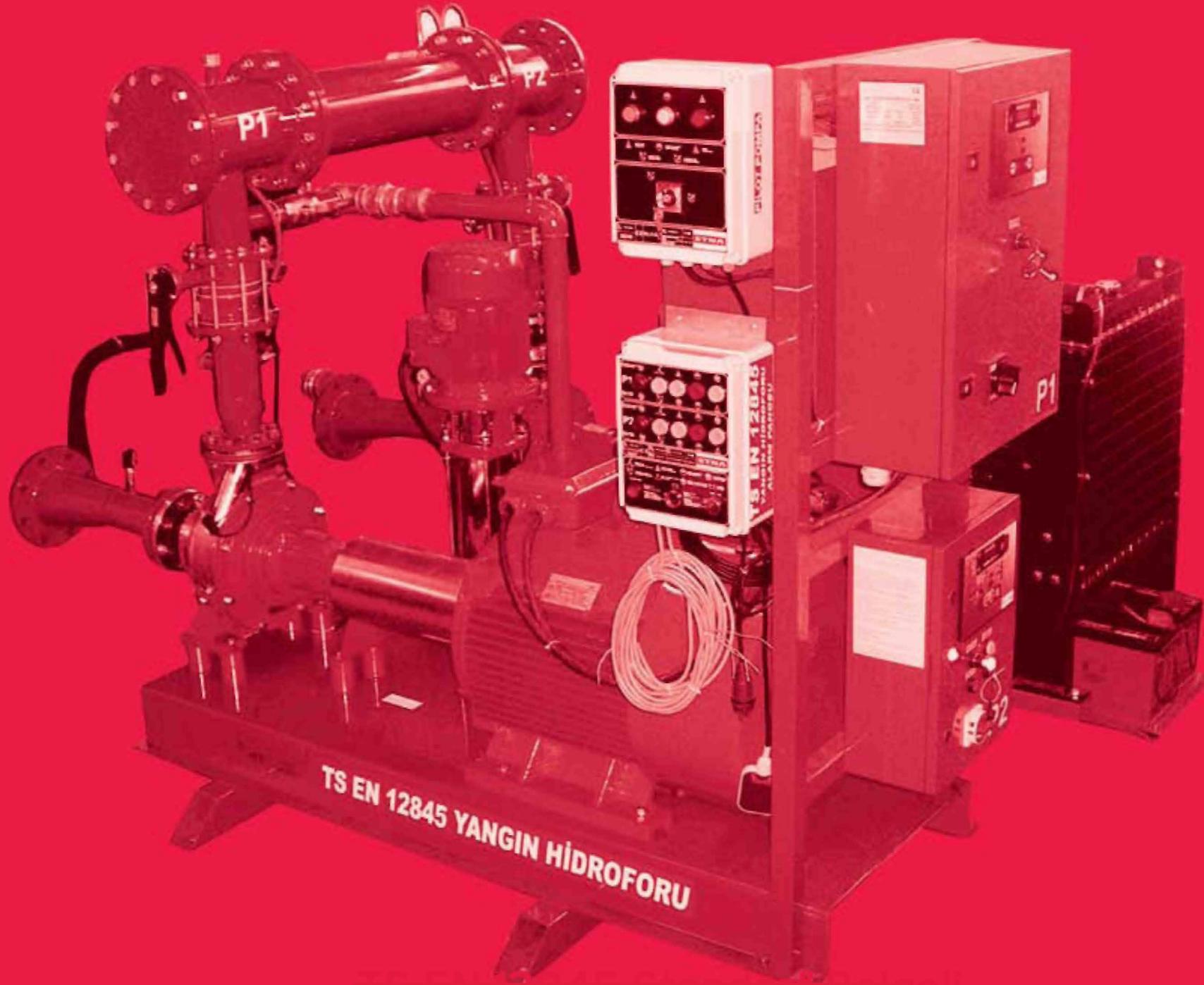




Pump & Booster Set Technologies



TS EN 12845 Certified Fire-Fighting Booster Sets



This product is exclusively designed for fire-fighting systems in line with Turkish and European Standards EN 12845 on design, installation and maintenance of fixed fire-fighting systems, automatic sprinkler systems.



Multistage Fire-Fighting Booster Sets with Vertical Pump

SPECIFICATIONS

Number of master pumps	: 1-3
Number of jockey pumps	: 1
Capacity	: 3 x 240 m ³ /h
mSS	: 150m
Maximum power of electrical pumps	: 37 kW
External control voltage	: 24 V
Panel control class	: IP54



Fire-Fighting Booster Sets with Horizontal Pump

SPECIFICATIONS

Number of master pumps	: 1-3
Number of jockey pumps	: 1
Capacity	: 3 x 500 m ³ /h
mSS	: 120m
Maximum power of electrical pumps	: 132 kW
External control voltage	: 24 V
Panel control class	: IP54



Fire-Fighting Booster Sets with Electrical Pump / Diesel Engine

SPECIFICATIONS

Number of main electrical pumps	: 1
Number of main diesel engine pumps	: 1
Number of jockey pumps	: 1
Capacity	: 2 x 500 m ³ /h
mSS	: 120m
Maximum power of electrical pumps	: 132 kW
Diesel engine maximum power	: 145 kW
External control voltage	: 12-24V
Protection class	: IP54

1. TS EN 12845 standard

TS EN 12845 standard includes the general rules and recommendations regarding the design, installation and maintenance of fixed sprinkler systems that are used in the buildings and the industry to prevent fire along with specific rules for life protection precautions and systems in all of the European community countries.

The rules and recommendations given in this standard can be applied to any addition, expansion, repair or change in a sprinkler system.

This standard covers classification of dangers, provision of water supplies, components to be used, system assembly, test, maintenance and expansion of current systems, and defines the structural details that are required to ensure that the sprinkler systems work in the best possible way in buildings complying this standard.

This standard does not cover the water supplies besides the sprinkler systems (like domestic water systems). However, the rules of the standard can be used as a guideline for other fire-fighting systems provided that certain rules are considered for other fixed fire-fighting systems. (Hydrant systems)

This standard also covers sprinkler system component assemblies.

2. General properties of the fire-fighting booster sets

Fire-fighting booster sets are designed in line with TS EN 12845 standard. Its modular structure accelerates and facilitates the selection of fire-fighting booster set group. Each module is mounted on a electrostatic epoxy painted steel frame in line with TS EN 12845 standard. Booster set assemblies are in an assembled module form with electrical panel cabling.

- * Each module is manufactured in line with TS EN 12845 standard.
- * The pumps are activated automatically with a command from pressure switch and then they are deactivated manually.
- * Diesel pump module is activated in line with TS EN 12845 standard.
- * Diesel pump emergency manual operation is also in line with the standard.
- * Main pump modules have inlets that are suitable to be connected to 1" forward-feed tanks (operation tank) in case they will be operated by drawing water from underground tank (negative suction).
- * To prevent mechanical seals to be damaged during closed valve test operations, pump modules have the ability of back circulation to the water tank or the operation tank.
- * The sections allocated for pump modules should be sprinkler protected.
- * TS EN 12845 Fire-fighting booster sets are factory-calibrated and tested. Thus they enable fast and easy assembly.
- * Remotely monitored alarm panel provides acoustic and visual warnings.
- * Eccentric reduction suction kit is standard including negative suction assembly.
- * The collectors are designed to prevent exceeding 1.8 m/second water speed in positive suction. EN 12845

Pumps

Regarding fire-fighting equipments, TS EN 12845 standard defines how the pump type should be. TS EN 12845 especially requires these pumps to have a steady curve. The operation pressure is requested to stay within certain criteria when the flow rate increases. Pumps are in line with EN 12259-12, and enable the connection between horizontal pump and engine to be independent and thus replacing pump interior assembly without dismantling suction and discharge collectors. The rotating assembly of the pumps can be replaced with a pull-out system from the engine side. To operate each pump, 2 units of pressure switch are used. These switches are connected to each other in series and their hydraulic connections are minimum 1/2".

Pump operation

When the pressure in the mains drops to a value that is not lower than 80% (the pressure in closed valve condition), the first pump set begins working automatically. In modules with two pumps, the second pump begins working before the pressure drops to a value not lower than 60%. When the pumps begin working once, they will continue working until they are (manually) stopped. EN 12845 Fire-fighting booster set can be configured as independent from the mains pressure.

Multiple modules

In booster sets with two modules, each pump meets the demanded flow rate and pressure separately. In booster sets with three modules, each pump meets 50% of the demanded flow rate and pressure.

Positive suction assembly

As much as possible, booster sets with horizontal centrifuge pumps should be mounted in positive suction conditions as follows: At least 2/3 capacity of the fire-fighting water tank should be above the pump axis.

Pump axis should not be more than 2 meters above the water level in the water tank.

It is not possible to connect the valve directly to the suction of the pump. Pump should be connected to a flat pipe with a length that is at least 2 times the suction diameter and eccentric reduction pipe with a horizontal top and not more than 20° bottom. (Eccentric suction kit) If the pump axes are above the minimum water level, then vertical flaps should be used.

Suction pipe should not be smaller than DIN 65. Moreover, the pipe should be designed in a way that the water speed will not exceed 1.8 m/second while the pump is operating at the requested maximum capacity. In cases where multiple pumps are mounted, suction pipes can be connected to each other with a collector, but this is not recommended.

Negative suction assembly

In case of negative suction assembly (suction from underground water tank), suction pipe should not be smaller than DN 80. Moreover, the pipe should be designed in a way that the water speed will not exceed 1.5 m/second while the pump is operating at the requested maximum capacity. If there are multiple pumps, suction pumps cannot be connected to each other. Pump axis should not be more than 3.2 meters above the minimum water level.



Electrical engine control panel



Diesel engine control panel



A vertical flap should be connected to the bottom of the suction pipe and each pump should be connected to the forward-feed tanks individually.

Pump electrical panel

Pump panel is as follows:

When the pump receives signal from the pressure switch, it automatically begins working. Manual operation. Stopping the pump only manually. The panel displays the following pump conditions. The availability of AC power in 3 phases, operation upon request, operating, operation fault etc. can be monitored on the panel. Moreover, the operation status can be monitored with visual and acoustic alarms in the nearby maintenance room.

Diesel engine pump modules

Diesel motor should be able to work full power at a high place with constant power output in line with ISO 3046. The pump reaches full capacity 15 seconds after it begins working. Horizontal pumps can be triggered directly. Fuel tank is manufactured from welded steel sheet, and if multiple machines are being used, fuel tank and supply of each is positioned separately. The fuel tank is positioned to a location higher than the fuel pump of the engine in a way that will provide positive pressure. However, this location is not just above the engine. There should be enough fuel for the fuel tank to meet the following conditions and to operate at full load.
- 3 hours for DT (Low danger class, water tank volume 15m³)
- 4 hours for ST (Standard danger class, water tank volume 23 m³)
- 6 hours for YTI and YTD (High danger class, water tank volume above 23 m³)

Emergency manual operation system

The emergency manual operation systems that are operated with the power supplied from both accumulators should have breakable covers. For periodic inspections, system operation should be in line with the rules defined in TS EN 12845.

Operation alarm indicator

Each of the below given status is displayed in the pump set location and maintenance room.

- A) Using a key preventing the automatic operation of the engine.
- B) Not being able to operate the engine after six attempts.
- C) Pump failure
- D) Diesel engine control mechanism failure. Warning lights should work as required.

Alarm transmission

The alarms defined in TS EN 12845 are assembled on alarm panel in the sprinkler control room or pump room, and warn visually and acoustically (75 dB) depending on the significance of the alarm.

Alarm systems are mounted to a fixed control spot in or out of the facility to transmit the alarm to the responsible individual for intervention.

ALARM AND VALVE CONTROL PANEL

Alarms can be monitored remotely as defined in the standard based on their significance.

- Signals that can be indications of fire like water flow signal are displayed as fire alarm (red alarm).
- In case of fire, the technical failures like power failure that prevents the system to work correctly are displayed as failure alarms (yellow alarm):

ALARMS FOR ELECTRICAL PUMP SET

1. When requested (pressure drop) YELLOW (visual and acoustic alarm)
2. Operation failure YELLOW (visual and acoustic alarm)
3. Operating (water flow) (fire alarm) RED (visual and acoustic alarm)
4. No power (technical failures) YELLOW (visual and acoustic alarm)
5. Pump suction valve is open GREEN (visual alarm)
6. Pump suction valve is closed RED (visual alarm)
7. Pump outlet valve is open GREEN (visual alarm)
8. Pump outlet valve is closed RED (visual alarm)
9. No water in the water tank RED (visual and acoustic alarm - stopping the pump is not allowed EN 12845)

ALARMS FOR DIESEL PUMP SET

1. Automatic mode is closed YELLOW (acoustic and visual alarm)
2. Operation failure YELLOW (visual and acoustic alarm)
3. Operating (water flow) (fire alarm) RED (visual and acoustic alarm)
4. Failure in the control system YELLOW (visual and acoustic alarm)
5. Pump suction valve is open GREEN (visual alarm)
6. Pump suction valve is closed RED (visual alarm)
7. Pump outlet valve is open GREEN (visual alarm)
8. Pump outlet valve is closed RED (visual alarm)
9. No water in the water tank RED (visual and acoustic alarm - stopping the pump is not allowed EN 12845)
10. No fuel in the fuel tank RED (visual and acoustic alarm) (when nominal level drops to 25%, "MIN FUEL" warning is displayed).

JOCKEY PUMP

1. Energy available GREEN (visual alarm)
2. Pump is operating YELLOW (visual alarm)
3. Pump failure RED (visual alarm)

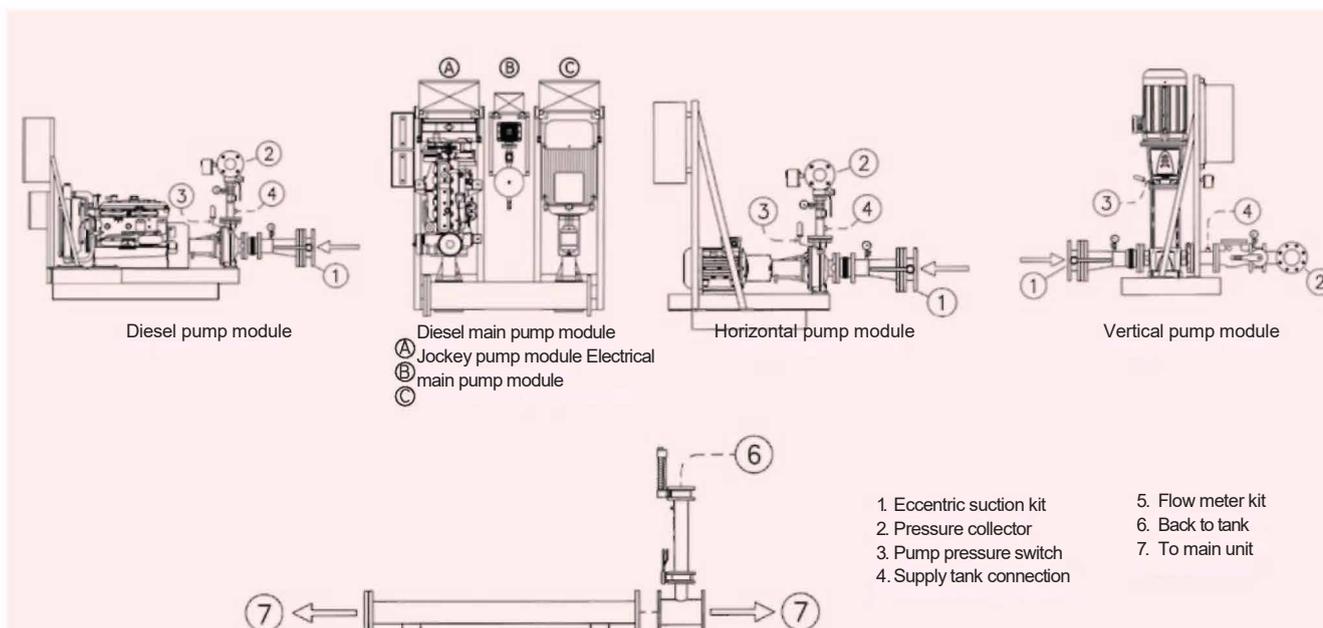


Remote monitored 12VDC Alarm and valve control panel (standard)

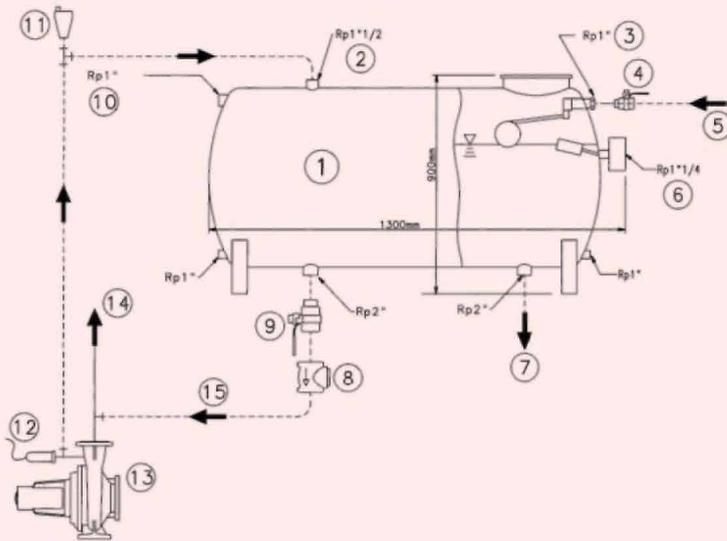
TS EN 12845 BOOSTER SET VERSIONS

Serial	Description	
KZDI	Diesel engine pump	
KZOOD	Diesel engine booster set	
KZ01D	Booster set with diesel engine pump and jockey pump	
KZ10D	Booster set with diesel engine pump and electrical engine	
KZ11D	Booster set with diesel engine, electrical engine and jockey pump	

Serial	Description	Horizontal pump series	Vertical shaft series
KZ10	Booster set with electrical engine pump		
KZ11	Booster set with electrical engine pump and jockey pump		
KZ20	Booster set with two main electrical pumps		
KZ21	Booster set with two main electrical engine pumps and jockey pump		

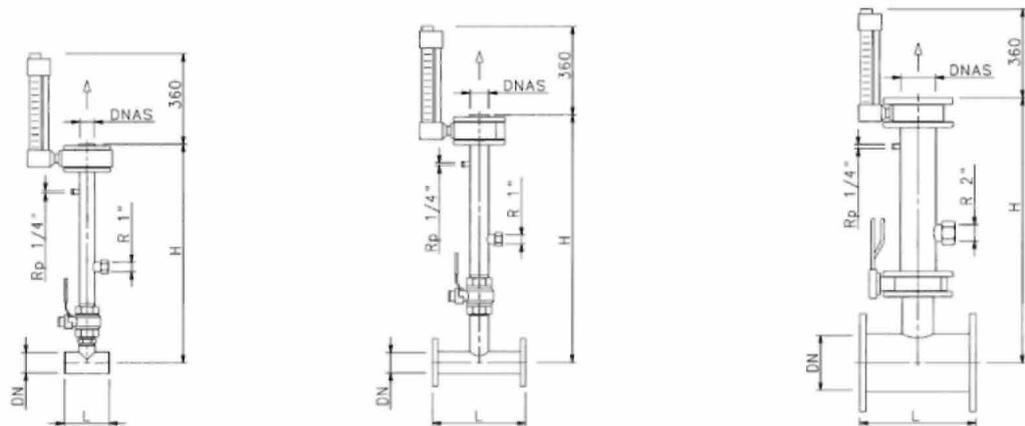


Operation / Forward-feed tank (option in case of negative suction)
Ready to be used with all connection accessories.

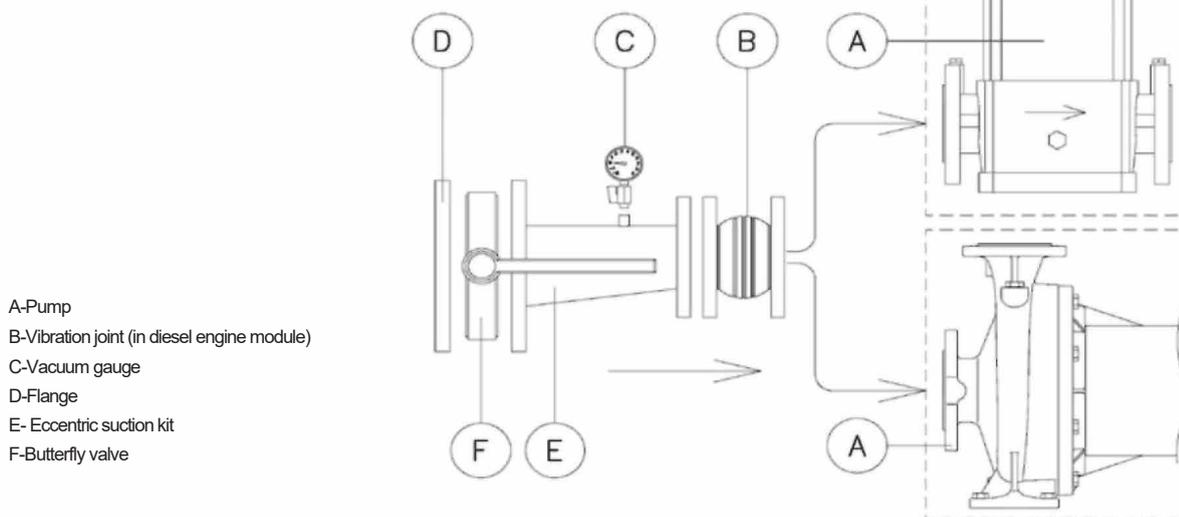


- | No | Description |
|----|--|
| 1 | Water feeding tank |
| 2 | Pump circulation pipe |
| 3 | Float switch (stop) |
| 4 | Filling valve |
| 5 | Mains |
| 6 | Low level switch |
| 7 | Discharge |
| 8 | Feed check valve |
| 9 | Feed valve |
| 10 | Overflow |
| 11 | Air relief valve |
| 12 | Pump pressure switch |
| 13 | Pump |
| 14 | To main fire-fighting system |
| 15 | Operation/Feeding tank connection |

Flow meter (optional)



Eccentric suction kit (standard)



- A-Pump
- B-Vibration joint (in diesel engine module)
- C-Vacuum gauge
- D-Flange
- E- Eccentric suction kit
- F-Butterfly valve