



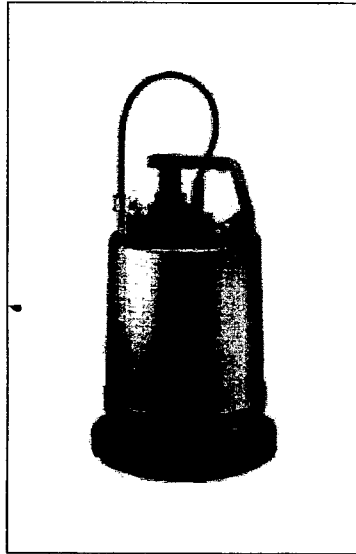
SOULAK 1006

T/m

SOULAK 1015



## *Instruction Manual*



**FSR-400 Residue Pump**

**AFEC Pumps EUROPE BV**  
Edisonstraat 12A  
7006 RD Doetinchem - NL  
Postbus 384,  
7000 AJ Doetinchem -NL  
Tel : 31 314 625 125  
Fax: 31 314 625 306  
E-mail: [info@afeceurope.com](mailto:info@afeceurope.com)

2009 Oct.

## **Pump instruction**



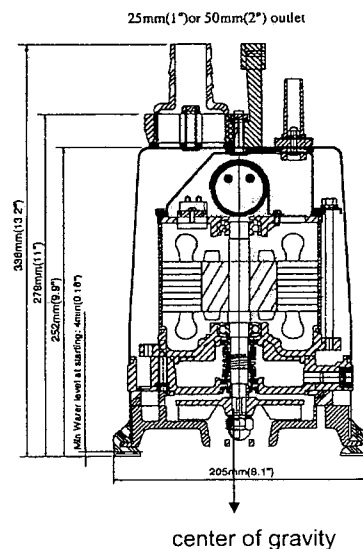
**Before operating of installing this pump, read this manual and follow all safety rules and operating instructions.**

The serial pump are suitable for water or liquid with small mixture pumping. For the safety considered, it is forbidden to try flammable, toxic, corrosive, abrasive, crystallizing, polymerizing and high-viscosity liquid.

Generally, this machine will be installed on the following conditions:

- 1) Supply voltage: 0.9 - 1.1 nominal supply voltage
- 2) Source frequency: 0.99 - 1.01 nominal frequency
- 3) Ambient temperature: 5°C - 40°C
- 4) Altitude: shall be at altitudes up to 1000m above mean sea level
- 5) Relative humidity: not exceed 50% at 40°C
- 6) Atmosphere: Free from excessive dust, acid fume, corrosive gases and salt.
- 7) Avoid exposing to direct sunlight or heat rays which can change the environmental temperature.
- 8) Avoid exposing to abnormal vibration.
- 9) Electrical equipment shall withstand the effects of transportation and storage temperature within a range of -25°C to 55°C.

If you have any question, please refer to our agency or company.



<b>PUMP <big>FEC</big> CE</b>			
No. _____			
Model _____			
Frequency	50 Hz	Discharge	25 mm
Head	11 m	Flow	0.13 m³/min
Output	0.4 kW	Phase	1 -
Voltage	230 V	Current	2.5 A
Class I		Revolution	2850/min
Code	1209	Weight	16 kg
All Favor Enterprise Co., Ltd. Made in Taiwan			

## **Safety instruction**



**Before operating of installing this pump, read this manual and follow all safety rules and operating instructions.**

1. Do not operate the equipment near potentially explosive environment.  
Do not use equipment in the presence of flammable liquids or gases.
2. Make sure the equipment grounding is properly connected before start the equipment.
3. SHUT OFF the power, before inspection, maintenance, adjustment.
4. Disposing wasted material and wasted lubricating oil shall obey the local regulation and be deeply careful.
5. Do no keep the pump inoperative long time, it had better run for exceed 15 minutes everyday.
6. The motor should be under the water surface to advance cooling the motor. Keep the temperature of the water under 45° C.
7. Never attempt to change the settings of all protective devices without consulting us.  
Other maintenance is welcome to be contacted manufacturer or our distributor.
8. These types of pumps are designed for liquid and small mixture pumping. The following shall not be used for pump life and your safety:
  - a) Flammable, toxic, abrasive, crystallizing and polymerizing liquid.
  - b) Liquid chemicals and food, alkaline and acidic corrosive liquid.
  - c) High temperature, high viscosity and high solid matter content liquid.If you have any question, please refer to our agency or company.

## **Installation**

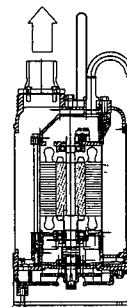


**Before installation, check your local electrical and plumbing codes. These regulations are for your safety.**

1. In order to reduce the risk of accidents during service and installation work, take extreme care and bear in mind the risk of electrical accidents.
2. Arrange the cable run so that the cables will not be kinked or nipped.
3. Connect the delivery piping, ensure the discharge hole size (refer specification), suitable pipe size and pumping direction. And the permitted force and moments on the pipe connections shall not be less than 500N.

Model	FSR-400
Outlet	25mm or 50mm

4. Place the pump on a firm surface which will prevent it from overturning or burrowing down. User shall be provided more than 0.5m around the pump for operation and maintenance. The pump can also be suspended by lifted handle slightly above the bottom.



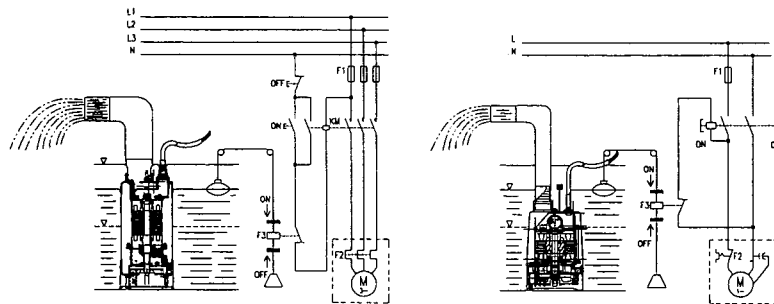
## Electrical Connections



### Warning – Electrical precautions

All wiring, electrical connections, and system grounding must comply with any local codes and ordinances. Employ a licensed electrician.

1. Be sure to provide an adequate grounding and install the leakage breaker without fail. It is important that pump should be properly grounded and provided with leakage breaker to prevent the users from serious electric shock injury.
2. Make sure if the voltage of the power supply is identical to the one indicated on the nameplate (label) of the pump. Do not plug in to other voltage and phase than what is the indicated on the nameplate.
3. Be careful the direction of rotation (for three-phase motor), when the power source is connected to the reverse phase to result the motor in wrong rotation. Please change the connection of any two incoming wires.
4. The pump must be supplied through a residual current device (RCD) with a rated residual operating current not exceeding 30mA. (EN60335-2-41: 1996 class I portable pumps)
5. Avoid unintentional starting and for the equipment safety, please install over-current protective device (circuit breaker or fuse) and over-load protective device to protective it. Recommend electrical supply and control wiring please following reference.  
 ※Recommend: over-current protection capacity setting  $\approx 1.25 \times$  motor full current  
 over-load breaker capacity setting = motor full current



F1: Over current protective device (fuse or breaker)

F2: Over load protective device (over load relay or thermal cut-off)

F3: Limits low water level switch (single-pole or 3-pole float switch)

KM: Contactor

### **Operation**



*If the thermal overload has tripped, the pump will stop and restart automatically when it has cooled down.*

*The pump shall not be used when people are in the water.*

1. Do not have a dry-run in the air, it will damage the pump.
2. Do not use the electrical cable to carry the pump. Do not lift or lower the pump by the cable, please carry with pump handle.
3. Extension of power cable - If the power cable has to be extended, select the proper cable size within the allowable extension. If cable is extended too far, a drop in voltage may occur, which will stop the running of motor and damage the pump. To prevent any possible accident, do not use the pump in the pond, swimming pool and bath tub if there are people present.
4. When the pump stops suddenly (by the motor thermal shut-off protection device).  
The motor protection device is built in to shut off the circuit automatically and to prevent the motor from burning out when the motor is overloaded due to the clogging by foreign particles or plug-in to wrong power source (Voltage, Frequency, and etc.). Should the pump stop suddenly, please check piping, pump itself, connection of electrical cable to power source, and etc., the motor protector always automatically trips off in a few seconds if there is any abnormality it gets response. Please resume the operation after clearing the trouble and leave the pump as it is.
5. Please consult your local dealers or our branch office where you purchased if you were unable to find the trouble. Unauthorized people is prohibited to disassemble or assemble as it will probably result in inferiority in performance or damage in motor.

### **Service and maintenance**



*Check the power cords, sealing medium and electrical outlet for damage or corrosion.*

*Repairs or re-assembly should only be carried out by qualified persons using original spare parts.*

You do not need to take any special care on the pumps after operation, however note the following points:

1. If pump is left in the water for a long period of time without running, pump may show signs of rusting and possibly accumulate floating matter which will shorten the life of your pump. In this case, let the pump run in the clean water and remove floating matters from the pump inside. Restore it after being dried.
2. When not in use, pump should be cleaned/ lubricated all movements and store in a dry, high or locked up place, out of reach of children and wet.
3. Please change the bearing every 5 years. You shall appoint our engineers to take the task. Don't re-assembly by yourself for your safe, because the IP protection will be fault.

### **Applications**



*The pump can not be used in an explosive or flammable environment or for pumping flammable liquid.*

*Should a person come in contact with either the pump or the pumped medium, and earth*

*leakage detector must be used.*

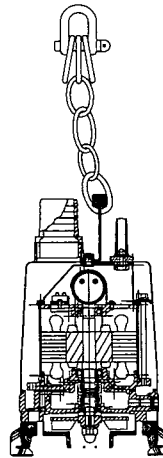
1. Newly designed double casing with circumferential flow system assures superior cooling effect. Excellent durability for long continuous running.
2. Waste water discharge for households, industries, and small municipalities.
3. Construction sites & civil engineering projects incl.: subways, tunnels, dams, and etc.
4. Utilities: telecommunications, power, generation plants.

### **Handling**



*Always lift the pump by lifting handle, never by the motor cable or hose.*

1. Always protect the cable end so that no moisture will penetrate into the cable.
2. If pump is stored for long period of time, protect it against dirt and heat.
3. The handling and transportation shall be carried-out by qualified persons.
  - To install the pump, use a cable or chain to drop it to the water bottom. Place it on the base (there is no need to use fixing bolts).
  - Do not fasten the cable or chain. Fix one of its ends to the hook.
  - When you need to use the pump, insert the hanger in the hanger hole or handle. Pull the hanger out of the hanger hole when the pump is not in use.
4. While transportation, keep attention to the balance of machine.
5. Do not lay down the unit, turn it upside down, or incline it to more than 15 degrees. The place should be level to settle the blower. Do not settle it slantwise.
  - The inlet and outlet pipeline above the water surface should have detachable flanges or joints to maintain. No need to discharge the water to hang the blower.
  - The volume of water should be kept above the lowest level.
  - The temperature of liquid should be kept below 45 °C.



### **Trouble Shooting**

To prevent serious accidents, disconnect the power supply before inspecting the pump:

Conditions	Reasons	Counter measure
Pump fails to start	No power is supplied (power outage)	Contact the electric power company or an electrical repair shop.
	Open circuit or poor connection of the cable	check if there is an open circuit in the cable or wiring
	Impeller is obstructed	Inspect the pump and remove the obstruction.
Pump starts but stops immediately, causing the motor protector to actuate.	Impeller is obstructed	Inspect the pump and remove the obstruction.
	Voltage drop	Correct the voltage to the rated voltage, or use an extension cable that meets the standard.
	A 50Hz model is operated at 60Hz	Check the nameplate and replace the pump or impeller.
	The strainer is obstructed, and the pump was operated dry for long hours	Remove the obstruction.
	Motor abnormal.	Repair the motor or replace with a new motor.
	The pump is picking up too much sediment.	Place a concrete block under the pump to prevent the pump from picking up sediment.
The pump's head and pumping volume is lower	The impeller is worn.	Replace.
	The hose may be clogged.	Minimize the number of bends in the hose, (In an area with a large amount of debris, use the pump in a meshed basket.)
	The strainer is obstructed or buried.	Remove the obstruction. Place a concrete block under the pump to prevent the pump from picking up sediment.
	The motor rotates in reverse.	Interchange the power supply terminal connection.
The pump generates noise or vibration.	The bearing of the motor may be damaged.	To replace the bearing. Contact the dealer from whom you purchased the equipment.

We declare under our sole responsibility that this product is in conformity with the following standards or standardization documents: EN60204-1: 1997 and EN809: 1998 according to the provisions of the regulation 98/37/EC, 73/23/EEC, and 89/336/EEC. This equipment must not put into service until the equipment into which it is to be incorporated has been declared in conformity with the provision of the Directive.

Geoffrey

Sneek 06-06-2010

The noise level of this pump is testing on continuous running.  
The measurement of emission sound pressure level is defined according to ISO3746.  
A-weighted sound pressure level measuring under load (pumping) is 50.2 dB(A).

The diagram is a detailed cross-sectional view of the FSR-400 pump assembly. It shows the internal rotor and stator arrangement, the inlet and outlet ports, and the various seals and bearings that ensure proper operation. The components are numbered as follows:

- 01: Outlet
- 02: Cable gland
- 04: Upper cover
- 06: Volute
- 07: Bearing bracket
- 09: Seal bracket
- 10: Inlet plate
- 13: Shaft
- 14: Rotor
- 16: Stator
- 20: Handle
- 21: Motor frame
- 22: Outer case
- 25: Bearing
- 25A: Bearing
- 27: Protector
- 30: Mech. seal
- 39: Impeller
- 42: Oil seal
- 45: Rubber stand
- 54: Capacitor
- 65: Volute cover
- 76: Bearing disc

NO	Description	Material
01	Outlet	FC / 1" or PC / 2"
02	Cable gland	NBR
04	Upper cover	SUS-304
06	Volute	NBR
07	Bearing bracket	FC-20
09	Seal bracket	FC-20
10	Inlet plate	FC-20
13	Shaft	SUS410
14	Rotor	
16	Stator	
20	Handle	PC
21	Motor frame	SUS-304
22	Outer case	SUS-304
25	Bearing	6202
25A	Bearing	6202
27	Protector	
30	Mech. seal	CE/CA + SIC/SIC
39	Impeller	PCD-45
42	Oil seal	NBR
45	Rubber stand	NBR
54	Capacitor	
65	Volute cover	SUS-304
76	Bearing disc	FC-20