

cemp

Flameproof
Motors



Centrifugal electric pumps ATEX safety instructions

A Regal Brand

REGAL

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1. Foreword

The centrifugal pumps in the AT, AG and XT series are electromechanical devices. To ensure they operate correctly, they must only be used immersed in a liquid in a small container.

By means of the impeller, the pumps suck in the liquid in which they are immersed, increase its speed and pressure, and push it into the delivery pipe.

The electric pumps are available in the following versions:

- AT and AG series: single-block
- XT series: with detachable motor

The speed of rotation varies according to the polarity of the motor used and the power supply frequency (4 or 2 poles; rated speed of rotation from 1500 to 3000 rpm at 50 Hz, from 1800 to 3600 rpm at 60 Hz).

The diameter and shape of the impeller may vary according to the type of application and the size of the pump.


The centrifugal pumps in the AT, AG and XT series are group II 2G/II 2GD, devices, suitable for use in areas classified with the presence of gas and/or dust, and are designed and built in accordance with the ATEX 94/9/EC directive.

The pumps in the AT, AG and XT series are designed and built in accordance with the European standards: EN 1127-1, EN 13463-1 and EN 13463-5.

The motors used for driving the centrifugal electric pumps are subjected to separate certification.

According to the ATEX directive, these motors must also be suitable for the following alternative uses:

- in areas classified with the presence of gas, category II 2G, Ex-d/Ex-de protection, IIB or IIC group, T5 temperature class, IP5x or IP6x protection class (ambient temperature: Ta -20°C, + 40°C) or T4 or T3 (Ta -20°C, + 60°C).
- in areas classified with the presence of dust, category II 2D, Ex-tD - A21 protection, IP65 mechanical protection, maximum surface temperature: T135°C or T150°C.

 This manual is an addition to the basic “Rotating electric machines - low voltage” manual and the “Safety Instructions” manual and must therefore be referred to along with these when installing, starting up, and carrying out maintenance on the motor.



2. Technical data



The electrical characteristics and other details of the motor, such as: certification, group, category and protection mode, are printed on the motor's data plate.

The technical characteristics of the pump are printed on the data plate and define:

- Type of pump and height of suction
- Capacity and head
- Ambient temperature
- Maximum temperature of fluid

Warning: The maximum allowed temperature for the fluid is 60°C.

MARKING FOR GASES	
	Mark of conformity with the applicable European directives
	EC marking specific for protection against explosions
II 2G	Device for above ground plants with the presence of category 2G gases, vapours or mists
c	Construction safety "c"
Tx	T5 / T4 / T3 temperature class
Ta	Ambient temperature (-20°C +60°C)
TL max + 60°C	Maximum temperature of fluid
A xxxxxx yy	Serial number (A = year, xxxxx = job order no., yy = progressive job order no.)
ATEX 03 PUMPEX	Reference of Technical File submitted to the Notified Body

MARKING FOR DUST	
	Mark of conformity with the applicable European directives
	EC marking specific for protection against explosions
II 2GD	Device for above ground plants with the presence of category 2D dust
c	Construction safety "c"
T135°C (T100°C) (T85°C)	Maximum surface temperature
Ta	Ambient temperature (-20°C +60°C)
TL max + 60°C	Maximum temperature of fluid
A xxxxxx yy	Serial number (A = year, xxxxx = job order no., yy = progressive job order no.)
ATEX 03 PUMPEX	Reference of Technical File submitted to the Notified Body

3. Installation instructions

General information

Before installing, using and maintaining the pump, read these safety instructions carefully.

The instructions given in this manual must be observed in addition to those given in the motor's safety and use and maintenance manuals.

The electric motors installed on the electric pumps must meet the following requirements:

- separate ATEX certification,
- suitability for the operating environment, and also for the substances present (gas group or type of dust),
- temperature class (if used in areas with the presence of gas) or maximum surface temperature (when used in areas with the presence of dust) that is compatible with the substances present in the operating environment,
- suitability to function at the temperature of the room in which it is used.

For the safety matters associated with the use of the motor, see the relevant operating and maintenance instructions and the safety instructions.

The electric devices and components are not to be opened when on.

Usage warnings

- The centrifugal pumps in the AT, AG and XT series are to be installed and maintained in accordance with the systems and maintenance rules for environments classified against the risk of explosion due to the presence of gas and/or dust (for example: EN 60079-14, EN 60079-17, EN 61241-14, EN 61241-17 or other national rules/standards).
- The centrifugal pumps in the AT, AG and XT series are to be connected to earth using a special tamperproof connecting element (to prevent accidental loosening and turning).
- The single-block pumps in the AT and AG series have the earth screw located inside the terminal box and on the outside of the motor enclosure.
- The detachable pumps in the XT series have the earth screw situated on the flange of the pump body.
- The pumps must always be immersed in liquid while in use, to prevent them from overheating. The minimum level of liquid must cover the feed screw (see figure 1). It is possible to verify the level of liquid either directly or indirectly; for example, through an indicator scale or by checking pump capacity, or the pressure on the delivery pipe.

- If the pump is used in an area classified for the presence of dust, the pump must have a motor that is suitable for the environment (category 2GD) and the fittings between the pump and the tank of liquid must also include a suitable gasket placed under the pump flange.
- In presence of combustible powders, it is necessary to eliminate the layer of powder by regularly cleaning the machine and removing the layer with suitable equipment.
- Check the following points periodically, according to the frequency of use:
 - wear of the shaft guide bushes. To replace them, send the pump to its manufacturers or to an authorized service centre;
 - presence of vibrations and/or abnormal noises. In this case, stop the pump, check for the causes and contact the manufacturers;
 - presence of scaling, especially in the case of a prolonged stop. The pump is always to be kept clean to prevent the formation of scaling, deposits, films, etc..

These formations may cause the pump to malfunction and, in particular, block its shaft.
- The connection with the hydraulic circuit must be made with metal pipes.
- The user must provide a filter for the suction pipe to prevent foreign bodies and/or dirt getting into the impeller.
- Exhaust or recirculating valves must be fitted to the delivery pipe.

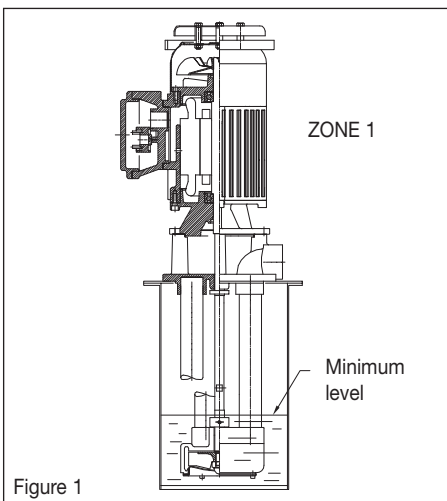
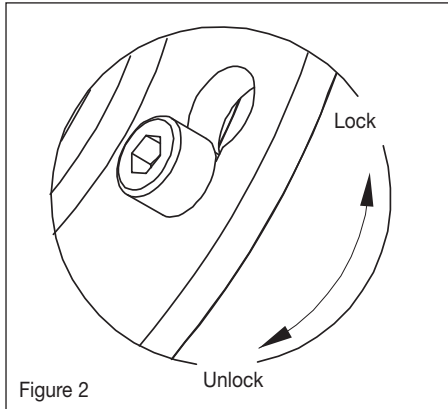


Figure 1

Additional warnings for pumps with detachable motor

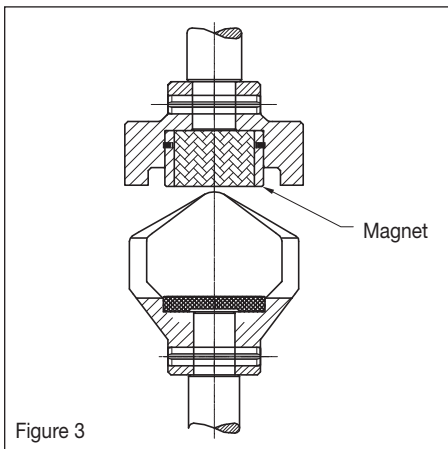
- The motor and pump are fitted together by means of a bayonet fitting between the flange on the motor and the flange on the pump body; once the parts have been joined (through rotation by a few degrees) secure them by tightening the screw. See Figure 2.



- The motor shaft is joined to the pump shaft by a joint with a magnet at the top to ensure that the joint is secure and that the pump shaft is in a correct working position.

The user must check periodically that the magnet is clean, that the joint is free of wear and working properly.

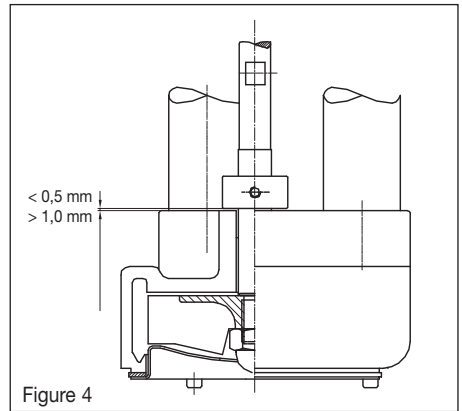
In particular, this operation is to be performed whenever the motor is separated from the pump body. See Figure 3.



- The safety ring on the pump shaft near the feed screw prevents friction between the impeller and the cover of the pump body, to avoid potentially dangerous situations, should the pump be released accidentally.

The user must check periodically the position of the safety ring against the pump body (minimum distance > 0.5 mm, maximum distance 1.0 mm). See Figure 4.

The check is to be made using a thickness gauge, with the motor fitted to the pump body



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