DW VOX

PART 1

Covers the following:

JES-JE- JESX-JEX- AGE-AGF-AGA-AGC; CD-2CD; CDX-2CDX-DWO-DWC-CMA-CMB-CMC-CMD-CMR-CDA; PRA; LPS; COMPACT-CVM-MULTIGO; EVM; 3SERIES-MD; BEST-RIGHT-DW; WINNER-BHS-IDROGO.

PART 2

Covers the following:

OPTIMA-BEST ONE-BEST ONE VOX-BEST 2-5-RIGHT-DW-DW VOX

Stainless Steel Submersible pump.

EBARA

INSTRUCTION MANUAL REGARDING USE AND MAINTENANCE
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 production and PART 2 which contains specific information regarding the motor-driven pump that you have purchased. The two booklets are complementary to each other, therefore make sure that you have both of them.
Follow the instructions given in these booklets 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 booklets contain contrasting information, keep to what is indicated in PART 2 (product specifications).

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

3. MANUFACTURER IDENTIFICATION DATA

3.1. MANUFACTURER DATA

EBARA PUMPS EUROPE S.p.A.

Plant management:
Via Pacinotti, 32 - 36040 BRENDOLA (VI) ITALY
Telephone: 0444/706811 - Telefax: 0444/706950 - Telex: 480536

Registered office:
Via Campo Sportivo, 30 - 38023 CLES (TN) ITALY
Telephone: 0463/660411 - Telefax: 0463/422782

3.2. MOTOR-DRIVEN PUMPS

See plates in FIG. 6:	6.1 for motor-driven surface pumps
	6.2 for submersible motor-driven 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).**
	**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.**
	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.

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

The only residual risk is the possibility of coming into contact (even if not accidentally) with the motor cooling fan by inserting thin objects (i.e. screwdrivers, small sticks, etc.) through the holes of the fan cover.

6. TECHNICAL-PRODUCTION CHARACTERISTICS

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

- MECHANICAL RISKS (Enclosure I Machines Directive):
  - EN 292-1 and EN 292-2
- ELECTRICAL RISKS (Enclosure I Machines Directive):
  - EN 292-1 and EN 292-2
  - CEI EN 60204-1
- VARIOUS RISKS (Enclosure I Machines Directive):
  - 98/37/CE – Enclosure I

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

7. INSTALLATION, DISMANTLING AND TRANSPORT

WARNING!

INSTALLATION MUST BE CARRIED OUT BY A QUALIFIED ENGINEER.

7.1. GENERAL INSTALLATION PRECAUTIONS

a) Use metal or rigid plastic pipes in order to avoid their yielding because of the depression created at suction;
b) support and align pipes so that they do not put any stress on the pump;
c) avoid throttlings caused by bending suction and delivery hoses;
d) seal any piping connections: air infiltration in the suction pipe negatively affects pump operation;
e) we recommend that a non-return valve and a gate are installed on the delivery pipe at the motor-driven pump outlet;
f) fix the piping to the reservoir or to any fixed parts so that it is not supported by the pump;
g) do not use a lot of bends (goosenecks) and valves;
h) 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 suctions longer than 4 metres use an oversized pipe (1/4" wider at suction for improved efficiency).

7.2. INSTALLATION

a) 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;
b) lower submersible pumps using a rope fixed to the handle and hooks provided;
c) 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;
d) SURFACE PUMPS cannot be moved or used in the open except as stated in PART 2;
e) 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:
a) disconnect the electric supply;
b) remove the delivery and suction pipes (where present) if too long or bulky;
c) if present, unscrew the screws that secure the motor-driven pump to its supporting surface;
d) if present, hold the power cable;
e) 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.

8. ELECTRICAL CONNECTION

– **ELECTRICAL CONNECTION MUST BE CARRIED OUT BY A QUALIFIED ENGINEER.**
– **IT IS ADVISABLE TO INSTALL A HIGH INTENSITY DIFFERENTIAL SWITCH (0.03 A) ON BOTH THE THREEPHASE AND SINGLE PHASE VERSIONS.**

WARNING! 	**We recommend that power is supplied to the motor-driven pump using an electric panel equipped with switch, fuses and a thermal switch calibrated to the current absorbed by the motor-driven pump.**
	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 a clockwise direction. If this is not the case (and it turns in an anti-clockwise direction) invert two of three wires in the motor base.

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

a) Our surface pumps are designed to operate at a temperature no higher than 40°C and a level no higher than 1000 metres;
b) our motor-driven pumps cannot be used in swimming pools or similar plants;
c) prolonged motor pump operation with the delivery pipe closed can cause damage;
d) avoid switching the motor pump on and off too frequently (check the maximum number in FIG. 8);
e) during power cuts, it is advisable to disconnect the power to the pump.

9.2. STARTING

a) Start the pump two or three times to check system conditions;
b) restrict the delivery to cause a rapid pressure increase for a few times;
c) make sure that the noise, vibration, pressure and electrical voltage levels are normal.

9.3. STOPPING

a) Gradually interrupt water circulation in the delivery section to avoid overpressure in the piping and pump caused by water hammering;
b) switch off the main switch.

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.

10.1. TROUBLESHOOTING

DISPLAYED FAULT	CAUSE	SOLUTION
THE PUMP DOES NOT WORK The motor does not turn	No electricity	Check the electrical supply meter
	Plug not inserted	Check the connection to the power supply
	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
	Float sticking	Check that the float reaches the level ON
	Thermal protection activated (single phase)	It reactivates automatically (single phase only)
THE PUMP DOES NOT WORK The motor turns	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
	Pressure too low	Restrict the delivery gate
THE PUMP WORKS with a reduced flow rate	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
	Leaks from piping	Check the joints
	Pressure too high	Recheck the system
THE PUMP STOPS AFTER WORKING FOR BRIEF PERIODS Thermal protection intervention	Liquid temperature too high	The temperature exceeds the technical limits of the pump
	Internal fault	Contact the nearest retailer
THE PUMP STOPS AFTER WORKING FOR BRIEF PERIODS Pressure applications	The difference between maximum and minimum pressure is minimal	Increase the difference between the two pressures
THE PUMP DOES NOT STOP Pressure applications	Maximum pressure too high	Set maximum pressure at a lower value
THE PUMP VIBRATES Or is too noisy during operation	Flow rate too high	Reduce the flow rate
	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

11. DISPOSAL

When disposing of the pump, please comply rigorously with the regulations in force in your country, making sure that residues of the treated liquid are not left inside the pump.
Most of our pumps do not contain hazardous polluting material. Specific cases are, however, indicated in the “DISPOSAL” chapter in PART 2.

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. 6.1-6.2 (The manufacturer reserves the right to modify it).

FIG. 1

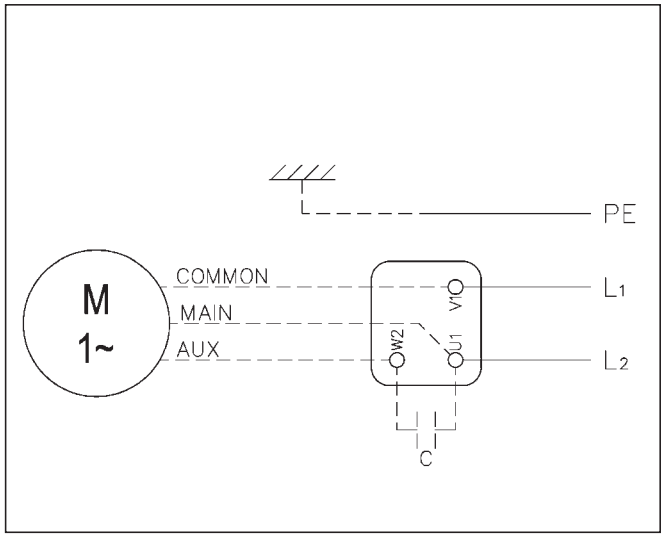


FIG. 2

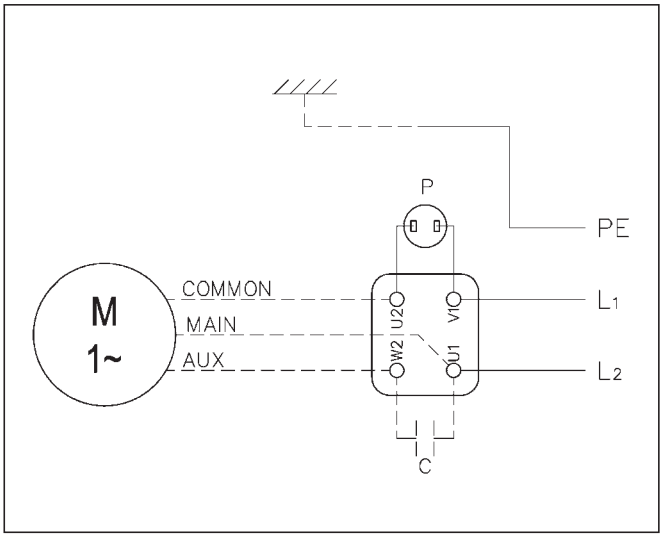


FIG. 3

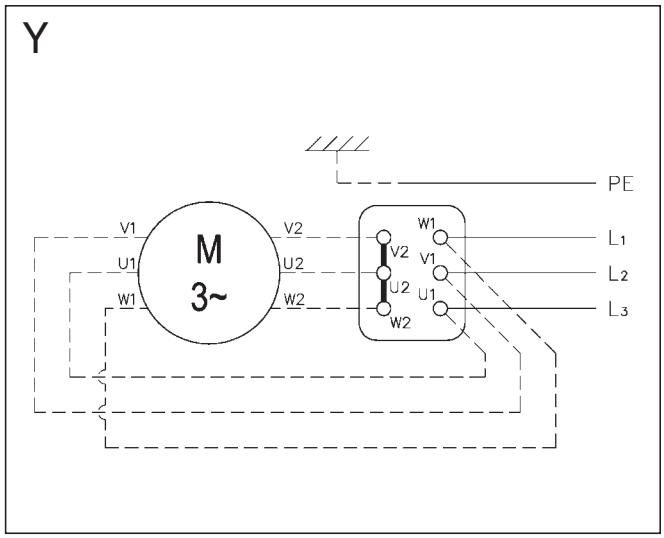


FIG. 4

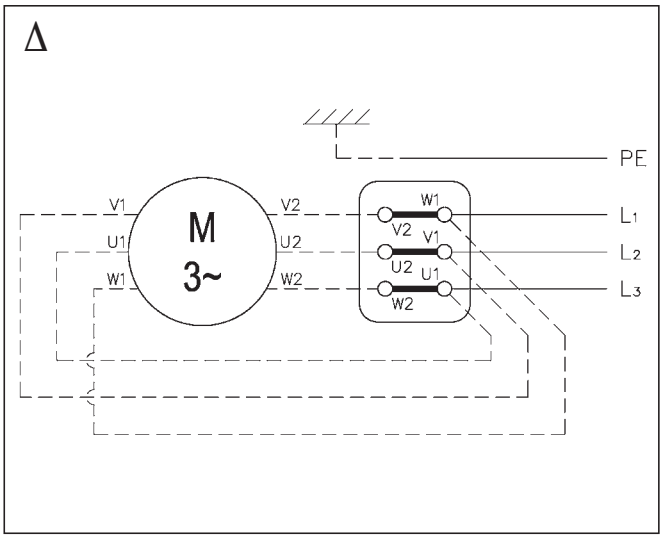


FIG. 5

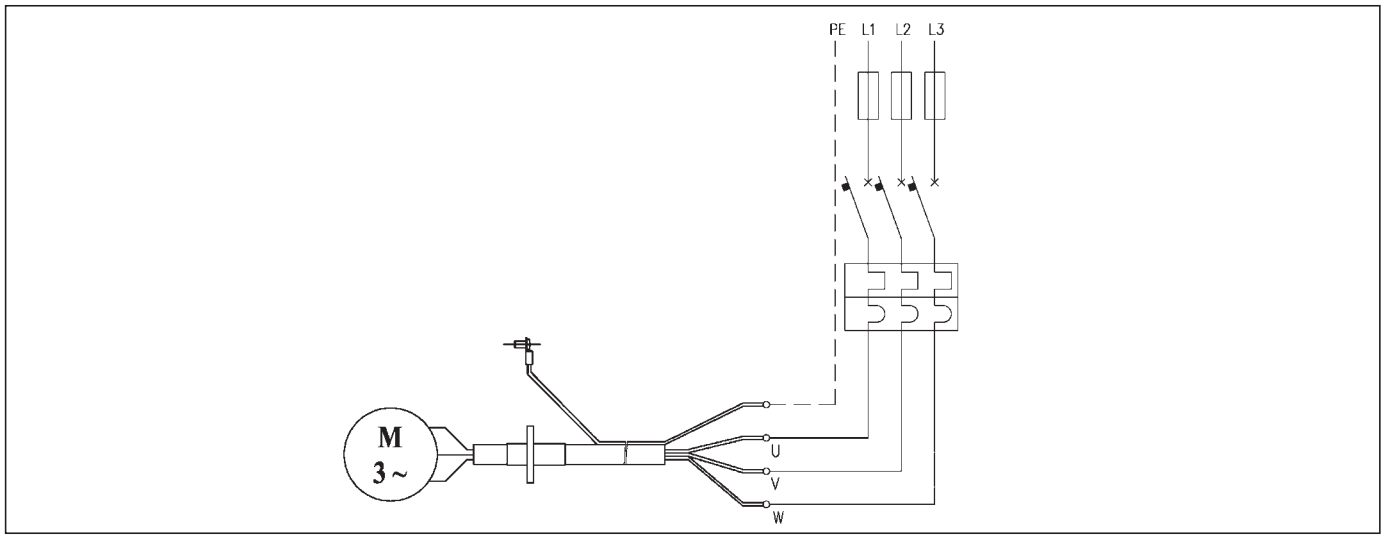


FIG. 6.1

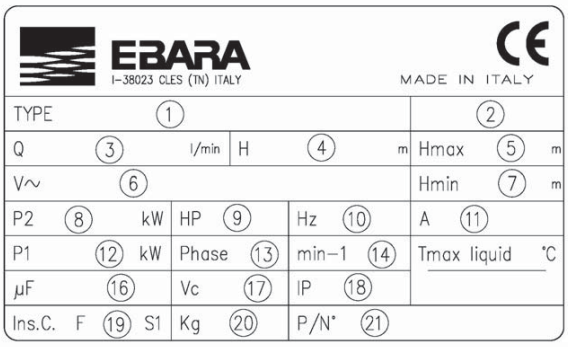
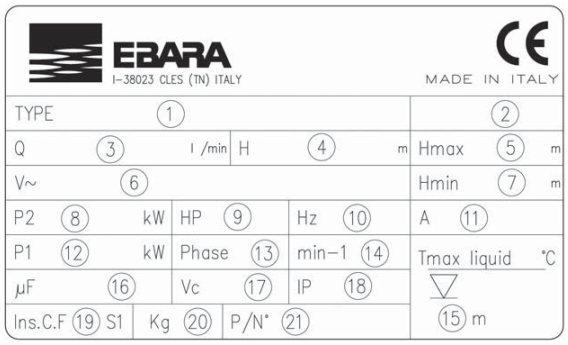


FIG. 6.2



1)	**"TYPE"**	Modello pompa • Pump model • Modèle pompe • Pumpenmodell • Modelo bomba • Pumpens modell • Pumpemodel • Pumpun malli • Model pomp • Modelo bomba • Μοντέλο αντλίας • Model čerpadla • Model čerpadla • Model pompy • Модель насоса • Pompa modeli • نموذج / صنف المضخة
2)	**"DATA CODE"**	Numero di serie • Serial number • Numéro de série • Seriennummer • Número de serie • Serienummer • Serienummer • Sarjanumero • Serienummer • Numero de série • Αριθμός σειράς • Výrobní číslo • Číslo série • Numer fabryczny • Серийный номер • Seri numarası • رقم تسلسل المضخة
3)	**"Q"**	Indicazione dei punti di portata minima e massima • Maximum and minimum flow rate points • Indication des débits MINI et MAXI. • Angabe des min. und des max. Durchsatzes • Indicación de los puntos de caudal mínimo y máximo • Indikation om punkter för min. och max. kapacitet • Indikation om minimums- og maksimumskapacitetspunkterne • Minimi- ja maksimivirtausnopeuspisteet • Indicatie minimum- en maximumdebiet • Indicações dos pontos de capacidade mínima e máxima • Ένδειξη ελάχιστων και μέγιστων τιμών παροχής • Údaje o minimálním a maximálním dopravovaném množství • Údaje o minimálnom a maximálnom dopravovanom množstve • Wskazanie punktów minimalnej i minimalnej nośności • Указание точек минимальной и максимальной производительности • Minimum ve maksimum kapasite noktaları işareti • تدل على اقل و اكثر كمية تعطيه المضخة
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 MINI 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 • Indikation om uppfordringshöjdspunkter som motsvarar min. och max. kapacitet • Indikation om prævalenspunkterne, svarende til minimums- og maksimumskapaciteten • Minimi- ja maksimivirtausnopeutta vastaavat painekorkeuspisteet • Indicatie van de opvoerhoogte overeenkomstig het minimum- en maximumdebiet • Indicações dos pontos de prevalência correspondentes á mínima e á máxima capacidade • Ένδειξη τιμών ανύψωσης που αντιστοιχούν στη μέγιστη και ελάχιστη παροχή • 1.Údaje o dopravní výšce (výtlaku) odpovídající minimálnímu a maximálnímu dopravovanému množství • Údaje o dopravnej výške (výtlaku) odpovedajúcej minimálnemu a maximálnemu dopravovanému množstvu • Wskazanie punktów wysokiego ciśnienia odpowiadających minimalnego i maksymalnej nośności • Указание точек напора, соответствующих минимальной и максимальной производительности • Minimum ve maksimum kapasite için basınç yüksekliği noktaları işareti • تدل على اقل و اكثر ارتفاع تعطيه المضخة بالنسبة الى الكمية
5)	**"Hmax"**	Prevalenza massima • Maximum head • Hauteur MAXI • Max. Förderhöhe • Presión máxima • Max. uppfordringshöjd • Maksimum prævalens • Maksimipainekorkeus • Max. opvoerhoogte • Prevalência máxima • Μέγιστη ανύψωση • Maximální dopravní výška • Maximálna dopravná výška • Ciśnienie maksymalne • Максимальный напор • Maksimum Basınç Yüksekliği • اكثر ارتفاع تعطيه المضخة
6)	**"V~"**	Tensione/i nominale/i • Rated voltage/s • Tension/s nominale/s • Nennspannung/en • Tensión/es nominal/es • Märkspänning • Nominalspænding • Nimellisjännite/-jännitteet • Nominale spanning(en) • Tensões / os nominais/ i • Ονομαστική (ές) Τάση (εις) • Jmenovité napětí • Menovité napätie • Napięcie/a nominalne • Номинальное напряжение (напряжения) • Nominal gerilim/ler • الجهد المتوسط المعيَّن(*VOLT*)
7)	**"Hmin"**	Prevalenza minima • Minimum head • Hauteur MINI • Min. Förderhöhe • Altura de elevación mínima • Min. uppfordringshöjd • Minimum prævalens • Minimipainekorkeus • Minimale opvoerhoogte • Prevalência mínima • Ελάχιστη ανύψωση • Minimální dopravní výška • Minimálna dopravná výška • Ciśnienie minimalne • Минимальный напор • Minimum Basınç Yüksekliği • اقل ارتفاع تعطيه المضخة
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 (axeleffekt) • Motorens nominaleffekt (nytteeffekt på akslen) • Moottorin nimellisteho (akselin antoteho) • Nominaal vermogen van de motor (vermogen overgebracht op as) • Potência nominal do motor [potência resistência eixo] • Ισχύς του κινητήρα (ισχύς στον άξονα) • Jmenovitý výkon motoru (výkon v ose) • Menovitý výkon motora (meraný na osi) • Nominalna moc silnika (moc na osi) • Номинальная мощность двигателя (отдаваемая мощность на оси) • Motorun nominal gücü (eksene verilen güç) • قدرة المحرك المعيَّن بالكيلو واط (القدرة الناتجة في المحور)
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) • Motorns märkeffekt i hästkrafter• Motorens nominaleffekt udtrykt i HP (hestekræfter) • Moottorin nimellisteho hevosvoimina • Nominaal vermogen van de motor uitgedrukt in HP ("horse power": paardekracht) • Potência nominal do motor expressa em HP [horse power] • Ονομαστική ισχύς του κινητήρα εκφραζόμενη σε HP (δύναμη ίππου) • Jmenovitý výkon motoru vyjádřený v HP (koňská síla) • Menovitý výkon motora meraný v HP (horse power=konská sila) • Nominalna moc silnika wyrażona w koniach mechanicznych • Номинальная мощность двигателя, выраженная в Л.С. (лошадиных силах) • HP (beygir gücü) olarak belirtilmiş motorun nominal gücü • قدرة المحرك بالحصان

10)	**“Hz”**	Frequenza • Frequency • Fréquence • Frequenz • Frecuencia • Frekvens • Frekvens • Taajuus • Frequentie • Frequência • Συχνότητα • Kmitočet • Frekvencia • Częstotliwość • Частота • Frekans • التردد
11)	**“A”**	Corrente nominale • Rated current • Courant nominal • Nennstrom • Corriente nominal • Märkström • Nominalstrøm • Nimellisvirta • Nominale stroom • Corrente nominal • Ονομαστικό ρεύμα • Jmenovitý elektrický proud • Menovitý prúd • Prąd nominalny • Номинальный ток • Nominal akım • التيار المعيَّن
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 • Effektförbrukning • El-linjens absorberede effekt • Ottoteho sähköverkosta • Geabsorbeerd vermogen door het elektriciteitsnet • Potência absorvida da linha elétrica • Ισχύς που απορροφάται από την ηλεκτρική γραμμή • Příkon • Moc pochłonięta przez linię elektryczną • Мощность, потребляемая от электросети • Elektrik hattı tarafından emilen güç • القدرة المسحوبة من الكهرباء
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 (monofase eller trefase) • Moottorin tyyppi (yksi- tai kolmivaihe) • Motortype (éénfasig of driefasig) • Tipo de motor [monofásica ou trifásica] • Είδος κινητήρα (μονοφασικός ή τριφασικός) • Typ motoru (jednofázový nebo třífázový) • Druh motora (jednofázový alebo trojfázový) • Rodzaj silnika (jednofazowa lub trójfazowa) • Тип двигателя (однофазный или трехфазный) • Motor tipi (mono faz veya trifaz) • نوع المحرّك (أحادي أو ثلاثي الطور)
14)	**“min^{-1}”**	Velocità di rotazione • Rotational speed • Vitesse de rotation • Rotationsgeschwindigkeit • Velocidad de rotación • Rotationshastighet • Rotationshastighed • Pyörimisnopeus • Rotatiesnelheid • Velocidade de rotação • Ταχύτητα περιστροφής • Rychlost otáčení • Rýchlosť otáčok • Prędkość obrotowa • Скорость вращения • Rotasyon hızı • سرعة الدوران
15)	**∇/m**	Massima profondità di funzionamento • Maximum operating depth • Profondeur maximale de fonctionnement • Max. Einsatztiefe • Máxima profundidad de funcionamiento • Maximalt driftdjup • Maksimal driftsdybde • Maksimikäyttösyvyys • Maximumdiepte voor functionering • Máxima profundidade de funcionamento • Μέγιστο βάθος λειτουργίας • Maximální provozní hloubka • Maximálna prevádzková hĺbka • Maksymalna głębokość działania • Максимальная глубина работы • Maksimum çalışma derinliği • العمق الأقصى أو الأكثر للتشغيل
16)	**“µF”**	Capacità del condensatore (solo per monofase) • Capacitor capacity (single phase only) • Capacité du condensateur (seulement pour monophasé) • Kapazität des Kondensators (nur für einphasige Version) • Capacidad del condensador (sólo monofásico) • Kondensatorns kapacitet (endast enfas) • Kondensatorkapacitet (angår kun monofase) • Kondensaattorin kapasitanssin (vain yksivaihe) • Condensorvermogen (alleen éénfasig) • Capacidade do condensador [somente para monofásica] • Χωρητικότητα του πυκνωτή (μόνο για μονοφασικό μοντέλο) • Kapacita kondenzátoru (pouze u jednofázového čerpadla) • Kapacita kondenzátora (len pre jednofázu) • Pojemność kondensatora (jedynie dla jednofazowej) • Емкость конденсатора (только для однофазного) • Kondansatör kapasitesi (sadece mono faz) • سعة المكثف (فقط أحادي الطور)
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) • Kondensatorns spänning (endast enfas) • Kondensatorspænding (angår kun monofase) • Kondensaattorin jännite (vain yksivaihe) • Condensorspanning (alleen éénfasig) • Tensão do condensador [somente para monofásica] • Τάση του πυκνωτή (μόνο για μονοφασικό μοντέλο) • Napětí kondenzátoru (pouze u jednofázového čerpadla) • Napätie kondenzátora (len pre jednofázu) • Napięcie kondensatora (jedynie dla jednofazowej) • Напряжение конденсатора (только для однофазного) • Kondansatör gerilimi (sadece mono faz) • جهد المكثف(فقط أحادي الطور)
18)	**“IP”**	Grado di protezione della pompa • Pump protection rating • Degré de protection de la pompe • Schutzgrad der Pumpe • Grado de protección de la bomba • Elpumpens kapslingsklass • Pumpens beskyttelsesgrad • Pumpun suoja-aste • Beschermingsgraad van de pomp • Grau de proteção da bomba • Βαθμός προστασίας της αντλίας • Stupeň ochrany čerpadla • Stupeň ochrany čerpadla • Stopień zabezpieczenia • Класс защиты насоса • Pompa koruma derecesi • مستوى حماية المضخة
19)	**“Ins. C. F 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 • Motorns isolation och användningstyp • Motorens isolationsklasse og servicetype • Moottorin eristysluokka ja käyttötyyppi • Klasse motorisolatie en type werking • Classe de isolamento motor e tipo de serviço • Τάξη μόνωσης του κινητήρα και είδος λειτουργίας • Stupeň izolace motoru a typ použití• Trieda izolácie motora a typ použitia• Klasa izolacji silnika i rodzaju obsługi • Класс изоляции двигателя и тип работы • Motor izolasyon sınıfı ve hizmet tipi • درجة عزل المحرك و نوع العمل
20)	**“ kg”**	Peso • Weight • Poids • Gewicht • Peso • Vikt • Vægt • Paino • Gewicht • Peso • Βάρος • Hmotnosť • Hmotnosť • Ciężar • Macca • Ağırlık • الوزن
21)	**P/N°**	Codice articolo pompa • Pump item code • Code article pompe • Artikelnummer der Pumpe • Código artículo bomba • Elpumpens art. nr • Pumpeartikelkode • Pumpun tuotekoodi • Artikelcode pomp • Código artigo bomba • Κωδικός της αντλίας • Kód výrobku čerpadla • Kód typu čerpadla • Kod artykułu pompy • Артикул насоса • Pompa ürün kodu • رقم المضخة

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			
		Operative Range	
Voltage indicated in the label	***Tolerance***	***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]	± 5%	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		
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

PRODUCTS:
JES-JE- JESX-JEX- AGE-AGF-AGA-AGC; CD-2CD; CDX-2CDX-DWO-DWC-CMA-CMB-CMC-CMD-CMR-CDA; PRA; LPS; COMPACT-CVM-MULTIGO; EVM; 3SERIES-MD; BEST-RIGHT-DW; WINNER-BHS-IDROGO.

DICHIARAZIONE DI CONFORMITÀ
Noi, EBARA PUMPS EUROPE S.p.A., dichiariamo sotto la nostra responsabilità che i ns. prodotti sono in conformità alla Direttiva Macchine 98/37/CE, alla Direttiva Bassa Tensione 73/23/CEE come modificato dalla direttiva 93/68/CEE e alla Direttiva Compatibilità Elettromagnetica 89/336/CEE come modificato dalla direttiva 93/68 CEE.

DECLARATION OF CONFORMITY
We, EBARA PUMPS EUROPE S.p.A., declare under our own responsibility that our products conform to the Machinery Directive 98/37/EC, to the Low Voltage Directive 73/23/EEC, as amended by Directive 93/68/EEC and to the Electromagnetic Compatibility Directive 89/336/EEC as amended by Directive 93/68/EEC.

DECLARATION DE CONFORMITE
Nous soussignons, EBARA PUMPS EUROPE S.p.A., déclarons sous notre responsabilité que nos produits sont conformes à la Directive sur les Machines 98/37/CE, à la Directive sur la Tension Basse 73/23/CEE, comme modifiée par la Directive 93/68/CEE et à la Directive sur la Compatibilité Electromagnétique 89/336/CEE comme modifiée par la Directive 93/68/CEE.

KONFORMITAETSERKLARUNG
Wir, EBARA PUMPS EUROPE S.p.A., erklären unter unserer Verantwortung, dass unsere Erzeugnisse mit der Maschinenvorschift 98/37/CE, sowie sie auch mit der Richtlinie über Tiefspannung 73/23/CEE wie von der Richtlinie 93/68/CEE abgeändert und mit der Vorschrift über elektromagnetische Verträglichkeit 89/336/CEE wie von der Norm 93/68/CEE abgeändert übereinstimmen.

DECLARACIÓN DE CONFORMIDAD
Nosotros, EBARA PUMPS EUROPE S.p.A., declaramos bajo nuestra responsabilidad que nuestros productos son conformes con la Directiva Máquinas 98/37/CE; con la Directiva Baja Tensión 73/23/CEE y su modificación Directiva 93/68/CEE; y con la Directiva Compatibilidad Electromagnética 89/336/CEE y su modificación Directiva 93/68/CEE.

DECLARATION OEM ÖVERENSSTÄMMANDE
Vi, EBARA PUMPS EUROPE S.p.A., deklarerar i enlighet med vårt ansvar, att våra produkter är överensstämmande med Maskindirektiv 98/37/CE, med Lågspännings Direktiv 73/23/CEE som modifierats från direktiv 93/68/CEE och med Direktivet för Elektromagnetisk Kompatibilitet 89/336/CEE som modifierats från direktiv 93/68/CEE.

DEKLARACJA ZGODNOŚCI Z NORMAMI
My, EBARA PUMPS EUROPE S.p.A., oświadczamy na naszą odpowiedzialność, że nasze produkty, są zgodnie z Normami Maszynowymi 98/37/CE, oraz Dyrektywą Niskonapięciową 73/23/CEE z modyfikacją Dyrektywą nr 93/68/CEE oraz Normą Elektromagnetyczną EMC 89/336/CEE z modyfikacją Dyrektywą nr 93/68 CEE.

ДЕКЛАРАЦИЯ О СООТВЕТСТВИИ
Мы, EBARA PUMPS EUROPE S.p.A., заявляем под личной ответственностью, что что наши изделия изготовлены в соответствии с Директивой по машинам 98/37/CE, Директивой по Низкому Напряжению 73/23/CEE модифицированное директивой 93/68/CEE и Директивой по Электромагнитной Совместимости 89/336/CEE модифицированное директивой 93/68 CEE.

شهادة التطابق

تتعهد شركة إيبارا (EBARA PUMPS EUROPE S.p.A.) ان منتجاتها تطابق قوانين الاتحاد الاوروبي: للتوجيهات الميكانيكية رقم 98/37/CE ، و توجيهات الجهد المنخفض رقم 73/23 /CEE الذي تم تعديله الى رقم 93/68 /CEE ، و انطباق الكهرباء المغناطيسية رقم 89/336 / CEE الذي تم تعديله الى رقم 93/68/CEE .

ERKLÆRING OEM OVERENSSTEMMELSE
Vi, EBARA PUMPS EUROPE S.p.A., erklarer herved ifølge vort ansvar, at vore produkter er i overensstemmelse med Maskindirektiv 98/37/CE, med Lavspændingsdirektiv 73/23/CEE som modificerets fra direktiv 93/68/CEE og med Direktivet for Elektromagnetisk Kompatibilitat 89/336/CEE som modificerets fra direktiv 93/68/CEE.

YHTÄPITÄVYYSLAUSUNTO
Me, EBARA PUMPS EUROPE S.p.A., ilmoitamme vastuunalaisena, että tuotteemme ovat yhdenmukaisia Kone Ohjeiden 98/37/CE, Matalajännite Ohjeiden 73/23/CEE muutettu säännöksillä 93/68/CEE ja Sähkömagneettisuus Yhteensopivuus Ohjeiden 89/336/CEE muutettu säännöksillä 93/68/CEE.

OVEREENKMSTIGHEIDSVERKLARING
Wij, EBARA PUMPS EUROPE S.p.A., verklaren onder eigen verantwoordelijkheid dat onze produkten in overeenstemming zijn met de Richtlijn Betreffende de Machines 98/37/CE, met de Richtlijn Lage Spanning 73/23/CEE, zoals die gewijzijd is door de richtlijn 93/68/CEE en met de Richtlijn Elektromagnetsche conformiteit 89/336/CEE zoals die gewijzijd is door de richtlijn 93/68/CEE.

DECLARAÇAO DE CONFORMIDADE
Nós, EBARA PUMPS EUROPE S.p.A., declaramos sobra nossa responsabilidade que, os produtos são em conformidades à Diretriz Macchine 98/37/CE, à Diretriz Baixa Tensão 73/23/CEE, sendo modificado da Diretriz 93/68/CEE e a Diretriz de Compatibilidade Electromagnética 89/336/CEE sendo modificada da Diretriz 93/68/CEE.

ΔΗΛΩΣΗ ΣΥΜΦΩΝΙΑΣ
Εμείς η EBARA PUMPS EUROPE S.p.A, δηλώνουμε με δική μας ευθύνη ότι τα προιόντα μας εκπληρούν τις προΰποθέσεις της Οδηγίας Μηχανών 98/37 Ευρωπαικής Ένωσης, της Οδηγίας Χαμηλής Έντασης 73/23 ΕΕ όπως τροποποιήθηκε από την οδηγία 93/68 ΕΕ και της Οδηγίας Ηλεκτρομαγνητικής Συμβατότητας 89/336 ΕΕ όπως τροποποιήθηκε από την οδηγία 93/68 ΕΕ.

PROHLÁŠENÍ O SHODĚ
My, EBARA PUMPS EUROPE S.p.A., prohlašujeme na naši odpovědnost, že naše výrobky jsou vyrobeny v souladu se Směrnicí Stroje 98/37/CEE, se Směrnicí Nízké napětí 73/ 23/ CEE podle změny směrnicí 93/ 68/ CEE a Směrnicí Elektromagnetická kompatibilita 89/ 336/ CEE podle změny směrnicí 93/ 68/ CEE.

ČESTNÉ PREHLÁSENIE
My, EBARA PUMPS EUROPE S.p.A., prehlasujeme na vlastnú zodpovednosť, že naše výrobky sú v súlade s normamy o Zariadeniach 98/37/CE, s normamy Nízkeho Napätia 73/23/CEE, ako bolo zmenené z normy 93/68/CEE, a s normou Elektromagnetický Súlad 89/336/CEE, ako bolo zmenené z normy 93/68 CEE.

UYGUNLUK DEKLERASYONU
EBARA PUMPS EUROPE S.p.A. mallarinin (uretimlerinin), 98/37/CE Mkineler Direktifi 73/23/CEE Dusuk Voltaj Direktifi, 93/68/CEE tarafindan modifiye dilen 93/68/CEE ve 89/336/CEE Elektromanyetik Bagdasma Direktifi tarafindan modifiye edilmis Ve kendisinin sorumlulugu altinda oldugunu deklare eder.

Mr. SASAKI KENICHI
President

Brendola, 01 September 2003

CE PRODOTTI CONFORMI ALLA DIRETTIVA MACCHINE 89/392 CEE CE *PRODUCTS IN CONFORMITY WITH EEC MACHINERY DIRECTIVE 89/392*

cod. 442170380

EBARA

EBARA PUMPS EUROPE S.p.A.
Via Pacinotti, 32
36040 BRENDOLA (VI) ITALY
Phone (0444) 706811
Fax (0444) 706950
Plants: Cles, Brendola
e-mail: ebara_pumps@ebaraeurope.com
www.ebara.it

FRANCE
Z.I. des Amandiers
39 Rue des Entrepreneurs
78420 CARRIERES SUR SEINE
Phone: (1) 30865480
Fax: (1) 39131971

SPAIN
Poligono Las Arenas,
C/Alameda, 1
28320 PINTO (MADRID)
Phone: 916.923.630
Fax: 916.923.891

GERMANY
Philipp-Reis - Str. 15
63128 DIETZENBACH
Phone: (6074) 82790
Fax: (6074) 827942

EBARA
PUMPS UK LIMITED
Unit 7 - Zodiac Park
High Road - Cowley
Uxbridge
Middlesex - UB8 2GU
Phone: 01895 439 027
Fax: 01895 439 028

EBARA
POMPY POLSKA Sp. z.o.o.
ul. Minska 63
03 - 828 WARSZAWA
POLAND
Phone: +48 22 3308118
Fax: +48 22 3308119

EBARA

OPTIMA/BEST-RIGHT-DW

OPERATING AND MAINTENANCE MANUAL PART 2
THE USER SHOULD KEEP THIS DOCUMENT

GB

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.

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

WARNING! **Risk of damaging the pump or system**

Risk of causing injury or damaging property

Electrical hazard

2. CONTENTS

3. DESCRIPTION AND USE OF MOTOR-DRIVEN PUMP

3.1. DESCRIPTION

Description: **SUBMERSIBLE MOTOR-DRIVEN PUMPS**
Model: **OPTIMA/BEST**
RIGHT
DW - DW VOX

3.2. USE FOR WHICH PUMPS ARE DESIGNED

The motor-driven pumps can be used for:

- handling clear water (OPTIMA/BEST) as well as dirty or sewage water (RIGHT-DW) with solids in suspension up to the diameter indicated in chap. 4;
- pumping water out of garages, cellars, basements, tanks, reservoirs, fountains, rainwater drains;
- flood irrigation of vegetable patches and gardens and oxygenating water. The DW series can also be used to drain rainwater drains, cesspits and septic tanks, and trenches etc..

WARNING! **ONLY USE RIGHT- AND DW-SERIES MOTOR-DRIVEN PUMPS FOR CONTINUOUS DUTY IF THEY ARE FULLY SUBMERSED.**
DO NOT USE RIGHT – DW MOTOR-DRIVEN PUMPS WITH THE MOTOR OUT OF WATER FOR MORE THAN 15 MINUTES.

Use the motor-driven pumps based on their technical specifications.

3.3. USE FOR WHICH PUMPS ARE NOT DESIGNED

The pumps cannot be used to handle:

- water containing acids or bases, and corrosive liquids in general;
- water with a temperature over the temperature limit given in chap. 4.
- seawater;
- flammable liquids and hazardous liquids in general;
- cannot be used in swimming pools (according to EN 60335-2-41);
- pumps with a cable less than 10m long cannot be used outdoors.

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

4. SPECIFICATIONS

4.1. OPTIMA/BEST PUMP SPECIFICATIONS

	U.M.	OPTIMA	BEST ONE	BEST ONE VOX	BEST 2-5
Max. temperature of liquid pumped	°C	50			35
Max. size of solids in suspension	mm	10		20	10
Max. immersion depth	m	5			10
Delivery diameter	*	G 1" ¼			G 1" ½

* = threading according to ISO 228

4.2. RIGHT – DW PUMP SPECIFICATIONS

	U.M.	RIGHT	DW	DW VOX
Max. temperature of liquid pumped	°C	40		
Max. size of solids in suspension	mm	35	50	
Max. immersion depth	m	10		
Delivery diameter	*	G 1" ½	G 2" or DN 50 flange	

* = threading according to ISO 228

4.3. OPTIMA/BEST - RIGHT - DW MOTOR SPECIFICATIONS

	OPTIMA BEST ONE	BEST 2-5	RIGHT	DW
TYPE	Submersible			
MAX. STARTS PER HOUR	30	20		
RATINGS	See motor-driven pump rating plate			
OVERLOAD PROTECTION	SINGLE PHASE: thermal cutout w/automatic reset THREE PHASE: by installer			

4.4. INFORMATION ON AIRBORNE NOISE

Given the type of use, the motor-driven pumps do not exceed an A-weighted sound pressure emission level of 70 dB (A).

5. PREPARING FOR USE

WARNING! **USE A ROPE FASTENED AROUND THE HANDLE TO LIFT OR LOWER THE MOTOR-DRIVEN PUMP: NEVER PULL THE POWER CABLE AND/OR FLOAT CABLE AND SWITCH (FIG. 12).**

5.1. INSTALLATION (FIG.1-5)

To install the pumps, proceed as directed in PART 1, chapter 7.2 and in the following point:

a) It is best to use rigid pipes (metal pipes on DW series) for permanent installations and flexible pipes for temporary installations, with sizes as given in chap. 4, observing the distances illustrated.

5.2. INSTALLING DW PUMP WITH DN 50 FLANGE (FIG. 6-7)

a) Using the relevant screws, fasten the mount on the surfaces due to support the pump;
b) screw the delivery pipe onto the mount;
c) the mount features a rod with a guide along which you slide the hook required to lower the pump;
d) lower the motor-driven pump, holding it by the rope fastened around the handle, until the flange slots into place on the mount;
e) the motor-driven pump couples with the mount under its own weight.

6. STARTING

New pumps may feature a small amount of oil (the food kind), which does not present a source of health risk.

6.1. VERSION WITH FLOAT (MA-MS) (SEE FIGURE)

Plug into the power mains and/or turn on with the switch: the motor-driven pump starts working. Once the pump has sucked in enough water to reach the minimum level ("OFF" level), regulated by the float, it will turn off automatically.
The float's working position is factory set so as to assure a minimum immersion level in the "OFF" position.
NB: If the liquid is overly contaminated, the operation of the magnetic-type float (MS versions) may be compromised, meaning it needs to be cleaned on a regular basis.
Moreover, do not use in liquids polluted with iron dust or magnetic material as this would compromise the operation of the float.

6.2. VERSION WITHOUT FLOAT

Plug into the power mains and/or turn on with the switch: the motor-driven pump starts working. Once the pump has sucked in enough water to reach the minimum level, unplug from the power mains and/or turn off with the switch.

6.3. RIGHT - DW PUMPS

a) There is a vent hole on the side of the pump casing of RIGHT and DW versions for priming. During operation, there will be a small recycling jet from it.
b) The three-phase version of the DW pumps features a 3-wire + earth power cord with the addition of two white and grey wires with a smaller cross-section connected to the thermal overload protector inside the motor (FIG. 13).
   – Connect the power cord's yellow/green wire to an efficient earthing system, which must be in compliance with the regulations in force in the user's country;
   – overload protection and use of the signal provided by the thermal overload protector are the user's responsibility;
   – overload trip units must have suitable thermal-magnetic devices set appropriately for the motor-driven pump installed;
   – for the heat sensor, the two white and grey wires must be connected to an electrical circuit that can cut power to the motor-driven pump.

7. MAINTENANCE

To maintain the motor-driven pumps properly and ensure their long service life, the filter and/or suction port must not be clogged and the impeller must be clean.
During maintenance work on the motor-driven pumps, disconnect the power supply.

7.1. OPTIMA - BEST ONE - ONE VOX MOTOR-DRIVEN PUMP (FIG. 8)

To reach the impeller, proceed as follows:
– wear work gloves to avoid cutting your hands;
– unscrew the two screws (1) securing the filter;
– remove the filter (2);
– unscrew the two spacers (3) and remove the volute (5);
– using a small straight screwdriver, remove the nylon washers (4) and replace with new ones;
– take care not to damage the O-ring (6).
At this point, the impeller is exposed: make sure it is clean.

7.2. BEST 2-5 MOTOR-DRIVEN PUMPS (FIG. 9)

To reach the impeller, proceed as follows:
– wear work gloves to avoid cutting your hands;
– unscrew the three screws (1) securing the filter;
– remove the filter (2);
– unscrew the three spacers (4) and three nuts (5) and remove the distancing plate (3);
– using a small straight screwdriver, remove the nylon washers (6) and replace them before reassembling the unit as they break when the volute is removed;
– take care not to damage the O-ring (7).

7.3. RIGHT MOTOR-DRIVEN PUMP (FIG. 10)

a) If the suction port is clogged, you must clean it, remembering to wear work gloves at all times to avoid cutting your hands;
b) If the impeller is dirty, proceed as follows:
   – wear work gloves to avoid cutting your hands;
   – unscrew the three screws (1) securing the feet and suction cover side (2)
   – remove the O-ring (3);
   – take care not to damage the O-ring (3);
   – make sure the space between the impeller and casing is also clean.
c) There is a small opening in the pump casing for air venting; keep it unclogged and clean. It is normal for fluid to come out during priming.

7.4. DW MOTOR-DRIVEN PUMP (FIG. 11)

a) If the suction port is clogged, you must clean it, remembering to wear work gloves at all times to avoid cutting your hands;
b) If the impeller is dirty, proceed as follows:
   – wear work gloves to avoid cutting your hands;
   – unscrew the six screws (1) keeping the pump casing closed (not the nut as it is welded to the pump casing);
   – remove the pump casing, pulling it off (2);
   – remove the O-ring (3);
   – take care not to damage the O-ring (3);
   – make sure the space between the impeller and casing is also clean.

7.5. REASSEMBLY

To reassemble, repeat the procedure given in reverse order.

GB

8. SCHEMA INSTALLAZIONE E SMONTAGGIO • 8. INSTALLATION AND DISASSEMBLY DIAGRAM • 8. SCHÉMA INSTALLATION ET DÉMONTAGE • 8.INSTALLATIONS- UND AUSBAUPLAN • 8. ESQUEMA DE INSTALACIÓN Y DESMONTAJE • 8. INSTALLATIONS- OCH NEDMONTERINGSSCHEMA • 8. INSTALLATIONS OG AFMONTERINGSSKEMA • 8. ASENNUS- JA PURKUKAAVIOT • 8. INSTALLATIE- EN DEMONTAGESCHEMA • 8. ESQUEMA DE INSTALAÇÃO E DE DESMONTAGEM • 8. ΣΧΕΔΙΟ ΕΓΚΑΤΑΣΤΑΣΗΣ ΚΑΙ ΑΠΟΣΥΝΑΡΜΟΛΟΓΗΣΗΣ • 8. SCHÉMA INSTALACE A DEMONTÁŽE • 8. SCHÉMA INŠTALÁCIE A DEMONTÁŽE • 8. SCHEMAT INSTALACJI I DEMONTAŻU • 8. МОНТАЖНЫЕ И ДЕМОНТАЖНЫЕ СХЕМЫ • 8. MONTAJ VE SÖKME ŞEMASI • 8. مخطط التركيب و الفكّ

FIG. 1
OPTIMA – BEST ONE – BEST ONE VOX

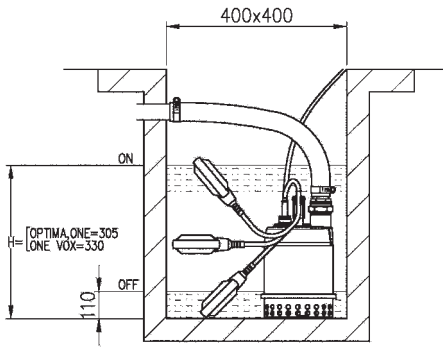


FIG. 2
OPTIMA – BEST ONE

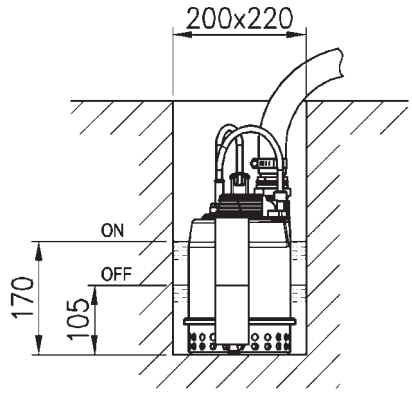


FIG. 3
BEST 2-3-4-5

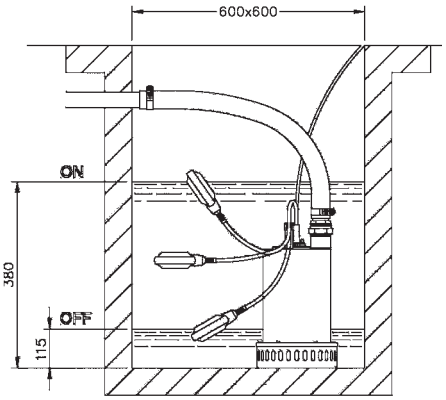


FIG. 4 • RIGHT

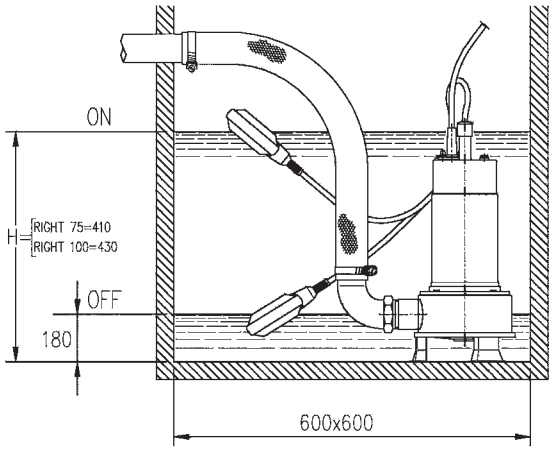


FIG. 5 • DW

Pump type	ON [mm]	OFF [mm]
75MA	460	250
100MA	470	260
150MA		

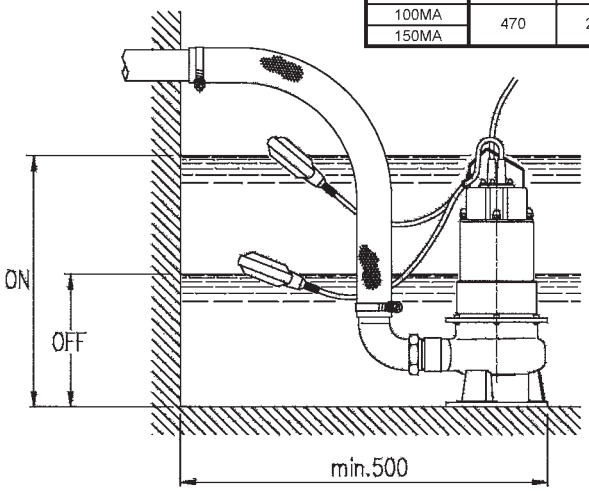


FIG. 6

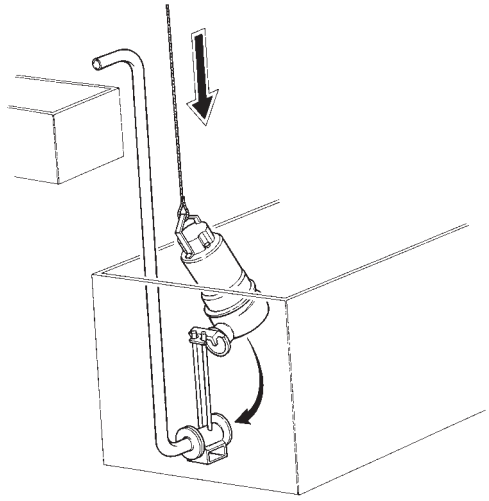


FIG. 7 • DW FZ VERSION

Pump type	ON [mm]	OFF [mm]
75MA	460	250
100MA	470	260
150MA		

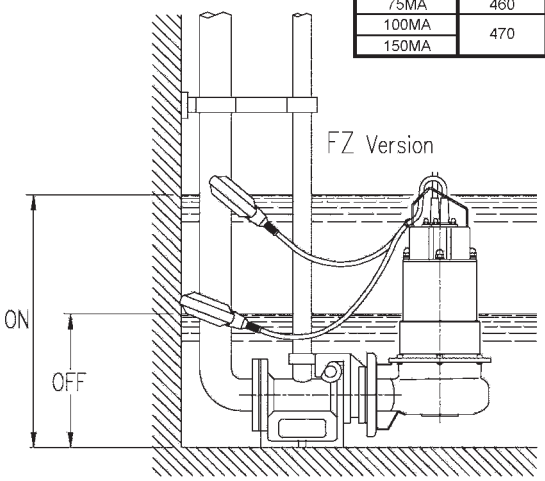


FIG. 8 • OPTIMA – BEST ONE – BEST ONE VOX

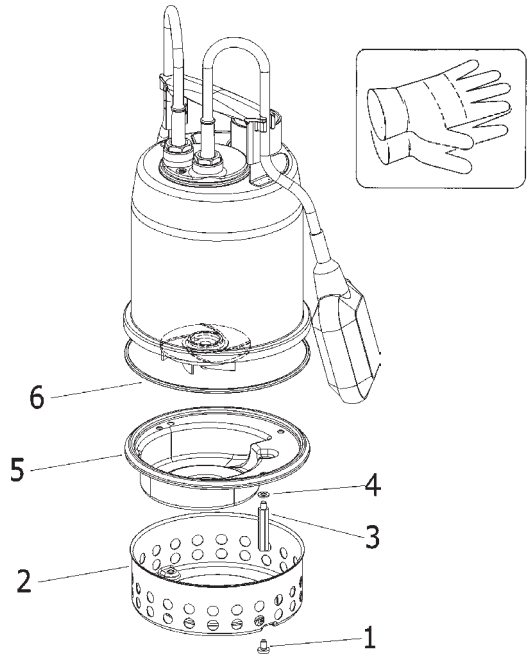


FIG. 9 • BEST 2-3-4-5

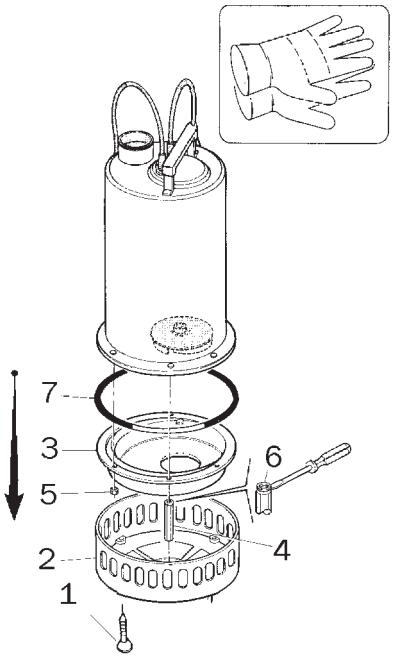


FIG. 10 • RIGHT

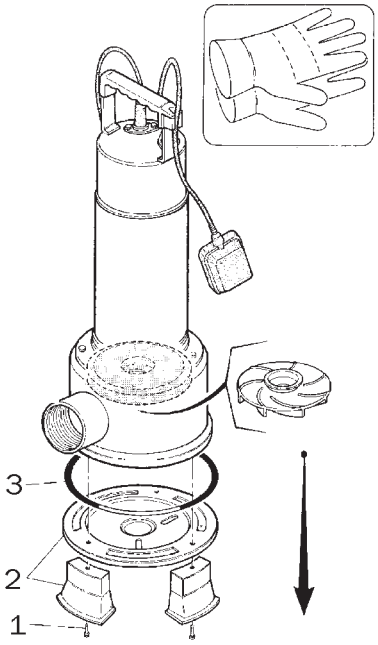


FIG. 11 • DW - DW VOX

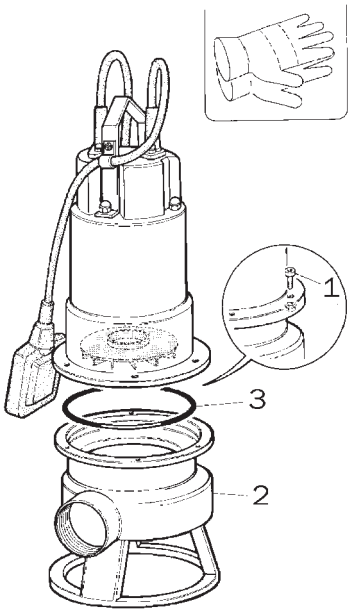
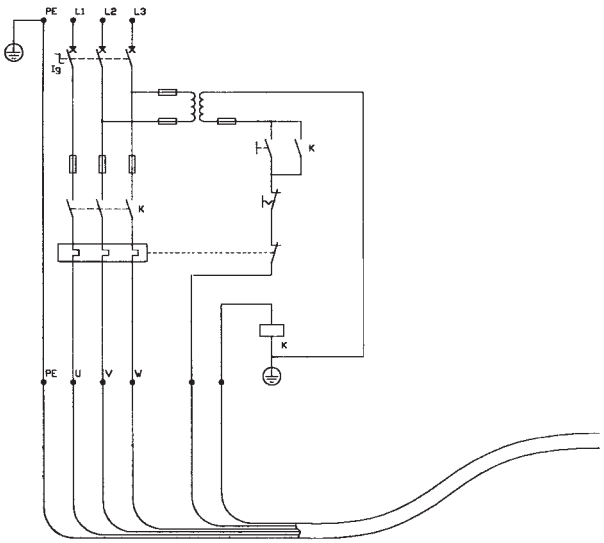


FIG. 12

Never pull the power cable or float. It may cause damage to the motor and an electric shock.

FIG. 13



CE

cod. 442170381 rev. F

EBARA

EBARA PUMPS EUROPE S.p.A.
Via Pacinotti, 32
36040 BRENDOLA (VI) ITALY
Phone: +39 0444.706.811
Fax: +39 0444.706.950
Plants: Cles, Brendola
e-mail: marketing@ebaraeurope.com
www.ebaraeurope.com

EBARA PUMPS UK LIMITED
Unit 7 - Zodiac Business Park
High Road - Cowley
Uxbridge - Middlesex
UB8 2GU, United Kingdom
Phone: +44 1895.439.027
Fax: +44 1895.439.028

EBARA FRANCE
Maille Nord 2
6/10 Avenue Montaigne
93160 NOISY LE GRAND, France
Phone: +33 155.851.616
Fax: +33 155.851.639

EBARA Pompy Polska Sp. z.o.o.
ul. Minska 63
03-828 Warszawa, Poland
Phone: +48 22.330.81.18
Fax: +48 22.330.81.19

EBARA ESPAÑA BOMBAS S.A.
C/Cormoranes 6y8.
Poligono La Estación,
28320 PINTO (MADRID), Spain
Phone: +34 916.923.630
Fax: +34 916.910.818

EBARA PUMPEN
Philipp-Reis - Str. 15
63128 DIETZENBACH, Germany
Phone: +49 6074.827.90
Fax: +49 6074.827.942