
ISTRUZIONI PER L'INSTALLAZIONE E LA MANUTENZIONE (IT)
INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE (GB)
INSTRUCTIONS POUR L'INSTALLATION ET LA MAINTENANCE (FR)
INSTALLATIONS- UND WARTUNGSANLEITUNGEN (DE)
INSTRUCTIES VOOR INSTALLATIE EN ONDERHOUD (NL)
INSTRUCCIONES DE INSTALACIÓN Y MANTENIMIENTO (ES)
ИНСТРУКЦИИ ПО МОНТАЖУ И ТЕХОБСЛУЖИВАНИЮ (RU)
NÁVOD K INSTALACI A ÚDRŽBĚ (CS)
INSTRUKCJA MONTAŻU I KONSERWACJI (PL)
INSTRUÇÕES PARA A INSTALAÇÃO E A MANUTENÇÃO (PT)
ASENNUS- JA HUOLTO-OHJEET (FI)
INSTALLATIONS- OCH UNDERHÅLLSANVISNINGV (SE)
INSTRUCȚIUNI PENTRU INSTALARE ȘI ÎNTREȚINERE (RO)
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ІНСТРУКЦІЇ З МОНТАЖУ ТА ТЕХНІЧНОГО ОБСЛУГОВУВАННЯ (UA)
ИНСТРУКЦИЯ ЗА МОНТИРАНЕ И ПОДДРЪЖКАТА (BG)
安装和维护说明 (CN)
إرشادات التركيب والصيانة (AR)

FEKA VS GRINDER

ITALIANO	Pag.	1
ENGLISH	Pag.	7
FRANÇAIS	Page	12
DEUTSCH	Seite	18
NEDERLANDS	Pag.	24
ESPAÑOL	Pág.	30
РУССКИЙ	Стр.	36
ČEŠTINA	strana	42
POLSKI	strona	48
PORTUGUÊS	Pág.	54
SUOMI	sivu	60
SVENSKA	Sid.	65
ROMÂNĂ	Pag.	70
SLOVENSKÝ JAZYK	str.	76
TÜRKÇE	sf.	82
MAGYAR	oldal	88
БЪЛГАРСКИ	Стр.	94
УКРАЇНСЬКА	стор.	100
中文	页码	106
عربي	صفحة	112

CONTENTS

1. KEY	7
2. PUMPED LIQUIDS	7
2.1. Product description	8
2.2. Intended use	8
3. TECHNICAL DATA AND LIMITATIONS OF USE	8
4. WARNINGS	8
5. INSTALLATION	8
6. ELECTRICAL CONNECTION	9
7. CHECK THE DIRECTION OF ROTATION (FOR THREE-PHASE MOTORS)	10
8. START-UP	10
8.1. Adjusting the float switch	10
9. PRECAUTIONS	10
10. MAINTENANCE AND CLEANING	10
10.1. Checking and changing seal oil	11
10.2. Changing the grinder	11
10.3. Cleaning the impeller	11
10.4. Adjusting the impeller clearance	11
11. TROUBLESHOOTING	11

1. KEY

The following symbols have been used in the discussion:



Situation of general danger.

Failure to respect the instructions that follow may cause harm to persons and property.



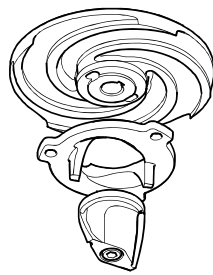
Situation of electric shock hazard.

Failure to respect the instructions that follow may cause a situation of grave risk for personal safety.



Notes

2. PUMPED LIQUIDS

FEKA VS GRINDER	
Description	
Submersible pump with ring impeller and grinder device at the front	
Free impeller passage	
Standards	
EN 12050-1	X
EN 12050-2	
Type of liquid	
Clear water	
Groundwater	
Rainwater	
Clear water containing sand	
Waste water:	
Without large solids or long fibres	X
Waste water with small solids and without long fibres.	X
Untreated sewage (with solids and long fibres)	X
Liquids containing long fibres	X
Flammable liquids (oil, petrol, etc.)	X
Aggressive liquids	X

2.1. Product description

The FEKA VS GRINDER pump is designed for pumping waste waters. The compact design makes the pump suitable for both temporary and permanent installations. The pump can be installed on a self-coupling system or free-standing on the bottom of the trap.

2.2. Intended use

The FEKA VS GRINDER pump is a single-stage submersible pump designed for pumping waste waters. FEKA VS GRINDER pumps are designed with a grinding system that grinds solid particles into small pieces so that they can be conveyed through pipes with a relatively small diameter. The pumps are used in pressurised systems, for example in hilly areas.

3. TECHNICAL DATA AND LIMITATIONS OF USE



Consult the data plate to check the following technical data:

Pos.	Description
1	Pump designation
2	Serial number
3	Model Code
4	Max. liquid temperature
5	Max. flow rate
6	Max. head
7	Min. head
8	Rated power at the shaft
9	Rated input power
10	Grade of protection IEC
11	Insulation class
12	Rated voltage
13	Rated current:
14	Frequency
15	Capacitor capacity (not applicable)
16	Number of phases
17	Level of duty
18	Country of production
19	Max. installation depth
20	Marking Ex/Quality marks
21	CE marking
22	Capacitor voltage
23	Serial number

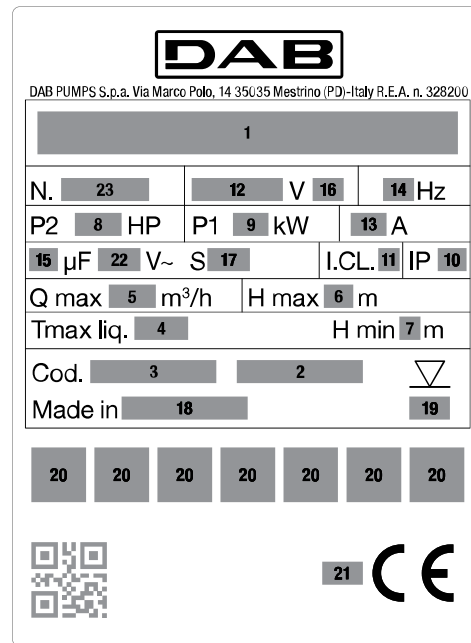


Fig. 1 Identification plate

4. WARNINGS

The pump is provided with a carrying handle which can also be used to lower it into wells or deep excavations by means of a rope. If the power supply cable is damaged in any way it must be replaced and not repaired (use cable type H07RN8-F Ø mm 9 - 9.5 with a minimum length of 10 metres for the portable version, with UNEL plug 47166-68 for the SINGLE-PHASE version and with CEE plug for the THREE-PHASE version). Skilled personnel must therefore be employed, in possession of the technical qualifications required by the Regulations in force. The pump must NEVER be allowed to run when dry.

5. INSTALLATION

If the bottom of the trap where the pump is to work is particularly dirty, a support should be provided on which to place the pump so as to avoid blocking of the suction grid (Fig.2)

Before positioning the pump, make sure that the filter is not totally or partially obstructed by mud, sediment or the like.

It is advisable to use pipes having an internal diameter at least equal to that of the delivery port, to avoid the decrease of pump performance and the possibility of blocking. In cases where the delivery pipe travels considerable distances horizontally, it is advisable for it to have a larger diameter than the delivery port.



Totally immerse the pump in the water.

For the version equipped with a float switch, ensure that the float switch can move freely (SEE PARAGRAPH ON FLOAT SWITCH ADJUSTMENT). Provide housing traps with minimum dimensions as shown in Fig.2. The dimensions of the trap must always be in relation to the quantity of water arriving and to the flow of the pump, so as not to subject the motor to excessive starts.

When the pump is intended for fixed installation with a float switch, a non-return valve must always be installed in the delivery line. This design is also recommended for pumps with manual operation

Connect the delivery pipe/hose directly to the pump outlet. If the pump is used in fixed installations, it is advisable to connect it to the piping by means of a coupling to facilitate disassembly and reinstallation. If a hose is used, fit a threaded hosetail to the pump outlet. Wrap the thread with a suitable material to ensure an effective seal (Teflon tape or similar).

For fixed installations we recommend the use of the DSD lifting device (available on request - **Fig.3**) to facilitate maintenance operations on the electric pump. Inserted between the delivery outlet of the electric pump and the piping, it avoids the disassembly of the delivery pipe during maintenance operations. The DSD device consists of 7 parts, plus one not supplied (3/4" pipes):

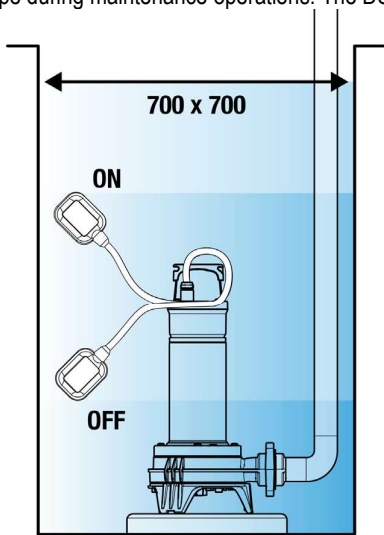


Fig. 2

The support foot should be placed on the bottom of the tank and secured with expansion screws to be sized appropriately. The pipe guide bracket should be placed on the top of the trap and inserted at the end of two 3/4" pipes (not supplied), which act as a chute. The two pipes connect the bracket to the support foot.

- A. Pipe fixing bracket
- B. 3/4" pipes (not supplied)
- C. Slide
- D. Pipe guide columns
- E. Support foot
- F. Pump
- G. Flange fixing screws

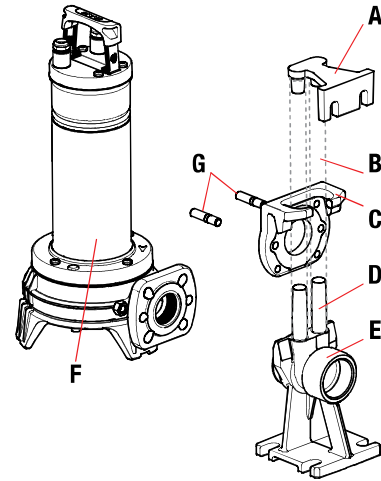


Fig. 3

6. ELECTRICAL CONNECTION



Attention: always respect the safety regulations!

The single-phase motors are equipped with built-in thermal overload protection and can be connected directly to the mains.

N.B.: if the motor is overloaded it stops automatically. Once it has cooled it starts again automatically without requiring any manual intervention.

Three-phase pumps must be protected with suitable motor protectors which are appropriately rated according to the data plate values of the pump to be installed. The plug of the pump must be connected to an EC socket complete with isolating switch and fuses.

Do not damage or cut the power supply cable. If this should occur, have the repair or replacement carried out by specialised, qualified personnel.

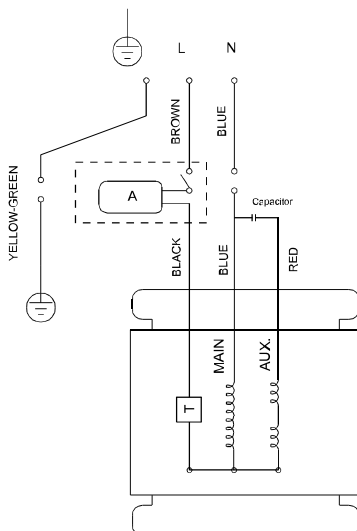


Fig.4 Electric wiring, single-phase.

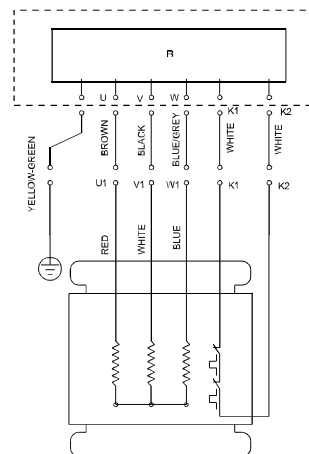


Fig.5 Electric wiring with control box, three-phase.

7. CHECK THE DIRECTION OF ROTATION (FOR THREE-PHASE MOTORS)

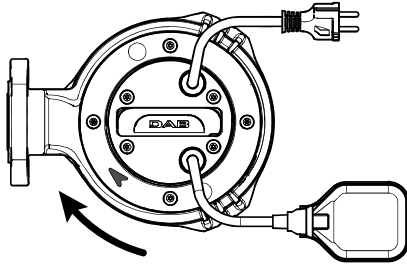


Fig.6

The direction of rotation must be checked each time a new installation is carried out.

Proceed as follows (Fig.6):

1. Place the pump on a flat surface.
2. Start the pump and stop it immediately.
3. Carefully observe the kickback on starting, looking at the pump from the motor side. The direction of rotation is correct, that is clockwise, if the protective cap moves as in the drawing (counter-clockwise).

If it is not possible to carry out the above because the pump is already installed, check as follows:

1. Start the pump and observe the water flow rate.
2. Stop the pump, turn off the power and invert two phases of the supply line.
3. Restart the pump and observe the water flow rate again.
4. Stop the pump.



The correct direction of rotation will be the one corresponding to the HIGHEST flow rate and the LOWEST power consumption!

8. START-UP

Models with a float switch are automatically put into operation when the water level rises; models without a float switch are put into operation via a switch upstream from the socket (not supplied).

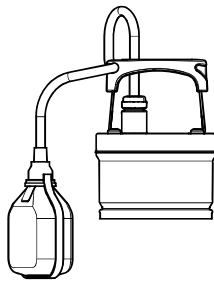


Fig.7

8.1. Adjusting the float switch

By lengthening or shortening the section of cable between the float switch and the stop point (slot in the handle - Fig.7), the START and/or STOP level of the pump is adjusted.

Ensure that the float can move freely.

Minimum stopping level 360 mm from the bottom.



During the first start-up, there may be a momentary noise caused by the presence of surface rust, formed as a result of the testing in water that each pump undergoes at the end of the production process. This condition clears up automatically when the pump is used and no further action is required. Should the noise persist, please refer to para. 11.

9. PRECAUTIONS

- The suction filter must always be present during pump operation.
- The pump must not undergo more than 20 starts/hour so as not to subject the motor to excessive thermal stress.
- **RISK OF FROST:** when the pump remains inactive at a temperature lower than 0°C, it is necessary to ensure that there is no water residue which could freeze, causing cracks in the pump components.
- If the pump has been used with substances that tend to form a deposit, rinse it after use with a powerful jet of water in order to avoid the formation of deposits or encrustations which would reduce the characteristics of the pump.



For power supply cables without a plug, provide a device for disconnection from the supply network (e.g. thermal magnetic circuit breaker) with contact opening distance of at least 3 mm for each pole.

10. MAINTENANCE AND CLEANING



In normal operation the pump does not require any type of maintenance (except for checking the seal oil), thanks to the oil-lubricated mechanical seal in the oil chamber and the lubricated-for-life bearings. The pump may not be dismantled except by skilled and qualified personnel, in possession of the qualifications required by the specific regulations on the subject. In any case, all repair and maintenance work must be carried out only after having disconnected the pump from the supply mains.

During disassembly, great care must be taken with sharp objects that can cause injury.

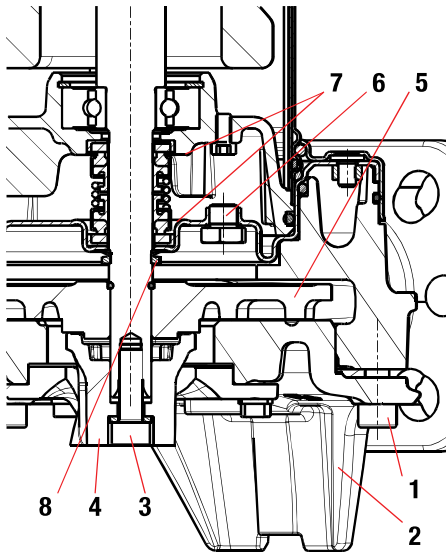


Fig. 8

10.2. Changing the grinder

See Fig.9 at the end of the booklet

10.3. Cleaning the impeller

See Fig.10 at the end of the booklet

10.1. Checking and changing seal oil

- Slacken and remove the 3 screws (1) and lift the pump base (2).
- Use pliers to hold the grinder head and slacken it and remove the screw (3).
- Remove the grinder head (4). Take the impeller (5) off the shaft.
- Retrieve the tab, the sand guard ring (8) and the two fixing half-rings. Slacken and remove the 4 body screws and lift off.
- Now turn the pump upside down, unscrew and remove the cap (6). Tilt the pump so as to drain the oil out of the hole of the cap (6) and pour it into a container.
- Analyse the oil: if it contains water or abrasive particles (e.g. sand), check the condition of the mechanical seal (7) and replace it if necessary (at a specialised centre).
- In the latter case also replace the oil with approx. 170 g of oil type MARCOL 152 ESSO.
- Restore the oil level inside the seal oil chamber by means of a special funnel inserted in the hole of the cap (6).
- Screw the cap (6) back into its seat and carry out the disassembly operations in reverse order to reassemble the pump after having applied a suitable amount of Teflon grease in the seat of the sand guard ring (8).

USED OIL MUST BE DISPOSED OF IN ACCORDANCE WITH CURRENT REGULATIONS.

10.4. Adjusting the impeller clearance

Proceed as follows:

1. Completely slacken the fixing screws.
2. Tighten the screws gently.
3. Tighten the retaining screws gently.
4. Slacken the screws by at least three turns.
5. Tighten the fixing screw by 180°.
6. Tighten the screws with a torque of 7 Nm.

11. TROUBLESHOOTING

FAULTS	CHECKS (possible causes)	REMEDIES
The motor does not start and does not make any noise.	Check that voltage is reaching the motor. Check the protection fuses. The float switch does not allow starting.	If burnt out, change them. - Check that the float can move freely. - Check that the float is efficient. (contact the supplier).
The pump does not deliver.	The suction grid or the pipes are blocked. The impeller is worn or blocked. If installed on the delivery pipe, the check valve is locked in the closed position. The liquid level is too low. At start-up, the water level must be higher than the filter level. The head required is higher than the pump's characteristics.	Remove the obstructions. Replace the impeller or remove the obstruction. Check the proper operation of the valve and replace it if necessary. Adjust the cable length of the float switch. (See paragraph "ADJUSTING THE FLOATING SWITCH").
The pump does not stop.	The float does not interrupt pump operation.	- Check that the float can move freely. - Check the efficiency of the float (contacts may be damaged - contact the supplier).
The flow rate is insufficient.	Check that the suction grid is not partially blocked. Check that the impeller or the delivery pipe are not partly blocked or encrusted. Check that the impeller is not worn. Ensure that the check valve (if contemplated) is not partially blocked. Check the direction of rotation in three-phase versions (See paragraph "CHECKING THE DIRECTION OF ROTATION").	Remove any obstructions. Remove any obstructions. Change the impeller. Accurately clean the check valve.
The thermal overload protection device stops the pump.	Check that the fluid to be pumped is not too dense as it would cause overheating of the motor. Check that the water temperature is not too high (see liquid temperature range). The pump is partially blocked by impurities. The pump is mechanically blocked.	Clean the pump thoroughly. Check for sliding between moving and fixed parts; check the wear condition of the bearings (contact the supplier).
The pump does not start.	Impeller blocked.	Remove the obstruction, wash and clean; contact DAB Service if necessary.
Absorption higher than data plate values.	Impeller blocked.	Remove the obstruction, wash and clean; contact DAB Service if necessary.
The pump is noisy	Check the direction of motor rotation in the three-phase version. Check that the knife rotates freely.	Invert the two power supply wires. Apply to the DAB assistance service.

