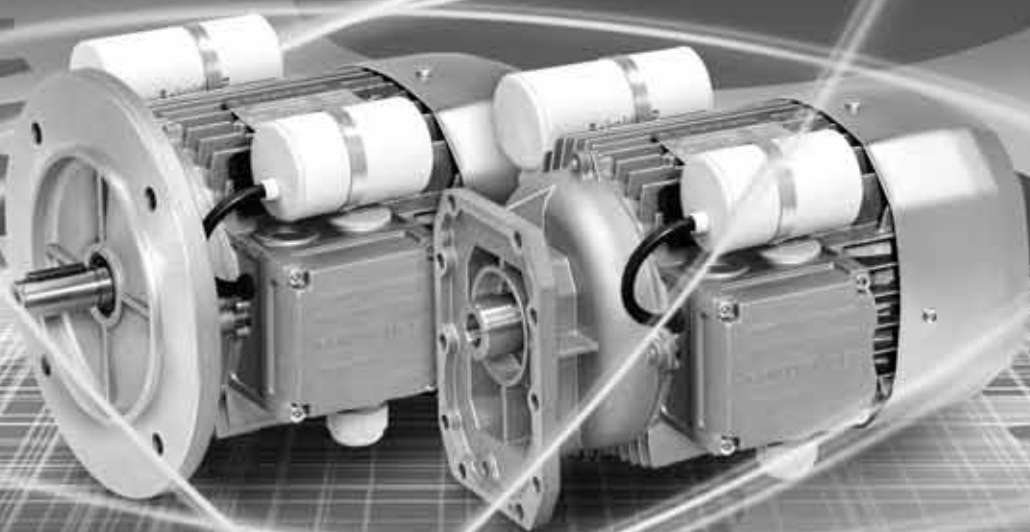




*Installation, use and service manual*

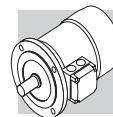
**BS**

**MS**




**BONFIGLIOLI**





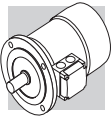
## SUMMARY

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### Revisions

Refer to page 8 for the catalogue revision index.

Visit [www.bonfiglioli.com](http://www.bonfiglioli.com) to search for catalogues with up-to-date revisions.



## 1 FIELD OF APPLICATION

The following instructions apply to the single-phase asynchronous electric motors manufactured by BONFIGLIOLI RIDUTTORI S.p.A., series:

- BS
  - MS
- in their standard version.

Special versions as described in the catalogues and/or in offers, or special applications will require additional information.

## 2 GENERAL SAFETY INFORMATION

The electric motors described in the following instructions are designed to be used in industrial installations and must be operated by qualified personnel only.



**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 and maintenance on motors must be performed only by qualified personnel who have thorough knowledge of the instructions and technical data for the product and who have been authorised to perform such operations by the safety supervisor. Since the electric motor does not have a defined function for the final user and is going to be physically coupled to another machine, it is the responsibility of the installer to guarantee that all provisions for its safe operation have been taken.**

## 3 INSTALLATION

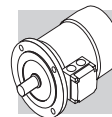
### Identification

Gearmotors and motors have a nameplate carrying their identification data. Table shows the plate used for all motor configurations.

BONFIGLIOLI RIDUTTORI						IEC 60034
1 ~ Mot	BS	80B	4	SC	No	
Cod.				IM B5	IP 55	
○ V	I. CL.	F	- S	1	○ cosφ	
	Hz	kW	A	min <sup>-1</sup>		
230	50	0.75	5.12	1360	0.95	
C = 25 microF						CE

### Reception

Upon receipt of the motor, check that it was not damaged during transportation; if damage is noted, inform the carrier immediately. In addition, check that the characteristics stated on the plate conform to those ordered and confirmed by BONFIGLIOLI RIDUTTORI S.p.A.



## Transport and handling

Cartons containing more than one motor are usually attached to wooden boards to facilitate handling by forklifts or transpallets.

Motors may be handled individually by lifting them with belts or chains (if required due to weight).

Motors of frame sizes MS3, and larger, are provided with an eyebolt for lifting purposes.



**The eyebolts are suitable for lifting the motor only.**

Make sure that the motor rests in a stable manner and will not roll (in the case of flanged motors).

## Storage

Observe the following instructions to ensure correct storage of products:

- a. Do not store outdoors, in areas exposed to weather or with excessive humidity.
- b. Always place boards in wood or other material between floor and products, to avoid direct contact with the floor.
- c. For storage periods exceeding 60 days, all coupling surfaces such as flanges and shafts must be protected with a suitable anti-oxidation product (Mobilarma 248 or equivalent).
- d. For storage periods exceeding 6 months, it is a good rule to turn the rotor every 1-2 months and to take adequate measures against corrosion and humidity.

## Motor installation



**Check that mains assembly and service conditions comply with the information on the plate and described in the technical documentation.**

The following instructions must be observed when installing the motor:

Prior to installing the motor remove from the shaft the plastic guards that are supplied for transportation purposes.

These must be disposed of according to the rules applicable in the Country where the installation takes place.

If applicable, remove oxidation preventative coating of shaft by means of a suitable solvent, which afterwards must be disposed of according to the regulations applying locally.



**Do not let the solvent be in touch with oilseal lips.**

Make sure that the motor is well-ventilated, that there is nothing to obstruct the free circulation of air, and that no situation will arise that could block the regular heat dissipation.

The installation must also allow the performance of ordinary maintenance on the motor and, if supplied, of the brake.



**Avoid hitting on the motor shaft: bearings may be damaged.**

In outdoor installations, protect the motor from direct sun radiation and, if possible, from inclement weather.

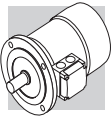
Prior to fitting flanged motors onto gear units make sure that the key is retained safely into the key seat. Coat thoroughly motor shaft with a suitable anti-seize product (Loctite 767 or equivalent) to prevent fretting corrosion and facilitate removal of motor at a later time.

Every 6-12 months it may be recommended to remove the motor from the gear head, clean the shaft area and re-apply the anti-seize product.

In order to avoid vibration once in operation, make sure the motor is secured tightly to mating gearbox flange. Should the motor need to be painted, screen name plate as well as vented plug (if applicable) and machined parts on beforehand.

## Balancing

The rotor shaft is dynamically balanced with half key fitted.



Assembly of external transmission unit must be performed with adequate instruments after suitable balancing, avoiding knocks which could damage the bearings.  
Be especially careful not to operate the motor without having properly secured the key not being used (motors with two shaft ends).



**Adopt adequate measures to avoid accidental contact with exposed live or moving parts.**



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

#### **Insulation test**

Before start-up, or after long storage (or idle) periods, check insulation resistance to mass with Megger at 500V DC.

The value measured at 25 °C for new windings in good condition should exceed 10 MΩ.

If this value is not reached, oven drying will be required to eliminate excess humidity.

## **4 WIRING**

#### **Norms applicable to all motors**

Use cables with suitable section for the rated current and for installation conditions, avoiding excessive heating and/or voltage drops. Connection at the terminal board must be performed according to the diagrams shown in chart below or according to the instructions supplied in the terminal box, using the appropriate plates, nuts and washers. Earth according to current norms before connecting to the mains.

In addition to the main terminals, the conduit box may contain thermal protection, anti-condensation heaters, and brake connections.

Wire any device according to the diagrams contained in the conduit box.

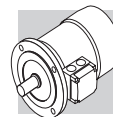
**When installing, repairing or maintaining the motor double check that all connections to the mains have been cut.**

At the end of the wiring operations, place the gasket on its site and close the cover. Carefully tighten the cable gland and close all the openings that are not used.

#### **Ventilation**

Motors are cooled through outer air blow (IC 411 according to CEI EN 60034-6) and are equipped with a plastic radial fan, which operates in both directions.

Ensure that fan cover is installed at a suitable distance from the closest wall so to allow air circulation and servicing of motor.

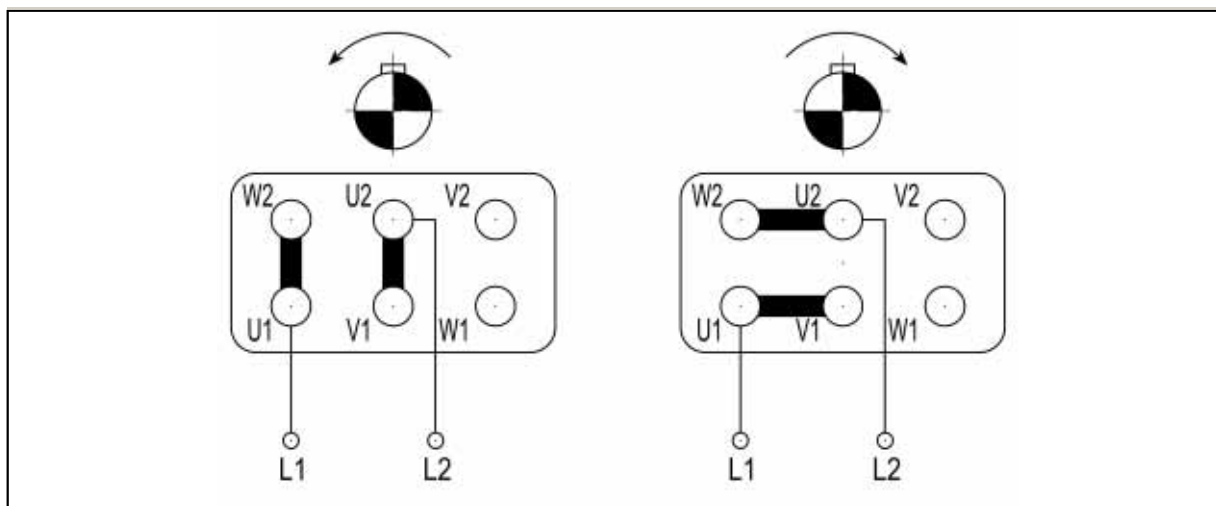


## 5 REVERSING

Motors are supplied with run capacitor permanently connected and can be operated in both directions of rotation.

Motors can be reversed by switching the wiring, as shown in the diagram below, through a remote control switch.

In the diagram below shaft are viewed from the drive end.



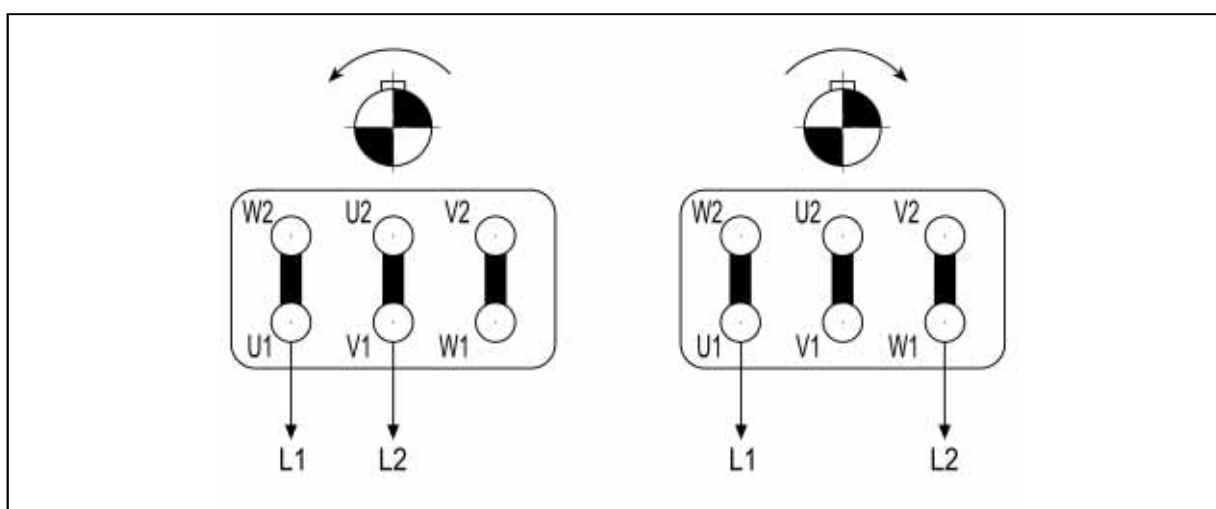
Prior to reversing, make sure the motor is at standstill.

**AE**

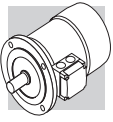
For a facilitated reversing through a simple switch, single-phase motors can be designed with symmetrical windings and run capacitor permanently connected.

For this arrangement specify option **AE** in the ordering code.

This particular design is lower rated as compare to the standard arrangement and advise should be seeked with Bonfiglioli's Technical Service.



Prior to reversing, make sure the motor is at standstill.



## 6 START-UP

Perform the following operations and checks before start-up:

1. check that all safety measures have been applied;
2. power up the motor unloaded at rated voltage;



**Single-phase motors have greater losses when they run idle than in full load operation. Running idle for a long period is therefore NOT recommended.**

3. check that operation is smooth and vibration-free;
4. For letting the starting capacitor discharging allow for a minimum 6 seconds rest time before reconnecting the motor;
5. if operation is satisfactory, apply the load to the motor while checking on values of absorbed current, power and voltage.



**Abnormal operations such as over current, overheating, noise, or vibrations, may cause serious damage or hazardous conditions. In these cases, cut power and notify maintenance personnel immediately.**

## 7 MAINTENANCE

Before any intervention, the motor, auxiliary circuits and/or accessories must be disconnected from the mains.

In particular:

- check disconnection from the electrical mains,
- provide suitable protections from exposed live parts,
- double check that accidental restarts are not possible under any circumstances.

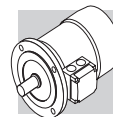
It is recommended that periodical checks of motor operating conditions are scheduled as a routine maintenance practice.

Check particularly on the following:

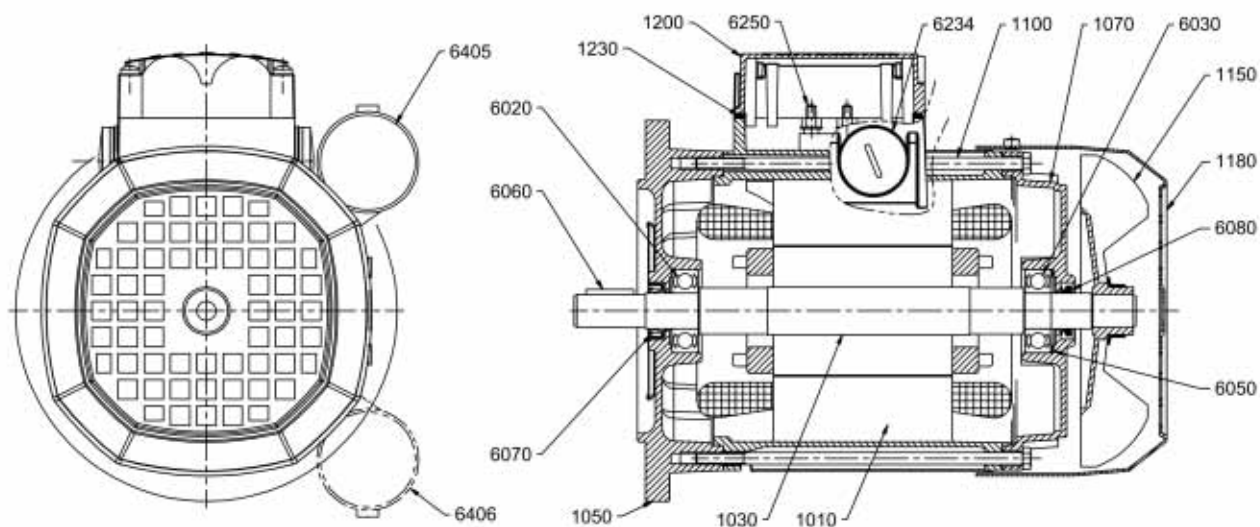
1. check that operation is smooth and absorbed current within rated value;
2. keep motor clean and fan cowl unobstructed by accumulation of dust or foreign particles;
3. check that seal rings are in good condition;
4. check that lead-in wires and all wirings are safely and tightly secured;
5. If condensate draining holes are provided, remove periodically the screws that close the holes and allow the condensate to drain. On installing the motor make sure that the drain hole is located at the lowest point.
6. standard bearings are grease packed for life and in general no periodical maintenance is required; it is good practice however to check their condition and eventually replace them after approx. 3 years.

The motor does not have to be removed for normal inspections unless the bearings need to be replaced. In this case, the operations should be performed by specialised personnel and with appropriate tools.

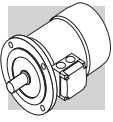




## 8 SPARE PARTS LIST



N.	Description	kit
1010	Stator winding	
1030	Rotor shaft	
1050	Flange (B5/B14)	
1070	Motor shield	
1150	Fan	
1100	Tie-rods	
1180	Fan cowl	
1200	Terminal box	KSM
1230	Terminal box gasket	
6234	Threaded plug	
6250	Terminal board	
6020	Bearing DE	KSA
6030	Bearing NDE	
6050	Compensating ring	
6060	Key DE	
6070	Seal ring	
6080	V-ring	
6405	Run capacitor	
6406	Starting capacitor (DC type only)	



## INDEX OF REVISIONS

R0

DOCUMENT

SECTION

DESCRIPTION

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