SERIE BA

Use and maintenance

ENGLISH

We would like to thank you for trusting us and buying our product. Before starting the motor, we advise you to read these instructions carefully, to be sure that the M.G.M. motor is used in safe conditions and to obtain its highest performance. For the different MGM motors types we suggest to download the "Use and maintenance" in its last and complete version directly from our web site: www.mgmrestop.com. Should any difficulty arise, please contact the M.G.M. organization, specifying the type of product and its serial number.
These instructions are valid for all M.G.M. electric motors belonging to the BA series (BA, BAX, BAF, BAPV, BAMP, BAE, BASV). The BA series includes asynchronous three-phase or single-phase totally enclosed fan cooled brake motors. The motors brake in case of power supply failure. The BA motors series are used as components in industrial applications. Performance and characteristics shown on the motor nameplate are guaranteed for installations in ambients having a temperature range of –15°C to +40°C and at an altitude less than 1000 meters above sea level. For any clarifications, please contact the M.G.M. motori elettrici S.p.A. organization.

General safety information

During operation, motors have live or moving parts. Therefore, removal of electrical or mechanical guards, improper use, or inadequate maintenance may cause serious damage to persons or property.

Installation, Maintenance, Adjustment, Replacement operations of components must be carried out by qualified personnel, using proper tools and working instruments. Above all, it is essential to verify that motor or plant are disconnected from the supply line and that on board terminals there is no voltage left.

In case of uneffective braking during regulation, maintenance or replacement operations of components, check that no load is applied to the drive shaft.

Avoid contact with the motor case since the temperature under normal operating conditions may exceed 50°C

Receipt and Storage 

When receiving the motor, it is essential to check that:
- all the characteristics shown on the motor nameplate correspond to the requested ones;
- the motor has not been damaged during transportation; any damage must be pointed out to the carrier immediately.

The ringbolts, if any must be used to lift only the motor without any other machines fitted to it.

The motors must be stored in a sheltered, dry and dust-free place.

Installation 

The installation of the motor must be carried out by qualified personnel, using proper tools and working instruments. When the installation is started, be sure that the characteristics expected from the motor match what is shown on the motor nameplate, with particular attention to the supply voltage and to the maximum braking torque.

Please verify that the type of brake is suitable for the application and in compliance with standards or rules in force on the machine on which the motor is incorporated.
Make sure that the brake torque is suitable for the application (e.g. lifting, safety applications, cranes and so on). For further details pls contact MGM motori elettrici SpA.

BA series doesn't include motors suitable for hazardous environment. Misapplication of a motor in hazardous environment can cause fire or an explosion and result in serious injuries.
Make sure that the brake torque is suitable for the application.
Check that all the gaskets are in perfect conditiion and well seated in their places; check that the cable inlet openings are properly closed and the IP protection level shown on the plate is respected.
For outdoor installations, it's recommended to protect the motor against the sun irradiation and against bad weather conditions. For outdoor vertical mounting with shaft down it is necessary to use a rain proof cover. Pls check that the cables entry isn't on the top of the terminal box. We suggest in any case that the connection cables come from the bottom upwards in order to avoid drip and water stagnation.
The ringbolts if removed must be replaced with screws with the same length and pitch to guarantee the IP protection degree.
Before starting the motor or after long periods of inactivity or storage, check that the earth insulation resistance is not less than 75M (25° C). The measuring must be done with a 500V DC Megger instrument.

Never touch the terminals during and immediately after measurement since they may carry dangerous voltages.

The motor must be installed in a ventilated room away from heat sources and in such a position to allow free air intake for proper ventilation. The motor must be also mounted in such a place as to allow easy inspection and servicing operations, keeping in mind possible danger arising from touching moving parts or the motor frame which may exceed 50°C. The motor is balanced with half key fitted (EN 60034-14). During the mounting stage, check that motor and machine coupling is accurately aligned, as an imperfect alignment could cause vibrations, damage the bearings, or cause shaft end breakage. In particular, when IMB5 and IMB14 construction motors are used, check that coupling surfaces are thoroughly cleaned and that the centering is perfect during the mounting stage. For IMB3 motors, when using couplings with joints, check that the motor axis and the driven machine axis are perfectly in line. When using pulleys, check that the belt tension is not too high. The surface where the motor is anchored must insure stability of fixing, motor alignment to the connected machine, lack of vibrations transmitted to the motor itself. So pls verify that no vibrations are transmitted to the motor.

Maintenance operations must be carried out only by qualified personnel and only after having disconnected the plant or the motors from the electrical supply. Inadequate inspections and maintenance can produce personal injury or property damage.
Maintenance and inspection operations described here below are absolutely essential in any case and they become even more important in relation to heavy duty applications or situations in which the brake motor performs as key safety role (e.g. Lifting, safety applications, cranes and so on).

Maintenance

Maintenance operations must be carried out by qualified personnel and only after having disconnected the plant or the motor from the electrical supply (including any possible auxiliaries and especially anti-condensation heaters) and after having checked that no load is applied to the driveshaft. For security reasons the hand release (49) and the hexagonal "T" key (51) never must be fitted on the motor but removed and kept by the plant maintenance responsible after every intervention. The hexagonal "T" key must be used only after having disconnected the motor from the electrical supply and after having checked that no load is applied to the drive shaft. After any operation on brake assembly, verify that the end protection cover (26) is firmly held in place by the hexagonal rear nut (27).

The operations which must be carried out periodically in order to ensure the correct functioning of the MGM brake motor are listed further on. The frequency of inspection depends on the particular motor duty (number of start/stop, applied moment of inertia, environment conditions and so on). **Generally it's advisable to proceed to the first inspection after few weeks of working and to draw up a periodical maintenance plan. Anyway it's recommended to provide inspections at least twice a year. For specific information pls contact the M.G.M. motori elettrici S.p.A. organization.**

- Periodically check that the motor operates correctly without noise or strange vibrations and that the openings for ventilation are not obstructed.
- Verify that all motor and brake supply terminals are property tightened to the terminal board as well as the earthing terminal to the motor frame.
- **As a result of normal wear of the brake disc lining, check that the air gap does not exceed the values shown on table 1.** The airgap must be as indicated on the table. Don't exceed this range to avoid any damage on the brake assembly. Please note that the brake linings wear is greater during the run-in. (few thousands stops). For the air gap adjustment, follow the instructions given into the paragraph "Air Gap Adjustment".
- **Check the wear on both friction surfaces of the brake disc (on one side only for BAPV series) to be sure that their thickness is not less than 2 mm.** Verify also that there are no damages on disc surfaces and, in particular, in the hub toothing. (For replacement, refer to the paragraph "Brake Disc Replacement"). Moreover check that no play should be between the brake disc and the brake disc hub in correspondence of the hub nails.
- Verify periodically that the braking torque is suitable. If needed, proceed to its adjustment as stated in the paragraph "Braking torque adjustment".
- Verify regularly the brake adjuster (19-42) wear conditions and their steady fastening on the rear cover brake surface (17).
- **All brake assembly components, in particular the brake disc (23, 39-41 for BAF series, 45 for BAPV) and the brake adjusters (19, 42 for BAF-BAPV series) are subject to wear. In consideration of the motor safety role, it's needed to replace them periodically. The replacement frequency comes from the motor duty (number of start/stop, applied moment of inertia, environment conditions and so on), we recommend however to replace them at least every 18 months.**
- **Periodically check and verify the shaft splines wear, exactly where the disc slides. If the shaft splines has a visible wear it's necessary to replace the rotor shaft (1).**

Braking Torque Adjustment 

The brake torque is proportional to the springs (18) compression, which can be varied by operating on the locknuts (20). The compression of the springs must be as uniform as possible. On the table 2 and 3 the standard compression values (H std) of the brake springs are shown. The corresponding brake torque of the standard compression values stated on the table are less than the maximum braking torque stated on the motor nameplate, especially for AC brake assembly. Please verify that the braking torque is suitable for your application.

If the brake coil (25) isn't able to call the brake moving element (24) back with a quick stroke and keep it attracted without vibrations, verify the exact air gap adjustment and, if this inconvenience still persists, loosen the locknut (20) and try it again until desired functioning is obtained.

Some types of motors (BA series 160÷225) can have 3 or 6 springs(18). Pay attention to the different adjustment of the spring compression to reach the brake torque value required.

After every intervention pls verify that the braking torque is the one required..

Never exceed the maximum braking torque value stated on the motor name plate. It's recommended to avoid adjusting the braking torque to values lower than 40% of the maximum value. For any clarifications, please contact the M.G.M. motori elettrici S.p.A. organization.

Brake Disc Replacement 

Please verify that the type of brake disc is suitable for the application and in particular verify if it's need to be used a K brake disc (e.g. liftings, safety applications, cranes and so on). For further details pls contact MGM motori elettrici SpA.

Loosen the rear nut (27), remove the end cover (26) and unscrew the locknuts (22). Take off the brake coil (25) from the brake adjusters (19 o 42), remove the nuts (20-21) and the springs (18). Remove the brake moving element (24) sliding it through the brake adjusters (19 o 42). Take off the old brake disc (23) and put in the new one.Verify that the new brake disc is properly inserted in the correct way. For re-assembling, proceed backwards. The new brake disc must be handled with clean hands, because even a small trace of grease will decrease the braking performance and also

increase noise. In the BAF series , unlike the BA series there are 2 brake discs (39-41) with an intermediate brake moving element (40) in between. After having mounted the brake coil (25), proceed to the airgap adjustment (see the pertinent paragraph). For the flywheel (45) replacement on the BAPV series, follow up the specific instructions.

Before replacing the brake disc it's always necessary to check the shaft splines wear, exactly where the disc slides. If the shaft splines has a visible wear it's necessary to replace the rotor shaft (1).

Brake Coil Replacement 

Loosen the rear nut (27), remove the end cover (26), disconnect the brake coil (25) connectors. Unscrew the locknuts (22) and pull off the brake coil (25) from brake adjusters (19 o 42). Reassemble the new brake coil on the brake adjusters (19 o 42) and reconnect the electrical connectors. Pay attention to place the electrical connectors in the right position so that to allow their insertion. Before reassembling the end cover (26) and the nuts verify that the connections and relative cables are property tightened. Proceed with the air gap adjustement as stated in the respective paragraph. Verify that the brake coil functions correctly; when the brake is energized, the brake coil (25) should attract the brake moving element (24) with a quick stroke, and hold it without any vibration or noise. In case of any vibration, check that terminal connectors are coupled correctly and tightened.

Brake adjusters replacement 

Loosen the rear nut (27), remove the end cover (26 or 48) and unscrew the locknuts (22). Take off the brake coil (25) from the brake adjusters (19 or 42), remove the nuts (20-21) and the springs (18). Remove the brake moving element (24) sliding it through the brake adjusters (19), remove the old brake adjusters and screw the new ones verifying their steady fastening on the rear cover brake surface (17). After having screwed each brake adjuster (19 or 42) it's necessary to check that its support bottom is completely leaned on the rear cover brake surface (17). For information on the right brake adjusters tigthening torque please contact us.

Air Gap Adjustment 

The air gap (60) i.e. the distance between the two magnetic cores of the brake coil (25) and the brake moving element (24), must be as shown on table 1. It's strongly unadvisable to exceed these values in order to avoid vibrations of the brake moving element, prominent noise, the burning of the brake coil or the brake assembly damaging.

It's advisable to check periodically the air gap. Because of the wear of the brake disc linings air gap, tends to increase. Please note that brake linings wear is greater during the run-in (few thousands stops).

In order to set the airgap back to the required value, operate on the nuts (21-22) in order to move the brake coil (25) towards the brake moving element (24). It's strongly recommended to avoid to tighten the locknut (22) located on one brake adjuster (19, 42 for BAPV-BAF series motors) before having completed the positioning of the brake coil (25) on all the brake adjusters. Therefore don't regulate the position of the brake coil adjusting the nut (21) on one brake adjuster, if previously you haven't loosen the locknuts (22) on all the brake adjusters (19, 42 for BAPV-BAF series motors). This wrong operation could stress the air gap adjusters. Please verify that the airgap is uniform. The air gap must be uniform to guarantee a correct functioning and avoid mechanical stresses due to a misalignment. When the air gap adjustment has been settled, the locknuts (22) should be tightened. For brake assembly with 6 brake adjusters (19, 42 for BAPV-BAF series motors), as first step regulate the brake coil position only on three brake adjusters at 120° by working onthe nuts 21-22. After having adjusted the position on these 3 brake adjusters, to complete the operation go on with the other 3 brake adjusters and first bring the air gap adjusting nuts (21) close to the brake coil and then tighten the locknuts (22). When the operation has been settled, verify that the airgap is uniform and the nuts (21-22) are tightened.

Recovery/disposal

Disposal of the motor must be carried out in compliance with current applicable regulations in the country of installation.

The crossed-out waste bin symbol, contained on the infomation plate, indicates that, at the end of its useful life, the product must not be disposed of as urban waste but must be collected seperately from other waste and sent for recovery or possible disposal according to specific methods for avoiding possible negative effects on the environment and to health, and for favouring its re-use and/or recycling of the materials of which it is made up.

The greater part of the motor components is made up of materials (steel, copper, aluminium, etc,) which could be re-

used/recycled, thus contributing towards safeguarding the environment.
For further information on modes of disposal/recovery or specific information on the various materials making up the motor, visit our website (www.mgmrestop.com) or contact MGM Italia.

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