

# NB, NBG, NK, NKG



**Coated solutions**

**Inspection, service and repair recommendations**

**Service instructions**





# NB, NBG, NK, NKG

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## English (GB)

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## English (GB) Service instructions

### Original service instructions

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### 1. General information

Read this document before you start service work on the product. Service work must comply with local regulations and accepted codes of good practice.

Observe the safety instructions in the installation and operating instructions for the product.

#### 1.1 Hazard statements

The symbols and hazard statements below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



##### DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.



##### WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.



##### CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The hazard statements are structured in the following way:



##### SIGNAL WORD

##### Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.

#### 1.2 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



Observe these instructions for explosion-proof products.



A blue or grey circle with a white graphical symbol indicates that an action must be taken.



A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.



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



Tips and advice that make the work easier.

#### 1.3 Target group

These service instructions are intended for professional installers, operators and service technicians of the product.

We recommend that service and maintenance be carried out by skilled persons with technical qualifications required by the specific legislation in force.

## 2. Inspection, service and repair recommendations

### 2.1 Why do inspection of the coating

Your coated pump also requires inspection as any other equipment which is not coated. Doing coating inspection is in general a preventive maintenance to avoid critical breakdowns or unexpected downtime.

#### Inspection must be carried out to:

- Check for possible wear/damage and especially unexpected wear/damage.
- Evaluate remaining operating life of coating.
- Evaluate if repair or re-coat is necessary and plan for this.

As part of the coating inspection routine we also recommend to carry-out a general pump inspection when the pump is out of operation and disassembled. By doing this it will be possible to make a full list of needed actions to keep your pump up and running.

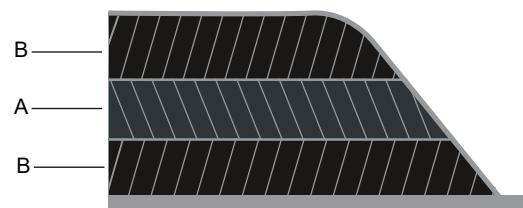
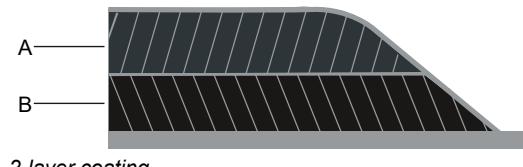
### 2.2 What to check when doing inspection

The standard coatings that we offer in this brochure are all so-called thin-film coatings. These are applied in 2 or more layers dependent on the type of job they need to do and the specific type is specified case by case.

Example:

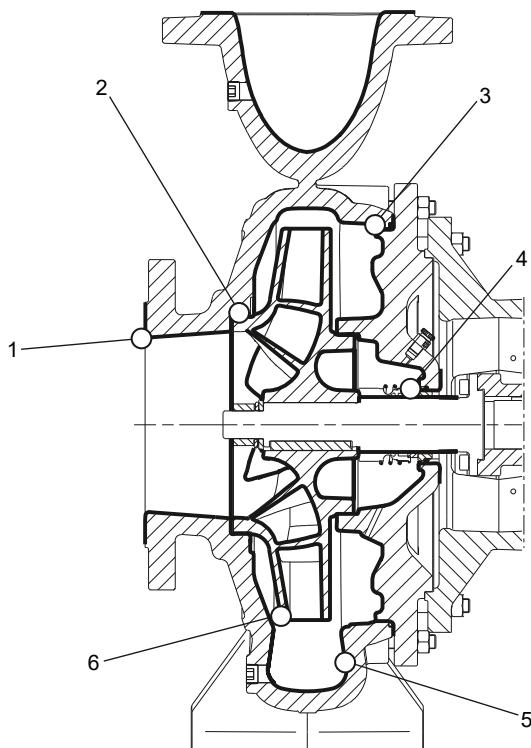
A: GREY

B: BLACK



As layers are always applied in different colors (each layer having the same physical properties) it is easy to spot if there are areas in the pump that are exposed to wear or has been damaged. If the top coating is partially worn or damaged, it is time to consider when to make your next move. If the wear is severe and metal is exposed to corrosion, consider a complete recoat of the pump.

### 2.3 Which coated areas to inspect



Pos.	Description
1	Edges
2	Interfaces between rotating and stationary components
3	Interfaces between components
4	Shaft and area where the shaft seal is located
5	Any flat surface area
6	Geometries and vane tip of the impeller

Wear or damage to the coating may appear if:

- Abrasive particles are more damaging than anticipated.
- Content, shape, density, hardness of abrasive particles has changed.
- Composition of liquid and operating pattern change.

### 2.4 Inspection interval

- **Coating selected for mild abrasion:** We recommend that you do 1st inspection after 1 year. If this shows no significant wear next inspection could be extended to 2 years interval.
- **Coating selected for moderate abrasion:** We recommend that you do 1st inspection after 1 year. If this shows no significant wear next inspection could be extended to 2 years interval.
- **Coating selected for severe abrasion:** Moderate or very abrasive liquids are often diverse in its composition (**hard, sharp, heavy particles**) and wear may behave unpredictably.

These coating types may need inspection every half to one year, until you learn how your pumped liquid/media impacts your coating. An inspection may reveal that another type of coating suits the installation better.

## 2.5 Service offerings from Grundfos/via coating supplier

- Inspection report is a service offering from Grundfos.
- Service video can be found on YouTube by searching for "How to repair ceramic coating on NB, NK pump".
- Repair kit from coating supplier Jakob Albertsen Komposit A/S

Kits can be ordered via this email: mail@jakob-albertsen.dk

Minimum order is 5 pcs of available kits.

### AVAILABLE KITS:

#### Stick-kit:



For repair of holes, grooves, and wear channels

**Kit content:** 1 x Stick-kit (114g) + goggles, 2 pairs of chemically resistant gloves, spatula, grinding pad, product data sheet.

When fully cured the coating can be machined or grinded and holes can be drilled for cutting of threads.

*Order number: 100086674*

#### Complete kit:



For repair/re-establishing larger areas of damaged coating

**Kit content:** 1 x Stick-kit (114g) + 1 x Rep-kit (250 g kit to re-establish larger areas of damaged coating) + goggles, 2 pairs of chemically resistant gloves, protective arm sleeves, paint brush, mixing stick, spatula, grinding pad, product data sheet.

*Order number: 100081667*

#### Common for both coating kits:

- Repair coatings must follow local regulations for application of epoxy products. The coatings can be mixed and applied by using the safety equipment provided with the kit.
- Repair coatings cure also when immersed in water.
- The pump can be restarted with a light load when the coatings have cured approximately 30 mins at 20° C.
- Full curing time is indicated on curing schemes with the kits.
- Shelf-life of both kits is 2 years.
- CLP marking and hazard label text in: GB, DK, D, NO, NL, AR (Arabic)

Approx. lead time (order acceptance -> shipment): 2 weeks Cost:

Price is adjusted once a year.

### 3. Repairing the coating

#### 3.1 Preparation before repairing the coating

Complete kit - to repair/re-establish larger areas of damaged coating.

- 1 x Stick-kit (114 g)
- 1 x Repair-kit (250 g)

Tool lists:

- Safety glasses
- Safety gloves
- Safety shoes
- Spatula
- Paint brush
- Steel brush
- Grinding paper
- Masking tape
- Protective sleeves



#### 3.2 Repairing a hole or deep crack using the stick-kit



1. Make sure that the rusted and damaged areas are removed by grinding/machining.



2. Make final grinding of hole/slot/groove.



3. Degrease and remove residues.



Use commercial solvents - acetone, xylene, alcohol, or methyl ethyl ketone.

4. Wear two pairs of protective gloves.



5. Use the spatula from the kit to cut off measured quantity from the repair stick.



6. Knead and mix the repair stick until uniform color is achieved and the mixture is soft and sticky.



Adapt the shape for repairing.



The working time is maximum 3 to 4 minutes (20 °C.) before the coating becomes too solid.



Make one coating mixture per repairing to have enough time to shape and apply the coating.

7. Shape the repairing coating allowing suitable room for the top coating.



8. Apply the repairing coating to external surfaces and cover a larger area than the damaged area, to ensure proper adhesion and strength.



### 3.3 Repairing a worn coating using the repair-kit



1. Make the first masking of areas that should be coated.



4. The coating area is now clearly defined.



5. Degrease and remove residues from the grinding.



2. Do final grinding inside the masking area to make necessary surface roughness. This ensures correct adhesion of the repairing coating.



3. Remove the first round of masking tape. Now, all particles from the grinding can be removed.



Use commercial solvents - acetone, xylene, alcohol, or methyl ethyl ketone.

6. Make the second masking to the edges of the grinded areas.



7. Wear two pairs of protective gloves.



8. Find the curing time in the application instructions



The mix ratio by weight is 4:1.

9. Use the spatula from the kit to cut off the repair stick.



10. Mix until uniform color with no streaks is achieved.



Scrape the mixing surface and tool to ensure no unmixed residue remains on either surface.



The working time is maximum 4 to 5 minutes (20 °C.) before the coating becomes too solid.

11. Add sufficient coating and make sure that all areas are covered.



12. Shape and remove excess coating with a spatula.



13. Immediately remove masking tape and shape edges while coating is still malleable.



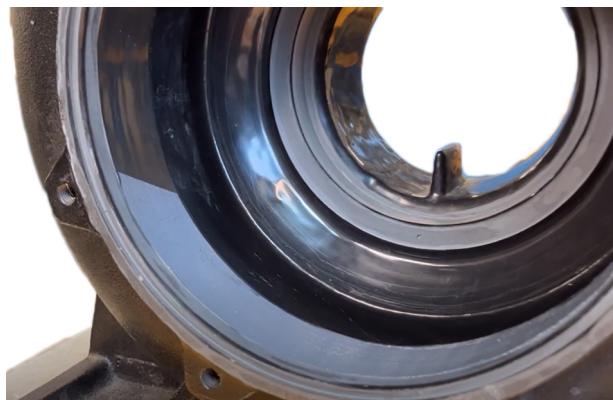
14. Use the solvent to avoid sticking to the gloves.

15. Make sure that there is no coating on connecting interfaces.



### 3.4 After repairing the coating

The pump can be restarted with a light load when the coatings have cured approximately 30 mins at 20° C.



Full curing time is indicated on curing schemes with the kits. Repairing coatings also cure when immersed in water.

## 4. Reference information

### 4.1 Related documents

You can find further product information on [grundfos.com](http://grundfos.com) about:

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Coating solutions for Grundfos NB/NBG and NK/NKG pump

[https://api.grundfos.com/literature/  
Grundfoslitrature-6008742.pdf](https://api.grundfos.com/literature/Grundfoslitrature-6008742.pdf)



### 4.2 Service videos

You can find video instructions for repairing ceramic coating by exploring the following QR codes/links:

Video	QR code
How to repair ceramic coating on Grundfos pumps <a href="https://www.youtube.com/watch?v=WliKNvEKsQ">https://www.youtube.com/watch?v=WliKNvE KsQ</a>	A standard black and white QR code.

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<b>Argentina</b> Bombas GRUNDFOS de Argentina S.A. Ruta Panamericana km. 37.500 Industin 1619 - Garín Pcia. de B.A. Tel.: +54-3327 414 444 Fax: +54-3327 45 3190	<b>Finland</b> OY GRUNDFOS Pumput AB Truukkikuja 1 FI-01360 Vantaa Tel.: +358-(0) 207 889 500	<b>Lithuania</b> GRUNDFOS Pumps UAB Smolensko g. 6 LT-03201 Vilnius Tel.: + 370 52 395 430 Fax: + 370 52 395 431	<b>Spain</b> Bombas GRUNDFOS España S.A. Camino de la Fuenteclaro, s/n E-28110 Algete (Madrid) Tel.: +34-91-848 8800 Fax: +34-91-628 0465
<b>Austria</b> GRUNDFOS Pumpen Vertrieb Ges.m.b.H. Grundfosstraße 2 A-5082 Grödig/Salzburg Tel.: +43-6246-883-0 Fax: +43-6246-883-30	<b>France</b> Pompes GRUNDFOS Distribution S.A. Parc d'Activités de Chesnes 57, rue du Malacombe F-38290 St. Quentin Fallavier (Lyon) Tel.: +33-4 74 82 15 15 Fax: +33-4 74 94 10 51	<b>Malaysia</b> GRUNDFOS Pumps Sdn. Bhd. 7 Jalan Peguan U1/25 Glenmarie Industrial Park 40150 Shah Alam, Selangor Tel.: +60-3-5569 2922 Fax: +60-3-5569 2866	<b>Sweden</b> GRUNDFOS AB Box 333 (Lunnagårdsgatan 6) 431 24 Mölndal Tel.: +46 31 332 23 000 Fax: +46 31 331 94 60
<b>Belgium</b> N.V. GRUNDFOS Bellux S.A. Boomsesteenweg 81-83 B-2630 Aartselaar Tel.: +32-3-870 7300 Fax: +32-3-870 7301	<b>Germany</b> GRUNDFOS GMBH Schlüterstr. 33 40699 Erkrath Tel.: +49-(0) 211 929 69-0 Fax: +49-(0) 211 929 69-3799 E-mail: infoservice@grundfos.de Service in Deutschland: kundendienst@grundfos.de	<b>Mexico</b> Bombras GRUNDFOS de México S.A. de C.V. Boulevard TLC No. 15 Parque industrial Stiva Aeropuerto Apodaca, NL. 66600 Tel.: +52-81-8144 4000 Fax: +52-81-8144 4010	<b>Switzerland</b> GRUNDFOS Pumpen AG Bruggacherstrasse 10 CH-8117 Fällanden/ZH Tel.: +41-44-806 8111 Fax: +41-44-806 8115
<b>Bosnia and Herzegovina</b> GRUNDFOS Sarajevo Zmaja od Bosne 7-7A BiH-71000 Sarajevo Tel.: +387 33 592 480 Fax: +387 33 590 465 www.ba.grundfos.com E-mail: grundfos@bih.net.ba	<b>Greece</b> GRUNDFOS Hellas A.E.B.E. 20th km. Athinon-Markopoulou Av. P.O. Box 71 GR-19002 Peania Tel.: +0030-210-66 83 400 Fax: +0030-210-66 46 273	<b>Netherlands</b> GRUNDFOS Netherlands Veluwezoom 35 1326 AE Almere Postbus 22015 1302 CA ALMERE Tel.: +31-88-478 6336 Fax: +31-88-478 6332 E-mail: info_gnl@grundfos.com	<b>Taiwan</b> GRUNDFOS Pumps (Taiwan) Ltd. 7 Floor, 219 Min-Chuan Road Taichung, Taiwan, R.O.C. Tel.: +886-4-2305 0868 Fax: +886-4-2305 0878
<b>Brazil</b> BOMBAS GRUNDFOS DO BRASIL Av. Humberto de Alencar Castelo Branco, 630 CEP 09850 - 300 São Bernardo do Campo - SP Tel.: +55-11 4393 5533 Fax: +55-11 4343 5015	<b>Hong Kong</b> 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 Tel.: +852-27861706 / 27861741 Fax: +852-27858664	<b>New Zealand</b> GRUNDFOS Pumps NZ Ltd. 17 Beatrice Tinsley Crescent North Harbour Industrial Estate Albany, Auckland Tel.: +64-9-415 3240 Fax: +64-9-415 3250	<b>Thailand</b> GRUNDFOS (Thailand) Ltd. 92 Chaloem Phraikit Rama 9 Road Dokmai, Pravej, Bangkok 10250 Tel.: +66-2-725 8999 Fax: +66-2-725 8998
<b>Bulgaria</b> Grundfos Bulgaria EOOD Slatina District Iztochna Tangenta street no. 100 BG - 1592 Sofia Tel.: +359 2 49 22 200 Fax: +359 2 49 22 201 E-mail: bulgaria@grundfos.bg	<b>Hungary</b> GRUNDFOS Hungária Kft. Tópark u. 8 H-2045 Törökpalánk Tel.: +36-23 511 110 Fax: +36-23 511 111	<b>Norway</b> GRUNDFOS Pumper A/S Strømsveien 344 Postboks 235, Leirdal N-1011 Oslo Tel.: +47-22 90 47 00 Fax: +47-22 32 21 50	<b>Turkey</b> GRUNDFOS POMPA San. ve Tic. Ltd. Sti. Gebze Organize Sanayi Bölgesi İhsan dede Caddesi 2. yol 200. Sokak No. 204 41490 Gebze/ Kocaeli Tel.: +90 - 262-679 7979 Fax: +90 - 262-679 7905 E-mail: satis@grundfos.com
<b>Canada</b> GRUNDFOS Canada Inc. 2941 Brighton Road Oakville, Ontario L6H 6C9 Tel.: +1-905 829 9533 Fax: +1-905 829 9512	<b>India</b> GRUNDFOS Pumps India Private Limited 118 Old Mahabalipuram Road Thoraipakkam Chennai 600 097 Tel.: +91-44 2496 6800	<b>Indonesia</b> PT GRUNDFOS Pompa Graha intiub Lt. 2 & 3 Jln. Ciliilitan Besar No.454. Makasar, Jakarta Timur ID-Jakarta 13650 Tel.: +62 21-469-51900 Fax: +62 21-460 6910 / 460 6901	<b>Ukraine</b> TOB "ГРУНДФОС УКРАЇНА" Бізнес Центр Європа Столичне шосе, 103 м. Київ, 03131, Україна Tel.: +(38 044) 237 04 00 Fax: +(38 044) 237 04 01 E-mail: ukraine@grundfos.com
<b>China</b> GRUNDFOS Pumps (Shanghai) Co. Ltd. 10F The Hub, No. 33 Suhong Road Minhang District Shanghai 201106 PRC Tel.: +86 21 612 252 22 Fax: +86 21 612 253 33	<b>Ireland</b> GRUNDFOS (Ireland) Ltd. Unit A, Merrywell Business Park Ballymount Road Lower Dublin 12 Tel.: +353-1-4089 800 Fax: +353-1-4089 830	<b>Poland</b> 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	<b>United Arab Emirates</b> GRUNDFOS Gulf Distribution P.O. Box 16768 Jebel Ali Free Zone, Dubai Tel.: +971 4 8815 166 Fax: +971 4 8815 136
<b>Columbia</b> GRUNDFOS Colombia S.A.S. Km 1.5 vía Siberia-Cota Conj. Potrero Chico, Parque Empresarial Arcos de Cota Bod. 1A. Cota, Cundinamarca Tel.: +57(1)-2913444 Fax: +57(1)-8764586	<b>Italy</b> GRUNDFOS Pompe Italia S.r.l. Via Gran Sasso 4 I-20060 Truccazzano (Milano) Tel.: +39-02-95838112 Fax: +39-02-95309290 / 95838461	<b>Portugal</b> Bombras GRUNDFOS Portugal, S.A. Rua Calvet de Magalhães, 241 Apartado 1079 P-2770-153 Paço de Arcos Tel.: +351-21-440 76 00 Fax: +351-21-440 76 90	<b>United Kingdom</b> GRUNDFOS Pumps Ltd. Grovebury Road Leighton Buzzard/Beds. LU7 4TL Tel.: +44-1525-850000 Fax: +44-1525-850011
<b>Croatia</b> GRUNDFOS CROATIA d.o.o. Buzinski prilaz 38, Buzin HR-10010 Zagreb Tel.: +385 1 6595 400 Fax: +385 1 6595 499 www.hr.grundfos.com	<b>Japan</b> GRUNDFOS Pumps K.K. 1-2-3, Shin-Miyakoda, Kita-ku Hamamatsu 431-2103 Japan Tel.: +81 53 428 4760 Fax: +81 53 428 5005	<b>Romania</b> GRUNDFOS Pompe România SRL S-PARK BUSINESS CENTER, Clădirea A2, etaj 2 Str. Tipografilor, Nr. 11-15, Sector 1, Cod 013714 Bucuresti, Romania Tel.: 004 021 2004 100 E-mail: romania@grundfos.ro	<b>U.S.A.</b> Global Headquarters for WU 856 Koomey Road Brookshire, Texas 77423 USA Phone: +1-630-236-5500
<b>Korea</b> GRUNDFOS Kazakhstan LLP 7' Kyz-Zhibek Str., Kok-Tobe micr. KZ-050020 Almaty Kazakhstan Tel.: +7 (727) 227-98-55/56	<b>Kazakhstan</b> Grundfos Kazakhstan LLP 6th Floor, Aju Building 679-5 Yeoksam-dong, Gangnam-ku, 135-916 Seoul, Korea Tel.: +82-2-5317 600 Fax: +82-2-5633 725	<b>Singapore</b> GRUNDFOS (Singapore) Pte. Ltd. 25 Jalan Tukang Singapore 619264 Tel.: +65-6681 9688 Faxax: +65-6681 9689	<b>Uzbekistan</b> Grundfos Tashkent, Uzbekistan The Representative Office of Grundfos Kazakhstan in Uzbekistan 38a, Oybek street, Tashkent Tel.: +(998) 71 150 3290 / 71 150 3291 Fax: +(998) 71 150 3292
<b>Czech Republic</b> GRUNDFOS Sales Czechia and Slovakia s.r.o. Čajkovského 21 779 00 Olomouc Tel.: +420-585-716 111	<b>Latvia</b> SIA GRUNDFOS Pumps Latvia Deglava bīznesa centrā Augusta Deglava ielā 60 LV-1035, Riga, Tel.: + 371 714 9640, 7 149 641 Fax: + 371 914 9646	<b>Slovakia</b> GRUNDFOS s.r.o. Prievozska 4D 821 09 BRATISLAVA Tel.: +421 2 5020 1426 sk.grundfos.com	<b>Slovenia</b> GRUNDFOS LJUBLJANA, d.o.o. Leskoškova 9e, 1122 Ljubljana Tel.: +386 (0) 1 568 06 10 Fax: +386 (0) 1 568 06 19 E-mail: tehnika-si@grundfos.com
<b>Denmark</b> GRUNDFOS DK A/S Martin Bachs Vej 3 DK-8850 Bjerringbro Tel.: +45-87 50 50 50 Fax: +45-87 50 51 51 E-mail: info_DK@grundfos.com www.grundfos.com/DK	<b>South Africa</b> GRUNDFOS (PTY) LTD 16 Lascelles Drive, Meadowbrook Estate 1609 Germiston, Johannesburg Tel.: (+27) 10 248 6000 Fax: (+27) 10 248 6002 E-mail: lgradidge@grundfos.com		
<b>Estonia</b> GRUNDFOS Pumps Eesti OÜ Peterburii tee 92G 11415 Tallinn Tel.: + 372 606 1690 Fax: + 372 606 1691			

**93038889 09.2023**  
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