CR, CRI, CRN, CRT
ATEX-approved pumps
Installation and operating instructions

GB ZH

(GB) Declaration of Conformity

We, Grundfos, declare under our sole responsibility that the products CR, CRI, CRN and CRT, to which this declaration relates, are in conformity with these Council directives on the approximation of the laws of the EC member states:

— Machinery Directive (2006/42/EC).
Standard used: EN 809: 1998.

— EMC Directive (2004/108/EC).

— ATEX Directive (94/9/EC).
(Applies only to products with the ATEX markings on the nameplate.)
Standards used: EN 13463-1: 2001, EN 13463-5: 2003.
(Declaration of conformity and installation and operating instructions of the motor are enclosed.)
Notified body holding copy of technical file: KEMA Quality B.V., No 0344. Utrechtseweg 310, 6802 ED, Arnhem, The Netherlands.

(ZH) 产品合格声明书

我们**格兰富**声明在我们的全权责任下，产品 CR, CRI, CRN 和 CRT，即该声明书的所指产品，符合欧洲共同体使其成员国法律趋于一致的以下理事会指令：

— 机械设备指令 (2006/42/EC)。
所用标准：EN 809: 1998。

— 电磁兼容性指令 (2004/108/EC)。

— ATEX (欧洲防爆) 指令 (94/9/EC)。
(仅适用于铭牌上带有 ATEX 标志的产品。)
采用标准：EN 13463-1: 2001 和 EN 13463-5: 2003。
(产品合格声明书以及电机的安装与操作指导内函。)
被通知的技术文件拷贝持有团体：KEMA Quality B.V., No 0344.
Utrechtseweg 310, 6802 ED, Arnhem, The Netherlands.

Bjerringbro, 17 November 2009

Svend Aage Kaae
Technical Director

CR, CRI, CRN, CRT
ATEX-approved pumps

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Original installation and operating instructions.

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Warning

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

1. General information

These supplementary installation and operating instructions apply to the ATEX-approved Grundfos CR pumps.

The CR pumps comply with ATEX Directive 94/9/EC.

The pumps are suitable for use in areas (zones) classified according to the 1999/92/EC Directive. In case of doubt, please consult the above-mentioned directives, or contact Grundfos.

2. Related installation and operating instructions

In addition to these instructions, observe the following installation and operating instructions:

- CR, CRI, CRN (standard pumps)
- CR, CRI, CRN, CRT – Removal of transport bracket and fitting of motor (pump without motor).

For special versions of the CR pumps, observe the relevant installation and operating instructions:

- CRN MAGdrive
- CR, CRI, CRN – Double seal (back-to-back)
- CR, CRI, CRN – Double seal (tandem).

3. Delivery

If the pump is delivered without motor, mount the motor and then adjust the chamber stack and shaft seal according to the procedure described in the installation and operating instructions, "Removal of transport bracket and fitting of motor", supplied with the pump.

4. Identification

The nameplate on the pump head gives the following details:

- data of standard pump
- data of ATEX marking
  - technical file number
  - serial number
  - Ex category.

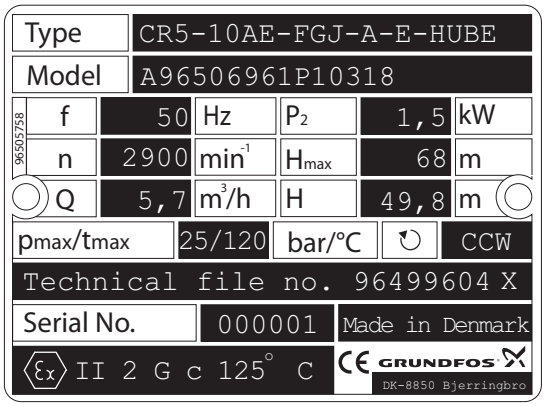

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Fig. 1 Example of CR nameplate with ATEX approval

5. Scope of ATEX categories for CR pumps

Directive	**ATEX-approved CR pumps**							
94/9/EC	Group I		Group II					
	Category M		Category 1		Category 2		Category 3	
	1	2	G	D	G	D	G	D
1999/92/EC [2]			Zone 0	Zone 20	Zone 1	Zone 21	Zone 2	Zone 22
CR pumps	None	CR CRI CRN	None	None	CR CRI CRN CRT [1]	CR CRI CRN CRT	CR CRI CRN CRT	CR CRI CRN CRT
Motors	None	None	None	None	2G EEx e T3 2G EEx d T4	2D 125 °C	2G EEx e T3 2G EEx d T4	3D 125 °C

1) For II 2 G, the pump must be protected against dry running. Use one of the following methods:

- An ATEX-approved dry-running protection. Always use this protection on pumps with MAGdrive or pumps with a single mechanical shaft seal.
- Pumps with double-seal system (back-to-back or tandem). The system for pressurising or flushing the double-seal system must be ATEX-approved.

Make sure that the combination of CR pump and dry-running protection is described in the Explosion Protection Document according to the 1999/92/EC Directive.

The responsibility for checking the functions of the dry-running protection, such as correct flow, correct sealing pressure and temperature of the flushing liquid rests with the installer/owner.

2) Important: The link between groups, categories and zones is explained in the 1999/92/EC directive. Please note that this is a minimum directive. Some EEC countries may therefore have stricter local rules. The user or installer is always responsible for checking that the group and category of the pump correspond to the zone classification of the installation site.

6. Operating conditions

6.1 Maximum liquid temperature

The maximum liquid temperature (t_{max}) stated on the pump nameplate must never be exceeded.

Pumps that are allowed to pump liquids up to a maximum of 150 °C are equipped with a tandem shaft seal. In this case, the temperature and flow of the flushing liquid must be according to the description in the installation and operating instructions "CR, CRI, CRN - Double seal (tandem)".

Make sure that the combination of CR pump and dry-running protection is described in the Explosion Protection Document according to the 1999/92/EC Directive.

The responsibility for checking the correct flow and the temperature of the flushing liquid rests with the installer/owner.

7. Before starting an ATEX-approved pump

Check list

This check list must be strictly observed:

1. Check that the ATEX rating of both motor and pump corresponds to the specified category.
   See section *5. Scope of ATEX categories for CR pumps*.
   If the motor and pump categories differ, the lower rating is valid.
2. If the pump falls under category M2, check that the pump is protected by a guard to prevent damage from falling or ejected objects.
3. Check that the motor output power corresponds to the required P_2 of the pump, see nameplates.
4. Check that the rubber parts of the pump are as ordered, see nameplates.
5. Check the alignment of the chamber stack.
6. See the label on the inside of the coupling guard.
7. Check that the shaft can rotate freely.
   There must be no mechanical contact between impeller and chamber.
8. Check that the pump has been filled with liquid and vented.
   The pump must never run dry.
9. Check the direction of rotation of the motor, see the arrow on the top of the fan cover.
10. If a pump with double seal (back-to-back) has been chosen, check that the seal chamber is pressurised.
11. Follow the special start-up procedures for these pump types:
    – MAGdrive pumps
    – pumps with double seal (back-to-back)
    – pumps with double seal (tandem).
    See the installation and operating instructions for the pump in question.
12. Check that the liquid temperature never exceeds the maximum liquid temperature (t_{max}) stated on the nameplate.
13. Avoid overheating of the pump.
    Operation against a closed discharge valve may cause overheating. Install a bypass with a pressure-relief non-return valve.
14. The pump must be re-vented in either of these situations:
    – the pump has been stopped for a period of time
    – air has accumulated in the pump.

8. Flammable liquids

Before start and during operation, make sure that the pump does not leak or has any malfunction.

After periods of standstill, always vent the pump before start.

Single mechanical shaft seal

If pumps with a single mechanical shaft seal are to be used for flammable liquids, sufficient ventilation around the pump is required. The leakage rate of a normally working shaft seal is less than 10 ml for each 24 hours of operation.

The temperature class is marked with a T on the motor nameplate. The temperature of the motor must be below the auto-ignition temperature of the flammable liquid.

The pump must always be protected against dry-running.
Make sure that the combination of CR pump and dry-running protection is described in the Explosion Protection Document according to the 1999/92/EC Directive.

9. Service

Make all service and adjustments according to the service instructions for the product. For service instructions, go to www.grundfos.com > Grundfos WebCAPS, or contact your local Grundfos service centre.

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