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FLUID TECHNOLOGY

MARCO

164 000 12 - UP3 12 V
164 000 13 - UP4 24 V

ELETTROPOMPA AUTOADESCANTE PER TRAVASO LIQUIDI
SELF-PRIMING ELECTRIC PUMP FOR TRANSFERRING VARIOUS LIQUIDS

AVVERTENZE D'USO
INSTRUCTIONS FOR USE

03/01/06 Ed.00 Rev.00

Q ELENCO POMPE MARCO

Articolo	Descrizione	Tipo	Volt
1620011C	UP1 220V.c.a. pompa girante in gomma 35 l	UP1	220
16200012	UP1 12V. pompa girante in gomma 35 l		12
16200013	UP1 24V. pompa girante in gomma 35 l		24
16200212	UP1-N 12V. pompa girante in gomma 35 l	UP1-N	12
16200213	UP1-N 24V. pompa girante in gomma 35 l		24
1640011C	UP3 220V.c.a. pompa a ingranaggi 14 l	UP3	220
16400012	UP3 12V. pompa a ingranaggi 14 l		12
16400013	UP4 24V. pompa a ingranaggi 14 l		24
16400212	UP3/P 12V. pompa a ingranaggi in PTFE 14 l	UP3/P	12
16400213	UP4/P 24V. pompa a ingranaggi in PTFE 14 l		24
1640611C	UP6 220V.c.a. pompa a ingranaggi 28 l	UP6	220
16406012	UP6 12V. pompa a ingranaggi 28 l		12
16406013	UP6 24V. pompa a ingranaggi 28 l		24
16402012	UP3/OIL 12V. pompa per olio	UP3 OIL	12
16402013	UP4/OIL 24V. pompa per olio		24
16408012	UP6/OIL 12V. pompa per olio	UP6 OIL	12
16408013	UP6/OIL 24V. pompa per olio		24
16410012	UP9 12V. pompa per servizi gravosi	UP9	12
16410013	UP9 24V. pompa per servizi gravosi		24
1640421C	UPX 220V.c.a. pompa a ingr. 14 l inox	UPX	220
16404012	UPX 12V. pompa a ingr. 14 l inox AISI 316		12
16404013	UPX 24V. pompa a ingr. 14 l inox AISI 316		24
1640431C	UPX-C 220V.c.a. pompa inox per chimici 14 l	UPX-C	220
16404112	UPX-C 12V. pompa inox per chimici 14 l		12
16404113	UPX-C 24V. pompa inox per chimici 14 l		24
16460012	UP3/A 12V. autoclave	UP3/A	12
16460013	UP4/A 24V. autoclave		24
16462012	UP6/A 12V. autoclave	UP6/A	12
16462013	UP6/A 24V. autoclave		24
16464012	UP9/A 12V. autoclave per servizi gravosi	UP9/A	12
16464013	UP9/A 24V. autoclave per servizi gravosi		24
16480012	DP3 12V. pompa lavaggio ponte	DP3	12
16480013	DP3 24V. pompa lavaggio ponte		24
16482012	DP9 12V. pompa lavaggio ponte	DP9	12
16482013	DP9 24V. pompa lavaggio ponte		24

R ACCESSORI POMPE MARCO

Tipo	Codice	Descrizione
BQC	16510200	Connessione da incasso per rifornimento acqua dolce dalla banchina
DQC	16510000	Connessione da incasso per pompa lavaggio
OK1	16502000	Kit tubi per pompe olio
AT1	16508210	Vaso espansione bianco 2 litri
AT2	16508310	Vaso espansione bianco 5 litri
AT1X	16508010	Vaso espansione inox 0,5 litri
AT2X	16508110	Vaso espansione inox 2 litri

ENG

PRODUCT DESCRIPTION A

Self-priming electric pump for the transfer of liquids of varied nature (except those listed in section G) for discontinuous or intermittent usage.
The pumping elements are made up of bronze gear drives which can possibly even run dry for brief periods. Completely equipped with in-line filter on the inlet side.

TECHNICAL DETAILS B

CODICE	TIPO	VOLT	FUSIBILE	PORTATA (2m)	PRESSIONE	PESO	P.ZI x CART.
CODE	*TYPE*	*VOLT*	*FUSE*	*FLOW RATE (2m)*	*PRESSURE*	*WEIGHT*	*PCS x CART.*
164 000 12	UP3	12	10 A	14 l/min.	2 BAR	1,5 kg	12
164 000 13	UP4	24	5 A	14 l/min.	2 BAR	1,5 kg	12

AMBIENT CONDITIONS C

Ambient operating conditions:

Temperature: min. -10 °C / max. +60 °C **Relative humidity:** max. 90 %
Warning: the above indicated temperature ranges are applicable to all components of the pump and these limits must be respected in order to avoid any possible damage or malfunctioning.

ELECTRICAL CONNECTIONS D

The electric pump must be connected to a source of direct current (either battery or transformer) with an amp rating of over 20A and 10A at nominal voltage of 12V and 24V respectively. The pump must be protected by a suitable rated fuse.

OPERATING CYCLE E

The pump has been designed for discontinuous use. Under conditions of high operating pressures (eg. with closed or blocked outlet, excessive length of the delivery circuit and/or excessive pressure due to accessories), the pump can be subjected to elevated stresses and overheating and therefore should not be used for prolonged periods under such conditions.

APPLICATIONS F

There are numerous fields of applications for the pump, however only exclusively with the allowed liquids mentioned:

- transfer of diesel fuel between tanks, refuelling of tractors and earth moving equipment
- bilge pump for boats
- transfer of water
- transfer of light weight lube oils, antifreeze, etc.

G FLUIDS ALLOWED / NOT ALLOWED

Allowed:

DIESEL FUEL with viscosity between 2 and 5.35 cSt (relative to 37,8°C temperature) Minimum flashpoint (PM): 55°C.
FRESH WATER

Not allowed:	**Related dangers**
PETROL (GASOLINE)	FIRE EXPLOSION
FLAMMABLE LIQUIDS with PM < 55°C	FIRE EXPLOSION
LIQUIDS WITH VISCOSITY > 20 cSt	MOTOR OVERHEATING
FOODSTUFF LIQUIDS	FOODSTUFF LIQUID CONTAMINATION
CORROSIVE CHEMICAL PRODUCTS	PUMP CORROSION - INJURY TO PERSONNEL
SOLVENTS	FIRE EXPLOSION DAMAGE TO SEALS

H TRANSPORTATION AND HANDLING

Due to limited weight and dimensions the pump does not require the use of any special handling or lifting equipment. When handling manually, normal personal protective gear should be worn (safety shoes with toe piece, etc.)
The pump is carefully packed prior to shipment. Upon receiving, the pump packaging should be inspected for damages and the pump stored in a dry area.

I INSTALLATION

It is recommended that the use of the pump be according to normative safety standards and also as per the precautions listed below.

I-1 PACKAGING ENVIRONMENTAL DISPOSAL

The packaging material is not in any way polluting or dangerous and does not require any special environmental disposal precautions. Disposal should be carried out according to local regulations in place.

I-2 PRELIMINARY CHECKS

Check that there has been no damage to the pump during transportation or storage. Both inlet and outlet ports should be carefully cleaned removing possible dust or residual packaging material. Verify that the available electrical power supply corresponds to the pump specification requirements.

I-3 POSITIONING OF THE PUMP

The pump can be mounted in any position. Fix the pump utilizing suitable screws corresponding to the antivibration mounts supplied with the pump.

WARNING: THE PUMP MOTOR IS NOT EXPLOSION PROOF. Do not install the pump where flammable vapours or gases may be present. Install the pump in an accessible place for inspection.
The pump is IP55 protection rated. It is good practice to avoid any pump contact with water splashes possibly causing water seepage into the motor with high risk of internal oxidation and/or short circuit.

I-4 TUBING CONNECTIONS

- Prior to making any tube/hose connections, check that the inlet ports have no end caps.
- Do not position the pump at a height greater than 1,5m with respect to the minimum level of the fluid to be transferred. Pump damage may occur if this height is exceeded as the pump may not draw fluid. Make sure that the outlet tube is empty and without chokes.
- Avoid choking the inlet or outlet tubes so that pump efficiency is optimized. The use of an inlet filter is mandatory especially with fluids containing impurities (filter grid gauge 0,5mm). In this case frequent cleaning and maintenance of the filter is advisable. Utilize tubes and connection pieces that are resistant to the fluid types handled and avoid any possible environmental dispersion.

I-5 PUMP INSTALLATION

The electrical installation of the pump must include a protection fuse which is suitably rated as indicated on the motor label and sized with reference to the chosen point of application.

WARRANTY EXPIRES IF NO FUSE IS UTILIZED.

Always mount the anti vibration rubber fittings supplied with the pump kit. Their usage ensures a consistent reduction in noise and vibration levels.
Electrical cabling size should depend on the distance between pump and battery power supply.

Up to 5 m length: 1,5mmq

Up to 10 m length: 2,5mmq

Over 10 m length: 4mmq

The use of undersized cabling can cause overheating of the electrical wiring and subsequent fire hazard. There will also be a voltage drop at the motor terminals with a consequent reduction in efficiency.

The flow rate value indicated on the motor label is obtained with a 13 mm internal tube diameter. Tubes with inferior diameters will cause an increase in current with potential risk of motor overheating.

To ensure the correct directional flow of the fluid as indicated by the arrow on the top of the pump, it is necessary to connect the positive pole of the battery supply to the (+) marked terminal on the motor end-cap and the negative pole to the (-) marked terminal. Electrical connections must be made using adequate terminal blocks and connectors ensuring a tight fitment of the electrical cables. Bad wiring can cause power losses and/or overheating of the cabling itself.

WARNING: it is the responsibility of the installation technician to ensure a correctly designed circuit installation fitted according to regulations. Environmental risks must be taken into account with the installation.

L TROUBLESHOOTING

L-1 CHECK POINTS IF THE PUMP HAS STOPPED OR WILL NOT START

- Check the effectiveness of the battery power supply (voltage activity)
- Check if the fuse has blown
- Check for any foreign matter present in-between the pump gear drives. To do this, disconnect the power supply and unscrew the four fixing screws, remove the pump front cover plate and inspect the pump chamber. Replace the cover plate in the same initial position after inspection.
- Avoid running the pump dry for more than a few minutes. Pumps found defective that have run dry in the absence of fluid are not covered by warranty.
- The average life span of the motor commutator brushes is approximately 500/700 hours under normal operating conditions. Stoppages are possible due to brush wear and tear after such a time period.

L-2 WHY THE PUMP WILL NOT PRIME ITSELF?

- The pump is fitted at a height greater than 1,5m above the fluid level.
- The pump has run dry for too long a period
- Long periods of inactivity. In this case it is advisable to add liquid directly into the pump chamber before start-up. It is also advisable to add, before running the pump, a drop of lubricating oil inside the pump only.
- Air leak at the suction pipe due to the following reasons:
- Possible cuts in the pipe, inadequate hose clamps, malfunctioning of the filter due to defective/worn seals or filter clogged.
- Air leak at the pump front plate cover due to the following reasons:
- Loose fixing screws, poor effectiveness of the seal.
- Faulty electrical cable connections
- Presence of obstructions or restrictions in the suction or delivery pipes or the use of special devices(eg. automatic spray pistol or aqua-stop).
- Presence of liquid loops in the outlet tube.

L-3 GOOD PRACTICES ENSURING A WELL FUNCTIONING PUMP

No particular maintenance is required if the pump is utilized for the transfer of diesel fluids. If it is expected that the pump will not be used for a period of at least 30 days, especially in the case of usage with fresh or salty water, it is advisable to run fresh water through the pump and to then loosen the pump front plate screws.

Upon re-use, run the pump briefly (a few seconds) and then tighten the screws again. Check under conditions of maximum operating pressure that the motor current value is within the motor label specifications.

Upon re-use, run the pump briefly (a few seconds) and then tighten the screws again. Check under conditions of maximum operating pressure that the motor current value is within the motor label specifications.

NORMAL MAINTENANCE L-4

Check frequently and keep the inlet filter clean.
Check every month the pump chamber and keep clean from any foreign matter.
Check every month that electrical wiring is in good condition.
Every 500 hours of pump operation substitute the motor brushes.

INDICATORS THAT THE PUMP IS FUNCTIONING CORRECTLY L-5

- Temperature of pump body and motor frame is within 60°C - 70°C
- Regular flow and constant pump noise levels
- Amp-draw within the limits indicated in the technical details.

TO OPEN THE PUMP L-6

- It is recommended that a specialized service technician be consulted for any pump repair work or the replacement of worn out internal components, exclusively with original spare parts.
- During the warranty period, only by authorized Marco S.p.A. personnel, failing which the warranty will expire.

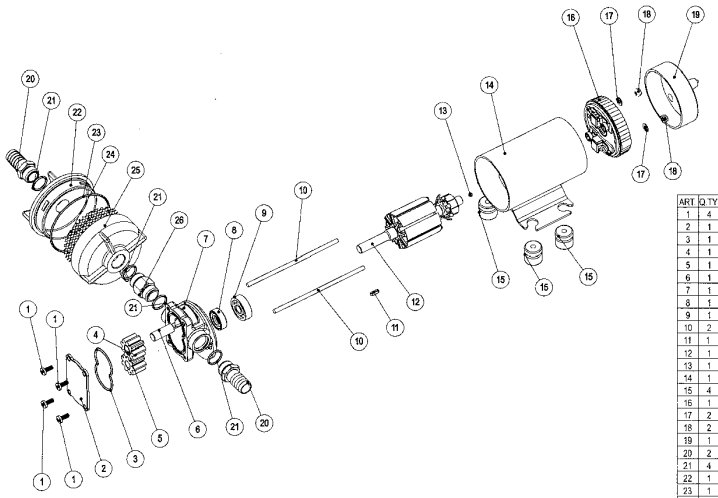
ENVIRONMENTAL DISPOSAL M

Should the pump be discarded, do not pollute the environment. Please refer to the local environmental regulations.

WARRANTY N

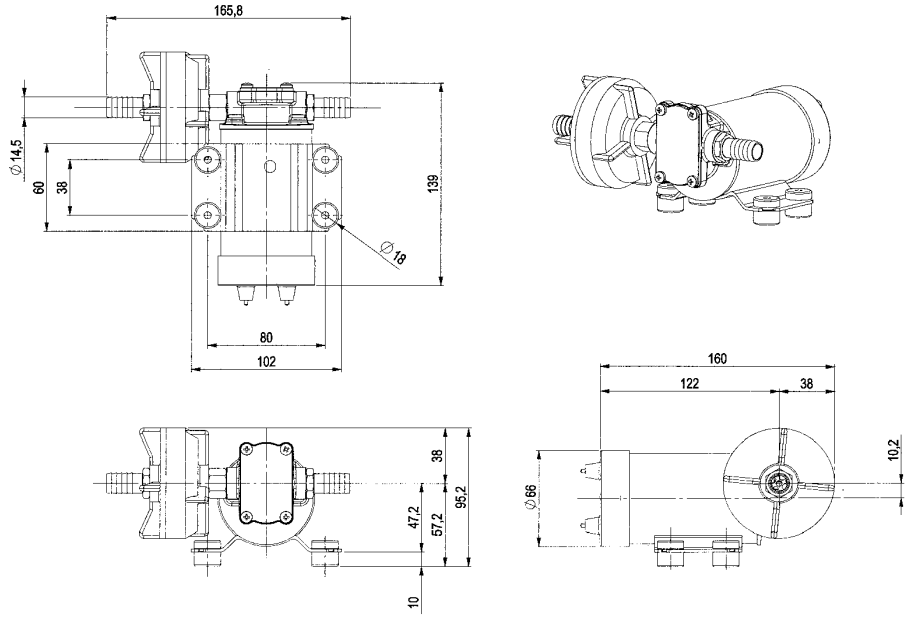
1) The Warranty period is 2 years from date of purchase on production of the appropriate sales invoice.
2) If this sales invoice is unavailable the Warranty period is 2 years from the date of manufacture.
3) The Warranty becomes null and void in the case of incorrect utilization or disregard of the instructions contained herein.
4) Warranty only covers defects due to original manufacturers production processes.
5) Warranty does not cover any related installation costs involved.
6) Transport costs are refundable only in the case where warranty has been duly recognized and accepted by Marco Spa. These costs will be limited to the actual shipment costs between Marco Spa warehouse and the client's delivery address.
7) No credit notes or replacement items will be issued prior to the receipt and proper testing of any Marco goods that are deemed faulty.

O EXPLODED VIEW

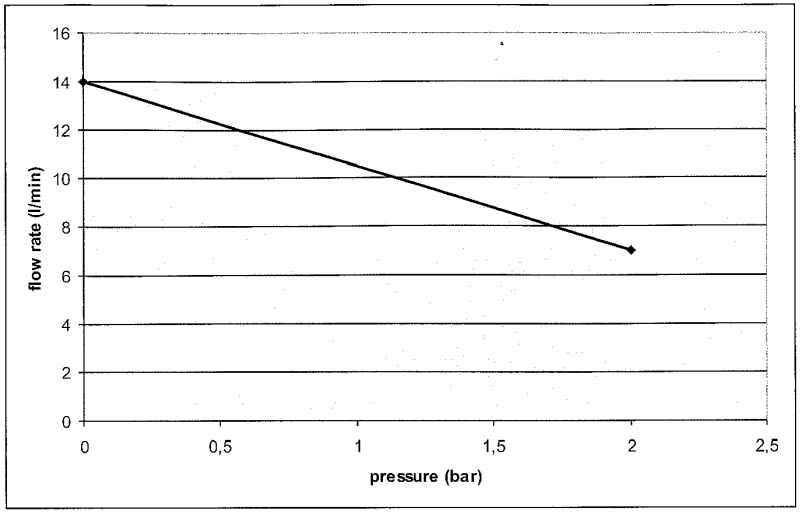


ART	Q.TY	DESCRIPTION
1	4	TOP PLATE SCREW M.4 X 10
2	1	TOP PLATE
3	1	TOP PLATE O-RING
4	1	IDLE GEAR
5	1	DRIVING GEAR
6	1	IDLE SHAFT
7	1	PUMP BODY
8	1	RUBBER LIP SEAL
9	1	BALL BEARING
10	2	ROD
11	1	KEY
12	1	ARMATURE
13	1	STEEL BALL
14	1	PUMP FRAME WITH MAGNETS
15	4	ANTIVIBRATION MOUNT
16	1	BRUSH HOLDER
17	2	WASHER
18	2	NUT M.4
19	1	RUBBER CAP
20	2	TUBE OUTLET
21	4	O-RING
22	1	FILTER HOUSING (MALE)
23	1	FILTER O-RING
24	1	FILTER NET
25	1	FILTER HOUSING (FEMALE)
26	1	NIPPLE 3/8 "

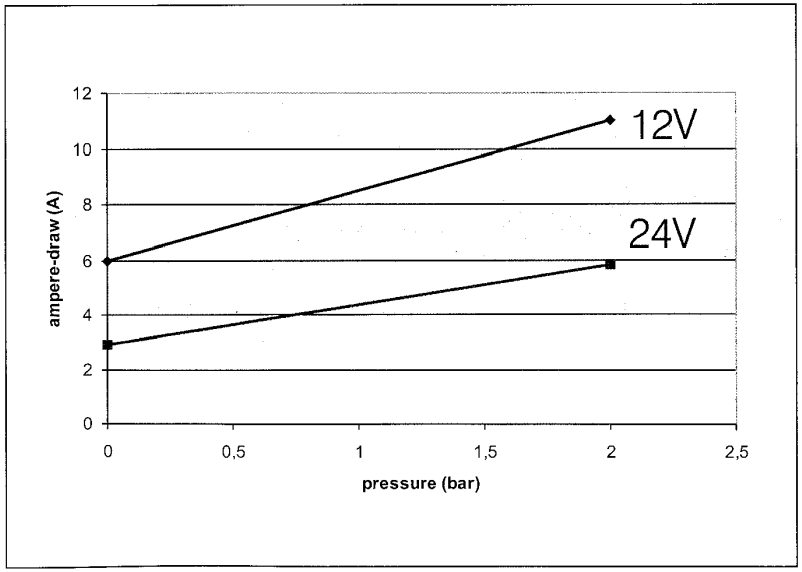
P DIMENSIONS



FLOW RATES DIAGRAM



AMPERE-DRAW DIAGRAM



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MARCO PUMPS

Item	Description	Type	Volt
1620011C	UP1 220V.a.c. rubber impeller pump 35 l	UP1	220
16200012	UP1 12V. rubber impeller pump 35 l		12
16200013	UP1 24V. rubber impeller pump 35 l		24
16200212	UP1-N 12V. rubber impeller pump 35l	UP1-N	12
16200213	UP1-N 24V. rubber impeller pump 35l		24
1640011C	UP3 220V.a.c. gear pump 14 l	UP3	220
16400012	UP3 12V. gear pump 14 l		12
16400013	UP4 24V. gear pump 14 l		24
16400212	UP3/P 12V. PTFE gear pump 14 l	UP3/P	12
16400213	UP4/P 24V. PTFE gear pump 14 l		24
1640611C	UP6 220V.a.c. gear pump 28 l	UP6	220
16406012	UP6 12V. gear pump 28 l		12
16406013	UP6 24V. gear pump 28 l		24
16402012	UP3/OIL 12V. gear pump for oil	UP3 OIL	12
16402013	UP4/OIL 24V. gear pump for oil		24
16408012	UP6/OIL 12V. gear pump for oil	UP6 OIL	12
16408013	UP6/OIL 24V. gear pump for oil		24
16410012	UP9 12V. heavy duty gear pump	UP9	12
16410013	UP9 24V. heavy duty gear pump		24
1640421C	UPX 220V.a.c. gear pump 14 l stainless-steel version	UPX	220
16404012	UPX 12V. gear pump 14 l stainless-steel AISI 316		12
16404013	UPX 24V. gear pump 14 l stainless-steel AISI 316		24
1640431C	UPX-C 220V.a.c. stainless-steel gear pump for chemicals 14 l	UPX-C	220
16404112	UPX-C 12V. stainless-steel gear pump for chemicals 14 l		12
16404113	UPX-C 24V. stainless-steel gear pump for chemicals 14 l		24
16460012	UP3/A 12V. automatic pump group with accumulator	UP3/A	12
16460013	UP4/A 24V. automatic pump group with accumulator		24
16462012	UP6/A 12V. automatic pump group with accumulator	UP6/A	12
16462013	UP6/A 24V. automatic pump group with accumulator		24
16464012	UP9/A 12V. heavy duty automatic pump group with accumulator	UP9/A	12
16464013	UP9/A 24V. heavy duty automatic pump group with accumulator		24
16480012	DP3 12V. washing services pump	DP3	12
16480013	DP3 24V. washing services pump		24
16482012	DP9 12V. washing services pump	DP9	12
16482013	DP9 24V. washing services pump		24

R

MARCO PUMPS ACCESSORIES

Type	Code	Description
BQC	16510200	Built-in boat quick connection for watering service from quay
DQC	16510000	Built-in quick connection for washing pump
OK1	16502000	Tube kit for oil pump
AT1	16508210	White painted metal accumulator tank 2 liters
AT2	16508310	White painted metal accumulator tank 5 liters
AT1X	16508010	Stainless steel accumulator tank 0,5 liters
AT2X	16508110	Stainless steel accumulator tank 2 liters

DICHIARAZIONE DI CONFORMITA' C.E.
E.C. DECLARATION OF CONFORMITY

Confermiamo che il prodotto:
We confirm that the product:

164 000 12 - UP3 12V. Pompa a ingranaggi 14 l / *gear pump*
164 000 13 - UP4 24V. Pompa a ingranaggi 14 l / *gear pump*

E' conforme alle direttive 73/23/C.E.E. (relativa al basso voltaggio) e 89/336/C.E.E. (relativa alla compatibilità elettromagnetica) entrambe recentemente modificate con la direttiva 93/68/C.E.E. per l'uniformità legislativa degli stati membri della C.E.E.
Is in conformity with the E.C. directive 73/23/E.E.C. (Directive relating to low-voltage) and 89/336/E.E.C. (relating to the Electromagnetic Compatibility) both recently modified with the E.C. directive 93/68/E.E.C. for the laws uniformity of the E.E.C. states.

Questa dichiarazione è valida per tutti gli articoli prodotti secondo la documentazione tecnica che è parte di questa dichiarazione. In caso di eventuali verifiche pertinenti alla Sicurezza delle macchine elettriche e alla Compatibilità Elettromagnetica sono state applicate le seguenti normative:
This declaration is valid for all products which are produced in accordance with the technical documentation which is a part of this declaration. For verification of conformity with regard to the security of electric machines and to the Electromagnetic Compatibility the following standards are applied:

☐	EB60335-2-41:1990 +A51:1991	Sicurezza delle macchine elettriche per uso domestico ed usi affini. Particolari applicazioni delle pompe elettriche con liquidi che non superano la temperatura di 35 °C. *Security of electric machines for the domestic use and similar uses. Particular applications of electric pumps with liquids that do not exceed 35°C.*
☐	EN50081 - 1 / 03.93	Normativa generica sull'emissione di disturbi radio (abitazioni, ambienti commerciali e piccole industrie). *Generic emission standard, residental, commercial and light industry.*
☐	EN50082 - 2 / 03.95 (ambienti industriali)	Normativa generica sulla resistenza ai disturbi radio *Generic waves immunity standard, industrial environment.*

Contrassegnazione con marchio CE da: Settembre '96
EC product marking from: September'96.

Questa dichiarazione è rilasciata sotto la responsabilità esclusiva di:
This declaration is given under the sole responsibility of:

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