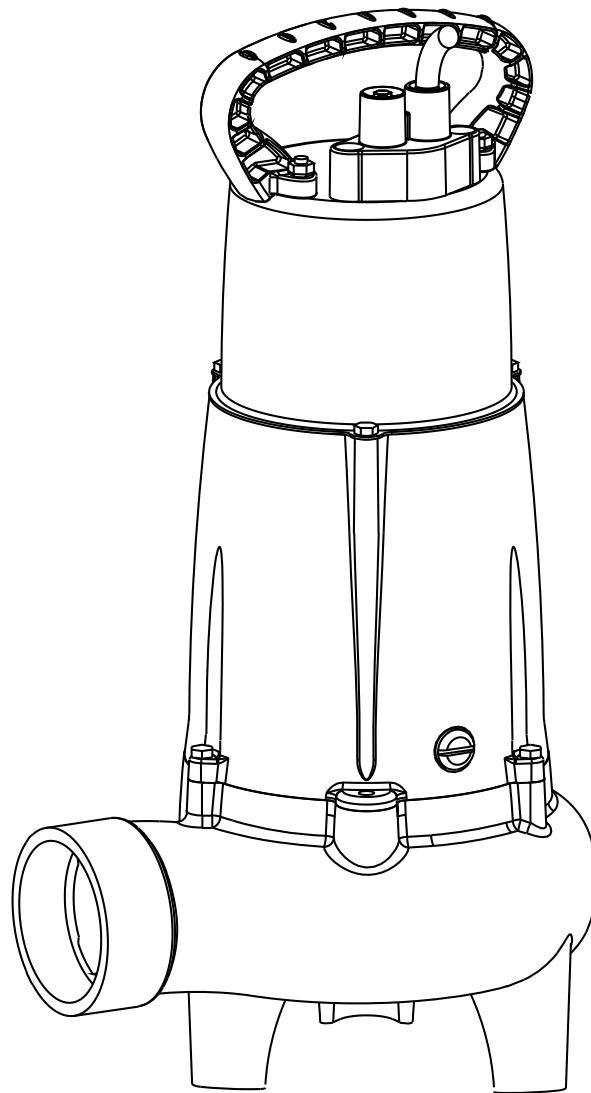


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**Light Wastewater Pump Type ABS MF 154 - 804  
Submersible Grinder Pump Type ABS Piranha 08 and 09**

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1010-00



## Installation and Operating Instructions (Original Instructions)

### Light Wastewater Pump Type ABS MF

154	354	565
154HW	404	665
324	504	804
334		

### Submersible Grinder Pump Type ABS Piranha

08
09

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# 1 General

## 1.1 Application areas

**ATTENTION** *The maximum allowable temperature of the medium pumped:  
MF 154 - 804 and Piranha 08 & 09 = 40 °C.  
MF 154HW = 80 °C.*



These pumps may not be used for the pumping of flammable or explosive fluids.

**ATTENTION** *Before using aggressive fluids check that the materials used in the pump are resistant to the particular fluid being pumped.*

**ATTENTION** *As with all electrical devices, this product may fail due to operating errors, absence of mains voltage, or even a technical defect. Such a failure may result in the medium or water escaping. If damage may occur due to such failures, measures are required to avoid damage arising. In this respect, taking account of the conditions in question, use of an emergency generator, provision of an additional and appropriately connected second unit, and particularly the use of an off-grid alarm system, are to be considered.*

The submersible wastewater pumps of the MF / Piranha series are reliable quality products designed for the following applications:

- Pumping of clear water.
- MF 154 - 804 for blockage-free pumping of faecal-free liquids with a light concentration of solids (up to 60 mm depending on model).
- MF-VO version with protective screen for locations such as building sites. For liquids with solids up to 7 mm.
- MF 154HW for the pumping of high temperature liquids up to a maximum of 80 °C. All discharge pipework from the pump must be temperature resistant accordingly and is the responsibility of the customer.
- Piranha 08 & 09 with shredding system, for sewage containing faecal matter, and liquids with a light concentration of non-abrasive solids.

## 1.2 Type of operation and frequency of starting for MF 154HW

The HW version of the MF pump is designed for short term (S2) and intermittent (S3) operation only, operating in 8-minute / 10% cycles i.e. 0.8 minutes ON / 7.2 minutes OFF.

## 1.3 Technical data

Maximum noise level ≤ 70 dB. This may be exceeded in certain circumstances.

### 1.3.1 Nameplate

We recommend that you record the data from the original nameplate in the corresponding form below, and maintain it as a source of reference for the ordering of spare parts, repeat orders and general queries. Always state the pump type, item number and serial number in all communications.

<b>SULZER</b>		CE	xx/xxxx	IP 68
Typ		Nr		
Nr		SN		
U	V	Ph	A	Hz
Qmax	m <sup>3</sup> /h	Hmax		1/min
		▽ m		
Sulzer Pump Solutions Ireland Ltd. Wexford, Ireland www.sulzer.com				
Made in Ireland				

### Legend

Typ	Pump type	
Nr.	Item Number	
SN	Serial number	
xx/xxxx	Production date (week/year)	
U	Rated voltage	V
	Rated current	A
	Frequency	Hz
P1	Rated input power	kW
1/min	Speed	min-1
Qmax	Max. flow	m <sup>3</sup> /h
Hmax	Max. head	m

1052-03

Figure 1: Standard version nameplate

▽	Max submersible depth	m
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## 2 Safety

The general and specific health and safety hints are described in detail in the separate booklet "Safety Instructions for Sulzer Products Type ABS". If anything is not clear or you have any questions as to safety make certain to contact the manufacturer Sulzer.

This unit can be used by children aged 8 years and above, and persons with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, when they have been given supervision or instruction concerning the safe use of the device and understand the hazards involved. Children must not play with the appliance. Cleaning and user maintenance should not be performed by children without supervision.

## 3 Transport



During transport the unit should not be dropped or thrown.



The unit should never be raised or lowered by the power cable.

The unit is fitted with a lifting device to which a chain and shackle may be attached for transport purposes.



Any hoist used must be adequately dimensioned for the weight of the unit.

All relevant safety regulators as well as general good technical practice must be complied with.

## 4 Set up and installation

**ATTENTION** *All relevant regulations covering sewage pumping installations, and where applicable, explosion-proof installations, must be complied with.*



The cable duct to the control panel should be made gas-tight by filling with foam after the power supply and control circuit cables have been laid.



Particular attention must be paid to the safety regulations covering work in closed areas in sewage plants as well as adherence to good general technical practices.

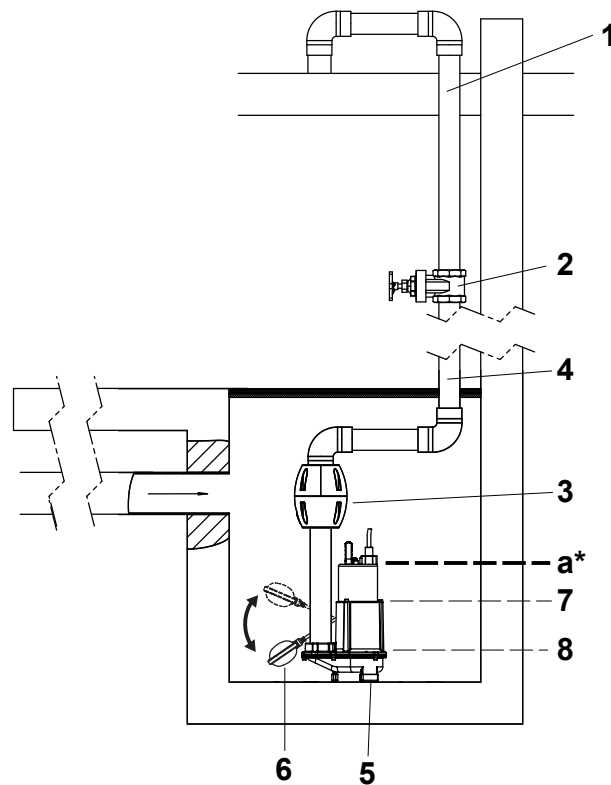
### 4.1 Discharge Line

The discharge line must be installed in compliance with relevant regulations. DIN 1986/100 and EN 12056 applies in particular to the following:

- The discharge line should be fitted with a backwash loop (180° bend) located above the backwash level and should then flow by gravity into the collection line or sewer.
- The discharge line should not be connected to a downpipe.
- No other inflows or discharge lines should be connected to this discharge line.

**ATTENTION** The discharge line should be installed so that it is not affected by frost.

#### 4.2 Installation example in concrete sump



1087-02

Figure 2: Installation example in concrete sump

#### Legend

- |                    |                                 |                    |
|--------------------|---------------------------------|--------------------|
| 1 Backwash loop    | 4 Discharge line                | 7 Switch-on level  |
| 2 Shut-off valve   | 5 Submersible pump              | 8 Switch-off level |
| 3 Non-return valve | 6 KS Float: up = on, down = off |                    |

**ATTENTION** \* Please observe the following important installation instructions as a function of the medium temperature when installing a hot water pump type MF 154HW:

- The pump can be fully immersed in the medium up to max. 60 °C temperature.
- Above 60 °C to max. 80 °C medium temperature, the maximum water level (see Figure 2, marked "a" above) must not be exceeded.

The power cable of the pump must be fixed in such a way that it cannot come into contact with the medium when above 60 °C.

Failure to follow these instructions may result in damage to the pump and/or loss of warranty.

**NOTE** Regulations for connecting to the sewer lines vary from country to country. Consult your local regulatory body.

### 4.3 Electrical connection



Before commissioning, an expert should check that one of the necessary electrical protective devices is available. Earthing, neutral, earth leakage circuit breakers etc. must comply with the regulations of the local electricity supply authority, and a qualified person should check that these are in perfect condition.

**ATTENTION** *The power supply system on site must comply with local regulations with regard to cross-sectional area and maximum voltage drop. The voltage stated on the nameplate of the pump must correspond to that of the mains.*

The power supply cable must be protected by an adequately dimensioned slow-blow fuse corresponding to the rated power of the pump.



The incoming power supply as well as the connection of the pump itself to the terminals on the control panel must comply with the circuit diagram of the control panel as well as the motor connection diagrams and must be carried out by a qualified person.

All relevant safety regulators as well as general good technical practice must be complied with.

**ATTENTION** *For use in the open air, the following regulations apply:*

Submersible pumps used outdoors must be fitted with a power cable of at least 10m length. Other regulations may apply in different countries.

In all installations, the power supply to the pump must be via a residual current device (e.g. RCD, ELCB, RCBO etc.) with a rated residual operating current not exceeding 30 mA. For installations not having a fixed residual current device the pump must be plugged into the power supply through a portable version of the device..

**NOTE** *Please consult your electrician.*

#### 4.3.1 Wiring Diagrams

##### Three Phase

50 Hz:

- MF 334D and D/KS
- MF 404D and D/KS
- MF 665D and D/KS
- MF 804D and D/KS
- Piranha 08/09D and D/KS

##### Single Phase

50 Hz:

- MF 154W, W/KS, HW and HW/KS
- MF 324W and W/KS
- MF 354W and W/KS
- MF 504W and W/KS
- MF 565W and W/KS
- Piranha 08/09W and W/KS

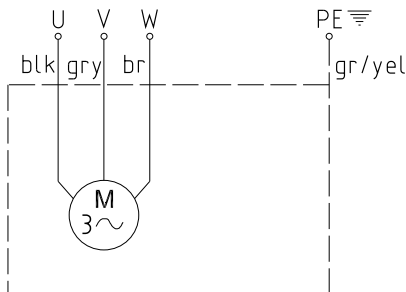


Figure 3: Three phase wiring

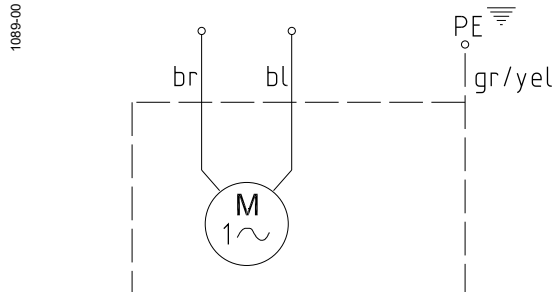


Figure 4: Single phase wiring

**NOTE:**

- U, V, W = live
- PE = earth
- gr/yel = green/yellow
- blk = black

- bl = blue
- br = brown
- gry = grey

### 4.3.2 Checking direction of rotation



The safety hints in the previous sections must be observed.

When three phase units are being commissioned for the first time, and also when used on a new site, the direction of rotation must be carefully checked by a qualified person.



When checking the direction of rotation, the submersible pump should be secured in such a manner that no danger to personnel is caused by the rotating impeller or by the resulting air flow. Do not place your hand into the hydraulic system!



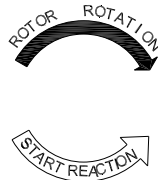
The direction of rotation should only be altered by a qualified person.



When carrying out the direction of rotation check, as well as when starting the unit, pay attention to the **START REACTION**. This can be very powerful.

#### ATTENTION

The direction of rotation is correct if the impeller rotates in a clockwise manner when viewing down from the top of the placed unit.



1019-00

#### ATTENTION

The start reaction is anti-clockwise.

Figure 5: Rotor rotation

#### NOTE

*If a number of pumps are connected to a single control panel then each unit must be individually checked.*

#### ATTENTION

*The mains supply to the control panel should have a clockwise rotation. If the leads are connected in accordance with the circuit diagram and lead designations, the direction of rotation will be correct.*

### 4.3.3 Changing direction of rotation



The safety hints in the previous sections must be observed!



The direction of rotation should only be altered by a qualified person.

If the direction of rotation is incorrect then this is altered by changing over two phases of the power supply cable in the control panel. The direction of rotation should then be rechecked.

#### NOTE

*The rotation direction measuring device monitors the direction of rotation of the mains supply or that of an emergency generator.*

## 5 Commissioning



The safety hints in the previous sections must be observed!

Before commissioning, the unit should be checked and a functional test carried out. Particular attention should be paid to the following:

- Have the electrical connections been carried out in accordance with regulations?
- Is the motor overload switch correctly set?
- Was the sump cleaned out?
- Have the inflow and outflows of the pump station been cleaned and checked?
- Is the direction of rotation correct - even if run via an emergency generator?
- Are the level controls functioning correctly?
- Are the required gates valves (where fitted) open?
- Do the non-return valves (where fitted) function easily?
- Does the pump sit correctly on the pedestal?
- Are the switching on and switching off levels set correctly?

## 6 Maintenance and service



Before commencing any maintenance work the pump should be completely disconnected from the mains by a qualified person and care should be taken that it cannot be inadvertently switched back on.



When carrying out any repair or maintenance work, the safety regulations covering work in enclosed areas of sewage installations, as well as good general technical practices, should be followed.



Servicing must only be carried out by qualified personnel.



To avoid danger if the power cable is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person.

### NOTE

***The maintenance hints given here are not designed for “do-it-yourself” repairs as special technical knowledge is required.***

### NOTE

***A maintenance contract with our Service Department will guarantee you the best technical service under all circumstances.***

### 6.1 General maintenance hints

Sulzer submersible pumps are reliable quality products each being subjected to careful final inspection. Lubricated-for-life ball bearings together with monitoring devices ensure optimum pump reliability provided that the pump has been connected and operated in accordance with the operating instructions.

Should, nevertheless, a malfunction occur, do not improvise but ask your Sulzer Customer Service department for assistance.

This applies particularly if the pump is continually switched off by the current overload in the control panel or by the alarm.

Regular inspection and care is recommended to ensure a long service life.

### NOTE

***The Sulzer service organisation would be pleased to advise you on any applications you may have and to assist you in solving your pumping problems.***

### NOTE

***The Sulzer warranty conditions are only valid provided that any repair work has been carried out in a Sulzer approved workshop and where original Sulzer spare parts have been used.***



## 6.2 Piranha shredding system

The shredding system of the Piranha is a wearing part and as such may need to be replaced. A reduction in cutting performance can reduce output. We recommend that the shredding system be inspected regularly. This is particularly so if sewage containing sand is being pumped. Regular inspection and care is recommended to ensure a long service life.

**ATTENTION** Before starting the pump ensure that the shredding rotor can rotate freely.

## 6.3 Maintenance of lifting stations in accordance with EN 12056.

It is recommended that the lifting station be inspected monthly and its function checked.

In accordance with EN regulations the lifting station should be maintained by a qualified person at the following intervals:

- in commercial premises every three months.
- in apartment blocks every six months.
- in a single family home once a year.

In addition we recommend that a maintenance contract be taken out with a qualified company.

## 6.4 Oil filling and changing

The oil chamber between the motor and the hydraulic section has been filled at manufacture with lubricating oil.

Oil fill quantity - Motor				
Pump type	Litres		Pump type	Litres
MF 334D and D/KS	N/A		MF 154W, W/KS, HW and HW/KS	N/A
MF 404D and D/KS	0.5		MF 324W and W/KS	N/A
MF 665D and D/KS	0.5		MF 354W and W/KS	0.5
MF 804D and D/KS	0.5		MF 504W and W/KS	0.5
Piranha 08/09D and D/KS	0.5		MF 565W and W/KS	0.5
			Piranha 08/09W and W/KS	0.5
Oil fill quantity - Oil chamber				
Pump type	Litres		Pump type	Litres
MF 334D and D/KS	0.02		MF 154W, W/KS, HW and HW/KS	0.02
MF 404D and D/KS	0.02		MF 324W and W/KS	0.02
MF 665D and D/KS	0.02		MF 354W and W/KS	0.02
MF 804D and D/KS	0.02		MF 504W and W/KS	0.02
Piranha 08/09D and D/KS	0.02		MF 565W and W/KS	0.02
			Piranha 08/09W and W/KS	0.02

An oil change is only necessary if a fault occurs.

## 6.5 Cleaning

If the pump is used for transportable applications then, in order to avoid deposits of dirt and encrustation, it should be cleaned after each usage by pumping clear water. In the case of fixed installation we recommend that the functioning of the automatic level control system be checked regularly. By switching the selection switch (switch setting "HAND") the sump will be emptied. If deposits of dirt are visible on the float switches then they should be cleaned. After cleaning, the pump should be rinsed out with clear water and a number of automatic pumping cycles carried out.

