

**CR, CRI, CRN 1s, 1, 3, 5, 10, 15, 20**

**CR, CRN 32, 45, 64, 90, 120, 150**

**Double seal (tandem)**

**Installation and operating instructions**

GB D F I E P GR NL S FIN DK PL RU H SI HR  
SER RO BG CZ SK TR EE LT LV ZH JP KO





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CR, CRN 32, 45, 64, 90, 120, 150  
Double seal (tandem)**

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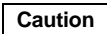


**Warning**  
*Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.*

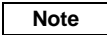
**1. Symbols used in this document**



**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.*

**2. General information**

These installation and operating instructions are a supplement to installation and operating instructions for standard CR, CRI, CRN pumps, publication No 96462123, and for CRN-SF pumps, publication No 96530119.

**3. Product description**

This type of double seal consists of two shaft seals mounted in a tandem arrangement in a separate seal chamber.

The seal can be used in these cases:

- The pump is operating with a negative pressure (vacuum).
- The pump is pumping crystallised liquids (e.g. sugar).
- The pump is pumping hardening liquids (oil products).
- The liquid temperature is up to +150 °C.



**Note** *Only Grundfos cartridge seals can be used.*

If the primary seal is leaking, the pumped liquid will be flushed away by the flushing liquid.

**4. Applications**

The seal shaft is available for the following Grundfos pumps:

Pump type	CR 1s	CR 1	CR 3	CR 5	CR 10	CR 15	CR 20	CR 32	CR 45	CR 64	CR 90	CR 120	CR 150
CR	•	•	•	•	•	•	•	•	•	•	•	•	•
CRI	•	•	•	•	•	•	•						
CRN	•	•	•	•	•	•	•	•	•	•	•	•	•

**5. Flushing liquid**

The flushing liquid should be selected according to the application and must not chemically attack the material of the pump and the shaft seal.

The flushing-liquid flow should also be matched to the application (recommended flow rate 25-200 l/h).



**Warning**  
*Never connect the flushing-liquid supply directly to the public water supply system. Local regulations must be observed.*

It is possible to connect the seal chamber to a separate flushing-liquid tank. In such cases, the manufacturer's installation and operating instructions must be observed.

**5.1 Maximum flushing-liquid pressure and temperature**

Due to the shaft seal design, the pressure in the seal chamber must not exceed 25 bar. The pressure of the flushing liquid must always be lower than the pressure of the pumped liquid.

The maximum temperature of the flushing liquid depends on the rubber material of the shaft seal.

Shaft seal	Maximum temperature [°C]
EPDM	+120
FKM	+90
FFKM	+120
FXM	+120

**6. Flushing-liquid connections**

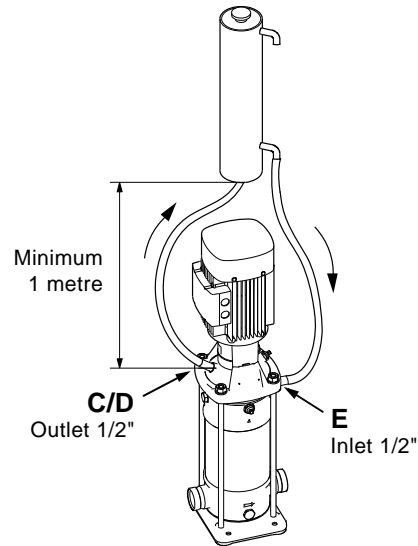
Legend to the letters used in the drawings:

Pos. A = pumped liquid.

Pos. C/D = outlet, flushing liquid.

Pos. E = inlet, flushing liquid, CR, CRN, CRI 1-20 and CR, CRN 120-150 (C/D for CR and CRN 32-90).

Figures 4, 5, 6 and 7 show seal chamber connections for flushing liquid. They also show where to fit the sensor (pos. A), if retrofitted.

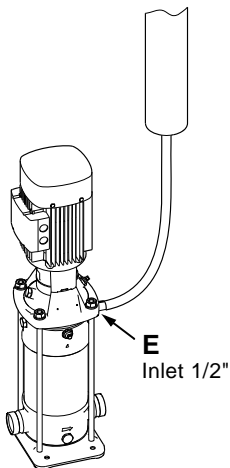


**Fig. 1** Tandem seal arrangement with circulating flushing liquid

In fig. 1, the flushing liquid circulates between an elevated tank and the pump by natural circulation. Heated flushing liquid rises from the seal chamber to the tank where it cools down. The cooled-down flushing liquid returns to the seal chamber.

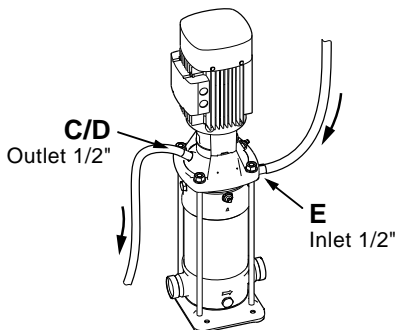
At high temperatures, the circulation of flushing liquid through the seal chamber cools the seal faces of the shaft seal and reduces noise.

TM04 3217 2408



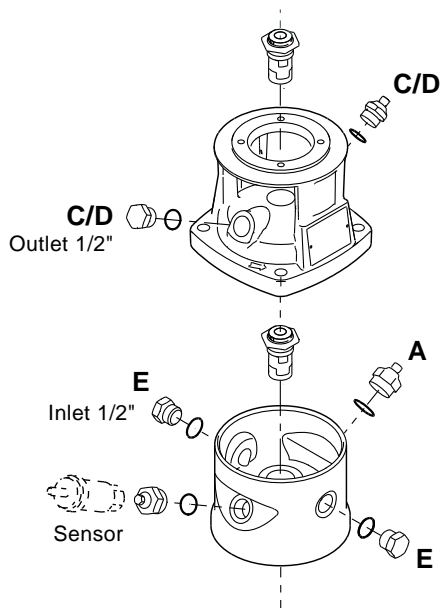
**Fig. 2** Tandem seal arrangement with flushing-liquid supply

In fig. 2, the flushing liquid enters the seal chamber via a pipe from an elevated tank. The flushing liquid in the seal chamber prevents leakage of pumped liquid to the environment. No heat is dissipated from the system.



**Fig. 3** Tandem seal arrangement with flushing liquid connected to a drain

In fig. 3, the flushing liquid enters the seal chamber via a pipe from a central flushing system. In case of seal leakage, the pumped liquid is washed away to the drain by the flushing liquid.

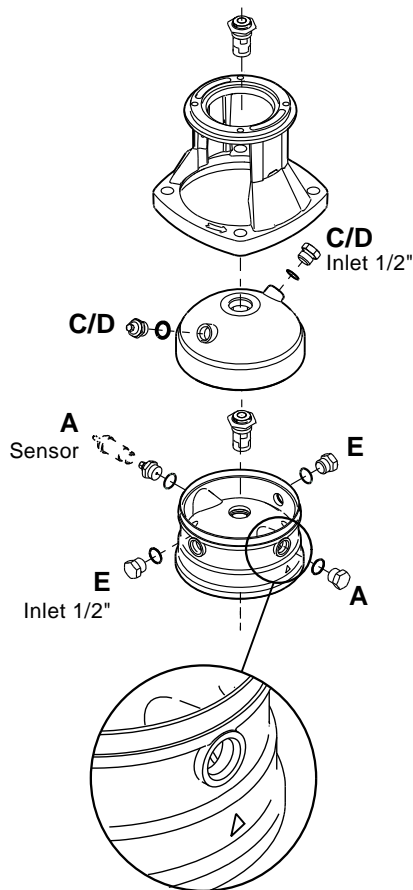


**Fig. 4** Seal chamber CR, CRI, CRN 1s, 1, 3, 5

TM03 3809 2408

TM03 3813 1106

TM03 8295 2408

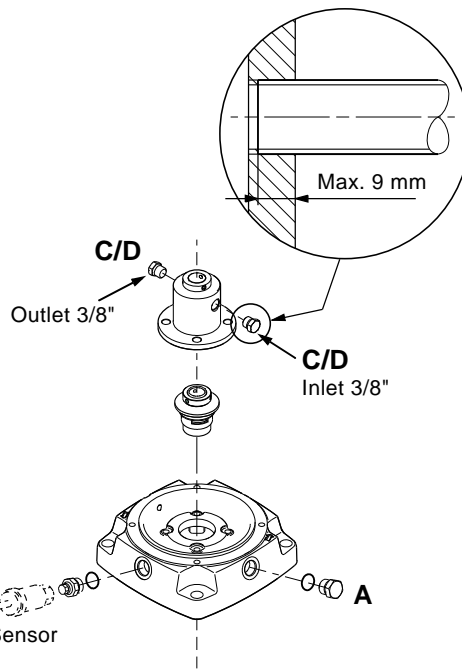


**Fig. 5** Seal chamber CR, CRI, CRN 10, 15, 20



**Warning**

*If the flushing-liquid supply pipe is inserted more than 9 mm into the seal chamber, it will damage the shaft seal. This applies to both inlet and outlet.*



**Fig. 6** Seal chamber CR, CRN 32, 45, 64, 90

TM03 8296 2408

TM03 8268 0907

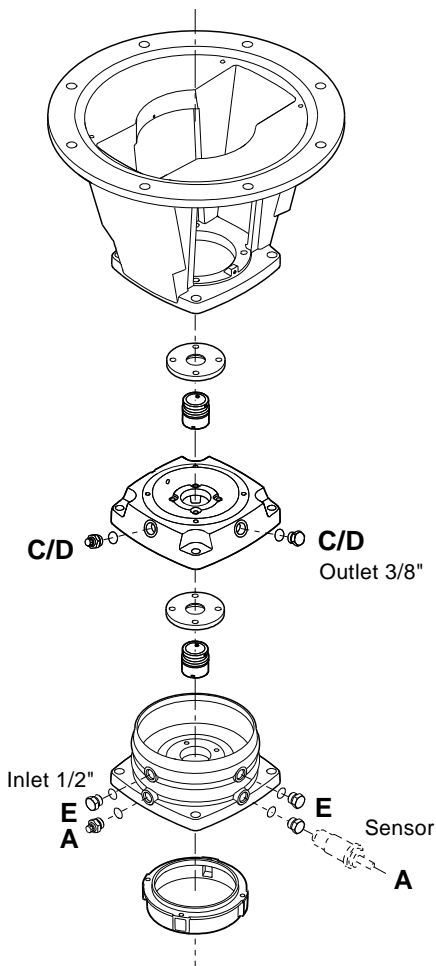


Fig. 7 Seal chamber CR, CRN 120, 150

TM04 4081 0709

### 7. Start-up

See also installation and operating instructions for the standard pump.

**Caution** *Before start-up, the seal chamber and the pump must be completely filled with liquid and vented.*

1. Start the pump, and check the direction of rotation.  
See the correct direction of rotation on the motor fan cover.

**Caution** *The seal chamber must always be filled with the flushing liquid during operation. Risk of dry-running.*

### 8. Operation

To ensure optimum function and performance, make sure that the flow of flushing liquid is always sufficient, and check that the elevated tank never runs dry of flushing liquid.

Depending on the pumped liquid, the quality of the flushing liquid must be checked at regular intervals to ensure optimum operation.

#### 8.1 Frost protection and draining of liquid



**Warning**

*Pay attention to the directions of the vent holes, and take care to ensure that the escaping liquid does not cause injury to persons or damage to the motor or other components.*

*When handling hot or hazardous liquids, special attention should be paid to the risk of personal injury.*

**Pump**

See the installation and operating instructions for the standard pump.

**Seal chamber**

Drain the seal chamber by loosening the lower plug (pos. E). (Pos. C/D for CR and CRN 32-90.)

### 9. Dimensions

Pump type	Additional height of seal chamber [mm]
CR, CRI, CRN 1s, 1, 3, 5	108
CR, CRI, CRN 10, 15, 20	90
CR, CRN 32, 45, 64, 90	0
CR, CRN 120, 150	111

### 10. Disposal

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

**Argentina**  
Bombas GRUNDFOS de Argentina S.A.  
Ruta Panamericana km. 37.500 Lote 34A  
1619 - Garin  
Pcia. de Buenos Aires  
Phone: +54-3327 414 444  
Telefax: +54-3327 411 111

**Australia**  
GRUNDFOS Pumps Pty. Ltd.  
P.O. Box 2040  
Regency Park  
South Australia 5942  
Phone: +61-8-8461-4611  
Telefax: +61-8-8340 0155

**Austria**  
GRUNDFOS Pumpen Vertrieb Ges.m.b.H.  
Grundfosstraße 2  
A-5082 Grödig/Salzburg  
Tel.: +43-6246-883-0  
Telefax: +43-6246-883-30

**Belgium**  
N.V. GRUNDFOS Bellux S.A.  
Boomsesteenweg 81-83  
B-2630 Aartselaar  
Tel.: +32-3-870 7300  
Télécopie: +32-3-870 7301

**Belorussia**  
Представительство ГРУНДФОС в  
Минске  
220123, Минск,  
ул. В. Хоружей, 22, оф. 1105  
Тел.: +(37517) 233 97 65,  
Факс: +(37517) 233 97 69  
E-mail: grundfos\_minsk@mail.ru

**Bosnia/Herzegovina**  
GRUNDFOS Sarajevo  
Trg Heroja 16,  
BiH-71000 Sarajevo  
Phone: +387 33 713 290  
Telefax: +387 33 659 079  
e-mail: grundfos@bih.net.ba

**Brazil**  
Mark GRUNDFOS Ltda.  
Av. Humberto de Alencar Castelo Branco,  
630  
CEP 09850 - 300  
São Bernardo do Campo - SP  
Phone: +55-11 4393 5533  
Telefax: +55-11 4343 5015

**Bulgaria**  
GRUNDFOS Pumpen Vertrieb  
Representative Office - Bulgaria  
Bulgaria, 1421 Sofia  
Lozenetz District  
105-107 Arsenalski blvd.  
Phone: +359 2963 3820, 2963 5653  
Telefax: +359 2963 1305

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

**China**  
GRUNDFOS Pumps (Shanghai) Co. Ltd.  
51 Floor, Raffles City  
No. 268 Xi Zang Road. (M)  
Shanghai 200001  
PRC  
Phone: +86-021-612 252 22  
Telefax: +86-021-612 253 33

**Croatia**  
GRUNDFOS CROATIA d.o.o.  
Cebini 37, Buzin  
HR-10010 Zagreb  
Phone: +385 1 6595 400  
Telefax: +385 1 6595 499  
www.grundfos.hr

**Czech Republic**  
GRUNDFOS s.r.o.  
Čajkovského 21  
779 00 Olomouc  
Phone: +420-585-716 111  
Telefax: +420-585-716 299

**Denmark**  
GRUNDFOS DK A/S  
Martin Bachs Vej 3  
DK-8850 Bjerringbro  
Tlf.: +45-87 50 50 50  
Telefax: +45-87 50 51 51  
E-mail: info\_GDK@grundfos.com  
www.grundfos.com/DK

**Estonia**  
GRUNDFOS Pumps Eesti OÜ  
Peterburi tee 92G  
11415 Tallinn  
Tel: + 372 606 1690  
Fax: + 372 606 1691

**Finland**  
OY GRUNDFOS Pumput AB  
Mestarintie 11  
FIN-01730 Vantaa  
Phone: +358-3066 5650  
Telefax: +358-3066 56550

**France**  
Pompes GRUNDFOS Distribution S.A.  
Parc d'Activités de Chesnes  
57, rue de Malacombe  
F-38290 St. Quentin Fallavier (Lyon)  
Tél.: +33-4 74 82 15 15  
Télécopie: +33-4 74 94 10 51

**Germany**  
GRUNDFOS GMBH  
Schlüterstr. 33  
40699 Erkrath  
Tel.: +49-(0) 211 929 69-0  
Telefax: +49-(0) 211 929 69-3799  
e-mail: infoservice@grundfos.de  
Service in Deutschland:  
e-mail: kundendienst@grundfos.de

**Greece**  
GRUNDFOS Hellas A.E.B.E.  
20th km. Athinon-Markopoulou Av.  
P.O. Box 71  
GR-19002 Peania  
Phone: +0030-210-66 83 400  
Telefax: +0030-210-66 46 273

**Hong Kong**  
GRUNDFOS Pumps (Hong Kong) Ltd.  
Unit 1, Ground floor  
Siu Wai Industrial Centre  
29-33 Wing Hong Street &  
68 King Lam Street, Cheung Sha Wan  
Kowloon  
Phone: +852-27861706 / 27861741  
Telefax: +852-27858664

**Hungary**  
GRUNDFOS Hungária Kft.  
Park u. 8  
H-2045 Törökbálint,  
Phone: +36-23 511 110  
Telefax: +36-23 511 111

**India**  
GRUNDFOS Pumps India Private Limited  
118 Old Mahabalipuram Road  
Thoraiakkam  
Chennai 600 096  
Phone: +91-44 2496 6800

**Indonesia**  
PT GRUNDFOS Pompa  
Jl. Rawa Sumur III, Blok III / CC-1  
Kawasan Industri, Pulogadung  
Jakarta 13930  
Phone: +62-21-460 6909  
Telefax: +62-21-460 6910 / 460 6901

**Ireland**  
GRUNDFOS (Ireland) Ltd.  
Unit A, Merrywell Business Park  
Ballymount Road Lower  
Dublin 12  
Phone: +353-1-4089 800  
Telefax: +353-1-4089 830

**Italy**  
GRUNDFOS Pompe Italia S.r.l.  
Via Gran Sasso 4  
I-20060 Truccazzano (Milano)  
Tel.: +39-02-95838112  
Telefax: +39-02-95309290 / 95838461

**Japan**  
GRUNDFOS Pumps K.K.  
Gotanda Metalion Bldg., 5F,  
5-21-15, Higashi-gotanda  
Shiagawa-ku, Tokyo  
141-0022 Japan  
Phone: +81 35 448 1391  
Telefax: +81 35 448 9619

**Korea**  
GRUNDFOS Pumps Korea Ltd.  
6th Floor, Aju Building 679-5  
Yeoksam-dong, Kangnam-ku, 135-916  
Seoul, Korea  
Phone: +82-2-5317 600  
Telefax: +82-2-5633 725

**Latvia**  
SIA GRUNDFOS Pumps Latvia  
Deglava biznesa centrs  
Augusta Deglava ielā 60, LV-1035, Rīga,  
Tālr.: + 371 714 9640, 7 149 641  
Fakss: + 371 914 9646

**Lithuania**  
GRUNDFOS Pumps UAB  
Smolensko g. 6  
LT-03201 Vilnius  
Tel: + 370 52 395 430  
Fax: + 370 52 395 431

**Malaysia**  
GRUNDFOS Pumps Sdn. Bhd.  
7 Jalan Peguam U1/25  
Glenmarie Industrial Park  
40150 Shah Alam  
Selangor  
Phone: +60-3-5569 2922  
Telefax: +60-3-5569 2866

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

**Netherlands**  
GRUNDFOS Netherlands  
Veluwezoom 35  
1326 AE Almere  
Postbus 22015  
1302 CA ALMERE  
Tel.: +31-88-478 6336  
Telefax: +31-88-478 6332  
e-mail: info\_gnl@grundfos.com

**New Zealand**  
GRUNDFOS Pumps NZ Ltd.  
17 Beatrice Tinsley Crescent  
North Harbour Industrial Estate  
Albany, Auckland  
Phone: +64-9-415 3240  
Telefax: +64-9-415 3250

**Norway**  
GRUNDFOS Pumper A/S  
Strømsveien 344  
Postboks 235, Leirdal  
N-1011 Oslo  
Tlf.: +47-22 90 47 00  
Telefax: +47-22 32 21 50

**Poland**  
GRUNDFOS Pompy Sp. z o.o.  
ul. Klonowa 23  
Baranowo k. Poznania  
PL-62-081 Przeźmierowo  
Tel: (+48-61) 650 13 00  
Fax: (+48-61) 650 13 50

**Portugal**  
Bombas GRUNDFOS Portugal, S.A.  
Rua Calvet de Magalhães, 241  
Apartado 1079  
P-2770-153 Paço de Arcos  
Tel.: +351-21-440 76 00  
Telefax: +351-21-440 76 90

**România**  
GRUNDFOS Pompe România SRL  
Bd. Biruintei, nr 103  
Pantelimon county Ilfov  
Phone: +40 21 200 4100  
Telefax: +40 21 200 4101  
E-mail: romania@grundfos.ro

**Russia**  
ООО Грундфос  
Россия, 109544 Москва, ул. Школьная  
39  
Тел. (+7) 495 737 30 00, 564 88 00  
Факс (+7) 495 737 75 36, 564 88 11  
E-mail grundfos.moscow@grundfos.com

**Serbia**  
GRUNDFOS Predstavništvo Beograd  
Dr. Milutina Ivkovića 2a/29  
YU-11000 Beograd  
Phone: +381 11 26 47 877 / 11 26 47 496  
Telefax: +381 11 26 48 340

**Singapore**  
GRUNDFOS (Singapore) Pte. Ltd.  
24 Tuas West Road  
Jurong Town  
Singapore 638381  
Phone: +65-6865 1222  
Telefax: +65-6861 8402

**Slovenia**  
GRUNDFOS PUMPEN VERTRIEB  
Ges.m.b.H.,  
Podružnica Ljubljana  
Štandrova 8b, SI-1231 Ljubljana-Črnuče  
Phone: +386 1 568 0610  
Telefax: +386 1 568 0619  
E-mail: slovenia@grundfos.si

**Spain**  
Bombas GRUNDFOS España S.A.  
Camino de la Fuentecilla, s/n  
E-28110 Algete (Madrid)  
Tel.: +34-91-848 8800  
Telefax: +34-91-628 0465

**Sweden**  
GRUNDFOS AB  
Box 333 (Lunnagårdsgatan 6)  
431 24 Mölndal  
Tel.: +46(0)771-32 23 00  
Telefax: +46(0)31-331 94 60

**Switzerland**  
GRUNDFOS Pumpen AG  
Bruggacherstrasse 10  
CH-8117 Fällanden/ZH  
Tel.: +41-1-806 8111  
Telefax: +41-1-806 8115

**Taiwan**  
GRUNDFOS Pumps (Taiwan) Ltd.  
7 Floor, 219 Min-Chuan Road  
Taichung, Taiwan, R.O.C.  
Phone: +886-4-2305 0868  
Telefax: +886-4-2305 0878

**Thailand**  
GRUNDFOS (Thailand) Ltd.  
92 Chaloen Phrakiat Rama 9 Road,  
Dokmai, Pravej, Bangkok 10250  
Phone: +66-2-725 8999  
Telefax: +66-2-725 8998

**Turkey**  
GRUNDFOS POMPA San. ve Tic. Ltd. Sti.  
Gebze Organize Sanayi Bölgesi  
Ihsan dede Caddesi,  
2. yol 200. Sokak No. 204  
41490 Gebze/ Kocaeli  
Phone: +90 - 262-679 7979  
Telefax: +90 - 262-679 7905  
E-mail: satis@grundfos.com

**Ukraine**  
ТОВ ГРУНДФОС УКРАЇНА  
01010 Київ, Вул. Московська 86,  
Тел.: (+38 044) 390 40 50  
Факс.: (+38 044) 390 40 59  
E-mail: ukraine@grundfos.com

**United Arab Emirates**  
GRUNDFOS Gulf Distribution  
P.O. Box 16768  
Jebel Ali Free Zone  
Dubai  
Phone: +971-4- 8815 166  
Telefax: +971-4-8815 136

**United Kingdom**  
GRUNDFOS Pumps Ltd.  
Grovebury Road  
Leighton Buzzard/Beds. LU7 8TL  
Phone: +44-1525-850000  
Telefax: +44-1525-850011

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

**Usbekistan**  
Представительство ГРУНДФОС в  
Ташкенте  
700000 Ташкент ул.Усмана Носира 1-й  
тулик 5  
Телефон: (3712) 55-68-15  
Факс: (3712) 53-36-35

<b>96477555</b> 0609	<b>320</b>
Repl. 96477555 0804	