

# CRN MAGdrive

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.*

**Warning**

*The use of this product requires experience with and knowledge of the product. Persons with reduced physical, sensory or mental capabilities must not use this product, unless they are under supervision or have been instructed in the use of the product by a person responsible for their safety. Children must not use or play with this product.*

## 1. Limited warranty

Products manufactured by GRUNDFOS PUMPS CORPORATION (Grundfos) are warranted to the original user only to be free of defects in material and workmanship for a period of 24 months from date of installation, but not more than 30 months from date of manufacture. Grundfos' liability under this warranty shall be limited to repairing or replacing at Grundfos' option, without charge, F.O.B. Grundfos' factory or authorized service station, any product of Grundfos' manufacture. Grundfos will not be liable for any costs of removal, installation, transportation, or any other charges which may arise in connection with a warranty claim. Products which are sold but not manufactured by Grundfos are subject to the warranty provided by the manufacturer of said products and not by Grundfos' warranty. Grundfos will not be liable for damage or wear to products caused by abnormal operating conditions, accident, abuse, misuse, unauthorized alteration or repair, or if the product was not installed in accordance with Grundfos' printed installation and operating instructions.

To obtain service under this warranty, the defective product must be returned to the distributor or dealer of Grundfos' products from which it was purchased together with proof of purchase and installation date, failure date, and supporting installation data. Unless otherwise provided, the distributor or dealer will contact Grundfos or an authorized service station for instructions. Any defective product to be returned to Grundfos or a service station

must be sent freight prepaid; documentation supporting the warranty claim and/or a Return Material Authorization must be included if so instructed.

GRUNDFOS WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSSES, OR EXPENSES ARISING FROM INSTALLATION, USE, OR ANY OTHER CAUSES. THERE ARE NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHICH EXTEND BEYOND THOSE WARRANTIES DESCRIBED OR REFERRED TO ABOVE.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages and some jurisdictions do not allow limit actions on how long implied warranties may last. Therefore, the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

## 2. Symbols used in this document

**Warning**

*If these safety instructions are not observed, it may result in personal injury!*

**Caution**

*If these safety instructions are not observed, it may result in malfunction or damage to the equipment!*

**Note**

*Notes or instructions that make the job easier and ensure safe operation.*

## 3. Permanent magnets



*Persons with pacemaker or other magnet-sensitive medical devices must not handle this pump. They must keep a distance of at least 3 feet from the MAGdrive, as there is a risk of influence from the magnetic fields of the pump. Credit cards, computers, watches and other magnet-sensitive objects should not be kept close to the pump.*



*The pump contains powerful magnets that may pose a risk of personal injury when servicing the pump. The pump should therefore only be dismantled and assembled by authorized personnel.*

## 4. Product description

Grundfos CRN MAGdrive are 100 % leakage-free, sealless pumps. The motor torque is transmitted to the pump shaft by means of magnetic force.

Grundfos CRN MAGdrive pumps are suitable for the pumping of these liquids:

- Aggressive or corrosive liquids
- Toxic liquids
- Volatile liquids
- Obnoxious liquids
- Liquids without fibers and magnetic particles, as they may cause wear of the pump.

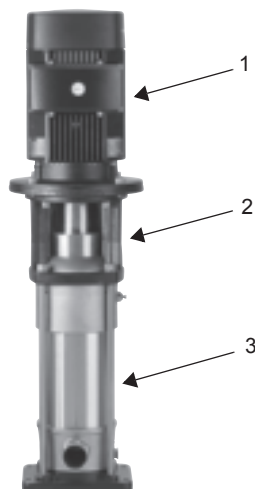


Fig. 1 CRN MAGdrive pump

Pos.	Description
1	Motor
2	Magnetic drive
3	Pump

## 5. Technical data

Liquid temperature:  $-4^{\circ}\text{F}$  to  $+248^{\circ}\text{F}$  ( $-30$  to  $120^{\circ}\text{C}$ ).

Maximum system pressure: 362 psi (25 bar).

Viscosity: 0.25 to 100 centipoise.

### Minimum flow rate

The pump **must never** run without flow. The curve below shows the minimum flow rate as a percentage of the rated flow rate in relation to the liquid temperature.

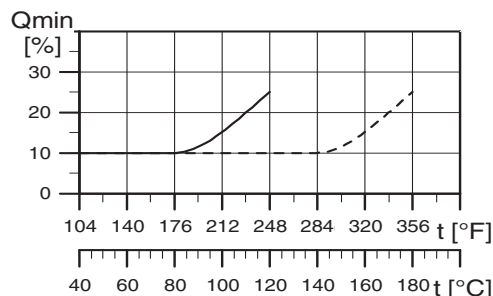


Fig. 2 Minimum flow rate

## 6. Type key

Example	CRN	5	-13	-M	-F	-G	-E
Type range							
Rated flow rate in m³/h							
Number of impellers							
Code for pump version							
M:CRN pump with magnetic drive							
Code for pipe connection							
CA:FlexiClamp							
CX:Tri Clamp							
F:DIN flange							
G:ANSI flange							
J:JIS flange							
P:PJE coupling							
Code for materials							
G:Wetted parts EN 1.4401/AISI 316							
Code for rubber parts of pump							
E:EPDM							
F:FXM (Fluoraz®)							
K:FFKM (Kalrez®)							
V:FKM (Viton®)							

See also the installation and operating instructions of CR, CRI, CRN.

## 7. Mechanical installation



**Installation and operation must comply with local regulations and accepted codes of good practice.**

Before installation, check that

- the pump and its components are as ordered.
- no visible parts have been damaged.

### 7.1 Installation of pump

The pump must be installed and put into operation as described in the installation and operating instructions of CR, CRI, CRN.

It is advisable to protect CRN MAGdrive pumps against dry running by installing a flow switch, pressure switch or a LiqTec® sensor close to the pump. The delay of the dry-running protection must be maximum 15 seconds.

### 7.2 Connection of sensor

A pressure sensor or a Grundfos LiqTec dry-running protection can be fitted in the threaded hole in the pump head.

Description	Dimension
Threaded connection:	½" NPT
Max. installation length, sensor:	.787 in. (20 mm)

## 8. Electrical connection

The pump must be installed as described in the installation and operating instructions of CR, CRI, CRN.

Pumps with motors of 25 and 30 Hp and 4-pole motors 1.5 Hp (1.1 kW) and above must be started via a soft starter.

### 8.1 Motor protection

As minimum the motor must be connected to an effective electronic motor protection with instantaneous release when the maximum setting of the current is reached. If a soft starter or frequency converter is used it must also be with instantaneous release.

In order to ensure the optimum protection of the MAGdrive motor, the motor protection should be set in accordance with the following guidelines:

1. Set the overload protection to the rated full-load current ( $I_{1/1}$ ) of the motor.
2. Start the pump and let it run for half an hour at the required duty point.
3. Measure the motor current. If not possible slowly grade down the scale indicator until the motor trip point is reached.
4. The setting of the motor protection must be 5 % higher than this value.  
The highest permissible setting of the motor protection is the rated full load current ( $I_{1/1}$ ) of the motor.

## 9. Start-up

Note: Do not start the pump until it has been filled with liquid and vented.

1. Open the isolating valve on the suction side of the pump.
2. Close the isolating valve on the discharge side of the pump.
3. Loosen the air vent screw in the pump head.
4. Slowly fill the pump with liquid.
5. Tighten the air vent screw when the pump has been completely filled with liquid.
6. Slowly open the isolating valve on the discharge side of the pump.
7. Start the pump.
8. Check the direction of rotation by means of the motor fan and the label on top of the fan cover.
9. After start-up, the pump should be vented again.  
Slowly loosen the air vent screw in the pump head.  
**Warning:** Pay attention to the direction of the vent hole to ensure that the escaping liquid does not cause injury to persons or damage to the motor or other components.
10. When liquid starts running out, tighten the air vent screw securely.

## 10. Maintenance

The pump requires no maintenance if it has been installed according to the instructions.

## 11. Fault finding

See the installation and operating instructions of CR, CRI, CRN.

## 12. Service



***The pump contains powerful magnets that may pose a risk of personal injury when servicing the pump. The pump should therefore only be dismantled and assembled by authorized personnel.***

If Grundfos is requested to service such a pump, we must be contacted with details about the pumped liquid, etc. before the pump is returned for service. Otherwise we can refuse to accept the pump for service.

Possible costs of returning the pump are paid by the customer.

### 12.1 Other documentation

Service and other documentation for CR pumps can be found at [www.grundfos.com](http://www.grundfos.com) > International website > WebCAPS - pump curves/catalogue/product finder.

If you have any questions, please contact the nearest Grundfos company or service workshop.

## 13. Disposal

This product or parts of it must be disposed of as described in the installation and operating instructions of CR, CRI, CRN.

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**U.S.A.**

GRUNDFOS Pumps Corporation  
17100 West 118th Terrace  
Olathe, Kansas 66061  
Phone: +1-913-227-3400  
Telefax: +1-913-227-3500

**Canada**

GRUNDFOS Canada Inc.  
2941 Brighton Road  
Oakville, Ontario  
L6H 6C9  
Phone: +1-905 829 9533  
Telefax: +1-905 829 9512

**México**

Bombas GRUNDFOS de México S.A. de C.V.  
Boulevard TLC No. 15  
Parque Industrial Stiva  
Aeropuerto  
Apodaca, N.L.C.P. 66600  
Phone: +52-81-8144 4000  
Telefax: +52-81-8144 4010



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