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**ISTRUZIONI PER L'INSTALLAZIONE E LA MANUTENZIONE**  
**INSTRUCTIONS DE MISE EN SERVICE ET D'ENTRETIEN**  
**INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE**  
**INSTALLATIONSANWEISUNG UND WARTUNG**  
**INSTRUCTIES VOOR INGEBRUIKNAME EN ONDERHOUD**  
**INSTRUCCIONES PARA LA INSTALACION Y EL MANTENIMIENTO**  
**INSTALLATIONS - OCH UNDERHÅLLSANVISNING**  
**ИНСТРУКЦИИ ПО МОНТАЖУ И ТЕХНИЧЕСКОМУ ОБСЛУЖИВАНИЮ**  
**KULLANIM VE BAKIM TALİMATLARI**  
**INSTRUCTIUNI DE INSTALARE SI INTRETINERE**  
**إرشادات للتركيب والعناية.**

**DRENAG 1400 - DRENAG 1800**  
**FEKA 1400 - FEKA 1800**  
**GRINDER 1400 - GRINDER 1800**



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## **DRENAG 1400 - DRENAG 1800 - FEKA 1400 - FEKA 1800 - GRINDER 1400 - GRINDER 1800**

### **DICHIARAZIONE DI CONFORMITÀ**

La Ditta DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALY - sotto la propria esclusiva responsabilità dichiara che i prodotti summenzionati sono conformi a:

- Direttiva del Consiglio n° 98/37/CE concernente il riavvicinamento delle legislazioni degli Stati membri CEE relative alle macchine e successive modifiche.
- Direttiva della Compatibilità elettromagnetica 89/336 e successive modifiche.
- Direttiva Bassa Tensione 73/23 e successive modifiche.

### **DECLARATION OF CONFORMITY**

The Company DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALY - declares under its own responsibility that the above-mentioned products comply with:

- Council Directive no. 98/37/CE concerning the reconciliation of the legislations of EEC Member Countries with relation to machines and subsequent modifications .
- Directive on electromagnetic compatibility no. 89/336 and subsequent modifications .
- Directive on low voltage no. 73/23 and subsequent modifications .

### **CONFORMITEITSVERKLARING**

De firma DAB PUMPS s.p.a. - Via M. Polo, 14 Mestrino (PD) - Italië, verklaart hierbij onder haar verantwoording dat hierbovengenoemde producten conform zijn aan

- de Richtlijn van de Raad nr. 98/37/CE betreffende harmonisatie van de wetgeving in de EEG-lidstaten t.a.v. machines en daaropvolgende wijzigingen.
- De richtlijnen van de elektromagnetische overeenstemming 89/336 en latere veranderingen.
- De richtlijnen voor lage druk 73/23 en latere veranderingen.

### **FÖRSÄKRAN OM ÖVERENSSTÄMMELSE**

Bolaget DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALIEN - intygar på eget ansvar att ovannämnda produkter är i enlighet med:

- Rådets direktiv nr. 98/37/CE och efterföljande ändringar som innehåller en jämkning av EU-ländernas lagstiftning beträffande maskiner.
- EMC-direktivet nr. 89/336 och efterföljande ändringar.
- Lågspänningsdirektiv nr. 73/23 och efterföljande ändringar.

### **DÈCLARATION DE CONFORMITÈ**

L'entreprise DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALIE - déclare sous sa responsabilité exclusive que les produits susmentionnés sont conformes à:

- la Directive du Conseil n° 98/37/CE concernant l'harmonisation des législations des Etats membres de la CEE relatives aux machines et ses modifications successives.
- la Directive de la compatibilité électromagnétique 89/336 et ses modifications successives.
- la Directive basse tension 73/23 et ses modifications successives.

### **KONFORMITÄTSEKTLÄRUNG**

Die Firma DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALY - erklärt unter ihrer eigenen, ausschließlichen Verantwortung, daß die genannten Produkte den folgenden Verordnungen entsprechen:

- Ratsverordnung Nr. 98/37/CE über die Angleichung der Gesetzgebung der CEE-Staaten über Maschinen und folgende Abänderungen.
- Verordnung über die elektromagnetische Kompatibilität 89/336 und folgende Abänderungen.
- Verordnung über Schwachstrom 73/23 und folgende Abänderungen.

### **DECLARACION DE CONFORMIDAD**

La Empresa DAB PUMPS s.p.a. - Via M. Polo,14 - Mestrino (PD) - ITALY - bajo su propia y exclusiva responsabilidad declara que los productos anteriormente mencionados respetan:

- Las Directrices del Consejo n° 98/37/CE referentes a la homogeneización de las legislaciones de los Estados miembros de la CEE relativas a las máquinas y sucesivas modificaciones.
- Directriz de la Compatibilidad electromagnética 89/336 y sucesivas modificaciones.
- Directriz Baja Tensión 73/23 y sucesivas modificaciones.

### **ЗАЯВЛЕНИЕ О СООТВЕТСТВИИ**

Фирма DAB PUMPS s.p.a. – Via Marco Polo, 14 Mestrino (PD) ИТАЛИЯ- под собственную исключительную ответственность заявляет, что вышеуказанные агрегаты соответствуют:

- Директиве Совета н° 98/37/СЕ касательно сближения законодательств Государств членов ЕЭС в области агрегатов и последующим поправкам.
  - Директиве об Электромагнитной совместимости 89/336 и последующим поправкам.
  - Директиве о низком напряжении 73/23 и последующим поправкам.
-

## UYGUNLUK BEYANI

Via M. Polo, 14 – Mestrino (PD) – İTALYA’da bulunan DAB PUMPS S.p.A., kendi sorumluluğunu üstüne alarak yukarıda belirtilen ürünlerin:

- AET üyelerinin makinelerle ilgili normlar ile ilişkin tamamlamalarının uyumlaştırılmasına ait 98/37/CE sayılı Avrupa Konseyi Yönetmeliğine.
- 89/336 sayılı AET Elektromanyetik Uyum Yönetmeliği ile ilişkin tamamlamalarına.
- 73/23 sayılı AET Alçak Gerilim Yönetmeliği ile ilişkin tamamlamalarına uygun olduklarını beyan eder.

شهادة مطابقة

DAB PUMPS S.p.A. الشركة  
VIA M. POLO 14  
MESTRINO (PD)  
ITALY

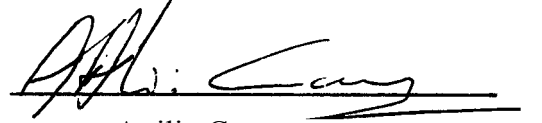
تحت مسؤوليتها الخاصة تشهد بأن المنتجات المذكورة أعلاه صنعت مطابقة إلى:  
– قانون مجلس الوزراء المؤرخ رقم 98/37/CE وما لحقه من تغييرات.  
– القانون الخاص بالمطابقة الإلكترونية ومغناطيسية 89/336 وما لحقه من تغييرات.  
– القانون الخاص بالجهد المنخفض 73/23 وما لحقه من تغييرات.

Mestrino (PD), 07 Gennaio 1998

## DECLARATIE DE CONFORMITATE

Firma DAB PUMPS s.p.a. – Strada M. Polo, 14 – Mestrino (PD) – ITALIA – declara pe proprie raspundere ca produsele mai sus mentionate sunt conforme cu:

- Directiva Consiliului n° 98/37/CE privind unificarea legislatiilor Statelor membre ale CEE referitoare la utilaje si modificarile survenite ulterior.
- Directiva Compatibilitatii electromagnetice 89/336 si modificarile survenite ulterior.
- Directiva pentru Joasa Tensiune 73/23 si modificarile survenite ulterior.



Attilio Conca  
Legale Rappresentante  
Legal Representative

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## 1. GENERAL



**Read this documentation carefully before installation.** Installation and functioning must comply with the safety regulations in force in the country in which the product is installed. The entire operation must be carried out in a workmanlike manner, exclusively by skilled personnel (paragraph 6.1), in possession of the technical qualifications indicated by the standards in force. Failure to comply with the safety regulations not only causes risk to personal safety and damage to the equipment, but invalidates every right to assistance under guarantee.

**Keep this manual with care for future consultation even after the first installation.**

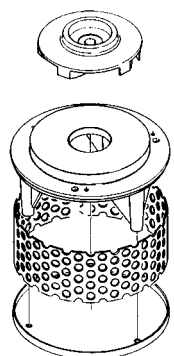
The pump must not be allowed to operate outside the limit values for flow rate, pressure, rotation speed and temperature indicated on the electric data plate or in this manual. The electric supply values indicated on the electric data plate must be strictly respected.



**These pumps cannot be used in swimming pools, ponds or tanks in which people or present, or for pumping hydrocarbons (petrol, diesel fuel, fuel oils, solvents, etc.) in accordance with the accident-prevention regulations in force.**

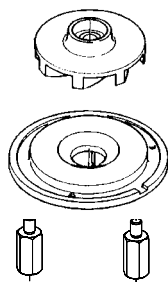
**N.B.:** the technical data plate inside the plastic envelope attached to the power cable shows the same data as the plate rivetted onto the motor cover; it is supplied in this way so that the user can attach it to the electric power supply panel. The type of pump and its characteristics can thus be identified without having to remove the pump from its place of installation.

**2. APPLICATIONS**  
**DRENAG**



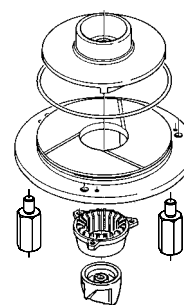
Pump of submersible type with a clearance impeller on an abrasion-resistant rubber pressure disc.

**FEKA**



Pump of submersible type with a vortex back impeller.

**GRINDER**



Pump of submersible type with grinder

**3. PUMPED FLUIDS**

	DRENAG	FEKA	GRINDER
Solid bodies passage diameter	12	38	--
Groundwater	◆	◆	◆
Rainwater	◆	◆	
Clear waste water	◆	◆	
Sewage		◆	◆
Untreated dirty water containing solid bodies and long fibres			◆
Fountain water	◆		
River or lake water	◆	◆	
Water containing sand	◆		

**4. TECHNICAL DATA AND RANGE OF USE**

- **Liquid temperature range:** from 0°C to 55°C
  - **Supply voltage**
    - 1 x 220-240 V 50Hz
    - 1 x 230 V 60Hz
    - 3 x 230 V 50/60Hz
    - 3 x 400 V 50/60Hz
- (see electric data plate)

	DRENAG		FEKA		GRINDER	
	single	three	single	three	single	three
- <b>Flow rate (m³/h):</b>	33	33	30	30	9	9

- **Max. head – Hmax (m):** pag. 95
- **Absorbed power:** see electric data plate
- **Degree of motor protection:** IP 68
- **Protection class:** F
- **Maximum environment temperature:** +55°C
- **Storage temperature:** -10°C + 40°C
- **DNM connectors:** 2" F GAS
- **Maximum immersion** 10 m
- **Noise level:** The noise level falls within the limits envisaged by EC Directive 89/392/EEC and subsequent modifications.

**4.1 Materials**

N.	PARTS	DRENAG	FEKA	GRINDER
1	PUMP BODY		CAST IRON 200 - UNI ISO 185	
4	IMPELLER		CAST IRON 200 - UNI ISO 185	
7	ROTOR SHAFT		STAINLESS STEEL AISI 416 X12CrS13 UNI 6900/71	
10	MOTOR CASING		CAST IRON 200 - UNI ISO 185	
16	MECHANICAL SEAL	SILICONE CARBIDE	CARBON/ CERAMIC	SILICONE CARBIDE
42	INTAKE FILTER	STAINLESS STEEL AISI 304 X5CrNi 1810-UNI 6900/71	--	--
77	PROTECTION CAP		CAST IRON 200 - UNI ISO 185	
120	HANDLE		STAINLESS STEEL AISI 304 X5CrNi 1810-UNI 6900/71	
147	GRINDER ROTATING PART	--	--	TEMPERED STAINLESS STEEL
148	GRINDER ROTATING PART	--	--	TEMPERED STAINLESS STEEL
--	SCREWS		STAINLESS STEEL AISI 304 X5CrNi 1810-UNI 6900/71	

**5. MANAGEMENT**

**5.1. Storage**

All the pumps must be stored indoors, in a dry, vibration-free environment; they are supplied in their original packaging and must remain there until the time of installation.

## 5.2. Transport

Avoid subjecting the products to needless jolts or collisions.

To lift and transport the electropump, while it is still in its original packaging, use fork-lift trucks and the pallet supplied standard.

The pumps are provided with a carrying handle which may also be used to lower them into wells or deep holes with a rope or chain.



**NEVER USE THE POWER CABLE TO MOVE THE ELECTROPUMP.**

## 5.3. Dimensions and weights

The adhesive label on the package indicates the total weight of the electropump. The dimensions are given on page 90.

## 6. WARNINGS

### 6.1. Skilled technical personnel



**Installation must be carried out by skilled personnel in possession of the technical qualifications required by the specific legislation in force.**

The term **skilled personnel** means persons whose training, experience and instruction, as well as their knowledge of the respective standards and requirements for accident prevention and working conditions, have been approved by the person in charge of plant safety, authorizing them to perform all the necessary activities, during which they are able to recognize and avoid all dangers. (Definition for technical personnel IEC 364).

### 6.2. Safety

Use is allowed only if the electric system is in possession of safety precautions in accordance with the regulations in force in the country where the product is installed.

### 6.3. Responsibility



**The Manufacturer does not vouch for correct operation of the pumps if they are tampered with or modified, run outside the recommended work range and/or without the use of our control and protection panels described below.**

**The manufacturer declines all responsibility for possible errors in this instructions manual, if due to misprints or errors in copying. The company reserves the right to make any modifications to products that it may consider necessary or useful, without affecting the essential characteristics.**

## 7. INSTALLATION

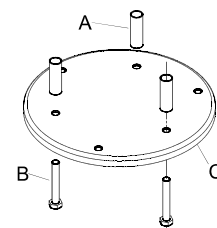
7.1. Ensure that the minimum dimensions of the wells or boreholes comply with the installation drawings on page 90-91-92. The size of the borehole must be in relation to the quantity of incoming liquid so that the motor is not subjected to an excessive number of starts (max. 30 per hour - max 20 for GRINDER 1400 M per hour)

7.2. Arrange the borehole in such a way that any solid parts present in the liquid are forced to flow towards the intake aperture of the pump, reducing as far as possible the formation of deposits or sediments that would be difficult to lift. The jet of flowing liquid must not interfere directly with the conveying movement of the pump.

7.3. Always respect the diameter of the delivery pipes (2" or larger); although a reduction in diameter would not cause damage to the pump, it could cause a reduction of the flow rate, thus leading to clogging when pumping dirty liquids.

7.4. To reduce backflow to a minimum it is advisable to fit a check valve on the delivery, suitable for operation with dirty liquids. If the pump is used for working in a sewer, the delivery pipe must rise to a height higher than that of the manifold, then go back down to enter the manifold.

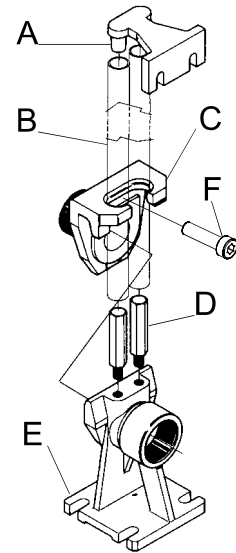
7.5. For mobile installations of FEKA and GRINDER electropumps we advise the use of the **Support disc kit** (available on request - Fig. 1) to prevent the pump from sinking into the soil during operation due to the effect of suction. The kit is composed of a a steel support disc (C), three spacer columns (A) and three screws TE M8x55 (B) for anchoring to the feet of the pump. Always do everything possible to provide a firm base.




(Fig. 1)

- 7.6. For fixed installations we advise the use of the lifting device DSD2 (available on request - fig. 2) to facilitate pump maintenance operations. When fitted between the pump delivery aperture and the pipe, it avoids having to remove the delivery pipe during maintenance jobs. The DSD2 device is composed of 5 parts:

- A. Pipe anchoring bracket
- B. 3/4" pipes (not supplied)
- C. Slide
- D. Pipe guide columns
- E. Foot
- F. Screw TCEI M10X35




(Fig. 2)

- 7.7.  Particular care must be taken in positioning the floats. The command for starting the pump must be given before the level of the liquid reaches the cover of the borehole. The command for stopping the pump must be given before the level of the liquid uncovers the top of the pump (see drawings on page 90- Ref. A - minimum level for continuous duty). The float must never rest on the bottom of the borehole or touch against the cover, if there is one. Care must also be taken to ensure that the float does not catch on protruding parts or other obstacles in the borehole.




**For continuous duty the pump must always be completely immersed in the liquid to be pumped.**

- 7.8.  Be very careful during installation or maintenance of the GRINDER pump as on the intake cover, over the intake aperture, there is a very sharp grinding device which could cause serious problems if you were to touch it with your hands during work.  
**Never put your hands under the pump when it is connected to the power mains**

8. **ELECTRICAL CONNECTION**

**CAUTION! ALWAYS FOLLOW THE SAFETY REGULATIONS.**

- 8.1.  **The electrical connections must be made exclusively by skilled personnel (see point 6.1) as required by the safety regulations in force in the country in which the product is installed.**

8.2. Ensure that:

- the system is correctly made;
- the mains voltage is the same as the value shown on the data plate;
- **THERE IS THE POSSIBILITY OF MAKING A GOOD EARTH CONNECTION.**

8.3. Check accurately to ensure that the protections have been correctly installed.

- **Fixed pumping stations must always be provided with an automatic switch with an intervention current of less than 30 mA.**
- **The pump must not operate without overload protection and a suitable motor protector.**

8.4. Depending on the pump to be installed, for correct installation one of the following electronic panels (supplied on request) must be used:

**ED 3 M**

Electric control panel for the protection and automatic operation by float(s) of single-phase electropumps type DRENAG 1400 M et FEKA 1400 M. Supplied complete with knife switch for isolating the power supply line. Contains the capacitor, the automatic magnetothermal switch for protection against overloads and short circuits with manual reset, the thermal protection with manual reset for connection to the wires KK coming from the motor, the terminal board for connecting the electropump and the float(s). Complete with terminals for connecting an alarm float and terminals for feeding an acoustic or luminous remote alarm to warn when it has tripped. Provided with a MANUAL operation button. Internal transformer complete with self-resetting protection against overloads and short circuits, cutting off the feeding voltage for three minutes.

**ED 3 M Hs**

Electric control panel for the protection and automatic operation by float(s) of single-phase electropumps type GRINDER 1400 M. Supplied complete with knife switch for isolating the power supply line. Contains the capacitors (one for increasing the starting torque), the automatic magnetothermal switch for protection against overloads and short circuits with manual reset, the thermal protection with manual reset for connection to the wires KK coming from the motor, the terminal board for connecting the electropump and the float(s). Complete with terminals for connecting an alarm float and terminals for feeding an acoustic or luminous remote alarm to warn when it has tripped. Provided with a MANUAL operation button. Internal transformer complete with self-resetting protection against overloads and short circuits, cutting off the feeding voltage for three minutes.

**ED 2.5 T**

Electric panel for the protection and automatic operation with float(s) of three-phase electropumps type DRENAG 1800 T, FEKA 1800 T and GRINDER 1800 T. Supplied complete with an insulating switch of the supply line with door locking handle which may be padlocked. Contains the automatic magnetothermal switch with manual reset and red warning light for protection against overloads and short circuits, the thermal protection with manual reset for connection to leads KK from the motor, the protection against lack of phase with manual reset, the terminal board for connection of the electropump and of the float(s). Complete with terminals for connection of an alarm float and with terminals for feeding an acoustic or luminous remote alarm to give warning of intervention. Provided with a MANUAL - 0 - AUTOMATIC operation selector. Internal transformer complete with self-resetting protection against overloads and short circuits, which cuts out the supply voltage for three minutes.

**E2D 6 M**

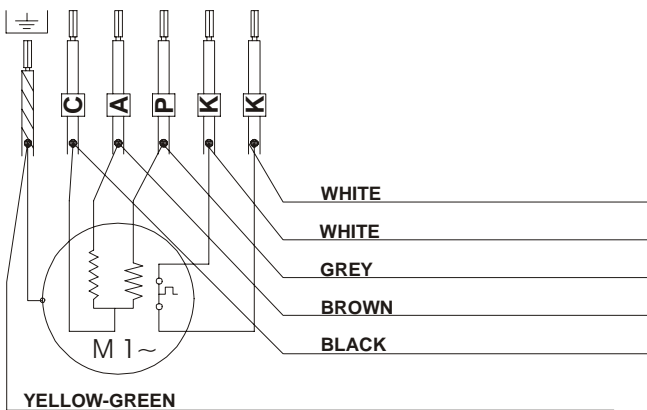
Electric control panel for the protection and automatic operation by floats of single-phase electropumps type DRENAG 1400 M and FEKA 1400 M, installed in pairs. Supplied complete with knife switch for isolating the power supply line. Contains the capacitors, the automatic magnetothermal switches for protection against overloads and short circuits with manual reset, the thermal protection with manual reset for connection respectively to the wires KK coming from the motor, the terminal board for connecting the electropump and the floats. Complete with terminals for connecting an alarm float and terminals for installing an acoustic or luminous remote alarm to warn when it has tripped. Provided with a MANUAL operation button for each electropump. In automatic operation, the starting order of the two pumps is inverted at each start and one will switch on in the event of breakdown of the other. Possibility of simultaneous operation of the two pumps by means of the float control. Internal transformer complete with self-resetting protection against overloads and short circuits, manually cutting off the feeding voltage for three minutes.

**E2D 5 T**

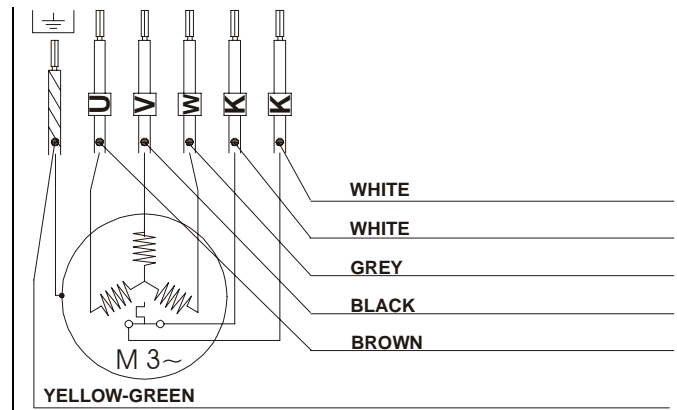
Electric panel for the protection and automatic operation with floats of three-phase electropumps type DRENAG 1800 T, FEKA 1800 T ad GRINDER 1800 T, installed in pairs. Supplied complete with an insulating switch of the supply line with door locking handle which may be padlocked. Contains the automatic magnetothermal switches with manual reset and red warning lights for protection against overloads and short circuits, the thermal protection with manual reset for connection respectively to the KK leads from the motors, the terminal board for the connection of the electropumps and of the floats. Complete with terminals for connection of an alarm float and with terminals for fitting an acoustic or luminous remote alarm to give warning of intervention. Provided with a MANUAL - 0 - AUTOMATIC operation selector for each electropump. With both switches in automatic mode there is automatic inversion of the starting order of the pumps at each start end activation of one of the two in the event of breakdown of the other. Possibility of simultaneous operation of two pumps by controlling the floats. Internal transformer complete with self-resetting protection against overloads and short circuits, which cuts out the supply voltage for three minutes.

8.5. For installing electropumps without using our panels, provide a control and protection panel, bearing in mind the indications concerning the identification of the leads give on the tag on the end of the pump supply cable (shown also in fig. 3-4).

The Manufacturer does not vouch for correct operation of the pumps if they are run without the use of our control and protection panels.



(Fig. 3)



(Fig. 4)

8.6. **Protect all electrical connections from moisture. Any joints must be absolutely watertight when immersed.**

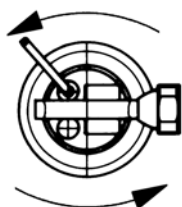


**ATTENTION: SOME JOINS MUST BE MADE USING CABLE WITH THE SECTION INDICATED IN TABLE 8.1.**

table 8.1

<b>Drenag 1400 M - Feka 1400 M</b>	<b>Grinder 1400 M</b>
up to 30 mt. cable 5P+E with section 1.5 mm <sup>2</sup> up to 50 mt. cable 5P+E with section 2.5 mm <sup>2</sup> up to 80 mt. cable 5P+E with section 4 mm <sup>2</sup>	up to 25 mt. cable 5P+E with section 1.5 mm <sup>2</sup> up to 40 mt. cable 5P+E with section 2.5 mm <sup>2</sup> up to 60 mt. cable 5P+E with section 4 mm <sup>2</sup>
<b>Drenag 1800 T - Feka 1800 T - Grinder 1800 T</b>	
up to 60 mt. cable 5P+E with section 1.5 mm <sup>2</sup> up to 100 mt. cable 5P+E with section 2.5 mm <sup>2</sup> up to 160 mt. cable 5P+E with section 4 mm <sup>2</sup>	

## 9. CHECKING THE DIRECTION OF ROTATION (for three-phase motors)



(FIG. 5)

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

Proceed as follows (Fig. 5):

- 1) Place the pump on a flat surface.
- 2) Start the pump and stop it immediately.
- 3) Carefully observe the kick-back on starting, looking at the pump from the motor side. **The direction of rotation is correct, that is clockwise, if the protection cap moves as in the drawing (anti-clockwise).**
- 4) If the motor is turning in the wrong direction, switch off the power and invert two phases on the supply line (upstream from the control unit).

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

- 1) Start the pump and observe the water flow rate.
- 2) Stop the pump, switch off the power and invert two phases on the supply line (upstream from the control unit).
- 3) Restart the pump and check the water flow rate again.
- 4) Stop the pump.

**The correct direction of rotation is the one that gives the higher flow rate.**

**It is not necessary to check the direction of rotation of single-phase motors.**

## 10. MAINTENANCE AND CLEANING



**Maintenance may be carried out on the machine by skilled personnel in possession of the qualifications indicated by the standards in force.**

Thanks to the mechanical seal in an oil chamber and to the sealed-for-life maintenance-free bearings, DRENAG, FEKA and GRINDER electropumps ensure continuous and constant operation with minimum maintenance. A certain amount of wear of the mechanical seal is inevitable and is accelerated when pumping water containing sand or other abrasive materials. It is therefore advisable to check regularly the sealing oil level, the clearances and the wear of the hydraulic parts..

### 10.1. Checking and changing the impeller

#### 10.1.1 Drenag

Unscrew the three screws (136), remove and extract the strainer cover (92) and slip the strainer (42) out of the intake cover (35). Remove the intake cover (35). If the impeller (4) is worn, place the pump in a vertical position with the impeller facing upwards so as to prevent the leakage of seal oil. Unscrew the allen screw (71), retain the spring washer (43) and the impeller locking washer (63). Remove the impeller (4) with a special extractor and retain the key (17). Change the impeller and reassemble proceeding in an inverse order, securing the screw (71) with a suitable locking compound.

#### 10.1.2 Feka

Unscrew the three screws (93) and remove the intake cover (35), levering on the pump body (1) with a screwdriver. If the impeller (4) is worn, place the pump in a vertical position with the impeller facing upwards so as to prevent the leakage of seal oil. Unscrew the allen screw (71) (if necessary, heat the piece with a blowlamp to make the job easier), retain the spring washer (43) and the impeller locking washer (63). Remove the impeller (4) with a special extractor and retain the key (17). Change the impeller and reassemble proceeding in an inverse order, securing the screw (71) with a suitable locking compound..

#### 10.1.3 Grinder

Unscrew the three screws (62) of the fixed part (148) of the grinding device and remove the device from its seat, if necessary with the aid of a screwdriver. Place the pump in a vertical position with the impeller facing upwards so as to prevent the leakage of seal oil. Block the impeller (4), inserting a screwdriver in the pump delivery aperture, between the impeller and the intake cover (35). Unscrew the allen screw (71) (if necessary, heat the piece with a blowlamp to make the job easier), retain the spring washer (43) and remove the rotating part (147) of the grinding device from its seat. Unscrew the three screws (93) and remove the intake cover (35). If the impeller (4) is worn, remove it from its seat in the motor shaft (7) using a special extractor and retain the key (17). Change the impeller and reassemble proceeding in an inverse order, securing the screw (71) with a suitable locking compound.

**10.2. Checking and changing the grinding device on Grinder electropumps**

If a gradual decrease of flow rate is noted, due presumably to possible clogging of the intake aperture, it is advisable to check and, if necessary, change both the rotating part and the fixed part of the grinding device, as it may have lost its grinding capacity.

**Periodic checking of the grinding device may be made to coincide with scheduled maintenance of the seal oil level.**

**10.3. Checking and changing the seal oil**

## 10.3.1 Checking the seal oil

For good pump operation the oil must be checked about every 2000 working hours and changed at least once a year. Check the oil with the pump in vertical position, unscrewing the cap provided (64) and ensuring that the oil level is just below the hole. Top up if necessary.

## 10.3.2 Changing the seal oil

Unscrew the cap (64), drain the oil chamber with the pump in horizontal position (hole facing downwards) and collect the oil in a container. If the oil contains particles of water or abrasive material (for example, sand) it is advisable to check the condition of the mechanical seal (16) and change it if necessary.



**Old oil must be disposed of in conformity with the laws in force.**

Fill with new oil through the hole provided, with the pump in vertical position, using about 0.3 kg of non-foaming hydraulic oil for DRENAG and GRINDER and about 0.4 kg for FEKA pumps.



**ATTENTION: The seal chamber must never be completely filled, but only up to the level of the hole, to leave room for thermal expansion of the oil.**

**10.4. Checking and changing the mechanical seal**

## 10.4.1 Checking the mechanical seal

Check as described in paragraph 10.3.2 "Changing the seal oil".

## 10.4.2 Changing the mechanical seal

Once the impeller (4) has been dismantled, remove the spring and the centring disc of the rotating part of the mechanical seal (16). Levering with two screwdrivers on the pump body, slip the rotating part of the mechanical seal (16) off the shaft (7), taking care not to spoil the sliding faces. Repeat the operation to remove the fixed part of the mechanical seal (16), levering on the seal's external diameter.

To fit the new mechanical seal, proceed as follows: the seat of the pump body containing the fixed part of the mechanical seal (16) must be free from residue, scale, oxides, etc. Insert the fixed part of the mechanical seal, complete with gasket, in the seat in the pump body (1), using a pad protected with plastic. The movement of the pad must be perfectly in line with the axis of the part. To reassemble the rotating part of the mechanical seal (16), cap the end of the shaft with the tapered pin provided. Slip the rotating part of the seal (16) onto the pin and press firmly with a special sleeve until the seal is securely fitted on the shaft. Before carrying out this operation, always ensure that the contact surfaces of the seal are both perfectly clean. Fit the spring and the centring disc.

**10.5. Resetting clearance**

After a large number of working hours, for DRENAG and GRINDER pumps, it may be necessary to adjust the clearance between the impeller (4) and the intake cover (35). In this case proceed as follows:

## 10.5.1 Drenag

Unscrew the three screws (136), remove the strainer cover (92) and the intake strainer (42). Slacken the three screws TCEI M8 (93) and unscrew the three screws STEI M6 (135) by about 4 turns. Ensure that the intake cover (35) touches the impeller (4). Then tighten the three screws STEI M6 (135) until they touch the pump body (1) and give them a final turn in a clockwise direction to restore the correct distance between the impeller (4) and the intake cover (35). Tighten the three screws TCEI M8 (93), reposition the intake strainer (42) and the strainer cover (92) and secure with the screws TE M8 (136).

## 10.5.2 Grinder

Slacken the three screws TCEI M8 (93) and unscrew the three screws STEI M6 (135) by about 4 turns. Ensure that the intake cover (35) touches the impeller (4). Then tighten the three screws STEI M6 (135) until they touch the pump body (1) and give them a final turn in a clockwise direction to restore the correct distance between the impeller (4) and the intake cover (35). Tighten the three screws TCEI M8 (93).

**11. MODIFICATIONS AND SPARE PARTS**

Any modification not authorized beforehand relieves the manufacturer of all responsibility. All the spare parts used in repairs must be original ones and the accessories must be approved by the manufacturer so as to be able to guarantee maximum safety of the machines and systems in which they may be fitted.

**12. TROUBLESHOOTING**

(see also the instructions booklet supplied with the electronic panel used)

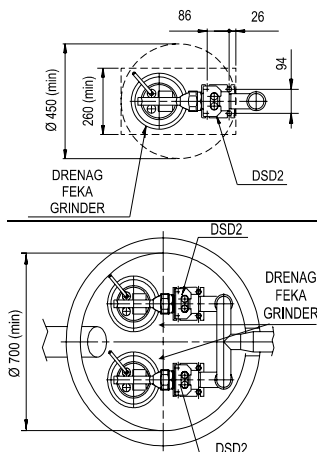
FAULT	CHECK (possible causes)	REMEDY
1. The motor does not start and makes no noise.	A. Check that the motor is live. B. The magnetothermal switch of the panel or the differential automatic switch on the distribution panel have tripped.  C. Check the float switch contacts and ensure that the float moves freely.	B. Check the insulation of the pump cables, of the pump or of the floats. Reset the magnetothermal switch located in the panel or the differential switch on the distribution panel.  C. Change the float(s) if the contacts are broken; free the float(s) from any obstructions.
2. The motor does not start but makes noise.	A. Ensure that the mains voltage corresponds to the voltage on the data plate. B. Check that the connections have been made correctly. C. Check that all the phases are present (for three-phase versions). D. The motor shaft is blocked.	B. Correct any errors.  C. If not, restore the missing phase.  D. Look for possible obstructions in the pump or motor. Remove any obstructions.
3. The motor turns with difficulty.	A. Check the supply voltage which may be insufficient. B. Check whether any moving parts are scraping against fixed parts.	B. Eliminate the cause of the scraping.
4. The pump does not deliver.	A. The intake aperture (grid, grinder, etc.) or the delivery pipes are blocked. B. The impeller is worn or blocked.  C. The required head is higher than the pump characteristics.	A. . Remove the blockage.  B. Change the impeller or remove the blockage. C. Try to eliminate load losses as far as possible.
5. The flow is insufficient.	A. Ensure that the intake or the delivery pipe is not blocked. B. On three-phase pumps, check that the direction of rotation is correct.  C. Ensure that the diameter of the delivery pipe is sufficient.	A. Remove any blockage.  B. Switch off the power and invert the connection of two supply wires (upstream from the control unit, if fitted). C. If necessary, replace the delivery pipe with one with a larger diameter.

	DRENAG				FEKA			GRINDER			
	(I)	(F)	(GB)	(D)	(NL)	(E)	(S)	(RU)	(TR)	(RO)	(n)
A	livello minimo per funzionamento continuo	niveau minimum pour fonctionnement continu	minimum level for continuous duty	Mindesthöhe für Dauerbetrieb	minimumpeil voor continuwering	nivel mínimo para el funcionamiento continuo	min. nivå för konstant drift	Минимальный уровень для непрерывного функционирования	Devamlı çalışma için asgari seviye	Nivel minim pentru functionarea continua	مستوى أدنى لعمل مستمر
B	livello minimo residuo in funzionamento manuale	niveau minimum résiduaire en fonctionnement manuel	minimum residual level in manual operation	verbleibende Mindesthöhe bei Handbetrieb	minimumrestpeil bij handbediening	nivel mínimo residual en funcionamiento manual	min. resterande nivå vid manuell drift	Минимальный уровень для функционирования в ручном режиме	El ile çalışma modunda kalan asgari seviye	Nivel minim rezidual la functionarea manuala	مستوى أدنى متبقي بعمل يدوي
C	dimensione minima base del pozzetto	dimension minimum base du puisard	minimum dimension of borehole base	Mindestabmessungen Schacht-Basis	minimum afmeting rioolputbasis	dimensión mínima base del pozo	brunnens min. basmått	Минимальные размеры площади колодца	Kuyu tabanının asgari ölçüsü	Dimensiune minima baza put	مقياس أدنى لتقاعدة البئر
D	dimensione minima altezza del pozzetto	dimension minimum hauteur du puisard	minimum borehole height	Mindestabmessungen Schacht-Höhe	minimum afmeting rioolputhoogte / diepte	dimensión mínima altura del pozo	brunnens min. höjdmått	Минимальная высота колодца	Kuyu yüksekliği asgari ölçüsü	Dimensiune minima inaltime put	مقياس أدنى لعلو البئر

14. ESEMPI DI INSTALLAZIONE / EXEMPLES D'INSTALLATION / EXAMPLES OF INSTALLATION/INSTALLIERUNGSBEISPIELE  
 INSTALLATIEVOORBEELDEN / EJEMPLOS DE INSTALACION / EXEMPEL PÅ INSTALLATION/ ПРИМЕРЫ МОНТАЖА  
 GENEL MONTAJ FORMLARI / EXEMPLE DE INSTALARE / أمثال تركيب

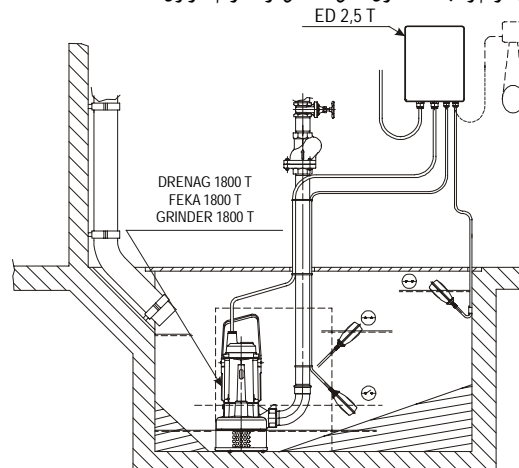
Dimensioni minime coperchio pozzetto per impianti previsti con DSD2 (vista in pianta).  
 Dimensions minimum couvercle puisard pour installations prévues avec DSD2 (vue en plan).  
 Minimum dimensions of borehole cover for systems provided with DSD2 (layout view).  
 Mindestabmessungen des Schachtdeckels für mit DSD2 vorgesehene Anlagen (Ansicht von oben).  
 Minimumafmetingen rioolputdeksel voor installaties voorzien van DSD2 (zicht op tekening).  
 Dimensiones mínimas de la tapa del pozo para instalaciones previstas con DSD2 (vista en plano).  
 Min. dimensioner för brunnlock för anläggningar som är utrustade med DSD2 (planvy).  
 Минимальные размеры крышки колодца для систем, оснащенных DSD2 (общий вид).  
 DSD2 tipi kaldırma tertibatı ile donatılan tesislerde kuyu kapağının asgari boyutları (plan görünüşü).  
 Dimensiuni minime capac put pentru instalatiile prevazute cu DSD2 (vedere in plan).

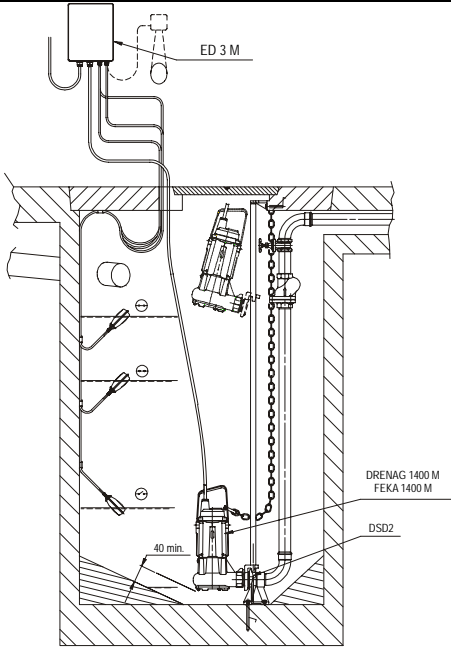
مقاييس أدنى لغطاء البئر لأجهزة مهيأة مع DSD2 (المبين بالخارطة)



Impianto fisso con 1 elettropompa tipo Drenag 1800 T o Feka 1800 T o Grinder 1800 T, completa di quadro ED 2,5 T, con un galleggiante controllo livello MIN/MAX e 1 galleggiante di allarme  
 Installation fixe avec 1 électropompe type Drenag 1800 T ou Feka 1800 T ou Grinder 1800 T, avec coffret ED 2,5 T, avec un interrupteur à flotteur de contrôle de niveau MIN/MAX et 1 interrupteur à flotteur d'alarme  
 Fixed system with 1 electropump type Drenag 1800 T or Feka 1800 T or Grinder 1800 T, complete with panel ED 2,5 T, with one MIN/MAX level control float and one alarm float.  
 Feste Anlage mit 1 Elektropumpe DRENAG 1800 T oder FEKA 1800 T oder GRINDER 1800 T, komplett mit Schalttafel ED 2,5 T, mit einem Schwimmer zur Kontrolle des MIN/MAX-Standes = 1 Alarm-Schwimmer  
 Vaste installatie met 1 electropomp type Drenag 1800 T of Feka 1800 T of Grinder 1800 T, compleet met paneel ED 2,5 T, met één drijver voor MIN/MAX-peilcontrole en 1 alarmdrijver.  
 Instalación fija con 1 electrobomba tipo Drenag 1800 T o Feka 1800 T o Grinder 1800 T, con cuadro ED 2,5 T, con un flotador de control de nivel MIN/MAX y 1 flotador de alarma  
 Fast anläggning med 1 elpump av typ Drenag 1800 T, Feka 1800 T eller Grinder 1800 T, komplett med eltavla ED 2,5 T, flottör för kontroll av MIN/MAX nivå och 1 larmflottör.  
 Стационарная система с 1 электронасосом типа Drenag 1800 T или Feka 1800 T или Grinder 1800 T, оснащенная эл. щитом ED 2,5 T с поплавком контроля МИН/МАКС. уровня и 1 сигнальным поплавком.  
 ED 2,5 T tipi elektrik panosu, MIN/MAX seviye flatörü ve 1 tane alarm flatörü ile donatılmış 1 tane Drenag 1800 T, Feka 1800 T veya Grinder 1800 T tipi pompanın bulunduğu sabit tesis.  
 Instalatie fixa cu 1 electropompa tip Drenag 1800 T sau Feka 1800 T sau Grinder 1800 T, dotata cu tablou ED 2,5 T, cu plutitor de control nivel MIN/MAX si 1 plutitor de alarma

1800 Drenag أو Feka 1800 T أو Grinder 1800 T, كاملة بلوح هيئة ثابتة مع 1 مضخة كهربائية من النوع ED 2,5 T, مع عوام رقابة للمستوى أدنى/أقصى و 1 عوام طوارئ من النوع ED 2,5 T

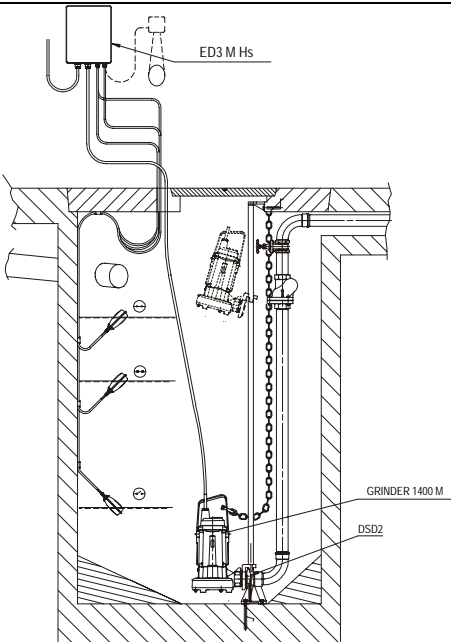




- Impianto fisso con 1 elettropompa Drenag 1400 M o 1 Feka 1400 M con dispositivo DSD2 completo di quadro elettrico ED 3 M con due galleggianti controllo livello minimo e massimo più un galleggiante di allarme.
- Installation fixe avec 1 électropompe Drenag 1400 M ou 1 Feka 1400 M avec dispositif DSD2 avec coffret électrique ED 3 M avec deux interrupteurs à flotteur de contrôle de niveau minimum et maximum plus un interrupteur à flotteur d'alarme.
- Fixed system with 1 electropump type Drenag 1400 M or Feka 1400 M with DSD2 device, complete with electric panel ED 3 M with two minimum and maximum level control floats and one alarm float.
- Feste Anlage mit 1 Elektropumpe DRENAG 1400 M oder 1 FEKA 1400 M mit Vorrichtung DSD2, komplett mit Schalttafel ED 3 M, mit zwei Schwimmern zur Kontrolle des Mindest- und Höchststandes plus einem Alarm-Schwimmer.
- Vaste installatie met 1 electropomp Drenag 1400 M of 1 Feka 1400 M met DSD2-mechanisme compleet met schakelpaneel ED 3 M en twee drijvers voor controle van het minimum- en maximumpeil plus een alarmdrijver.
- Instalación fija con 1 electrobomba Drenag 1400 M o 1 Feka 1400 M con dispositivo DSD2 con cuadro eléctrico ED 3 M con dos flotadores de control del nivel mínimo y máximo más un flotador de alarma.
- Fast anläggning med 1 elpump Drenag 1400 M eller 1 Feka 1400 M med en lyftanordning DSD2 och komplett med eltavla ED 3 M, två flottörer för kontroll av min. och max. nivå och en larmflottör.
- Стационарная система с 1 электронасосом Drenag 1400 M или 1 Feka 1400 M, оснащенная подъемным механизмом DSD2 и эл. щитом ED 3 M с двумя поплавками контроля МИН./МАКС. уровня и 1 сигнальным поплавком.
- DSD2 tipi kaldırma tertibatı, ED 3 M tipi elektrik panosu, iki tane MIN/MAX seviye flatörü ve 1 tane alarm flatörü ile donatılmış bir tane Drenag 1400 M veya Feka 1400 M tipi pompanın bulunduğu sabit tesis.
- Instalatie fixa cu 1 electropompa Drenag 1400 M sau 1 Feka 1400 M cu dispozitiv DSD2 dotat cu tablou ED 3 M cu doua plutitoare de control nivel minim si maxim plus un plutitor de alarma.

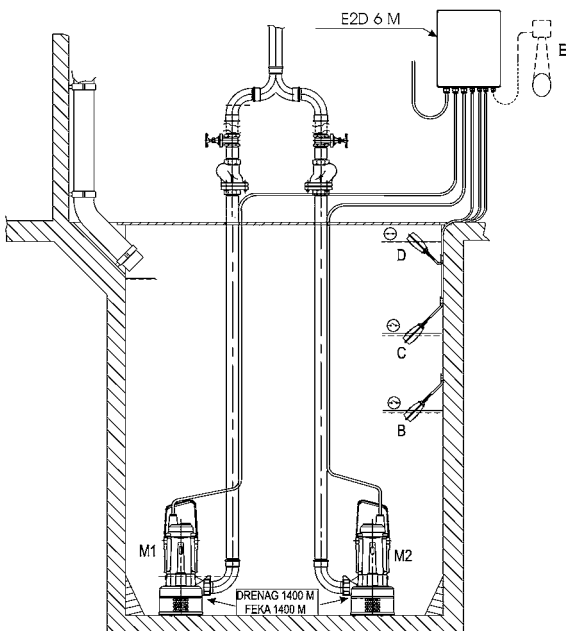
ED 3 M مع جهاز DSD2 كاملة بلوح من النوع ED 3 M  
هيئة ثابتة مع ١ مضخة كهربائية من النوع M

مع عوامين لرقابة المستوى أدنى/أقصى و ١ عوام طوارئ



- Impianto fisso con 1 elettropompa Grinder 1400 M con dispositivo DSD2 completo di quadro elettrico ED 3 M Hs con due galleggianti controllo livello minimo e massimo più un galleggiante di allarme.
- Installation fixe avec 1 électropompe Grinder 1400 M avec dispositif DSD2 avec coffret électrique ED 3 M Hs avec deux interrupteurs à flotteur de contrôle de niveau minimum et maximum plus un interrupteur à flotteur d'alarme.
- Fixed system with 1 electropump type Grinder 1400 M with DSD2 device, complete with electric panel ED 3 M Hs with two minimum and maximum level control floats and one alarm float.
- Feste Anlage mit 1 Elektropumpe GRINDER 1400 M mit Vorrichtung DSD2, komplett mit Schalttafel ED 3 M Hs, mit zwei Schwimmern zur Kontrolle des Mindest- und Höchststandes plus einem Alarm-Schwimmer.
- Vaste installatie met 1 electropomp Grinder 1400 M met DSD2-mechanisme compleet met schakelpaneel ED 3 M Hs en twee drijvers voor controle van het minimum- en maximumpeil plus een alarmdrijver.
- Instalación fija con 1 electrobomba Grinder 1400 M con dispositivo DSD2 con cuadro eléctrico ED 3 M Hs con dos flotadores de control del nivel mínimo y máximo, más un flotador de alarma.
- Fast anläggning med 1 elpump 1400 M med anordning DSD2, komplett med eltavla TD 1,5 M Hs, två flottörer för kontroll av min. och max. nivå och en larmflottör.
- Стационарная система с 1 электронасосом Grinder 1400 M, оснащенная подъемным механизмом DSD2 и эл. щитом ED 3 M Hs с двумя поплавками контроля МИН./МАКС. уровня и 1 сигнальным поплавком.
- DSD2 tipi kaldırma tertibatı, ED 3 M Hs tipi elektrik panosu, iki tane MIN/MAX seviye flatörü ve 1 tane alarm flatörü ile donatılmış bir tane Grinder 1400 M tipi pompanın bulunduğu sabit tesis.
- Instalatie fixa cu 1 electropompa Grinder 1400 M cu dispozitiv DSD2 dotat cu tablou electric ED 3 M Hs cu doua plutitoare de control nivel minim si maxim plus un plutitor de alarma.

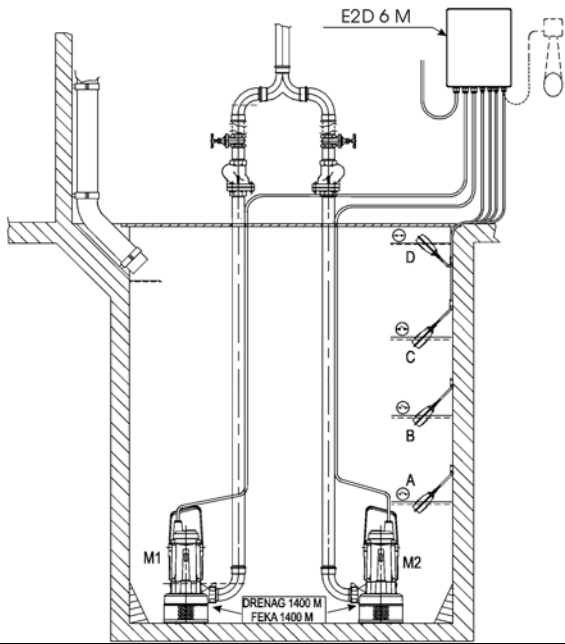
ED 3 M Hs مع جهاز DSD2 كاملة بلوح من النوع ED 3 M Hs  
هيئة ثابتة مع ١ مضخة كهربائية من النوع  
رقابة للمستوى أدنى/أقصى وعوام طوارئ واحد.



- Impianto fisso con 2 elettropompe Drenag 1400 M o Feka 1400 M completo di quadro elettrico E2D 6 M con due galleggianti controllo livello minimo/ massimo più un galleggiante di allarme.
- Installation fixe avec 2 électropompes Drenag 1400 M ou Feka 1400 M avec coffret électrique E2D 6 M avec deux interrupteurs à flotteur de contrôle de niveau minimum/maximum plus un interrupteur à flotteur d'alarme.
- Fixed system with 2 electropumps type Drenag 1400 M or Feka 1400 M complete with electric panel E2D 6 M with two minimum/ maximum level control floats and one alarm float.
- Feste Anlage mit 2 Elektropumpen DRENAG 1400 M oder FEKA 1400 M komplett mit Schalttafel E2D 6 M, mit zwei Schwimmern zur Kontrolle des Mindest- und Höchststandes plus einem Alarm-Schwimmer.
- Vaste installatie met 2 electropompen Drenag 1400 M of Feka 1400 M compleet met schakelpaneel E2D 6 M en twee drijvers voor controle van het minimum/maximumpeil plus een alarmdrijver.
- Instalación fija con 2 electrobombas Drenag 1400 M o Feka 1400 M con cuadro eléctrico E2D 6 M con dos flotadores de control del nivel mínimo/máximo más un flotador de alarma.
- Fast anläggning med 2 elpumpar Drenag 1400 M eller Feka 1400 M komplett med eltavla E2D 6 M, två flottörer för kontroll av min. / max. nivå och en larmflottör.
- Стационарная система с 2 электронасосами Drenag 1400 M или Feka 1400 M, оснащенная эл. щитом E2D 6 M с двумя поплавками контроля МИН./МАКС. уровня и 1 сигнальным поплавком.
- E2D6 M tipi elektrik panosu, iki tane MIN/MAX seviye flatörü ve bir tane alarm flatörü ile donatılmış 2 tane Drenag 1400 M veya Feka 1400 M tipi pompanın bulunduğu sabit tesis.
- Instalatie fixa cu 2 electropompe Drenag 1400 M sau Feka 1400 M dotata cu tablou electric E2D 6 M cu doua plutitoare de control nivel minim/maxim plus un plutitor de alarma.

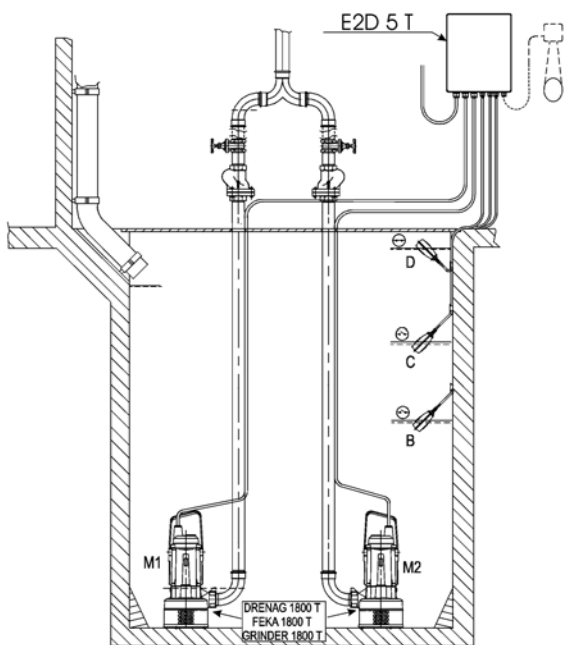
E2D 6 M مع جهاز DSD2 كاملة بلوح من النوع E2D 6 M  
هيئة ثابتة مع ٢ مضخات كهربائية من النوع M

مع عوامين لرقابة المستوى أدنى/أقصى و ١ عوام طوارئ



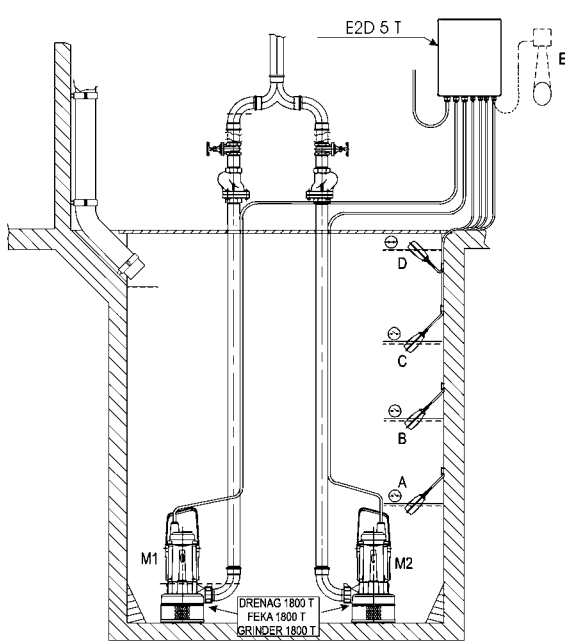
- Impianto fisso con 2 elettropompe Drenag 1400 M o Feka 1400 M completo di quadro elettrico E2D6 M con 3 galleggianti controllo livello minimo/ massimo più un galleggiante di allarme.
- Installation fixe avec 2 électropompes Drenag 1400 M ou Feka 1400 M avec coffret électrique E2D6 M avec 3 interrupteurs à flotteur de contrôle de niveau minimum/maximum plus un interrupteur à flotteur d'alarme.
- Fixed system with 2 electropumps type Drenag 1400 M or Feka 1400 M complete with electric panel E2D6 M with 3 minimum/ maximum level control floats and one alarm float.
- Feste Anlage mit 2 Elektropumpen DRENAG 1400 M oder FEKA 1400 M komplett mit Schalttafel E2D6 M, mit 3 Schwimmern zur Kontrolle des Mindest- und Höchststandes plus einem Alarm-Schwimmer.
- Vaste installatie met 2 electropompen Drenag 1400 M of Feka 1400 M compleet met schakelpaneel E2D6 M en 3 drijvers voor controle van het minimum/maximumpcil plus een alarmdrijver.
- Instalación fija con 2 electrobombas Drenag 1400 M o Feka 1400 M con cuadro eléctrico E2D6 M con 3 flotadores de control del nivel mínimo/máximo más un flotador de alarma.
- Fast anläggning med 2 elpumpar Drenag 1400 M eller Feka 1400 M komplett med eltavla E2D6 M, 3 flottörer för kontroll av min. / max. nivå och en larmflottör.
- Стационарная система с 2 электронасосами Drenag 1400 M или Feka 1400 M, оснащенная эл. щитом E2D6 M с 3 поплавками контроля МИН./МАКС. уровня и 1 сигнальным поплавком.
- E2D6 M tipi elektrik panosu, 3 tane MIN/MAX seviye flatörü ve bir tane alarm flatörü ile donatılmış 2 tane Drenag 1400 M veya Feka 1400 M tipi pompanın bulunduğu sabit tesis.
- Instalatie fixa cu 2 electropompe Drenag 1400 M sau Feka 1400 M dotata cu tablou electric E2D6 M cu 3 plutitoare de control nivel minim/maxim plus un plutitor de alarma.

هيئة ثابتة مع ٢ مضخات كهربائية من النوع Drenag 1400 M أو Feka 1400 M , كاملة بلوح من النوع E2D6 M , مع ٣ عوامات لرقابة المستوى أدنى/أقصى وعوام طوارئ واحد.



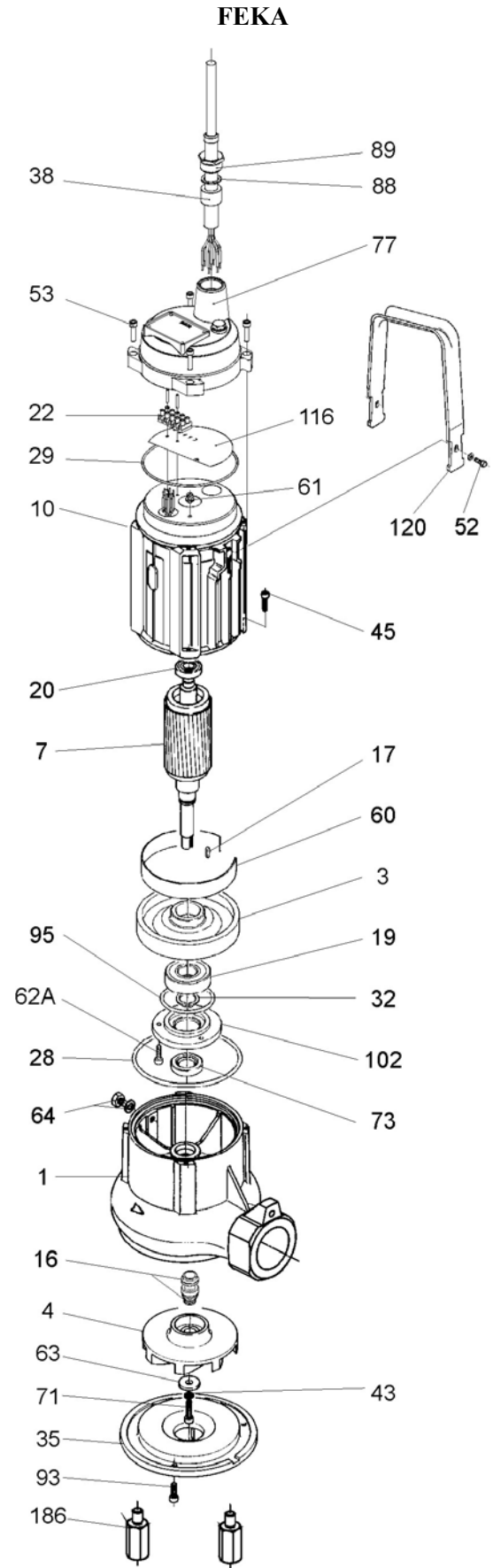
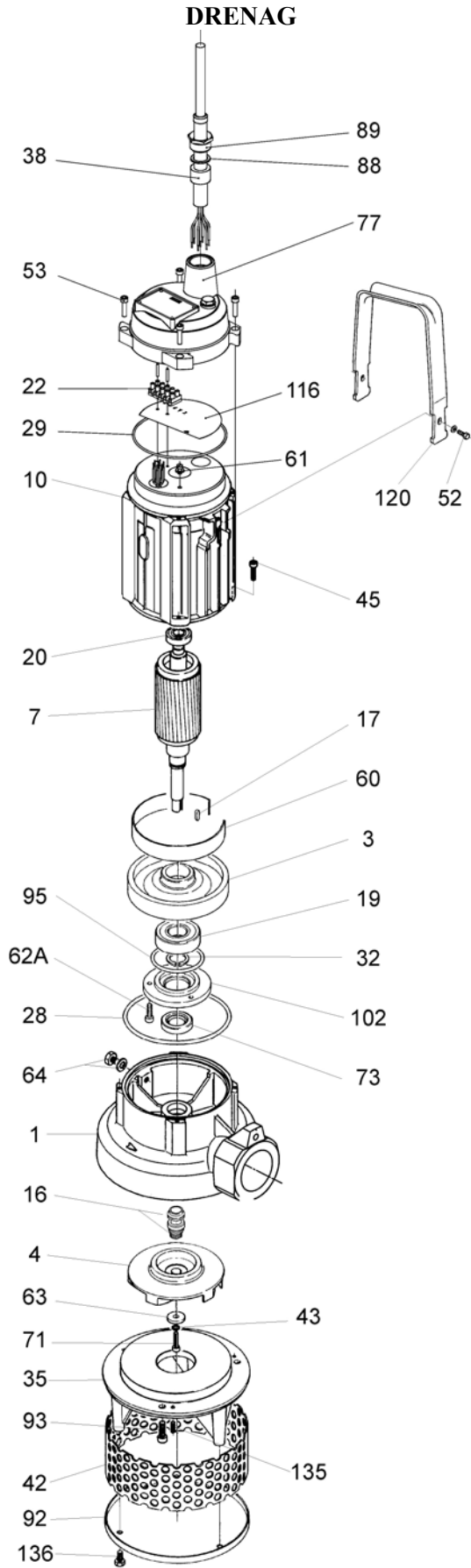
- Impianto fisso con 2 elettropompe Drenag 1800 T, Feka 1800 T, GRINDER 1800T completo di quadro elettrico E2D5 T con due galleggianti controllo livello minimo/ massimo più un galleggiante di allarme.
- Installation fixe avec 2 électropompes Drenag 1800 T, Feka 1800 T, GRINDER 1800T avec coffret électrique E2D5 T avec deux interrupteurs à flotteur de contrôle de niveau minimum/maximum plus un interrupteur à flotteur d'alarme.
- Fixed system with 2 electropumps type Drenag 1800 T, Feka 1800 T, GRINDER 1800T complete with electric panel E2D5 T with two minimum/ maximum level control floats and one alarm float.
- Feste Anlage mit 2 Elektropumpen Drenag 1800 T, Feka 1800 T, GRINDER 1800T komplett mit Schalttafel E2D5 T, mit zwei Schwimmern zur Kontrolle des Mindest- und Höchststandes plus einem Alarm-Schwimmer.
- Vaste installatie met 2 electropompen Drenag 1800 T, Feka 1800 T, GRINDER 1800T compleet met schakelpaneel E2D5 T en twee drijvers voor controle van het minimum/maximumpcil plus een alarmdrijver.
- Instalación fija con 2 electrobombas Drenag 1800 T, Feka 1800 T, GRINDER 1800T con cuadro eléctrico E2D5 T con dos flotadores de control del nivel mínimo/máximo más un flotador de alarma.
- Fast anläggning med 2 elpumpar Drenag 1800 T, Feka 1800 T, GRINDER 1800T komplett med eltavla E2D5 T, två flottörer för kontroll av min. / max. nivå och en larmflottör.
- Стационарная система с 2 электронасосами Drenag 1800 T, Feka 1800 T, GRINDER 1800T, оснащенная эл. щитом E2D5 T с двумя поплавками контроля МИН./МАКС. уровня и 1 сигнальным поплавком.
- E2D5 T tipi elektrik panosu, iki tane MIN/MAX seviye flatörü ve bir tane alarm flatörü ile donatılmış 2 tane Drenag 1800 T veya Feka 1800 T, GRINDER 1800 T tipi pompanın bulunduğu sabit tesis.
- Instalatie fixa cu 2 electropompe Drenag 1800 T, Feka 1800 T, GRINDER 1800T dotata cu tablou electric E2D5 T cu doua plutitoare de control nivel minim/maxim plus un plutitor de alarma.

هيئة ثابتة مع ٢ مضخات كهربائية من النوع Drenag 1800 T , Feka 1800 T , Grinder 1800 T , كاملة بلوح من النوع E2D5 T , مع عوامين لرقابة للمستوى أدنى/أقصى وعوام طوارئ واحد.

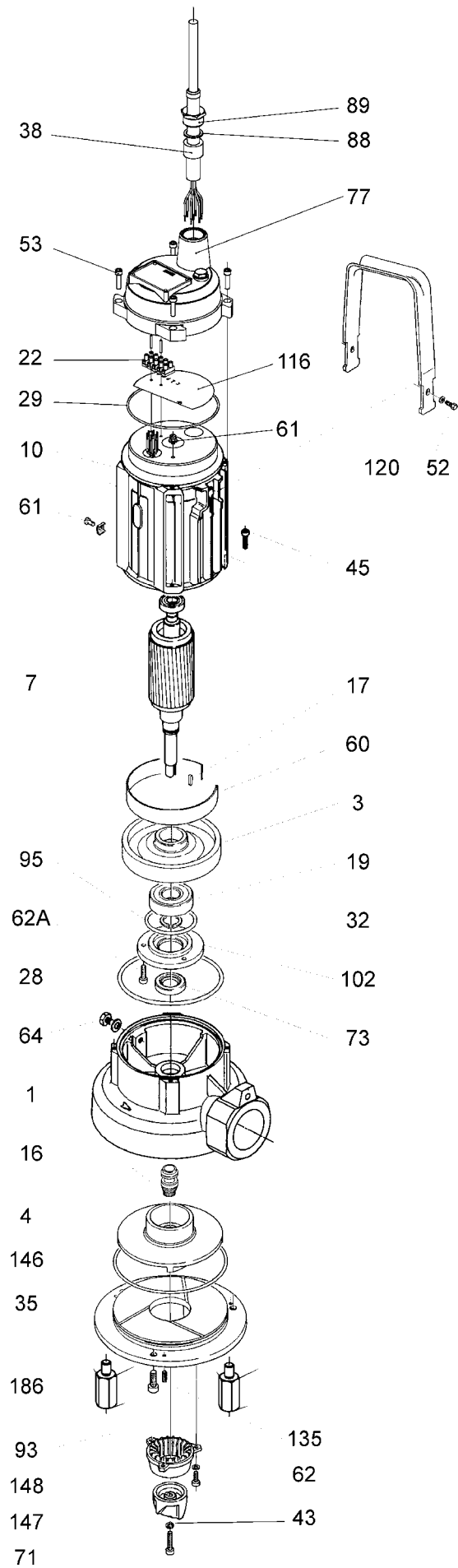


- Impianto fisso con 2 elettropompe Drenag 1800 T, Feka 1800 T, GRINDER 1800T completo di quadro elettrico E2D5 T con 3 galleggianti controllo livello minimo/ massimo più un galleggiante di allarme.
- Installation fixe avec 2 électropompes Drenag 1800 T, Feka 1800 T, GRINDER 1800T avec coffret électrique E2D5 T avec 3 interrupteurs à flotteur de contrôle de niveau minimum/maximum plus un interrupteur à flotteur d'alarme.
- Fixed system with 2 electropumps type Drenag 1800 T, Feka 1800 T, GRINDER 1800T complete with electric panel E2D5 T with 3 minimum/ maximum level control floats and one alarm float.
- Feste Anlage mit 2 Elektropumpen Drenag 1800 T, Feka 1800 T, GRINDER 1800T komplett mit Schalttafel E2D5 T, mit 3 Schwimmern zur Kontrolle des Mindest- und Höchststandes plus einem Alarm-Schwimmer.
- Vaste installatie met 2 electropompen Drenag 1800 T, Feka 1800 T, GRINDER 1800T compleet met schakelpaneel E2D5 T en 3 drijvers voor controle van het minimum/maximumpcil plus een alarmdrijver.
- Instalación fija con 2 electrobombas Drenag 1800 T, Feka 1800 T, GRINDER 1800T con cuadro eléctrico E2D5 T con 3 flotadores de control del nivel mínimo/máximo más un flotador de alarma.
- Fast anläggning med 2 elpumpar Drenag 1800 T, Feka 1800 T, GRINDER 1800T komplett med eltavla E2D5 T, 3 flottörer för kontroll av min. / max. nivå och en larmflottör.
- Стационарная система с 2 электронасосами Drenag 1800 T, Feka 1800 T, GRINDER 1800T оснащенная эл. щитом E2D5 T с 3 поплавками контроля МИН./МАКС. уровня и 1 сигнальным поплавком.
- E2D5 T tipi elektrik panosu, 3 tane MIN/MAX seviye flatörü ve bir tane alarm flatörü ile donatılmış 2 tane Drenag 1800 T veya Feka 1800 T, GRINDER 1800 T tipi pompanın bulunduğu sabit tesis.
- Instalatie fixa cu 2 electropompe Drenag 1800 T, Feka 1800 T, GRINDER 1800T c dotata cu tablou electric E2D5 T cu 3 plutitoare de control nivel minim/maxim plus un plutitor de alarma .

هيئة ثابتة مع ٢ مضخات كهربائية من النوع Drenag 1800 T , Feka 1800 T , Grinder 1800 T , كاملة بلوح من النوع E2D5 T , مع ٣ عوامات لرقابة للمستوى أدنى/أقصى وعوام طوارئ واحد.



# GRINDER



<b>Modello / Modèle / Model  Modell / Model  Modelo / Modell / Model  Модель / نموذج</b>	<b>Prevalenza / Hauteur d'élévation / Head up  Förderhöhe / Overwicht / Prevalencia  Maximal pumphöjd / Manometrik yükseklik  Hanop / التفوق</b>	
	<b><i>Hmax (m) 2 poles  50 Hz</i></b>	<b><i>Hmax (m) 2 poles  60 Hz</i></b>
DRENAG 1400	19.2	19.3
DRENAG 1800	21.5	22.3
FEKA 1400	13.9	14.1
FEKA 1800	15.5	15.7
GRINDER 1400	24.5	24.8
GRINDER 1800	26.5	27.3

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09/06 cod.0013.550.10