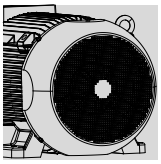
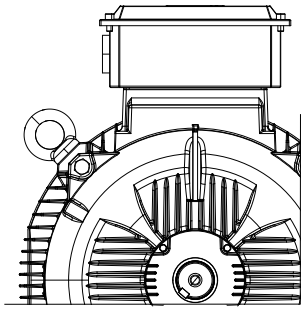
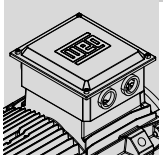


MANUAL FOR INSTALLATION, OPERATION AND MAINTENANCE



LOW VOLTAGE ELETRIC MOTORS



1. Introduction

The installation, operation and maintenance of the motor must be always performed by qualified personnel using proper tools and methods and following the instructions contained in the documents supplied with the motor.

The instructions presented in this document are valid for WEG motors with the following characteristics:

- Three-phase and single-phase induction motors (squirrel cage rotor);
- Three-phase permanent magnet motors;
- Three-phase hybrid motors (squirrel cage rotor + permanent magnets);

The objective of this manual is to provide important information, which must be considered during the shipment, storage, installation, operation and maintenance of WEG motors. Therefore, we advise to make a careful and detailed study of the instructions contained herein before performing any procedures on the motor. The noncompliance with the instructions informed in this manual and others mentioned on the website www.weg.net voids the product warranty and may cause serious personal injuries and material damages.

Electric motors have energized circuits and exposed rotating parts which may cause injuries to people.

2. Shipment, storage and handling

Check the conditions of the motor immediately upon receipt. When any damage is noticed, this must be reported in writing to the transportation company, and immediately communicated to the insurance company and to WEG. In this case, no installation job can be started before the detected problem has been solved.

Check if the nameplate data matches the invoice data and the environmental conditions in which the motor will be installed. If the motor is not immediately installed, it must be stored in a clean and dry room protected against dust, vibrations, gases and corrosive agents, and with relative humidity not exceeding 60%. In order to prevent water condensation within the motor during the storage period, it is recommended to keep the space heater ON (where provided).

In order to prevent oxidation of the bearings and ensure an even distribution of the lubricant, rotate the motor shaft at least once a month (at least five turns), always leaving it in a different position.

For bearings with oil mist lubrication systems, the motor must be stored horizontally, independently from the mounting configuration, with ISO VG 68 oil in the bearing, (the amount is indicated in the motor manual available on the website www.weg.net) and the shaft must be turned weekly.

If motors with open bearings are stored longer than six months, the bearings must be relubricated with the amount of grease indicated on the nameplate before the commissioning of the motor. If the motors are stored for more than two years, it is recommended to change the bearings, or to remove, wash, inspect and relubricate them before the motor is started. After this storage period, it is also recommended to change the start capacitors of single-phase motors since they loss their operating characteristics.

Always handle the motor carefully in order to prevent impacts and damages to the bearings and always install the shaft transportation/ locking device (if supplied) when transporting the motor.

Do not handle the motors by the polymeric components: fan cover, terminal box and / or terminal box cover. Use only the eyebolts to lift the motor. However these eyebolts are designed for the motor weight only. Thus never use these eyebolts to lift the motor with additional loads coupled to it. The lifting eyebolts of the terminal box, fan cover, etc., are intended to handle only these parts when disassembled from the motor.
For multimounting motors (with removable feet/base), the eyebolts must be positioned according to the motor mounting position so that the lifting angle is vertically aligned (lifting at 0°). Additional information regarding the maximum allowable angle-of-inclination is indicated in the general manual available on the website www.weg.net.

Periodically and mainly before the initial star-up, measure the insulation resistance of the motor winding. Check the recommended values and the measuring procedures on the website www.weg.net.

3. Installation

During the installation, the motors must be protected against accidental energization.
Check the motor direction of rotation, turning it without load before it is coupled to the load.
WIN motor, even de-energized, have a risk of electric shock at their terminals if the rotor moves. Make sure the rotor is locked before carrying out operations on the terminals.

Remove the transportation devices and shaft locking device (if supplied) before starting the motor installation.

Motors must be only installed in places compatible with their mounting features and in applications and environments for which they are intended.

Those motors with feet must be installed on bases duly planned in order to prevent vibrations and assure perfect alignment. The motor shaft must be properly aligned with the shaft of the driven machine. Incorrect alignment, as well as improper belt tension, will certainly damage the bearings, resulting in excessive vibrations and even causing the shaft to rupture.

The admissible shaft radial and axial loads indicated in the general manual of the website must be respected. Use flexible coupling whenever possible.

When motors are fitted with oil lubricated bearings or oil mist lubrication systems, connect the cooling and lubrication tubes (where provided).

For oil lubricated bearings, the oil level must be in the center of the sight glass. Only remove the corrosion protection grease from the shaft end and flange immediately before the motor installation.

Unless specified otherwise in the purchase order, WEG motors are dynamically balanced with "half key" and without load (uncoupled). The driving elements, such as pulleys, couplings, etc., must be balanced with "half key" before they are mounted on the shaft of the motors.

The motor must always be positioned so the drain hole is at the lowest position. The drain plug should be verified periodically to ensure that it is not clogged or obstructed ensuring the drainage of condensated water.

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For power cables and grounding system connections, terminal box and drip cover assembly, the tightening torques indicated on Table 1 must be respected.

Table 1 - Tightening torques for fixing elements [Nm]

Component	M4	M5	M6	M8	M10	M12	M14	M16	M20
Terminal Block / Flying leads	1 to 1.5	2 to 4[1)]	4 to 6.5	6.5 to 9	10 to 18	15.5 to 30	-	30 to 50	50 to 75
Grounding	1.5 to 3	3 to 5	5 to 10	10 to 18	28 to 40	45 to 70	-	115 to 170	-
Terminal box cover	-	3 to 5	4 to 8	8 to 15	18 to 30	25 to 40	30 to 45	35 to 50	-
Drip cover installed in the fan cover	1.5 to 2.3	3.5 to 5	6 to 9	14 to 20	-	-	-	-	-
Polymeric fan cover	-	-	-	6 to 8	6 to 8	-	-	-	-

1) For 12-pin terminal block, the tightening torque range allowed is: minimum 1.5 Nm and maximum 2.5 Nm.

Motors installed outdoors or in the vertical position require the use of additional shelter to protect them from water; for instance, use of a drip cover. To prevent accidents, ensure that the grounding connection has been performed according to the applicable standards and that the shaft key has been securely fastened before the motor is started. Connect the motor properly to the power supply by means of safe and permanent contacts, always considering the data informed on the nameplate, such as rated voltage, wiring diagram, etc.

For power cables, switching and protection devices dimensioning, consider the rated motor current, the service factor, and the cable length, among others. For motors without terminal block, insulate the motor terminal cables by using insulating materials that are compatible with the insulation class informed on the nameplate. The minimum insulation distance between the non-insulated live parts themselves and between live parts and the grounding must meet the applicable standards and regulations for each country.

Take the required measures in order to ensure the degree of protection indicated on the motor nameplate:
■ Unused cable inlet holes in the terminal boxes must be properly closed with blanking plugs;
■ The cable entries used must be fitted with components, such as, cable glands and conduits;
■ Components supplied loose (for example, terminal boxes mounted separately) must be properly closed and sealed;
■ Fixing elements mounted in the threaded through holes in the motor enclosure (for example, the flange) must be properly sealed.

The motor must be installed with overload protection devices. For three-phase motors, it is recommended to install a phase failure protection device. When motor is fitted with temperature-monitoring devices in the stator windings and/or bearings, they must be connected during the operation and even during tests.

For flying leads motors, do not push the overlength of leads into the motor in order to prevent that they touch the rotor.

Ensure the correct operation of the accessories (brake, encoder, thermal protection, forced ventilation, etc.) installed on the motor before it is started.

Motors fitted with Automatic Thermal Protectors will reset automatically as soon as the motor cools down. Thus, do not use motors with Automatic Thermal Protection in applications where the auto-reseting of this device may cause injuries to people or damage to equipment.
Motors fitted with Manual Thermal Protectors require manual reset after they trip. If the Automatic Thermal Protector or the Manual Thermal Protector trip, disconnect the motor from the power supply and investigate the cause of the thermal protector triping. Magnet motors must be driven by variable frequency drives only. Motors of frame sizes IEC 315, NEMA 445/7 and above, when inverter fed, must be equipped with shaft grounding kits.

For more information about the use of variable frequency drives, follow the instructions in the motor manual 50033244 on the website www.weg.net and in the manual of the variable frequency drive.

4. Operation

During operation, do not touch the non-insulated energized parts and never touch or stay too close to rotating parts. Ensure that the space heater is always OFF during the motor operation.

The rated performance values and the operating conditions are specified on the motor nameplate. The voltage and frequency variations of the power supply should never exceed the limits established in the applicable standards.

Occasional different behavior during the normal operation (actuation of thermal protections, noise level, vibration level, temperature and current increase) must always be assessed by qualified personnel. In case of doubt, turn off the motor immediately and contact the nearest WEG service center.

Do not use roller bearings for direct coupling. Motors fitted with roller bearings require radial load to ensure their proper operation.

For motors fitted with oil lubrication or oil mist systems, the cooling system must be ON even after the machine is OFF and until the machine is at complete standstill.

After complete standstill, the cooling and lubrication systems (if any exist) must be switched OFF and the space heaters must be switched ON.

5. Maintenance

⚠ Before any service is performed, ensure that motor is it at standstill, disconnected from the power supply and protected against accidental energization. Even when the motor is stopped, dangerous voltages may be present in space heater terminals.

If motors are fitted with capacitors, discharge them before any handling or service is performed.

Motor disassembly during the warranty period must be performed by a WEG Authorized Service Center only.

For motors with permanent magnet rotor, the motor assembly and disassembly require the use of proper devices due to the attracting or repelling forces that occur between metallic parts. This work must only be performed by a WEG Authorized service center specifically trained for such an operation.

People with pacemakers cannot handle these motors. The permanent magnets can also cause disturbances or damages to other electric equipment and components during maintenance.

For motors provided with axial fans, the motor and the axial fan have different markings for indicating the direction of rotation for prevent incorrect assembly.

The axial fan must be assembled so that the indicative arrow for direction of rotation is always visible, viewing the non-drive end side. The marking indicated on the axial fan blade, CW for clockwise direction of rotation or CCW for counterclockwise direction of rotation, indicates the direction of rotation of the motor viewing the drive end side.

Regularly inspect the operation of the motor, according to its application, and ensure a free air flow. Inspect the seals, the fastening bolts, the bearings, the vibration and noise levels, the drain operation, etc. The lubrication interval is specified on the motor nameplate.

When motors are supplied with shaft grounding system, monitor the grounding brush constantly during its operation and, when it reaches the end of its useful life, it must be replaced by another brush with the same specification. If a motor is supplied with an internal grounding brush, indicated by a tag in the product, it must be verified each time the bearings or any internal part of the motor is maintained.

6. Additional information

For further information about shipment, storage, handling, installation, operation and maintenance of electric motors, access the 50033244 manual on the website www.weg.net. For special applications and operating conditions (50026367 manual for Smoke Extraction Motors, 50021973 manual for Brake Motors, 50078700 manual for Electronically Conmutated Motors, 14629920 manual for Roller Table motors, 50106963 manual for WEG Lift Gearless motors) refer to the applicable manual on the website *www.weg.net* or contact WEG. When contacting WEG, please, have the full description of the motor at hand, as well as the serial number and manufacturing date, indicated on the motor nameplate. For motors supplied with WEG Motor Scan sensor, see installation guidelines Overview of Receipt to Operation Manual (10008475131) available on *www.weg.net*.

7. Warranty Term

WEG Industries (India) Pvt Ltd. (LV Motors division) offers domestic warranty (motors operating in India) against defects in workmanship and materials for its products manufactured in India for a period of 30 months from the dispatch date at WEG Hosur factory, limited to 36 months from the date of manufacture stamped on motor nameplate.

The paragraphs above contain the legal warranty periods.

If a warranty period is defined in a different way in the commercial/technical proposal of a particular sale, that will supersede the time limits set out above.

The warranty periods above are independent of the product installation date and the startup. If any defect or abnormal occurrence is detected during machine operation, the customer must immediately notify WEG in writing about the occurred defect, and make the product available for WEG or its Authorized Service Center for the period required to identify the cause of the defect, check the warranty coverage, and perform the proper repairs.

In order for the warranty to be valid, the customer must be sure to follow the requirements of WEG's technical documents, especially those set out in the product Installation, Operation and Maintenance Manual, as well as the applicable standards and regulations in force in each country.

Defects arising from the inappropriate or negligent use, operation, and/or installation of the equipment, non-execution of regular preventive maintenance, as well as defects resulting from external factors or equipment and components not supplied by WEG, will not be covered by the warranty.

The warranty will not apply if the customer at its own discretion makes repairs and/or modifications to the equipment without prior written consent from WEG.

The warranty will not cover equipment, components, parts and materials whose lifetime is usually shorter than the warranty period. It will not cover defects and/or problems resulting from force majeure or other causes not imputable to WEG, such as, but not limited to: incorrect or incomplete specifications or data supplied by the customer; transportation, storage, handling, installation, operation and maintenance not complying with the provided instructions; accidents; defects in the construction works; use in applications and/or environments for which the machine was not designed; equipment and/or components not included in the scope of WEG supply.

The warranty does not include disassembly services at the buyer's premises, product transportation costs and travel, lodging and meal expenses for the technical staff of the Service Centers, when requested by the customer.

The services under warranty will be provided exclusively at WEG authorized Service Centers or at one of its manufacturing plants. Under no circumstances will the warranty services extend the equipment warranty period.

WEG's Civil Liability is limited to the supplied product; WEG will not be liable for indirect or consequential damages, such as losses of profit and revenue losses and alike which may arise from the contract signed between the parties.

EU Declaration of Conformity

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WEG (Chang Zhou) Automation Equipment Co.,Ltd
No. 227, Xincheng Avenue, Jintan District, Changzhou City, Jiangsu Province, China.
www.weg.net/cn

Declares under sole responsibility that WEG electric motors and components used for following motor lines:

BLDC, W01, W11, W12, W20, W21, W22, W23, W30, W40, W50, W51, W60, W80, WFL, WIN, K1F, K1N, K1O, K1S, K1T, K1W, K2F, K2N, K2U, General Purpose, HGF, Roller Table, Steel Motor, PSC, Pump/Filter, Servomotor, Vertical High Thrust, Water Cooled and WQuattro

when installed, maintained and used in applications for which they were designed, and in compliance with the relevant installation standards and manufacturer's instructions, comply with the provisions of the following relevant European Union harmonization legislation and standards, wherever applicable:

Low Voltage Directive	2014/35/EU*;
EU Ecodesign Directive	(EU)2019/1781* as amended by Comission Regulation (EU)2021/341; Directive 2009/125/EC*;
RoHS Directive	2011/65/EU* and its amendments (including Directive 2015/863/EU);
Machinery Directive	(EU)2023-1230**;
EMC Directive	2014/30/EU (electric motors are considered inherently benign in terms of electromagnetic compatibility).

EN 60034-1:2010 + AC:2010 / EN 60034-2-1:2014 / EN IEC 60034-5:2020 / EN 60034-6:1993/ EN 60034-7:1993 + A1:2001 / EN 60034-8:2007 + A1:2014 / EN 60034-9:2005 + A1:2007 /EN 60034-11:2004/ EN 60034-12:2017/EN IEC 60034-14:2018 / EN 60034-30-1:2014/ EN 60204-1:2018 /EN IEC 60204-11:2019 / CLC IEC/TS 60034-30-2:2021 / EN 61800-5-1: 2007+A1:2017+A11:2021 / EN IEC 61800-3: 2018 / EN IEC 63000:2018 / CLC IEC/TS 60034-25:2024 and IEC 60034-30-3:2024.

* Electric motors with a voltage rating higher than 1000V are not under the scope.

** Electric motors are considered partly completed machinery and are supplied with a "Declaration of Incorporation".

Declaration of Incorporation

The products above cannot be put into service until the machinery into which they have been incorporated has been declared in conformity with the Machinery Directive.
A Technical Documentation for the products above is compiled in accordance with part B of annex VII of Machinery Directive (EU)2023-1230.
We undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the product identified above (partly completed machinery) through WEG authorized representative established in the European Union. The method of transmission shall be electronic or physical method and shall be without prejudice to the intellectual property rights of the manufacturer.

Signed for and on behalf of the manufacturer:

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Vitor Marcon
Quality Systems and Certifications Manager
Jaraguá do Sul
November 1, 2024

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Engineering Director
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November 1, 2024

UK CA Declaration of Conformity

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when installed, maintained, and used in applications for which they were designed, and in compliance with the relevant installation standards and manufacturer's instructions, comply with the provisions of the following relevant European Union harmonization legislation and standards, wherever applicable:

Electrical Equipment (Safety) Regulations	S.I. 2016/1101*;
The Ecodesign for Energy-Related Products Regulations and Energy Information	S.I. 2021/745*;
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations	S.I. 2012/3032*;
Supply of Machinery (Safety) Regulations	S.I. 2008/1597 amended by S.I.2011/2157**;
Electromagnetic Compatibility Regulations	S.I. 2016/1091 (electric motors are considered inherently benign in terms of electromagnetic compatibility);

EN 60034-1:2010 + AC:2010 / EN 60034-2-1:2014 / EN IEC 60034-5:2020 / EN 60034-6:1993/ EN 60034-7:1993 + A1:2001 / EN 60034-8:2007 + A1:2014 / EN 60034-9:2005 + A1:2007 /EN 60034-11:2004/ EN 60034-12:2017/EN IEC 60034-14:2018 / EN 60034-30-1:2014/EN 60204-1:2018 /EN IEC 60204-11:2019 / EN IEC 63000:2018 / CLC IEC/TS 60034-30-2:2021 and CLC IEC/TS 60034-25:2024.

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Vitor Marcon
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Jaraguá do Sul
November 1, 2024

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