

INSTRUCTION MANUAL

3E SERIES

PART 1 - GENERAL INSTRUCTION MANUAL

PART 2 - 3E INSTRUCTION MANUAL

GENERAL INSTRUCTION MANUAL PART 1

TO BE KEPT BY THE USER

1. INTRODUCTION

This instruction manual is made up of two parts: PART 1 which contains general information regarding all our products and PART 2 which contains specific information regarding the motor-driven pump that you have purchased. Follow the instructions given in this booklet in order to obtain optimum return and operation from your motor-driven pump. If any other information is necessary, please contact the nearest authorised retailer. If the booklet contains contrasting information, keep to what is indicated in PART 2 (product specifications).

THE REPRODUCTION, EVEN PARTIAL, OF THE ILLUSTRATIONS AND/OR TEXT HEREIN IS FORBIDDEN.

The following symbols are used throughout the instruction booklets:

WARNING! Risk of damaging the pump or the system



Risk of injuring people or damaging things



Risks of an electrical nature

2. CONTENTS (PART 1)

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3. MANUFACTURER IDENTIFICATION DATA

3.1. MANUFACTURER DATA

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3.2. MOTOR-DRIVEN PUMPS

See plates	6.1 3E pumps
in FIG. 6:	6.2 3ES pumps

For product type, see PART 2.

4. GUARANTEE AND TECHNICAL ASSISTANCE

THE GUARANTEE IS RENDERED NULL AND VOID IF THE INSTRUCTIONS GIVEN IN THIS BOOKLET ARE NOT ADHERED TO AND/OR IF ANYONE OTHER THAN PERSONNEL FROM OUR HELP CENTRES INTERVENES ON THE MOTOR-DRIVEN PUMP. IN THESE CASES, THE MANUFACTURER

IS RELIEVED FROM ALL RESPONSIBILITY REGARDING INJURY TO PEOPLE AND SUBSEQUENT DAMAGE TO ADJACENT ITEMS AND/OR THE MOTOR-DRIVEN PUMP ITSELF.

Once you have received the motor-driven pump, make sure that the packaging is not broken or seriously damaged. If it is, immediately inform the person who delivered it. After extracting the motor pump from its packaging, make sure that it was not damaged during transportation. If it has been, inform the retailer within 8 days from delivery. Check the motor-driven pump plate to ensure that the indicated characteristics are those requested by you.

The following parts, being normally subject to wear, have a limited guarantee:

- bearings
- mechanical seals
- grommets
- capacitors

If a fault that is not listed in the "TROUBLESHOOTING" table (chapter 10.1.) occurs, please contact the nearest authorised retailer.

5. GENERAL SAFETY WARNINGS

Before starting the motor-driven pump, the user must follow the operations indicated in this manual (PART 1 and PART 2), and apply them each time the motor-driven pump is used or when maintenance is carried out on it.

5.1. PREVENTIVE MEASURES TO BE TAKEN BY THE USER



Users must observe the accident prevention regulations that are in force in their countries at the time. They must also pay attention to the motor-driven pump characteristics (see "TECHNICAL DATA" in PART 2). Always wear protective gloves when handling the pump or performing maintenance.



While repairing or carrying out maintenance on the motor-driven pump, disconnect the electric supply. Doing this avoids accidental starting, which could injure people and/or cause damage.



The appliances can be used by people with reduced physical, sensory or mental capabilities or who lack experience or knowledge of the appliance, provided they are supervised or have been trained to use the appliance safely and understand the attendant risks. Children must not play with the appliance. Submersible pumps cannot be used by children. User cleaning and maintenance operations on the pumps must not be carried out by children.

Any maintenance, installation or handling carried out on the motor-driven pump while it is still being powered can seriously injure, or even kill, people.

When starting the motor-driven pump, users must ensure that their feet are not bare or, worse, immersed in water. They must also ensure that their hands are not wet.

Users must not operate or carry out any work on the motor-driven pump that is not permitted in this manual.



Stop operation in case pump is in failure. Operation of broken pumps can cause injury or damage property.

Do not touch the pump when the liquid handled is hot water. Burns may result from high temperatures.

Do not touch the motor. The motor's surfaces will be hot, and you could get burned if you touch them.

Do not touch the rotating parts such as the spindle, shaft couplings, V-pulleys, etc. while the pump is running. Since these parts rotate at high speed, doing so could result in injury.

Do not touch the live parts when the power is on. There is a risk of electric shock.

Pumps lacking the indication of protection against frost must not be left outdoors in frosty conditions.

5.2. IMPORTANT PROTECTIONS AND CAUTIONS



All motor-driven pumps are designed in such a way that all moving parts are made safe by using guards. The manufacturer declines any responsibility in the event of damages caused by the removal of said protections.



Each conductor or powered part is electrically insulated with regards to earth. Extra security is also added by connecting the accessible conducting parts to an earth conductor. This ensures that accessible parts cannot become dangerous should the main insulation become faulty.

5.3. RESIDUAL RISKS FOR SURFACE PUMPS

Residual risks include the following:

- The possibility of coming into contact (even if not accidentally) with the motor's cooling fan by inserting thin objects (e.g. screwdrivers, sticks and similar) through the fan cover holes.
- For single-phase pumps, possible start-up without notice due to automatic rearm of the motor protection device, following the latter's intervention due to motor overheating.

6. TECHNICAL-PRODUCTION CHARACTERISTICS

6.1 The motor-driven pump you have purchased has been designed and manufactured in compliance with the following directives:

- MECHANICAL HAZARDS (Annex I Machinery Directive):
 - UNI EN ISO 12100
- ELECTRICAL HAZARDS (Annex I Machinery Directive):
 - UNI EN ISO 12100
 - CEI EN 60204-1
- VARIOUS RISKS (Enclosure I Machines Directive):
 - 2006/42/EC – Enclosure I

The electrical components and relative circuits installed on the motor-driven pumps are in accordance with the CEI EN 60204-1 Directive.

6.2 DRINKING WATER USE

If the product is made using materials compatible with drinking water pumping, it must be operated with clean water at the nominal flow rate for at least 15 minutes before use. Moreover, for submersible electric pumps, wash the external surface with clean water before installation

7. INSTALLATION AND DISMANTLING, TRANSPORT AND STORAGE

WARNING!



INSTALLATION MUST BE CARRIED OUT BY A QUALIFIED ENGINEER.

7.1. GENERAL INSTALLATION PRECAUTIONS

- Use metal or rigid plastic pipes in order to avoid their yielding because of the depression created at suction;
- support and align pipes so that they do not put any stress on the pump;
- avoid throttlings caused by bending suction and delivery hoses;
- seal any piping connections: air infiltration in the suction pipe negatively affects pump operation;
- we recommend that a non-return valve and a gate are installed on the delivery pipe at the motor-driven pump outlet;
- fix the piping to the reservoir or to any fixed parts so that it is not supported by the pump;
- do not use a lot of bends (goose-necks) and valves;
- on SURFACE PUMPS installed above head, the suction pipe should be fitted with a foot valve and filter in order to prevent foreign matter from entering and its end should be immersed at a depth that is at least twice the diameter of the pipe; its distance from the bottom of the reservoir should also be one and a half times its diameter.
For suction longer than 4 metres use an oversized pipe (1/4" wider at suction for improved efficiency).

7.2. INSTALLATION

- Position the pump on a flat surface that is as close as possible to the water source. Leave enough space around the pump to allow safe use and maintenance. A free space of at least 100 mm must be kept in front of the cooling fan of surface pumps in all cases;
- lower submersible pumps using a rope fixed to the handle and hooks provided;
- use pipes of suitable diameters (see PART 2) fitted with threaded sleeves that must be screwed onto the pump suction and delivery unions or its threaded counterflanges;
- SURFACE PUMPS cannot be moved or used in the open except as stated in PART 2;
- for specific instructions, consult the chapter "PREPARING FOR USE" in PART 2.

7.3. DISMANTLING

The following must be done when moving or dismantling the motor pump:

- disconnect the electric supply;
- remove the delivery and suction pipes (where present) if too long or bulky;
- if present, unscrew the screws that secure the motor-driven pump to its supporting surface;
- if present, hold the power cable;
- lift the motor-driven pump using equipment suitable to the pump weight and dimensions (refer to the plate).

7.4. TRANSPORTATION

The motor-driven pump is packed in a carton or can be fixed to a wooden pallet, if pump weight and dimensions allow it. Transportation should not, in any case, present any particular problems. Verify the total weight stamped on the box. The purchaser shall check the goods for defects and quantities on delivery. Any damage discovered on delivery must be reported to the carrier/shipper and recorded on the delivery note.

7.5. STORAGE

- The product must be stored in a covered and dry place, far away from heat sources and protected against dirt and vibrations.
- Protect the product against damp conditions, heat sources and mechanical damage.
- Do not place heavy objects on the packaging.
- The product must be stored at an ambient temperature between +5°C and +40°C (41°F – 104°F) with a relative humidity of 60%.

8. ELECTRICAL CONNECTION

- ELECTRICAL CONNECTION MUST BE CARRIED OUT BY A QUALIFIED ENGINEER.
- A HIGH-SENSITIVITY (0.03 A) RESIDUAL-CURRENT CIRCUIT BREAKER MUST BE INSTALLED. IT IS NONETHELESS ADVISABLE TO CHECK THE COMPATIBILITY AND CORRECT SIZING OF THE SYSTEMS PROTECTIONS FOR THE SPECIFIC APPLICATION, IN ACCORDANCE WITH THE APPLICABLE REGULATIONS. THESE OPERATIONS MUST BE CARRIED OUT BY QUALIFIED PERSONNEL.

WARNING!



Motor-driven pumps not equipped with a plug must be powered by connecting them permanently to the electrical cabinet equipped with a switch, fuses and thermal cut-out calibrated to the pump's absorbed current.

The mains must be reliably earthed, according to the electrical regulations in force in the user's country: this is the installer's responsibility.

If the motor-driven pump is supplied without a power cable, use a cable that complies with the regulations in force and the necessary section according to length, power and mains voltage.

If present, the plug of the single phase version must be connected to the mains far from sprays, water jets or rain and it must be accessible.

The three phase version does not have an internal motor protector, therefore overload protection must be provided by the user.

MOTOR-DRIVEN SURFACE PUMPS

WHILE CONNECTING, MAKE SURE THAT BOTH THE TERMINAL BOARD AND THE MOTOR DO NOT GET WET.

- Connection of the single phase versions must be made on the basis of whether thermoamperometric protection "P" is internal (FIG. 1) or external (FIG. 2).
- For threephase versions, after connecting the star (FIG. 3) or triangle (FIG. 4) cable to the terminal board, looking at the pump from the motor side, check that the cooling fan turns in the same way as the arrow on the label applied on the fan cover. If it is incorrect, swap two of the three wires over on the motor's terminal strip.
- For applications with inverter use a cable length <25 meters.

SUBMERSIBLE MOTOR-DRIVEN PUMPS

- In single phase versions, plug the unit into the socket.
- For threephase versions (FIG. 5), check that the motor turns in a clockwise direction looking at the pump from the top, proceed as follows: with the motor-driven pump not yet secured to the system, connect the power cable to the terminal board and switch on briefly; the pump shall start with a kick in an anti-clockwise direction, seen from the top of the pump. If the direction is wrong (clockwise), invert two of the three wires in the terminal board of the electrical panel.

FIG. 7 shows the standard voltages shown on the plate with their respective tolerances.

8.1. ADJUSTMENTS AND RECORDINGS

In pumps fitted with a float, adjust the length of the float cable with regards to the minimum and maximum value of the water (see PART 2).

Check that the system automatisms do not require a number of start-ups higher than the number shown in FIG. 8 for surface pumps and in PART 2 for submersible pumps.

9. USE AND STARTING

NEVER ALLOW THE MOTOR-DRIVEN PUMP TO OPERATE WITHOUT WATER. DOING SO CAN SERIOUSLY DAMAGE THE INTERNAL COMPONENTS.

9.1. GENERAL WARNINGS

- Our surface pumps are designed to operate at a temperature no higher than 40°C and a level no higher than 1000 metres;
- our motor-driven pumps cannot be used in swimming pools or similar plants;
- prolonged motor pump operation with the delivery pipe closed can cause damage;
- Avoid switching the motor pump on and off more than 50,000 times a year. If operate the pump on and off more than 50,000 times per year, the pump life may be shortened and there is a risk of premature failure. Regarding the maximum number per hour, please refer also Chapter 8;
- during power cuts, it is advisable to disconnect the power to the pump;
- Select the pump so that it will operate close to the best efficiency point, at least between minimum and maximum rated flow rate.

9.2. STARTING DIAGRAM

To put the pump into operation, you must proceed as follows:

- Insert a flat-tip screwdriver through the fan cover, in the back of the pump, until it fits into the slot made on the end of the rotor shaft;
- Turn the screwdriver a couple of complete turns both ways;
- Connect the pump to the system;
- Start the pump two or three times to check system conditions;
- restrict the delivery to cause a rapid pressure increase for a few times;
- make sure that the noise, vibration, pressure and electrical voltage levels are normal.

9.3. STOPPING

- Gradually interrupt water circulation in the delivery section to avoid over-pressure in the piping and pump caused by water hammering;
- Cut off the power supply.

10. MAINTENANCE AND REPAIRS

We recommend periodically checking that the pump is working correctly; pay particular attention to any abnormal noise or vibration and, for surface pumps, any mechanical seal leaks.

The main and most common special maintenance operations are generally as follows:

- replacement of mechanical seals
- replacement of grommets
- replacement of bearings
- replacement of capacitors.

When the SURFACE pump remains inactive for a long period, it should be emptied completely, removing the discharge and filling caps, washed carefully with clean water then emptied. Do not leave water deposits inside. This operation must always be carried out whenever there is a chance of frost in order to avoid the breakdown of the pump components. If the power cord needs changing on submersible pumps, this must be done by an assistance centre only.

10.1. TROUBLESHOOTING

DISPLAYED FAULT	CAUSE	SOLUTION
THE PUMP DOES NOT WORK The motor turns	Float sticking	Check that the float reaches the level ON
	Thermal protection activated (single phase)	It reactivates automatically (single phase only)
	Incorrect electrical connection	Check the terminal board and the electrical panel
	Automatic switch triggered or fuses blown	Reset the switch or replace the fuses and verify the cause
THE PUMP DOES NOT WORK The motor turns	No electricity	Check the electrical supply meter
	Plug not inserted	Check the connection to the power supply
	Decrease in the line voltage	Wait for voltage to return to normal
	Suction filter / hole blocked	Clean the filter / hole
	Foot valve blocked	Clean the valve and check its operation
	Pump not primed	Prime the pump Check any delivery non-return valves Check the liquid level
THE PUMP WORKS with a reduced flow rate	Pressure too low	Restrict the delivery gate
	System undersized	Re-examine the system
	System dirty	Clean the piping, valves, filters
	Water level too low	Switch off the pump or immerse the foot valve
	Incorrect rotational direction (threephase only)	Invert the two phases
	Incorrect supply voltage	Supply the pump with the voltage indicated on the ate
THE PUMP STOPS AFTER WORKING FOR BRIEF PERIODS Thermal protection intervention	Leaks from piping	Check the joints
	Pressure too high	Recheck the system
	Liquid temperature too high	The temperature exceeds the technical limits of the pump
THE PUMP STOPS AFTER WORKING FOR BRIEF PERIODS Pressure applications	Internal fault	Contact the nearest retailer
	The difference between maximum and minimum pressure is minimal	Increase the difference between the two pressures

(Part 1)

DISPLAYED FAULT	CAUSE	SOLUTION
THE PUMP DOES NOT STOP Pressure applications	Maximum pressure too high	Set maximum pressure at a lower value
	Flow rate too high	Reduce the flow rate
THE PUMP VIBRATES Or is too noisy during operation	Cavitation	Contact the nearest retailer
	Irregular piping	Fix in a better way
	Noisy bearing	Contact the nearest retailer
	Foreign bodies sliding along the motor fan	Remove the foreign bodies
	Incorrect priming	Bleed the pump and/or fill it again
THE PUMP LEAKS FROM THE SEAL	Seal not in the correct working position	See chapter 9.2 e)

11. DISPOSAL



This product falls within the scope of Directive 2012/19/EU regarding the management of electrical and electronic equipment waste (WEEE). Electronic-electrical equipment must not be disposed of with domestic waste as it is made of various materials that can be recycled at the appropriate facilities. Inquiries should be made through the municipal authorities regarding the location of the ecological platforms that receive products for disposal and their subsequent correct recycling.

Furthermore, it is worth remembering that, upon purchase of an equivalent appliance, shops are obliged to collect the product for disposal free of charge. This product is not potentially dangerous for human health and the environment, since it does not contain harmful substances as per Directive 2011/65/EU (RoHS), yet if abandoned in the environment it has a negative impact on the ecosystem.

Read the instructions carefully before using the appliance for the first time. It is recommended that you do not use this product for any purpose other than that for which it was intended; there is danger of electric shock if used improperly. The crossed-out bin symbol found on the appliance label indicates the compliance of this product with the regulations regarding electrical and electronic equipment waste.

Abandoning the appliance in the environment or its illegal disposal is punishable by law. Specific cases are, however, indicated in the "DISPOSAL" chapter in PART 2.

This symbol on the pump means that it cannot be disposed of with household waste.

According to Article 9(1)(i) of the Waste Framework Directive 2008/98/EC and to the 1907/2006 REACH regulation, all EBARA products have been notified to the European Chemicals Agency (ECHA).

To consult the SCIP Number with related information on the safe use of the product see section "Company Certifications" on the website www.ebara.europa.com

12. SUPPLIED TECHNICAL DOCUMENTATION

12.1. DRAWING SHOWING THE ELECTRICAL CONNECTIONS OF A SINGLE PHASE MOTOR-DRIVEN PUMP

See FIG. 1-2

12.2. DRAWINGS SHOWING THE ELECTRICAL CONNECTIONS OF A THREEPHASE PUMP

See FIG. 3-4-5

12.3. EXAMPLE OF A PLATE

See FIG. 6.1 (3E) - 6.2 (3ES) (The manufacturer reserves the right to modify it).

FIG. 1

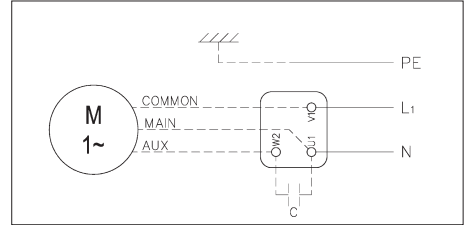


FIG. 2

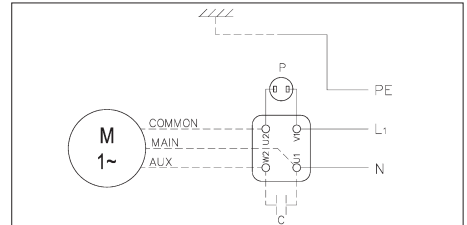


FIG. 3

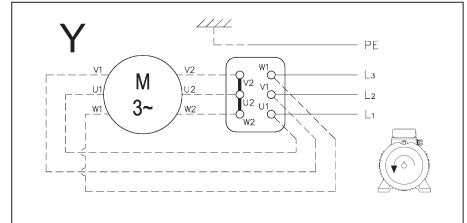


FIG. 4

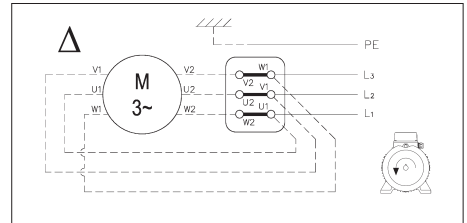
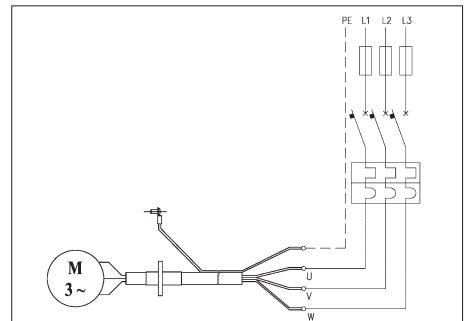


FIG. 5



Transcribed from the supplied photograph. Please compare the finished artwork with the original photo before production, especially any characters that are unclear.

FIG. 6.1



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MADE IN ITALY

Type (1)				(2)			
Q	(3)	m³/h	H	(4)	m	T _{max} liquid	°C
H _{max}	(5)	m	H _{min}	(7)	m	IP	(18)
V ~	(6)					A	(11)
PI/P2	(12)	g	kW	(8)	Hz	(10)	n
IE2	> (50%)		(23)	> (75%)		(24)	(100%)
MEI	> (25)		Hyd. eff.		(26)		%
Ins.C.	(19)	SI	kg	(20)	P/N*	(21)	

FIG. 6.2

									
TYPE		(1)							
Q	(3)	m ³ /h	H	(4)	m	H _{max}	(5)		
						H _{min}	(7)		
	(8)	kW	HP	(9)		min ⁻¹	(14)		
						T _{max liquid}			
					Hyd.eff.		(26)	%	
		kg	(20)	P/N	(21)				

1)	"TYPE"	Modello pompa • Pump model • Modèle pompe • Pumpermodell • Modelo bomba • Pumpens modell • Pumpemodell • Pumpun malli • Model pomp • Modelo bomba Μοντελο αντλιας • Modelo bępada • Modelo bępada • Model pump • Modelъ насоса • Modela pompa • Pompa model • مودل پمپا / صيف المصخة • Model pompy • Moden pumpe • Pumba model • Sůkna model • Šurbilo model • Szivattyú model • Modelъ насоса • Model pumpse • Model pompe • Model ģþþake • Moden na pumpa
	"DATA CODE"	Mese. Anno di produzione e numero di serie (alfanumerico) • Month. Year of manufacture and serial number (alphanumeric) • Mois. Année de fabrication et numéro de série (alphabnumérique) • Monat. Jahr der Herstellung und Seriennummer (alphabetisch) • Mes. Año de fabricación y número de serie (alfanumérico) • Månad. Tillverkningsår och serienummer (alfanumeriskt) • Måned. Produktionsår og serienummer (alfanumerisk) • Kuukausi. Valmistusvuosi ja sarjanumero (aakkosnumeraaliset) • Maand. Bouwjaar en serienummer (alfanumeriek) • Més. Ano de produçáo e número de série (alfanumérico) • Μήνας. Έτος παραγωγής και αριθμός σειράς (αλφαριθμητικός) • Měsic. Rok výroby a výrobní číslo (alfanumerické) • Mesiac. Rod výroby a výrobné číslo (alfanumerické) • Mesiaç. Rok produkcji i numer seřujny (alfanumeryczny) • Месяс. Год производства и серийный номер (буквенно-цифровой) • LUNA. Año de fabricaçáo e sêrie (alfanumérico) • ماه. سال ايرایش و شماره سريال • Mesec. Godina na proizvodstvo i serijski broj (bucvno-cifrovni) • Месяц. Год производства и серийный номер (буквенно-числовой) • Mesec. Godina proizvodnje i serijski broj (alfanumericki) • Mesec. Godina proizvodnje i serijski broj (alfanumericki) • Messec. Leto izdelave in serijska številka (yvesalnuerični oblik) • Meseci. Godina na proizvodstvo i serijski broj (alfanumeričnii)
3)	"Q"	Indicazione dei punti di portata minima e massima • Maximum and minimum flow rate points • Indication des débits MIN et MAXI. • Angabe des min. und des max. Durchsatzes. • Indicación de los puntos de caudal mínimo y máximo. • Indikation om upfordringshöjds punkter som motsvarar min. och max. kapacitet. • Indikation om minimums- og maksimumskapacitetspunkterne • Minimi-ja maksimivirtuvorupeustipeet • Indicate minimum- en maximumdebit • Indicações dos pontos de capacidade mínima e máxima • Ενδείξη ελάχιστων και μεγίστων ρυθμών εκροής • Uđaje o minimalnim i maksimalnim dopravnim mogućostima • Uđaje o minimalnom a maximalnom dopravanom množtvu • Wskazanie punktów minimalnej i maksymalnej przepływu • Указание точек минимальной и максимальной производительности • Indicação punctelor de debit minim și maxim • Minimum ve maksimum kapasite noktaları işareti • حد اکثری کمترین و حداکثری جریان • تداد علی اق و الحد اکثری • Посочване на точите на минимален и максимален поток • Várhata ja suurima láblövöltu tase • Norade uz minimālās un maksimālās plūsmas punktiem • Minimalais ir maksimālais srauto tašķu nurodums • A minimális és maximális áramlási teljesítmény pont megjelölése • Вказка точок мінімальної та максимальної витрати • Označka točaka minimalnog i maksimalnog protoka • Označka točaka minimalnog i maksimalnog protoka • Navedba najnižjega in najvišjega pretoka • Наведување на точките на минимален и максимален проток
4)	"H"	Indicazione dei punti di prevalenza corrispondenti alla minima e massima portata • Head points corresponding to maximum and minimum flow rate • Indication des H.M.T. correspondant aux débits MIN et MAXI. • Angabe der Förderhöhe, die dem min. und dem max. Durchsatz entsprechen • Indicación de los puntos de presión correspondientes a los caudales mínimo y máximo. • Förderung om uppföringshöjdspunkter som motsvarar min. och max. kapacitet. • Indikation om prevalsanspunkterne, svarende til minimums- og maksimumskapaciteten • Minimi-ja maksimivirtuvorupeusta vastavaat painekorkeuskapeista • Indicate van de overhoogte overeenkomstig het minimum- en maximumdebit • Indicações dos pontos de prevalência correspondentes à mínima e à máxima capacidade • Ενδείξη πιέσεων αντισφόνων που αντιστοιχούν στο μέγιστο και ελάχιστο παρόρροϊ • 1. Uđaje o dopravnij výtce (výtlaku) odpovídající minimálnímu a maximálnímu dopravnímu množství • Wskazanie punktów wysokości ciśnienia odpowiadających minimalnemu i maksymalnemu natężeniu • Указание точек напора, соответствующих минимальной и максимальной производительности • Indicação punctelor înălțime de presiune corespundente debitului minim și maxim • Minimum ve maksimum kapasite için basınç yükseltileri noktaları işaretleri • حد اکثری کمترین و حداکثری جریان • تداد علی اق و الحد اکثری • Posocvanie na toचितe na napór, sootvetstvuyushchiy minimal'nuyu i maksimal'nuyu debít • Kõrgus vähima ja suurima láblövöltu taseme juures • Pársvars punktu noráde, kas atbilst minimálajam un maksimálajam plūsmas ātrumam. • Nurodomi minimalų ir maksimalų slautų atitinkamus papilto taškai. • A minimális és maximális áramlási sebességnek megfelelő tértőlponok kijelölése • Вказка точок напора, що відповідають мінімальній та максимальній виробності. • Označka vršnih točaka koje odgovaraju minimalnoj i maksimalnoj brzini protoka • Označka vršnih točaka koje odgovaraju minimalnoj i maksimalnoj brzini protoka • Navedba največjega in najmanjšega izmeta glede na najnižji in najvišji pretok • Индикација на точите на напор кои одговарат на минималната и максималната брзина на проток
5)	"Hmax"	Prevalenza massima • Maximum head • Hauteur MAXI • Max. Förderhöhe • Presión máxima • Max. upfordringshöjd • Maksimum prævelens • Maksimale opvoerhoogte • Prevalencia máxima • Μέγιστον αντισφόν • Maximalni dopravnij výška • Máximálna dopravná výška • Cisnienie maksymalne • Максимальный напор • Înălțime de refulare maximă • Maksimum Basıncı Yükseltiki • حد اکثری ارتفاع تقطیع المصخة • حداکثری • حد اکثری • Максимальна напор • Maksimale kõrgus • Maksimális pársvars • Maksimális príplomás • Maximális tértópn • Максимальний напір • Maksimálna prevalence • Maksimálna prevalence • Najveći izmet • Максимальн напор
	"V"	Tensione nominale/(Rated voltages • Tension's nominales • Nennspannung/en • Tensión'es nominales • Märkspänning • Nominalspænding • Nimelajännitel/nominalltet • Nomiale spanning(en) • Tenses / os nominalis / Овоютки (ёс) Тіон (с) • Jmenovitý nářet • Menovité nářet • Menovité nářet • Napriepela nominálne • Nominalele напряжение (напряжения) • Tensiuni nominale • Nominal gerilmeler • (VOLT) الجيد المتوسطة العتة(ولت) • ولتاژ کاری • Нарпичальні напруги(ен) • Nimpinge (d) • Nominálsis (-iei) spriegums (-i) • Nominali šampa • Névéges feszültség/ek • Номинальнл напругилл • Nazivni paronli • Nazivni paronli • Nominalna-e neprestiti/-i • Номинальні напони
7)	"Hmin"	Prevalenza minima • Minimum head • Hauteur MINI • Min. Förderhöhe • Altura de elevación mínima • Min. upfordringshöjd • Minimum prævelens • Minimale opvoerhoogte • Prevalencia mínima • Ελάχιστο αντισφόν • Minimalni dopravnij výška • Mínimálna dopravná výška • Cisnienie minmalne • Минимальный напор • Înălțime de refulare minimă • Minimum Basıncı Yükseltiki • حد اکثری ارتفاع تقطیع المصخة • حداقلی • حد اکثری • Минимален напор • Minimaale kõrgus • Minimaális pársvars • Minimaals príplomás • Minimals tértópn • Минимальний напір • Minímala prevalence • Minímala prevalence • Najmanjši izmet • Минимален напор
8)	"P2"	Potenza nominale del motore (potenza resa all'asse) • Rated motor power (power delivered at axis) • Puissance nominale du moteur (puissance rendue à l'axe) • Nennleistung des Motors (Leistungsabgabe an der Achse) • Potencia nominal del motor (potencia en el eje) • Motorns märkeffekt (akseffekt) • Motorens nominaleffekt (ytteffekt på akslen) • Moottori nimellisteho (akselin antoteho) • Nominaal vermogen van de motor (vermogen overgebracht op as) • Potencia nominal do motor (potencia resistencia eléctrica) • لویخ تو موتور (لوخوت دن اوبو) • Jmenovitý výkon motoru (výkon vs osu) • Menovitý výkon motoru (merány na axi) • Nominalna moc silnika (moc na osi) • Номинальная мощность двигателя (отдаваемая мощность на ось) • Puterea nominală a motorului (putere la ax) • Motorun nominal gücü (eksen verileri gücü) • قذرة المحرك المعين بالكيلو وات (القذرة الناتجة في المحور) • قذرة المحرك المعين بالكيلو وات (قذرة الناتجة في المحور) • توان کاری موتور اتوان روی محور) • Nominalná motora žuda (ass tejasau jeauda) • Nominali variklio galia (asiazi taikoma galia) • A motor névéges teljesítménye (ja tengelynél feltüntetett) • Номинальная потужність двигуна (показується, що падається на вісь) • Nazivna snaga motora (izlazna snaga prema osi) • Nazivna snaga motora (izlazna snaga prema osi) • Nominalna moc motora (realna moc osi) • Номинална моћност на моторот (моћност наведена на оската)

9)	"HP"	Potenza nominale del motore espressa in HP (horse power) • Rated motor power expressed in HP (horse power) • Puissance nominale du moteur exprimée en HP (horse power) • Nennleistung des Motors, ausgedrückt in HP • Potencia nominal del motor en HP (horse power) • Motors márkoeffekt i hástkraftar • Motorens nominaleffekt uttrykt i HP (hestekræfter) • Moottorin nimellisteho hevosvoimina • Nominaal vermogen van de motor uitgedrukt in HP ("horse power": paardekracht) • Potencia nominal do motor expressa em HP [horse power] • Ονομαστική ισχύς του κινητήρα εκφρασμένη σε HP (ἵππων ἰσχύος) • Jmenovitý výkon motoru vyjadřený v HP (koňská síla) • Menovitý výkon motoru meraný v HP (horse power=koňská síla) • Nominalna moć silnika wyrażona w koniach mechanicznych • Номинальная мощность двигателя, выраженная в л.с. (лошадиных силах) • Puterea nominală a motorului exprimată în HP (horse power) • HP (beygir gücü) olarak belirtilmiş motorun nominal gücü • قدرة المحرك بالحصان • Номинальная мощность на мотора, изразена в HP (конски сили) • Motori nimivõimsus hobujõududes • Nominalná jauda, izteikta HP (zirgspekā jauda) • AG (arklio galimos) įreikšti automati nominali galia • A motor Hp-ben kifejezett névelges teljesítménye (horse power) • Номинальна потужність двигуна, виражена в к.с. (кінських силах) • Nominalna snaga motora izražena u KS (konjska snaga) • Nominalna snaga motora izražena u KS (konjska snaga) • Nominalna moć motora, izražena u HP (konjska moć) • Nominalna moć motora, izražena u HP (konjska moć) • Номинална моћност на моторот изразена во HP (коњска сила)
10)	"Hz"	Frecuencia • Frequency • Fréquence • Frequenz • Frecuencia • Frekvens • Frekvens • Taajius • Frequentie • Frequência • Συχνότητα • Kmitočet • Frecvență • Frekvencia • Częstotliwość • Частота • Frekans • التردد • فركانس • Честота • Sagedus • Frekvence • Dažnis • Frekvencia • Частота • Frekvencija • Frekvence • Pogostost • Фреквенција
11)	"A"	Corrente nominale • Rated current • Courant nominal • Nennstrom • Corriente nominal • Märksström • Nominalström • Nimensilvirta • Nominale stroom • Corrente nominale • Ονομαστικό ρεύμα • Jmenovitý elektrický proud • Menovitý prúd • Prąd nominalny • Номинальный ток • Current nominal • Nominal akim • التيار المعين • Номинален електрически ток • Nimivool • Nominālā strāva • Nomināli srovē • Névelges áramerősség • Номинальный струм • Nazivna struja • Nazivna struja • Nominālni tok • Номинална струја
12)	"P1"	Potenza assorbita dalla linea elettrica • Power absorbed by the electrical line • Puissance absorbée par la ligne électrique • Leistungsaufnahme der elektrischen Leitung • Potencia absorbida por la línea eléctrica • Effektforbrukning • El-linjens absorberade effekt • Ottotelo sähköverkosta • Geabsorbeerd vermogen door het elektriciteitsnet • Potencia absorbida da linha elétrica • Ισχύς του απορροφούμετου από την ηλεκτρική γραμμή • Pīlkon • Moc pochłoniętą przez linię elektryczną • Мощность, потребляемая от электросети • Puterea absorbită de linia electrică • Elektrik hatl tarafindan emilen güç • القدرة المستجوبة من الكهرباء • القوة الممتصة من الكهرباء • توان خط جذب جریان • Мощност, погълната от електрическата линия • Kasutatav vooluterve • Jauda, ko patērē elektriskajā • Elektros līnijas suvartojama galia • Az elektromos vezeték által felvett teljesítmény • Потужність, споживана від електромережі • Apсорbirana snaga • Apсорbirana snaga • Absorbirana moć električnoga voda • Енергија апсорбирана од далноводот
13)	"Phase"	Tipo di motore (monofase o trifase) • Motor type (single phase or threephase) • Type de moteur (monophasé ou triphasé) • Motortyp (Einphasig oder Drehstrom) • Tipo de motor (monofásico o trifásico) • Motortyp (enfas eller trefas) • Motortype (monofasise eller trefase) • Moottorin tyyppi (yksi- tai kolmivaihe) • Motortype (éénfasig of driefasig) • Tipo de motor (monofásico ou trifásico) • Είδος κινητήρα (μονοφασικός ή τριφασικός) • Typ motoru (jednofázový nebo třífázový) • Druh motoru (jednofázový alebo trojfázový) • Rodzaj silnika (jednofazowa lub trójfazowa) • Тип двигателя (однофазный или трехфазный) • Tipul motorului (monofazat sau trifazat) • Motor tip (mono faz veya trifaz) • نوع المحرك (أحادي أو ثلاثي الطور) • نوع موتور (تکفاز یا سه فاز) • Тип мотор (монофазен или трифазен) • Motori tipu (ühe- või kolmefaasiline) • Motora tips (vienfāzes vai trifāžu) • Variklio tipas (vienfazis arba trifazis) • Motor tipus (egyfázisú vagy háromfázisú) • Тип двигуна (однофазний або трифазний) • Tip motora (jednofazni ili trofazni) • Tip motora (jednofazni ili trofazni) • Vrsta motora (enofazni ali trifazni) • Тип на мотор (еднофазен или трофазен)
14)	"min ⁻¹ "	Velocità di rotazione • Rotational speed • Vitesse de rotation • Rotationsgeschwindigkeit • Velocidad de rotación • Rotationshastighet • Rotationshastighed • Υορίσμιση περιστροφών • Rotationsnelheid • Velocidade de rotação • Τογύτης περίοδος • Rychlost otáčení • Rychlost otáček • Predložok obrotov • Скорость вращения • Viteza de rotație • Rotasyon hızı • سرعة الدوران • سرعت دورانی • Скорост на ротация • Rotēriemskiturs • Rotācijas ātrums • Sukimosi greitis • Forgási sebesség • Швидкість обертання • Brzina rotacije • Brzina rotacije • Hlitosť vrtenja • Брзина на ротација
15)	"∇/m"	Massima profondità di funzionamento • Maximum operating depth • Profondeur maximale de fonctionnement • Max. Einsatztiefe • Máxima profundidad de funcionamiento • Maximalt driftdjup • Maksimal driftisdybde • Maksimalkäyttösyyvyys • Maximumdiepte voor functionering • Máxima profundidade de funcionamento • Μέγιστο βάθος λειτουργίας • Maximāli provozni hloubka • Maksimāla prevádzková hĺbka • Maksymalna głębokość działania • Максимална глубина работы • Adăncimea maximă de funcționare • Maksimum çalışma derinliği • العمق الأقصى أو الأكثر لتشغيل • حداکثر عمق کاری • Максимална работна дълбочина • Maksimálne hĺbkúgavus • Maksimālais darba dziļums • Didžiausias veikimo gylis • Maksimālais mūkidēsis mērység • Максимална робоча глибина • Maksimāla radna dubina • Maksimāla radna dubina • Največja globina delovanja • Максимална дълбочина на работа
16)	"μF"	Capacité du condensateur (solo per monofase) • Capacitor capacity (single phase only) • Capacité du condensateur (seulement pour monophasé) • Kapacitāt des Kondensators (nur für einphasige Version) • Capacidad del condensador (sólo monofásico) • Kondensators kapacitē (endast enfass) • Kondensatorkapacitēt (angār kun monofase) • Kondensaattorin kapasitanssi (vain yksivaihe) • Condensatorvermogen (alleen éénfasig) • Capacidade do condensador (somente para monofásica) • Χαρητκήριση του πυκνωτή (μόνο για μονοφασικό ρεύμα) • Kapacita kondenzátoru (pouze u jednofázového čerpadla) • Kapaciteta kondenzatora (len per jednofazni) • Pojemność kondensatora (jedynie dla jednofazowej) • Емкость конденсатора (только для однофазного) • Capacitatea condensatorului (doar pentru monofazat) • Kondensatori kapasitēsi (sadece mono faz) • سعته المكثف (فقط أحادي الطور) • طاقیت خازن (فقط تک فاز) • Капацитет на кондензатора (само монофазен) • Kondensaattori mahutatus (ainult ühefaasiliste) • Kondensatora jauda (tikai vienfāzei) • Kondensatoriaus našumas (tik vienfazis modelis) • A kondenzátor kapacitása (csak egyfázisú motornál) • Емність конденсатора (тільки для однофазного типу) • Kapacitet kondenzatora (samo za jednofaznu pumpu) • Kapacitet kondenzatora (samo za jednofaznu pumpu) • Kapaciteta kondenzatora (le enofazni) • Капацитет на кондензатор (само за еднофазен)
17)	"Vc"	Tensione del condensatore (solo per monofase) • Capacitor voltage (single phase only) • Tension du condensateur (seulement pour monophasé) • Spannung des Kondensators (nur für einphasige Version) • Tensión del condensador (sólo monofásico) • Kondensators spānning (endast enfass) • Kondensatorspænding (angār kun monofase) • Kondensaattorin jännite (vain yksivaihe) • Condensatorspanning (alleen éénfasig) • Tensão do condensador (somente para monofásica) • Τάση του πυκνωτή (μόνο για μονοφασικό ρεύμα) • Napětí kondenzátoru (pouze u jednofázového čerpadla) • Napätie kondenzátora (len per jednofazni) • Napiecie kondensatora (jedynie dla jednofazowej) • Напряжение конденсатора (только для однофазного) • Tensiunea condensatorului (doar pentru monofazat) • Kondensatori gerilimi (sadece mono faz) • جهد المكثف (فقط أحادي الطور) • ولتاژ خازن (فقط تک فاز) • Напряжение на кондензатора (само монофазен) • Kondesaattori pinge (ainult ühefaasiliste) • Kondensatoria spriegums (tikai vienfāzei) • Kondensatoriaus įtampa (tik vienfazis modelis) • A kondenzátor feszültsége (csak egyfázisú motornál) • Напруга конденсатора (тільки для однофазного типу) • Napon kondenzatora (samo za jednofaznu pumpu) • Napon kondenzatora (samo za jednofaznu pumpu) • Napotest kondenzatorja (le enofazni) • Напон на кондензатор (само за монофазен)
18)	"IP"	Grado di protezione della pompa • Pump protection rating • Degré de protection de la pompe • Schutzgrad der Pumpe • Grau de protecção de la bomba • Elpumrens kapslingsklass • Pumpens beskyttelsesgrad • Pumpun suola-aste • Beschermingsgraad van de pomp • Grau de protecção da bomba • Βαθμός προστασίας της αντλίας • Stupeň ochrany čerpadla • Stupień ochrony čerpadla • Stopeń zabezpieczenia • Klasa zaščitne nasosa • Grad de protecție al pompei • Pompa koruma derecesi • مستوى حماية المضخة • درجه حفاظت موتور • Степен на защита на помпата • Pumpa kaitsetase • Sūkņa aizsardzības pakāpe • Siurblio apsaugos laipsnis • A szivattyú védelmi szintje • Ступінь захисту насоса • Stupanj zaštite pumpe • Stupnja zaštite črpalke • Степен на заштита на пумпата
19)	"In s. C. S1"	Classe di isolamento motore e tipo di servizio • Motor insulation class and type of service • Classe d'isolation du moteur et type de service • Isolierungsklasse des Motors und Betriebsart • Clase de aislamiento motor y tipo de servicio • Motors isolation och användningstyp • Moottorin eristysluokka ja käyttötyyppi • Klasse motorisolatione en type working • Classe de isolamento motor e tipo de serviço • Τάξη ισολώνης του κινητήρα και είδος λειτουργίας • Stupeň izolace motoru a typ použití • Trieda izolácie motora a typ použitia • Klasa izolacji silnika i rodzaju obsługi • Klāss izolācijas motora i tipa darbu • Clase de izolatie motor și tip de serviciu • Motori izolasyon sınıfı ve hizmet tipi • نوع العمل • Степен електричнег изолатиона и тип работи • Klas na izolacija na motoru i tip obzluževanja • Moottori izolationsluokka • Moottori izolationsluokka • Moottori izolācijas klase ja arkalpošanas veids • Varkilo izolācijas klase ir aptarmavimo tipas • A motor szigetelési osztálya és a szolgálati típusa • Klasa izolacji dwignu na typ funkcyjowania • Klasa izolacije motora i vrsta rada • Klasa izolacije motora i vrsta rada • Razred izolacije motora i vrsta delovanja • Klasa na motorna izolacija i vid na usluga
20)	"kg"	Peso • Weight • Poids • Gewicht • Peso • Viki • Vægt • Paino • Gewicht • Peso • Βάρος • Hmotnost • Hmotnost • Ciężar • Macca • Greutatea • Ağırlık • الوزن • Терно • Kaal • Svarts • Svoris • Tömeg • Bara • Težina • Težina • Teža • Тежина

21)	"P/N"	Codice articolo pompa • Pump item code • Code article pompe • Artikelnummer der Pumpe • Código artículo bomba • Elpumpens art. nr • Pumpeartikelcode • Pumpun tuotekoodi • Artikelcode pomp • Código artigo bomba • Кодовый артикул насоса • Код артикалу помпы • Код артикалу насоса • Pomba tuotekood • Sūkna precod number • Siurblio artikulo kodas • Szivattyú áruközlő • Код артикулу насоса • Šifra dijela pumpe • Šifra dela pumpe • Koda artikla črpalke • Број на артикул пумпа
22)	Eff. "IE" (50%)	Efficienza motore al 50% del carico e della tensione nominale • Motor efficiency at 50% of the load and rated voltage • Efficacité moteur à 50% de la charge et de la tension nominale • Wirkungsgrad des Motors bei 50% Last und Nennspannung • Eficiencia motor al 50 % de la carga y de la tensión nominal • Motors verkningsgrad vid 50 % belastning och märkspänning • Motoreffektivitet ved 50 % af belastningen og den nominelle spænding • Moottorin hyötysuhde 50 %:n nimelliskuormituksella ja -jännitteellä • Motorrendement op 50% belasting en nominale spanning • Eficiência do motor a 50 % da carga e da tensão nominal • Αποδοχή κινητήρα στο 50 % του φορτίου και της ονομαστικής τάσης • Účinnost motoru pri 50% zátěži a jmenovitém napětí • Účinnost motoru pri 50 % zafatzi a jmenovitom napätí • Sprawność silnika przy 50 % obciążenia i napięciu znamionowym • Эффективность двигателя при 50 % нагрузке и номинального напряжения • Eficienta motorului la 50% din sarcină și din tensiunea nominală • Yükün ve nominal gerilimin %50'ündeki motor etkinliği • راندمان موتور در 50% بار و ولتاژ اسمی • فعالية المحرك عند استخدا 50% من حمل التشغيل والجهود الكهربائي المتعيرة • Эффективност на мотора при 50% от натоварването и от номиналното напрежение • Moottori efektiivsus 50% nimipingest ja -koormusest • Motora efektivitate pie 50% slodzes un nominālā sprieguma • Variklio efektyvumas esant 50 % apkrovos ir nominaliai įtampai • A motor hatékonysága a terhelés és a névleges feszültség 50%-ánál • ККД двигателя при 50% навантаження та номінальної напруги • Učinkovitost motoru pri 50% opterećenja i nazivnog napona • Efikasnost motoru pri 50% opterećenja i nazivnog napona • Učinkovitost motorja pri 50 % obremenitve in nominalnega toka • Ефикасност на моторот при 50% од отпавувањето и номиналниот напон
23)	Eff. "IE" (75%)	Efficienza motore al 75% del carico e della tensione nominale • Motor efficiency at 75 % of the load and rated voltage • Efficacité moteur à 75 % de la charge et de la tension nominale • Wirkungsgrad des Motors bei 75% Last und Nennspannung • Eficiencia motor al 75 % de la carga y de la tensión nominal • Motors verkningsgrad vid 75 % belastning och märkspänning • Motoreffektivitet ved 75 % af belastningen og den nominelle spænding • Moottorin hyötysuhde 75 %:n nimelliskuormituksella ja -jännitteellä • Motorrendement op 75% belasting en nominale spanning • Eficiência do motor a 75 % da carga e da tensão nominal • Αποδοχή κινητήρα 75 % του φορτίου και της ονομαστικής τάσης • Účinnost motoru pri 75 % zátěži a jmenovitém napětí • Účinnost motoru pri 75 % zafatzi a jmenovitom napätí • Sprawność silnika przy 75 % obciążenia i napięciu znamionowym • Эффективность двигателя при 75 % нагрузке и номинального напряжения • Eficienta motorului la 75% din sarcină și din tensiunea nominală • Yükün ve nominal gerilimin %75'indeki motor etkinliği • راندمان موتور در 75% بار و ولتاژ اسمی • فعالية المحرك عند استخدا 75% من حمل التشغيل والجهود الكهربائي المتعيرة • Эффективност на мотора при 75% от натоварването и от номиналното напрежение • Moottori efektiivsus 75% nimipingest ja -koormusest • Motora efektivitate pie 75% slodzes un nominālā sprieguma • Variklio efektyvumas esant 75% apkrovos ir nominaliai įtampai • A motor hatékonysága a terhelés és a névleges feszültség 75%-ánál • ККД двигателя при 75% навантаження та номінальної напруги • Učinkovitost motoru pri 75% opterećenja i nazivnog napona • Efikasnost motoru pri 75% opterećenja i nazivnog napona • Učinkovitost motorja pri 75 % obremenitve in nominalnega toka • Ефикасност на моторот при 75% од отпавувањето и номиналниот напон
24)	Eff. "IE" (100%)	Efficienza motore al 100% del carico e della tensione nominale • Motor efficiency at 100 % of the load and rated voltage • Efficacité moteur à 100 % de la charge et de la tension nominale • Wirkungsgrad des Motors bei 100% Last und Nennspannung • Eficiencia motor al 100 % de la carga y de la tensión nominal • Motors verkningsgrad vid 100 % belastning och märkspänning • Motoreffektivitet ved 100 % af belastningen og den nominelle spænding • Moottorin hyötysuhde 100 %:n nimelliskuormituksella ja -jännitteellä • Motorrendement op 100 % belasting en nominale spanning • Eficiência do motor a 100 % da carga e da tensão nominal • Αποδοχή κινητήρα 100 % του φορτίου και της ονομαστικής τάσης • Účinnost motoru pri 100 % zátěži a jmenovitém napětí • Účinnost motoru pri 100 % zafatzi a jmenovitom napätí • Sprawność silnika przy 100 % obciążenia i napięciu znamionowym • Эффективность двигателя при 100 % нагрузке и номинального напряжения • Eficienta motorului la 100% din sarcină și din tensiunea nominală • Yükün ve nominal gerilimin %100'ündeki motor etkinliği • راندمان موتور در 100% بار و ولتاژ اسمی • فعالية المحرك عند استخدا 100% من حمل التشغيل والجهود الكهربائي المتعيرة • Эффективност на мотора при 100% от натоварването и от номиналното напрежение • Moottori efektiivsus 100% nimipingest ja -koormusest • Motora efektivitate pie 100% slodzes un nominālā sprieguma • Variklio efektyvumas esant 100% apkrovos ir nominaliai įtampai • A motor hatékonysága a terhelés és a névleges feszültség 100%-ánál • ККД двигателя при 100% навантаження та номінальної напруги • Učinkovitost motoru pri 100% opterećenja i nazivnog napona • Efikasnost motoru pri 100% opterećenja i nazivnog napona • Učinkovitost motorja pri 100 % obremenitve in nominalnega toka • Ефикасност на моторот при 100% од отпавувањето и номиналниот напон
25)	"MEI >"	Indice che misura la qualità della pompa rispetto la sua efficienza • Index measuring the quality of the pump with respect to its efficiency • Indice qui mesure la qualité de la pompe par rapport à son efficacité • Index für Qualität der Pumpe in Bezug auf ihren Wirkungsgrad • Indice que mide la calidad de la bomba con respecto a su eficiencia • Index som mäter kvaliteten på pumpen i förhållande till dess effektivitet • Indeks, der måler pumpens kvaliteten i forhold til dens effektivitet • Vähimmäishyötysuhdeindeksi • Getal dat de kwaliteit van de pomp met betrekking tot het rendement hiervan uitdrukt • Indice que mede a qualidade da bomba em relação a sua eficiência • Δείκτης που μετράει την ποιότητα της αντλίας σε σχέση με την απόδοσή της • Index, který měří kvalitu čerpadla vzhledem k jeho účinnosti • Index, który wyraża jakość czepadła w zhdze k jego ućinnosci • Wskaźnik, który mierzy jakoć pompy w stosunku do jej sprawności • Коэффициент измерения качества насоса относительно его эффективности • Indice care măsura calitatea pompei față de eficiența sa • Etkinlikine göre pompanın kalitesini ölçen gösterge • شاخص اندازه گیری کیفیت پمپ با در نظر گرفتن راندا ۱۱ • مؤثر و قیس چوۃ الجرضخ وفقاً للفاعا • Индекс, който измерва качеството на помпата спрямо нейната ефективност • Pumba kvaliteedi suhe jõudluse suhtes • Indeks, kas mēra sūkna kvalitāti attiecībā uz tā efektivitāti • Siurblio kokybės matavimas palyginti su efektyvumu • Mutató, mely a szivattyú minőségét méri annak hatékonyságához képest • Коэффициент вимірю якості насоса відносно його ефективності • Indeks koji mjeri kvalitetu pumpe s obzirom na njezinu učinkovitost • Indeks koji mjeri kvalitetu pumpe s obzirom na njezinu efikasnost • Indeks kakovosti črpalke glede na njeno učinkovitost • Индекс што го мери квалитетот на пумпата во однос на нејзината ефикасност
26)	"Hyd. Eff."	Efficienza idraulica della pompa • Hydraulic efficiency of the pump • Efficacité hydraulique de la pompe • Hydraulischer Wirkungsgrad der Pumpe • Eficiencia hidráulica de la bomba • Pumpens hydrauliska effektivitet • Pumpens hydrauliske effektivitet • Pumpun hydraulinen hyötysuhde • Hydraulisch rendement van de pomp • Eficiencia hidráulica da bomba • Υδραυλική απόδοση της αντλίας • Hydraulická účinnost čerpadla • Hydraulická účinnost čerpadla • Sprawność hydrauliczna pompy • Гидравлическая эффективность насоса • Eficienta hidraulică a pompei • Pompanin hidroliek etkinliği • الفاعا الهيدروليكية للبرضخ • راندا ۱۱ هيدروليكية • Эффективность гидравлического насоса • Индекс, който измерва ефективността на помпата • Pumba hidrauliline efektiivsus • Sūkna hidrauliska efektivitate • Siurblio hidraulinis efektyvumas • A szivattyú hidraulikus hatékonysága • Гидравлическа ефективність насоса • Hidraulička učinkovitost pumpe • Hidraulička efikasnost pumpe • Hidraulična učinkovitost črpalke • Хидравлическа ефикасност на пумпата

FIG. 7

SINGLE PHASE		
Voltage indicated in the label	Tolerance	Operative
110 [V]	± 6%	103 - 117 [V]
115 [V]	± 6%	108 - 122 [V]
220 [V]	± 6%	207 - 233 [V]
230 [V]	± 10%	207 - 253 [V]
240 [V]	± 6%	226 - 255 [V]
208-230 [V]	± 6%	196 - 244 [V]
220-230 [V]	± 6%	207 - 244 [V]
230-240 [V]	-10% +6%	207 - 255 [V]
Other [V]	± 5%	–

THREE PHASE			
Voltage indicated in the label	Tolerance	Operative Range	
		Delta connection "Δ"	Star connection "Y"
220 Δ/ 380 Y [V]	± 6%	207 - 233 Δ	357 - 403 Y [V]
240 Δ/ 415 Y [V]	± 6%	226 - 253 Δ	390 - 440 Y [V]
230 Δ/ 400 Y [V]	± 10%	207 - 253 Δ	360 - 440 Y [V]
220-240 Δ/ 380-415 Y [V]	± 6%	207 - 253 Δ	360 - 440 Y [V]
230-240 Δ/ 400-415 Y [V]	-10% +6%	207 - 253 Δ	360 - 440 Y [V]
230 [V]	± 10%	207 - 253 Δ	not available
400 [V]	± 10%	not available	360 - 440 Y [V]
208 - 230 [V]	± 5%	198 - 242 Δ	not available
460 [V]	-10% +6%	not available	414 - 488 Y [V]
Other [V]	± 5%	–	–

FIG. 8

MAXIMUM NR OF STARTS PER HOUR EQUALLY DISTRIBUTED		
Nominal motor power (P2) [kW]	Closed couple pumps [N.°]	EVM, 3S, 3P [N.°]
≤ 1.85	40	35
2.2 ÷ 4	30	30
5.5 – 7.5	20	20
9.2 ÷ 13	15	15
15 – 18.5	12	15
22 – 30	12	12
37 – 45	/	8
55	/	4

SERIES PRODUCT:

JES, JE, JESX, JEX, AGA, AGC, CD, CDX, CDXL, 2CDX, 2CDXL, DWO, DWC, CMA, CMB, CMC, CMD, CMR, CDA, PRA, LPS, COMPACT, CVM, MATRIX, 3M, 3LM, 3S, 3LS, 3P, 3LP, 3PF, 3LPF, 3D, 3DS, 3DP, MD, 3E, 3ES

EN: CE DECLARATION OF CONFORMITY (ORIGINAL)

We, EBARA PUMPS EUROPE S.p.A., with head office in Via Campo Sportivo, 30 38023 Cles (TN) – ITALY , hereby declare under our own responsibility that our products pump conform to the provisions of the following European directives: Machinery Directive 2006/42/EC ; Low Voltage Directive 2014/35/EU; Electromagnetic Compatibility Directive 2014/30/EU; Directive RoHS II 2011/65/EU, Directive EcoDesign 2009/125/EC and Reg. (UE) n.547/2012, Reg. (UE) 2019/1781, Directive RAEE 2012/19/UE and the following harmonized technical standards: EN 809:1998+A1:2009; EN ISO 12100:2010, EN 60335-1:2012/A15:2021, EN 60335-2-41:2012, EN 55014-1:2017, EN 55014-2:2015, EN 62233:2008.

Gambellara, 13 May 2024


Mr. Minoru Matsushita
Managing Director
EBARA PUMPS EUROPE S.p.A
Via Campo Sportivo, 30
38023 Cles (TN) ITALY

Person authorised to compile technical file and
empowered to sign the EC declaration of conformity.

OPERATING AND MAINTENANCE MANUAL PART 2

THE USER SHOULD KEEP THIS DOCUMENT

1. INTRODUCTION

This instruction manual is split into two booklets: PART 1, containing general information regarding our whole product range; and PART 2, containing information specific to the motor-driven pump you have purchased. The two publications are complementary to each other, so make sure you have both.

Comply with the instructions contained in them to get the most out of your motor-driven pump and assure its proper operation. If you need further information, get in touch with your nearest authorized dealer. If information in the two parts contradict each other, take PART 2 containing the product's specific information as valid.

NO PART OF THESE ILLUSTRATIONS AND/OR TEXT MAY BE REPRODUCED FOR ANY REASON.

The following symbols have been used in the compilation of this instruction booklet:

WARNING! Risk of damaging the pump or the system



Risk of causing injury and damaging property



Electric Hazard



Risk from Hot surface

2. CONTENTS (PART 2)

- | | |
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| 1. INTRODUCTION | page 10 |
| 2. CONTENTS | page 10 |
| 3. DESCRIPTION AND USE OF MOTOR-DRIVEN PUMP | page 10 |
| 4. SPECIFICATION | page 10-11 |

3. DESCRIPTION AND USE OF MOTOR-DRIVEN PUMP

3.1 DESCRIPTION

MODEL/Type	Cast iron	Description
3E	X	Inline End suction close coupled cast iron pump
3ES	X	Inline End suction close coupled with flanged motors and rigid coupling

The motor-driven pumps are employed to handle cold and hot water (see section 4) and are used in permanent installations. They are built with materials assuring long life and consistent performance if used according to the instructions given in Part 1 and 2 of the manual. Their special construction means they can be disassembled to service the motor and replace the impeller and mechanical seal without having to disconnect the pump casing from the suction and delivery lines. They are designed for low and medium delivery rates in conformity with EN 733 DIN 24255 standards and other corresponding European standards.

3.2 USE FOR WHICH PUMPS ARE DESIGNED

The motor-driven pumps can be used for the following applications: **RESIDENTIAL AND COMMERCIAL:** General water supply, water

lifting, swimming pool, pressure boosting systems, air-conditioning, cooling.

FARMING: sprinkler or flood irrigation.

INDUSTRIAL: water handling, Chilling unit, Boiler, Heat Exchanger, coolant unit.

Use the motor-driven pump based on its technical specifications.

3.3 USE FOR WHICH PUMPS ARE NOT DESIGNED

3E inline motor-driven pumps cannot be used to handle dirty water, water containing acids and corrosive liquids in general, water with temperatures higher than those mentioned in section 4, saltwater, flammable liquids and hazardous liquids in general.

The motor-driven pumps must never be made to work without liquid.

4. SPECIFICATIONS

4.1 PUMP SPECIFICATIONS

	U/M	3E/3ES
Temperature of liquid pumped	°C	-10 to 120
Suction diameter	mm	32-40-50-65-80-100
Delivery diameter	mm	32-40-50-65-80-100
Maximum working pressure	MPa	1.0/1.6

4.2 MOTOR SPECIFICATIONS

TYPE	TEFC
RATINGS	See motor-driven pump rating plate
OVERLOAD PROTECTION	THREE PHASE: prepared by installer

4.3 INFORMATIONS ON AIRBORNE NOISE

Power [kW]	Motor Frame		50Hz LpA [dB] (A)*	
	3E	3ES	3E	3ES
0.37	80	-	<70	-
0.55	80	80	<70	<70
0.75	90	80	<70	<70
1.1	90	90	<70	<70
1.5	90	90	<70	<70
2.2	90	90	<70	<70
3	100	100	76	<70
4	100	112	76	<70
5.5	112	132	79	<70
7.5	112	132	82	<70
9.2	132	132	82	<70
11	132	160	82	70
15	132	160	80	70
18.5	160	160	86	70
22	160	180	86	70

Power [kW]	Motor Shaft		4pole 50Hz LpA [dB] (A)*	
	3E	3ES	3E	3ES
≤3	71-100	71-100	<70	<70
*Sound pressure level - Mean value of measurements taken 1 m from the pump. Tolerance ±2.5 dB.				

THE MANUFACTURER RESERVES THE RIGHT TO AMEND TECHNICAL DATA FOR THE PURPOSE OF PRODUCT IMPROVEMENTS AND UPDATING.

5. PREPARING FOR USE

WARNING! TO LIFT OR MOVE THE MOTOR-DRIVEN PUMP, USE A ROPE STRONG ENOUGH TO TAKE ITS WEIGHT, TAKING CARE NOT TO TILT THE PUMP TOO MUCH (FIG 1);

5.1 INSTALLATION

To install the pump, proceed as directed in PART 1, chapter 7.2 and in the following points:

- Use pipes of a suitable diameter, Suction pipe should be absolutely airtight, with a diameter larger or equal to pump suction nozzle diameter. (see chapter 4).
- Piping should always be connected to avoid any kind of stress to pumps.
- The pumps can be installed on delivery or return pipes and in horizontal and vertical position, provided the motor is never placed below the pump to avoid water leakage into motor or bearings. (FIG 2) (Note that vertical installation is possible for $\leq 7.5\text{kW}$ 2 Pole and $\leq 1.1\text{kW}$ 4 pole units)
- We recommend the use of gate valves upstream and downstream the pump.
- Pump should not be installed in the lowest point of the system to avoid settlements buildup.
- For a correct air bleeding it is necessary to fill up the whole system.

5.1.1 FOR MOTOR-DRIVEN PUMPS

For the units of $\leq 11\text{kW}$, baseplate is essential. We recommend to use a raised base plate which would make it easier to insert a container underneath to catch a liquid when the pump casing needs draining, and would double as a safety platform when the floor is in danger of being flooded. When units are placed directly on the floor, it is needed to set the base plate with anchor bolts in the concrete.

Please tighten the anchor bolt properly to avoid unwanted vibration.

5.2 PIPEWORK

To install pipes, proceed as directed in PART1, chapter 7 and in the following points:

- Do not fit the pump on misaligned pipes
- Use a suitable support for the suction and delivery line
- Install a non-return valve between the pump and delivery gate valve in the following cases:
 - when piping is long
 - when actual head is high
 - when the pump is automatic
 - when water is pumped into the tank
 - when two or more pumps are working in parallel
- Additional valves on the pipes are recommended, in order to isolate the pumps in case of maintenance

5.3 FILLING THE PUMPS

WARNING! OPERATION TO BE PERFORMED WITH THE MOTOR'S TERMINAL STRIP FULLY CLOSED

- Remove the plug/hexagonal cap located on top of the pump casing (FIG 4);
- With the aid of the funnel, fill the pump with water to overflowing;
- Screw the plug/hexagonal cap back on until it is locked tight to prevent air to get in

5.4 DISASSEMBLING MOTOR-DRIVEN PUMPS

All the parts of these pumps can be disassembled and inspected with-

out removing the pump casing and pipes.

To remove the motor/pump rotating part from the pump casing, proceed as follows:

- Remove the bolt between the pump casing and motor bracket and simply remove the motor axially. Use any suited hoist when lifting/moving the pump. (FIG 1)

Please be more attentive during disassembling when pumps are arranged in horizontal position. First give a support to motor before loosening the bolts of the motor and pump casing.

For repairing, please send the pump to the manufacturer or to an authorized shop.

5.5 HANDLING THE PUMP

During transportation, assembly and disassembly, keep the pumps on a flat surface. Try to avoid slant surfaces or rough surfaces as much as possible. If there is a slant surface, then it is highly recommend to use base plate and properly set it with anchor bolt.

6. DIAGRAMS AND DRAWINGS

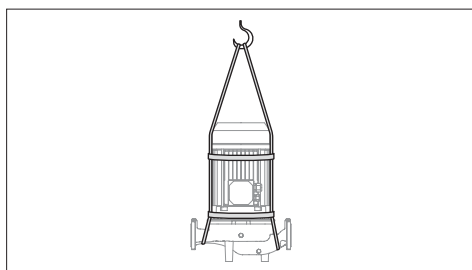


FIG.1: Lifting of 3E pumps with the help of rope

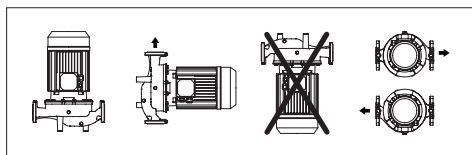


FIG 2: Installation of motor $\leq 7.5\text{kW}$ 2 pole and $\leq 1.1\text{kW}$ 4 pole

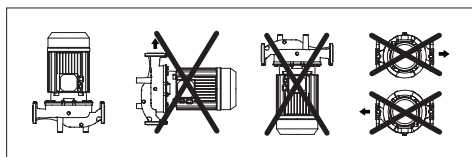


FIG 3: Installation of motor $\geq 9.2\text{kW}$ 2 pole and $\geq 1.5\text{kW}$ 4 pole

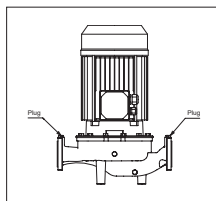


FIG 4: Plugs required to check the filling of pumps

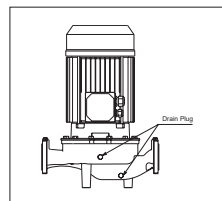


FIG 5: Drain Plugs on pumps

SERIES PRODUCT: 3E SERIES UNIT

EN: EC DECLARATION OF CONFORMITY (ORIGINAL)

We, EBARA PUMPS EUROPE S.p.A., with head office in Via Campo Sportivo, 30 38023 Cles (TN) – ITALY , hereby declare under our own responsibility that our products conform to the provisions of the following European directives: Low Voltage Directive 2014/35/EU; Electromagnetic Compatibility Directive 2014/30/EU; RoHS Directive 2011/65/EU; Directive RAEE 2012/19/EU; EcoDesign - Water Pump Regulations (EU) n.547/2012 and the following harmonized technical standards: EN 809:1998+A1:2009; EN 60335-1:2012+A15:2021; IEC 60335-2-41:2021+A11:2021; EN IEC 63000:2018; EN 16480:2016.

Gambellara, 13 May 2024


Mr. Minoru Matsushita
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Person authorised to compile technical file and
empowered to sign the EC declaration of conformity.

Notes

Notes



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