LGB s.r.l.
Via Romania, N° 7
35127 PADOVA Z.I.
☎ ++39 049 6989310
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Rev. 01 del 04/11/2014

USER'S AND MAINTENANCE MANUAL OF LGB PRODUCTS

LGB s.r.l. thanks you for purchasing its products.

For a safe, effective, efficient and correct use of your LGB product, please read this manual carefully.

This User's manual and the product have been prepared and tested according to appropriate procedures, should misprints or other types occur please inform our business contacts (www.lgb-pumps.it).

LGB s.r.l. assumes no responsibility for any direct or indirect consequential damage to an improper use of the product or in any case to applications not conforming to the requirements described in this manual of use and maintenance.

The electric motor pumps of LGB s.r.l. cannot be used for alimentary and drinking water applications, except for special customizations requested by the customer and in compliance with the Ministerial Decree n. 34 dated 21/03/1973 (eg. pumps used in ice makers, etc.)

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CONTENTS:

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1. GENERAL DESCRIPTION OF PRODUCTS

The prescriptions contained in this manual refer to LGB products, as follows:

- Electric pumps for industrial dishwashers, sanitary facilities, swimming pools and medical devices;
- Electric motors for industrial ovens and coffee machines

The pumps and electric motors are designed and manufactured as components to be incorporated in a 'Class 1' apparatus, whose casing and construction provides protection against electrical shocks.
The pumps and electric motors must therefore be considered components of the apparatus in which they are incorporated.
It is the sole responsibility of the LGB customer, as the apparatus / equipment manufacturer, that incorporates the pump or electric motor as a component, to ensure safety and compliance with related norms of the complete.

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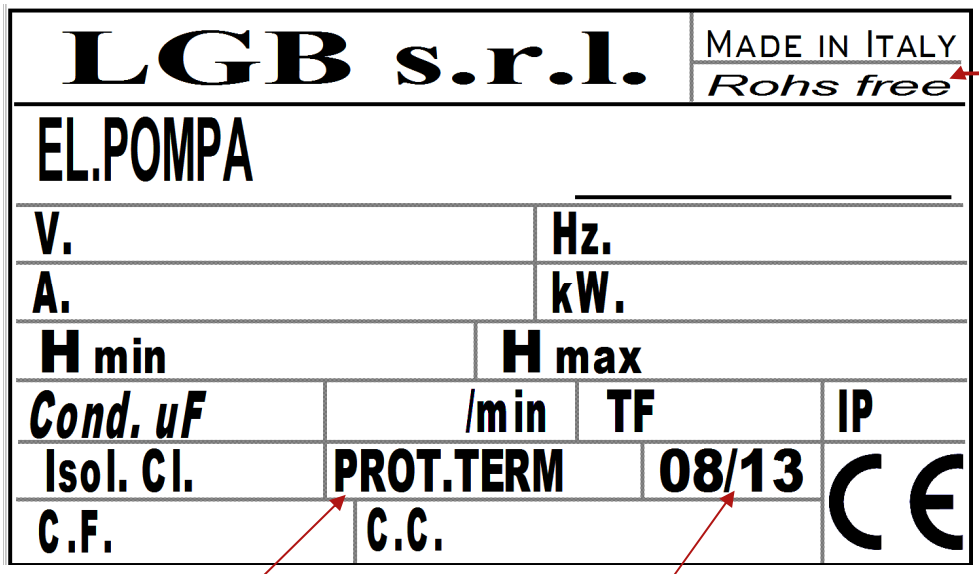
2. PRODUCT ADHESIVE IDENTIFICATION AND DATA LABELS

For Electric motor pumps: *Compliance with the Regulations 2002/95/EC*



Winding equipped with thermal protector - *Date of production*

EL.POMPA _____ = Pump model _____;
V. = Power supply Voltage; **Hz.** = Rated frequency;
A.= Total absorbed Current; **kW.** = Maximum power consumption (P_1);
H min. = Minimum head; **H max.** = Maximum head;
Cond µF = the capacitor's capacity; ….. **/min** = rpm;
TF = Maximum temperature of the pumped fluid; **IP** = Protection grade;
Isol.Cl. = Isolation class;
C.F. = Supplier Code;; **C.C.** = Customer Code;

./.

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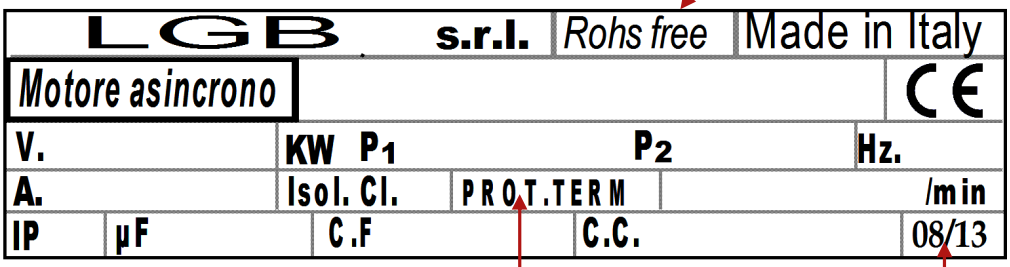
For Electric Motors: *Compliance with the Regulations 2002/95/EC*

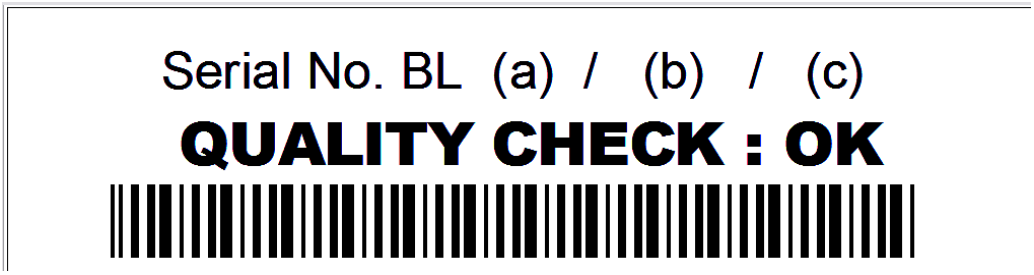


Winding equipped with Thermal protector - *Date of production*

Motore asincrono = ***Asynchronous motor***;
V. = Power supply Voltage; **kW** **P1** = Rated input power **P2** = Rated power at shaft
Hz = Rated frequency.
A. = Total absorbed Current; **Iso. Cl.** = Isolation Class; ….. **/min** = rpm;
IP = Protection grade; **µF** = the capacitor's capacity;
C.F. = Supplier Code; **C.C**. = Customer Code;

All LGB are equipped with the following TRACEABILITY LABEL:

In addition to the data labels, all electric pumps and motors are equipped with the below label, bearing the serial number, consisting of production lot (a), the date of production (b) and the ID number of the product (c).



This serial number (repeated with a barcode) allows to trace at any time the report of assembly line end testing performed and carried out on 100% of the production.

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3. INSTALLATION

3.1. Always check manually the free rotation of the shaft assembly acting on the rear part of the same where there is always present the impression dedicated to act with just a simple screwdriver;

3.2. Fix the product on a solid base dedicated to ensuring a rigid and vibration free position, as well as an access for visual inspection;

3.3. Fix correctly the piping to the suction inlet and the discharge outlet of the pump housing, making sure that the pipes do not have a lesser diameter;

3.4. All the pipes used for the various hydraulic connections must be perfectly sealed, therefore, the use of metal clamps is recommended;

3.5. All the piping connected to the pump must be firmly supported , the lack of support may lead to the breakage of the pump housing;

3.6. Connect electrically the product by matching the data label of the product with the available power supply voltage that must be the same for voltage and frequency;

3.7. Before starting up the product, check that the pump housing is full of liquid to be pumped;

3.8. Check that the direction of rotation of the shaft assembly is correct (for three-phase motors it is indicated by the arrow printed on the adhesive label affixed to the product);

3.9. ONLY FOR THREE-PHASE ELECTRIC MOTORS AND MOTOR PUMPS: after each new connection of phases or tension (V) after a lack of phases or tension (V), it is possible that phases get reversed, therefore the correct direction of rotation must get checked. The wrong direction of rotation causes overheating of the motor, likely vibrations, reduces significantly the performance of the electric motor pump and causes probable damage to the pump casing (in the case where the impeller unscrews itself);

3.10 The use of the product with fluids other than those of normal use is not foreseen. IMPORTANT: Do not use exceeding percentages of detergents and/or rinse agents as recommended by the manufacturer of the machine where the electric pump is incorporated, do not use not recommended solutions with excessive percentage of Chlorides and / or Chlorites, **except for specific applications previously agreed in writing with LGB S.r.l.**

3.11 ONLY FOR SINGLE PHASE ELECTRIC MOTORS / PUMPS: All capacitors with protection class different from P2 or S2 must be assembled in accordance with the requirements laid out in section 24.8 of EN 60335-1 .

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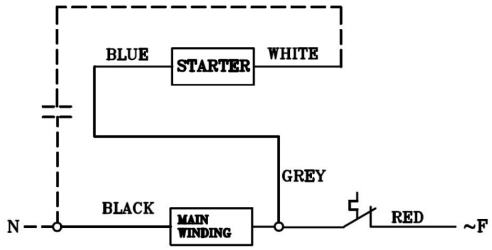
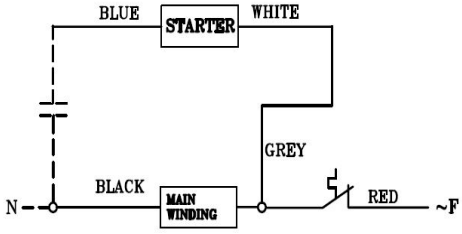
4. ELECTRIC CONNECTIONS:

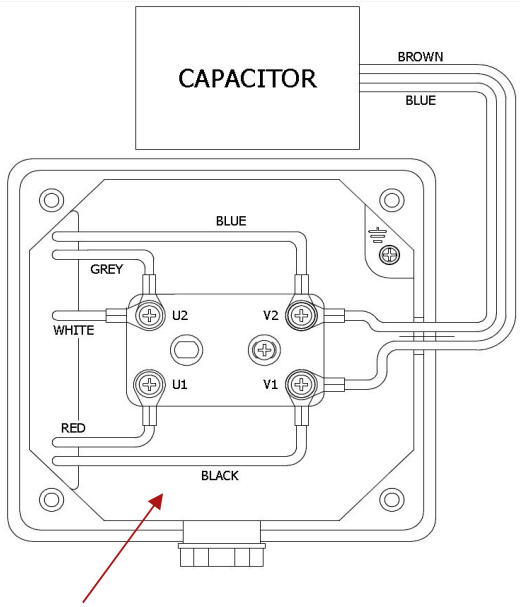
4.1. Standard connection diagram of electric pumps with single-phase motor windings running in both directions (cw / ccw);

CLOCKWISE ROTATION, WIRE SIDE



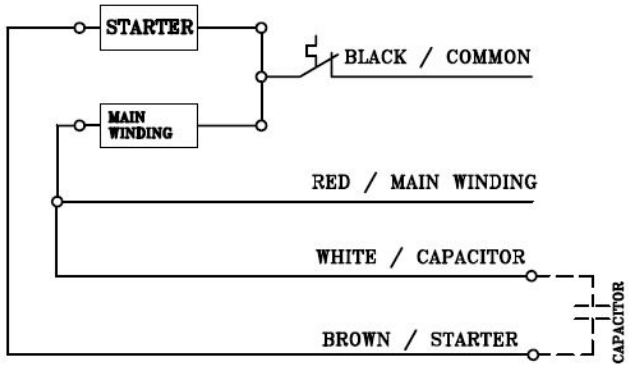
COUNTERCLOCKWISE ROTATION, WIRE SIDE

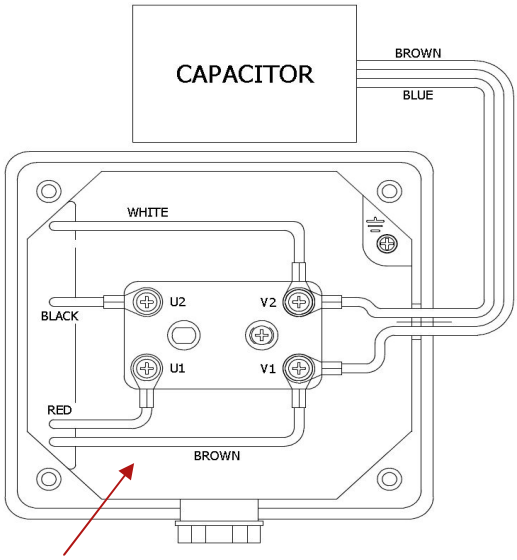




Example of connection in the terminal box of TEFC motors

4.2. Standard connection diagram of electric pumps with single-phase motor windings;





Example of connection in the terminal box of TEFC motors

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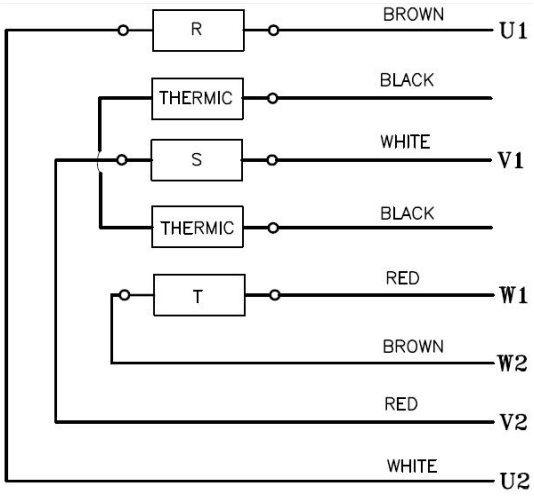
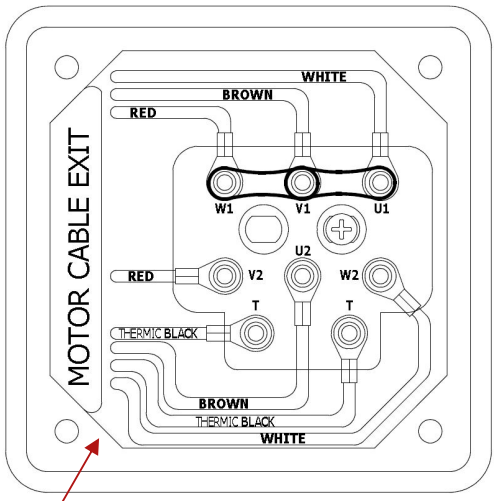
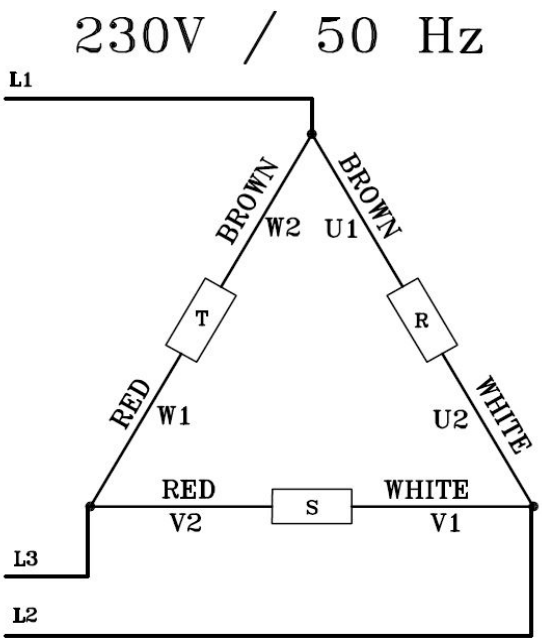
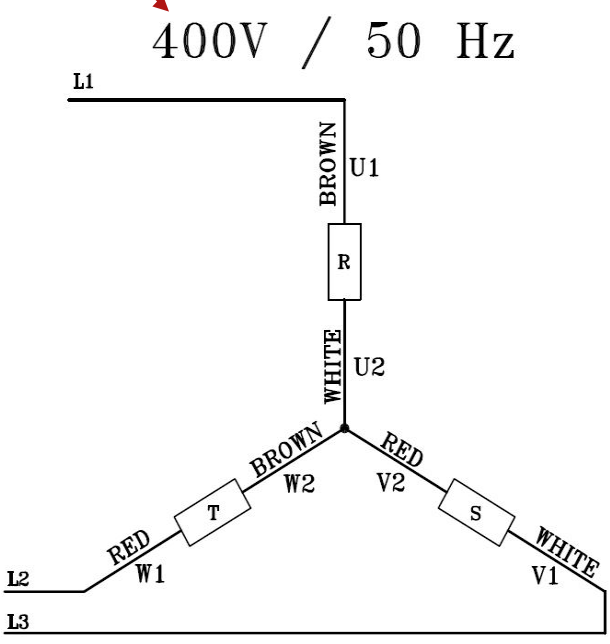
4.3. Standard connection diagram of electric pumps and motors with three-phase motor windings and independent thermal protector;





Example of connection in the terminal box of TEFC motors (400V connection)





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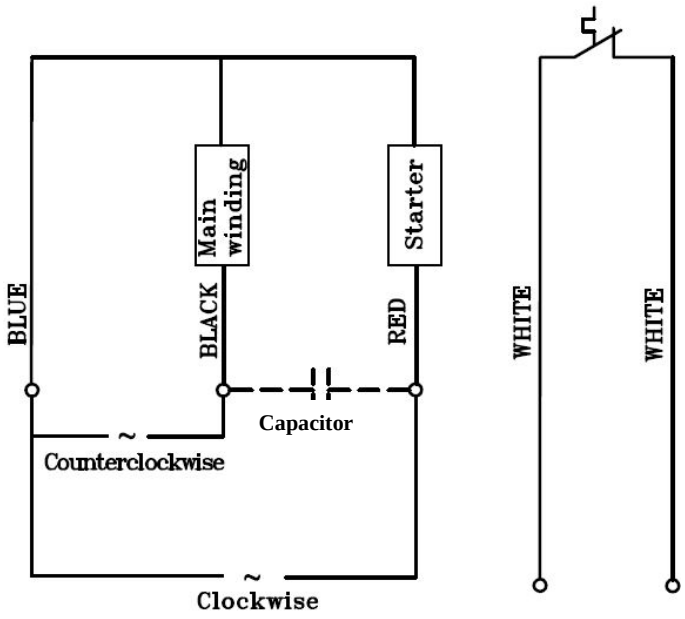
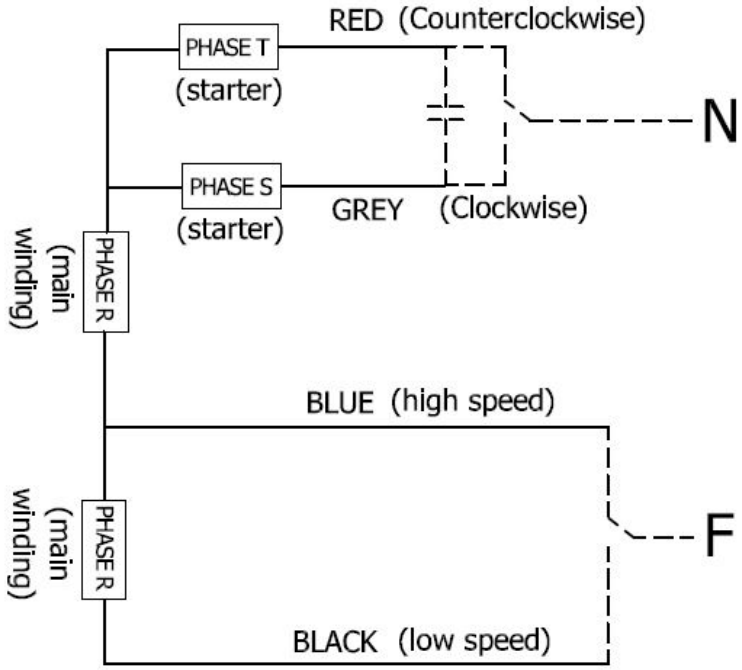
4.4. Standard connection diagram of motors with single-phase motor winding;



4.5. Standard connection diagram of motors with 2/4 poles motor winding;



Due to the numerous requests for customization, you can find on the market electric pumps and motors with wiring diagrams different from those standard ones listed above, both for the position and for the colouring of the electrical cables. This is caused by LGB s.r.l. needs to unify the production. In any cases of doubt, it is advisable to contact a qualified Technician at LGB s.r.l. (www.lgb-pumps.it).

5. ADDITIONAL WARNINGS

The product can be stored in a warehouse under conditions of an environment that is:

5.1. Dry;

5.2. Ventilated;

5.3. Clean (if necessary cover the product or place it in a carton);

5.4. Keep the product away from direct sources of heat;

5.5. During the period of storage, so not to cause the blocking of the mechanical seals, it is necessary to act periodically on the rear of the motor shaft, by rotating it.

6. CONTROL AND MAINTENANCE

6.1. Check that the power supply is switched off / not connected in order the product cannot restart, even accidentally, before you start working on it;

6.2. Difficult working conditions or occasional uses of the product makes necessary frequent inspections. To ensure, through time, safety, reliability and performance, the product must be subject to six-monthly maintenance work consisting of actions of verification, control and substitution;

6.3. The inspections are essentially visual, verifying that the components of the product externally and internally have not been dented, corroded and in any case affected in degradation phenomena, and paying particular attention to components made out of plastic material, especially for dents, cracks and breakages. Obviously, the presence of such phenomena must involve the replacement of damaged parts;

6.4. Components subject to wear and tear (e.g. mechanical seals) must be checked periodically;

6.5. ***MECHANICAL SEAL***, it is advisable a use of maximum of 8000 hours, during which it is appropriate to carry out the following measures:

6.5.1. In the system where the product is installed, appropriate filters must be used, necessary to block solids and/or abrasive parts that can position themselves between the sliding surfaces causing damage and consequently causing loss of pressure and leakage.

6.5.2. Make sure that the sliding surfaces are constantly lubricated by the pumped liquid, maintaining the proper water level inside the dishwasher tank and ensuring that during normal use an excessive amount of foam does not form. In the case of partial or missing lubrication, the sliding surfaces of the mechanical seal will overheat and the heat (not removed by the pumped liquid) is transmitted in its entirety, causing a sudden deterioration of the sliding surfaces and consequent leakage.

6.6. ***BEARINGS***, no time limit of use is indicated, but nevertheless the following steps need to be taken:

6.6.1. Make sure that dust and / or metal chips or other kind do not settle on the motor shields;

6.6.2. Make sure that in the area of shaft bearings no leaks of grease are present, this might be a symptom of excessive temperature attained.

6.7. In the case where the user is not able to perform the ordinary or the extraordinary maintenance, these operations must be carried out by qualified staff at LGB s.r.l.

6.8. Any type of intervention on the product by unauthorized persons, renders automatically void the performance warranty by LGB.

7. REPLACEMENT OF PUMP HOUSINGS

7.1. Unscrew the screws / nuts coupling the pump housing's front to the flange;

7.2. Assemble the new pump housing, making sure that there are no deposits of dirt on coupling sealing surfaces in correspondence with the O-ring seat;

7.3. At every maintenance operation and control where the pump front casing needs removal, it is necessary to replace the O-ring.

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8. REPLACEMENT OF IMPELLERS

The following operations can be performed only by qualified persons.

8.1. Unscrew the screws / nuts coupling the pump housing's front to the flange (as above);

8.2. In the case of the presence of a nut that locks the impeller, unscrew the nut and then unscrew the impeller;

8.3. In the case of assemblies without nut simply unscrew the impeller;

8.4. To unscrew the impeller you must keep locked the shaft assembly by acting in the rear part of the electric pump motor, taking great care not to damage nor the copper crowns of the wound stator, nor the cooling flaps of the rotor (in the case of electric pumps with TEFC motors, slip off the fan cover and the fan, keeping locked the rear of the motor shaft);

8.5. Proceed with the replacement of the impeller and reassemble the pump housing's front as indicated in point n° 8.2.

9. REPLACEMENT OF MECHANICAL SEALS

The following operations can be performed only by qualified persons.

9.1. Mechanical seals are precision components and as such they require a proper and accurate assembly.

9.2. Do not wet the sliding surfaces and the rubber seals of EPDM type with lubricants.

9.3. The seal surfaces, at the time of assembly, must be clean and dry.

9.4. Avoid totally the use of excessive force during insertion.

9.5. Avoid totally that the mechanical seal is subject to shocks or impacts during the assembly.

9.6. Follow the steps indicated in the instructions for the replacing of the impeller and the pump front housing (points n°8 and 9);

9.7. ***IN THE CASE OF ROTATING SEAL POSITIONED ON THE MOTOR SHAFT***: slip off the seal to replace, insert the new seal on the motor shaft taking extreme care pushing it in place by tightening the impeller;

9.8. ***IN THE CASE OF ROTATING SEAL POSITIONED ON THE IMPELLER SPIGOT***: slip off the seal to replace, place the new seal in the dedicated buffer (**DIS0136**), moisten the spigot of the impeller with denatured ethyl alcohol and insert the seal until it rests on the bottom plate of the impeller;

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9.9. Slip off the fixed seal inserted into the flange with the help of a flat screwdriver, moisten the seal seat (present in the flange) with denatured ethyl alcohol and proceed with the insertion of the fixed seal until its complete settling in place with the appropriate dedicated buffer (**DIS0137**).

See on following pages above mentioned drawings of buffers:

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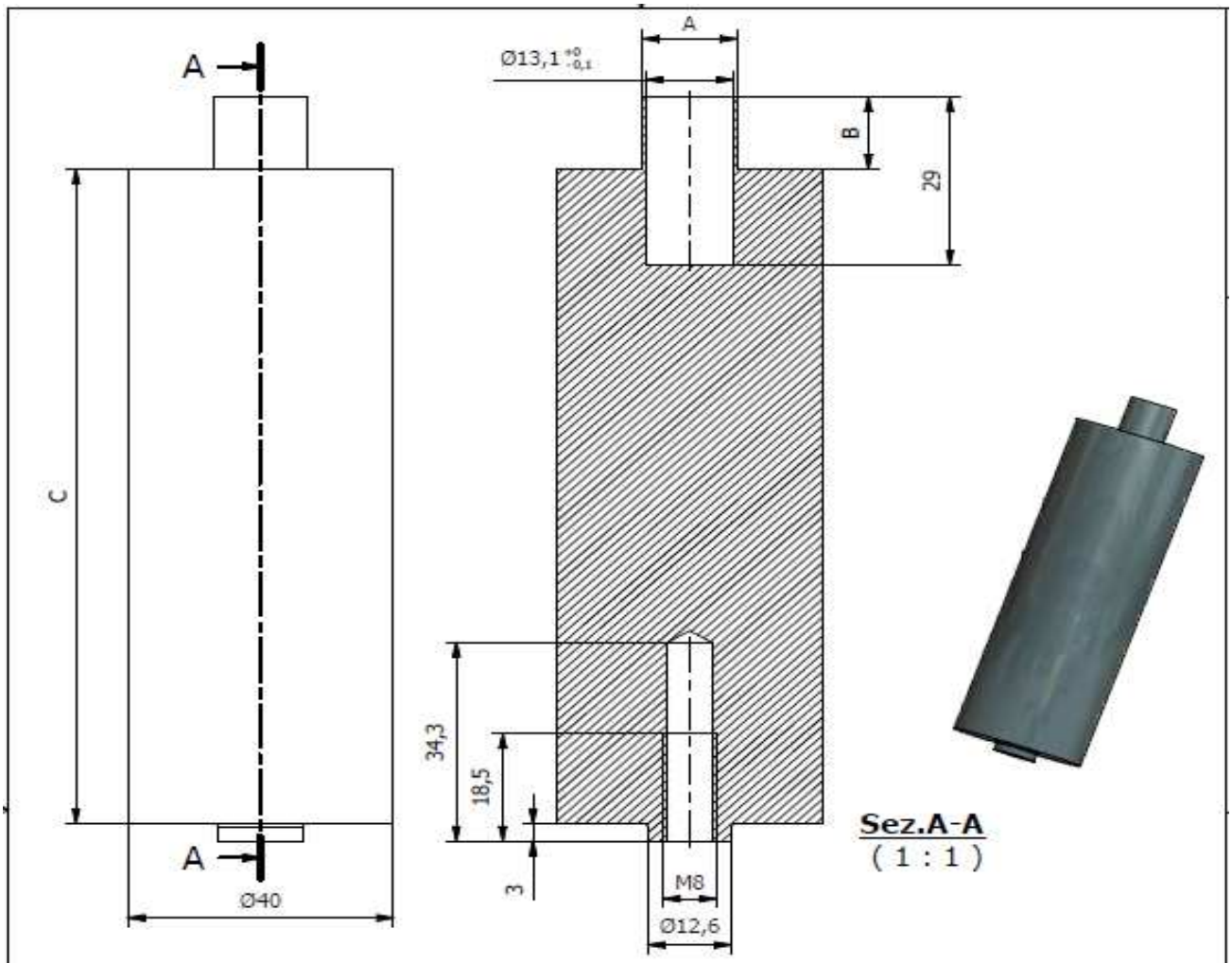

	ELENCO TAMPONI			
	TIPO TENUTA	QUOTA "A" (± 0.05)	QUOTA "B"	QUOTA "C"
PRESSA A	PR/AR 13	14.2	11	113
	PR/AR 13 RID	14.9	15	113
PRESSA B	PR/AR 13	14.2	11	83
	PR/AR 13 RID	14.9	15	83

Rev.	Data	Descrizione		Disegnato	Approvato
a	28-01-13	Prima emissione	/	M.Mauro	G.Cesaro

DOVE NON SPECIFICATO USARE TOLLERANZE UNI EN 22768-1_mK						DESCRIZIONE	CODICE	Rev.
0.5÷3	>3÷6	>6÷30	>30÷120	>120÷400	>400÷1000	Elenco tamponi inserimento tenute con pressa	DIS0136	a
±0.1	±0.1	±0.2	±0.3	±0.5	±0.8			

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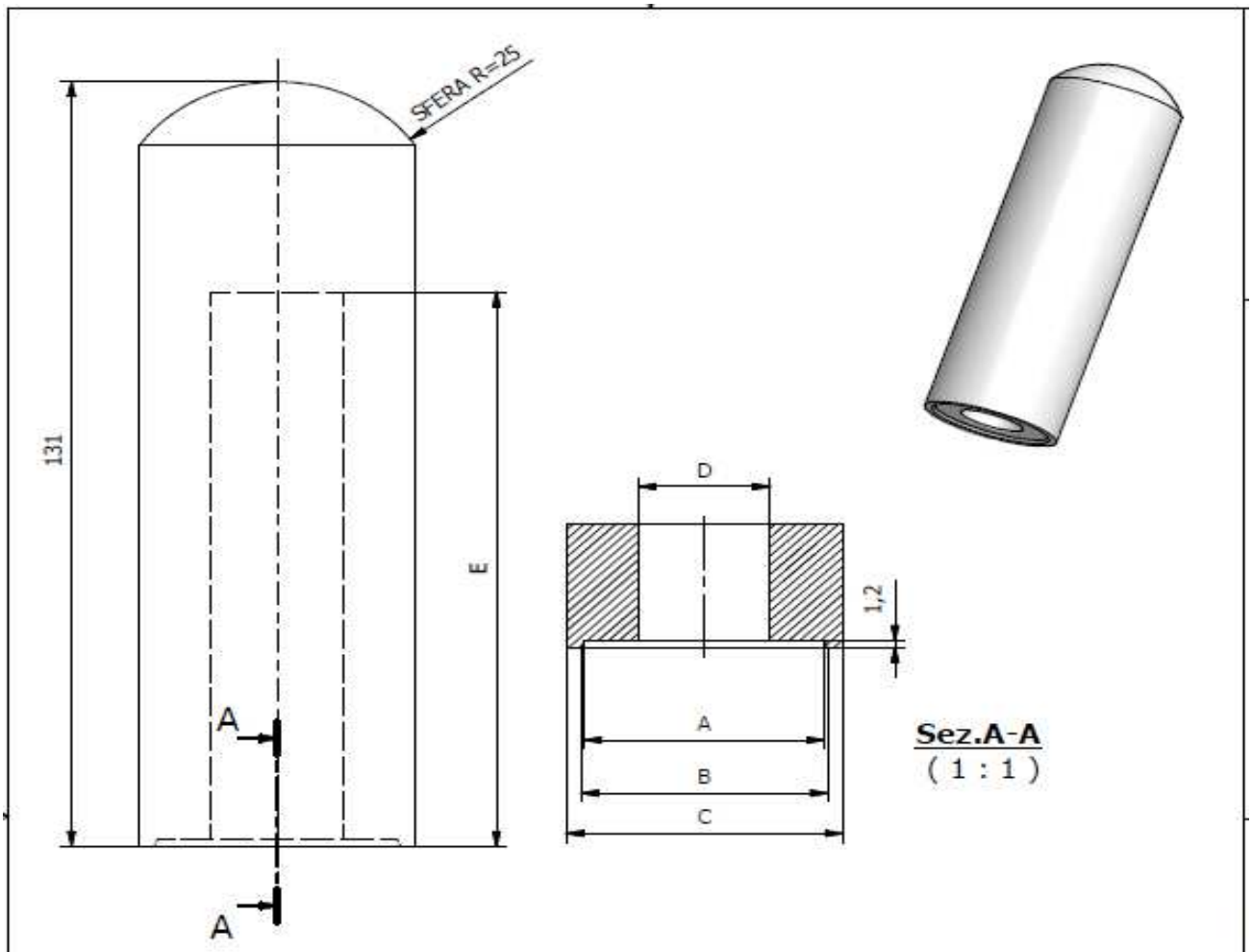

ELENCO TAMPONI					
TIPO TENUTA	QUOTA "A"	QUOTA "B"	QUOTA "C"	QUOTA "D"	QUOTA "E"
PF C 42 x 20 x...	35.5	36.5	41	19.5	92
PF C 29.5 x 16 x...	25	26.5	29.5	12.3	103
PF C 26 x 12 x...	22	24	26	12.3	96
PF C 22 x 10 x...	19	19.5	22	8.3	101

Rev.	Data	Descrizione		Disegnato	Approvato
a	28-01-13	Prima emissione	/	M.Mauro	G.Cesaro
			BM/RNP		

DOVE NON SPECIFICATO USARE TOLLERANZE UNI EN 22768-1_mK						DESCRIZIONE	CODICE	Rev.
0.5÷3	>3÷6	>6÷30	>30÷120	>120÷400	>400÷1000	Tamponi inserimento tenute fisse	DIS0137	a
±0.1	±0.1	±0.2	±0.3	±0.5	±0.8			

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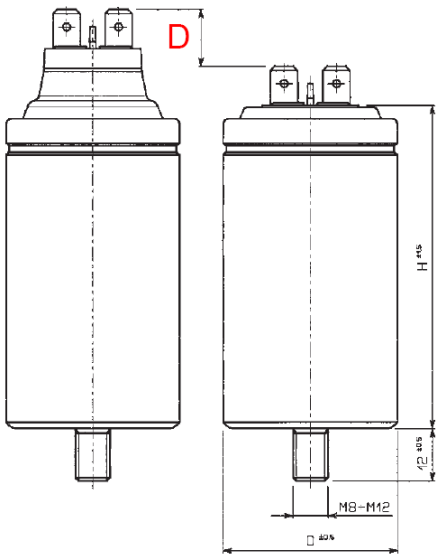
10. CAPACITORS

The capacitor used for the construction of electric motors, unless otherwise requested by the customer, has safety class P0 as required by standard EN 60252-1 (standard governing the manufacture of capacitors). It is the sole responsibility of the final equipment manufacturer, to ensure the incorporation of the electric motor and capacitor in an environment corresponding to the above-mentioned safety class.

With reference section 24.8 of the EN 60335-1 standard, the motor starter capacitors of the equipment for which applies point n. 30.2.3 of the same standard and which are permanently connected in series to a motor winding, must not cause a dangerous condition in case of failure of the capacitor.

Given the use of some non-metallic materials and configurations currently assembled to LGB products, to ensure the adaptation to the standard it is necessary to:

- if you have P0 - capacitors with plastic casing (from 2015 identified with the S1), assemble the same at a distance greater than 50 mm from any non-metallic part;
- In case of use of P2 - capacitors with metal casing (from 2015 identified with the code S2), in order to allow regular operation of the anti-explosion-preventing device it is necessary to provide a free space of at least 10mm above the power connections (see quote D of below drawing which shows the capacitor's elongation in case of failure).



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11. FAULTS AND REMEDIES

IN ALL CASES OF DOUBT PLEASE ALWAYS CONTACT A QUALIFIED TECHNICIAN AT LGB s.r.l. (www.lgb-pumps.it). All products supplied by LGB are subject to assembly line end tests, for both the electric and hydraulic components.
In respect of any case of doubt, the Customer may request the LGB test report by providing the complete serial number shown on the traceability label (Quality Check) which is applied to the product after passing all the tests with positive result.
In the case of power cord rupture or in any case of damage, the product must be replaced**.**

12. DECLARATION OF CONFORMITY (CE)

All products supplied by LGB s.r.l. comply with the standards, requirements, Declarations and Certifications specified in the section QUALITY of our company website (www.lgb-pumps.it).

13. TECHNICAL SPECIFICATIONS

LGB website - www.lgb-pumps.it - in the section "CATALOGUE", shows by product type all the technical characteristics and the overall dimensions of our standard products.

The catalogue is purely indicative, since for each model of electric pump /motor already exist various solutions of customization. For proper consultation and any requests we suggest you contact the LGB Sales Department.

All our products are identified with "pollution degree 3" and with "overvoltage category 2":
- Pollution degree identified in Annex M of EN 60335-1;
- Overvoltage categories identified in Annex K of the standard EN 60335-1.

14. PRODUCT WARRANTY

For product warranty please refer to the General Conditions of Sale in our website **www.lgb-pumps.it**