

OPERATION AND MAINTENANCE MANUAL

DAMIEN Motori Elettrici declares that the motors quoted in this technical manual complies with the following EU Directives:

- L.V.D. 2014/35/EU (Low voltage)
- E.M.C. 2014/30/EU (Electromagnetic compatibility)
- M.D. 2006/42/CE (Annex IIB)

N.B.

The low voltage motors are component of a machine. Them putting into service are prohibited if the final product are not conformed to EU standards.

The material complies with the main European Standards:

- CEI EN 55014-1 - E.M.C. Electromagnetic compatibility
- CEI EN 60034-1 - Rating and performance
- CEI EN 60034-5 - IP Rating. Degree of body motor protection
- CEI EN 60204-1 - Safety of machinery.

The motors are composed by electrical and electronic equipment that comply with the RoHS 2 Directive 2011/65/EC (restriction of hazardous substances directive)

ELECTRIC MOTOR INSTALLATION

WARNING

The electric motor must be installed only and exclusively by skilled technicians. Before operating the electrical material read this manual and the instructions. Bear in mind that this manual does not exempt anyone from motors or those general standards associated with the safety of persons, animals or property set forth by the EU standards.

- 1) The electric motor must be run according to the features stated in the name plate, it must be installed and performed maintenance according to the EU standards.
- 2) The electric motor is not suitable in areas with substances which burn without oxygen.
- 3) Before starting up the electric motor you must check:
 - The overall conditions of the motor
 - The free rotation of the motor shaft, unless for the "self-braking" motors
 - The correct connections to the terminal strip (see the leaflet supplied with the motor)
 - That the motor plate values correspond to the network which will power it

WARNING

For the ELECTRICAL CONNECTIONS – THE SPECIFICATIONS OF THE BRAKE / ENCODER / INVERTER OR OTHER CONFIGURATIONS, you must read the leaflet supplied with the electric motor.

WARNING

If parts of the motor are damaged and/or the values reported on the motor's rating plate do not exactly match those of the mains that will power it, or the environmental conditions are different, do not start the electric motor.

- 4) Fix the motor into its seat using suitable fastening equipment (with B14 flange pay attention to the depth of the screws and their closure, there is a risk of damaging the electric winding or the screws thread).
- 5) Handling of the motor: if the motor has a weight greater than 30 kg, use machine tools or similar in order to prevent physical injury, conforming to EU directives.
- 6) Do not start the electric motor with the key inserted on the motor shaft because, due to the centrifugal force, can be ejected and cause a risk factor.
- 7) Before performing maintenance on the electric motor or near it, visually check that the main power supply has been disconnected, make sure that it is impossible for the motor to restart unexpectedly,

make sure also that other masses connected to the crankshaft cannot drag the motion of the same;

WARNING

Wait until the motor is at room temperature before opening the protection to avoid explosions due to the temperature or electrical charge.

- 8) It is forbidden to use the motor in environmental conditions which differ from the IP ratings specified on the nameplate, as per EN 60034-5
- 9) Connect the motor's frame to earth using the appropriate equipotential terminal identified by the symbol as per EN 60204-1.
- 10) If the electric motor is stored, the environment must be maintained between (0°C +55°C) and the humidity of 30% < UR% < 95%. In any case after 12 months from the storage check the insulation resistance which should be approximately 1 MΩ with DC test voltage of 500V for Vn < 500V. If you detect a difference, this may be due to the presence of humidity in the windings, so repeat the test.
- 11) Make sure that the mechanical protection of the motor's moving parts or parts connected to it, e.g. the pulley belt units, are sufficient as far as safety for persons or animals in accordance with EN 60204-1.
- 12) Check that the alignment between motor shaft and rotating parts keyed to the motor is correct or that they are statically and dynamically balanced in order to prevent undesired moments, as per EN 60204-1. The shaft of the electric motor is designed according to the IEC standard IEC 72-1.
- 13) Check the correct fixing of the flange or the feet and the correct adherence to the entire support surface. Do not install the motor inside enclosed enclosures without proper air exchange.
- 14) The dimensions and the mechanical characteristics of the shields, flanges, frames and mechanical parts are compliant with IEC 72-1. They are also electrical compliant with the IEC 34-1 (1983).
- 15) Make sure that the electric motor is not a source of noise pressure levels LpA > di 80 dBA as set forth by EU directives. In such cases the unit must be silenced or workers must protect themselves with individual acoustic protective equipment.
- 16) Make sure that the hot parts of the electric motor (temperature > 80°C) are adequately protected against touching by personnel, animals or property compliant with EN 60204-1
- 17) All risk situations must be adequately indicated with visual signs such as voltage, excessive noise or temperature.
- 18) Make sure that the hot parts of the electric motor are adequately protected against touching by personnel, animals or property and the gasket and cable inlet are closed correctly.

ELECTROMECHANICAL SAFETY OF THE ELECTRIC MOTOR (EN 60204-1)

- 1) Envisage a safety device against overload for power supplied > 500W in thermal service S1. This can be achieved with a thermal relay and a contactor. We suggest to fit a thermal safety device into the windings of the motors with a thermoresistor or bimetallic device in scarcely ventilated places such, as for example, the inside of crankcase.. The intervention temperature depends to the insulation class in accordance with EN 60204-1.
- 2) If required by particular operating conditions of the electric motor together with other machines, envisage the application of a minimum voltage relay and contactor as per EN 60204-1.
- 3) Variable speed applications are not allowed unless especially if they are too away from the nominal rotation speed. Pay attention that in some cases it is necessary to contact the manufacturer.
- 4) If the speed range is agreed upon with the manufacturer thus increasing the risk factor, a suitable safety device should be used as per EN 60204-1.
- 5) A safety device must be envisaged against electric motor over currents by means of magnetic relay and contactor or fuses as per EN 60204-1.

- 6) The sizing of the electric motor power supply cables and the admissible voltage drop percentage must conform to EN 60204-1.
- 7) Is also important that the cables have the thermal dimensions considering the power exchange in accordance with EN 60204-1.
- 8) When IG [A], fault current is known at the expected fault point, K and S (cable section mm²), then calculate the maximum tripping time Δt (s) of magnetic circuit breakers.
- 9) Personnel, animals and property must be protected against indirect contact to parts that are not normally subjected to electric voltage but that might be subjected to it in the case of malfunction. Therefore fit a differential relay and contactor with Id <= 30mA as per EN 60204-1
- 10) If the turning direction of the motor shaft has been set to one only such direction, this must be clearly indicated with an arrow as per EN60204-1.
- 11) In the event that the motor brakes electrically by means of the inversion of two power supply wires, the motor must not be restarted in the opposite direction as per EN 60204-1.
- 12) The automatic reset of the safety device is strictly prohibited. This may be done only and exclusively in the exact moment, by the manual intervention of personnel who are skilled in reset operations as per EN 60204-1.

MAINTENANCE

Overhaul and repair operations can only be carried out by skilled and specialized staff in compliance with current regulations. **Only skilled staff knowing all of the regulations and standard on connection and use of electric devices are authorized to operate DAMIEN Motori Elettrici.**

- Do not open the motor nor the terminal board while the motor is being energized and in an explosive atmosphere. It is necessary to keep the motor and any possible accessories clean and with no traces of dust, oil, dirt or other impurities. Always make sure the air channel for cooling is not obstructed in order to avoid overheating. Inspect the motor on a regular basis. Make sure the motor works without any vibrations or strange noise. Make sure the tension of any possible drive belts is correct. Make sure the motor fastening elements are fastened correctly. When they are present, the bearings with greaser must be greased periodically, with the motor running, observing the necessary precautions. Check the shaft seal conditions and, if necessary, replace the seals. Spare parts must be original, with suitable certificate and approved by DAMIEN Motori Elettrici.

DISPOSAL

The motor must be disposed of according to the material used and in compliance with current regulations in the country of installation.

CONTACTS

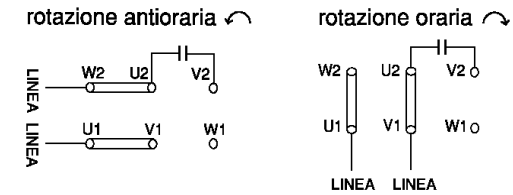
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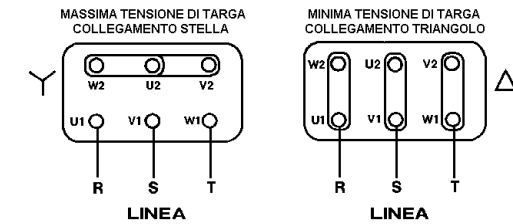
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MAIN CONNECTIONS:

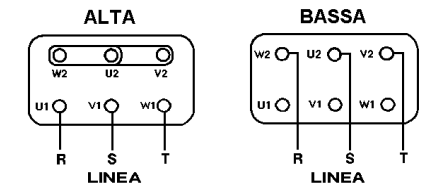
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TYPE: T COLLEGAMENTO MOTORE TRIFASE

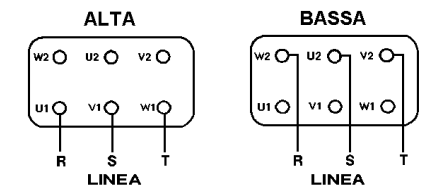


TYPE: TD COLLEGAMENTO MOTORE A DUE VELOCITA'



UNICA TENSIONE, UNICO AVVOLGIMENTO TIPO DAHLANDER

TYPE: TT COLLEGAMENTO MOTORE A DUE VELOCITA'



UNICA TENSIONE, DOPPIO AVVOLGIMENTO