SPK

Installation and operating instructions





be think innovate

Original installation and operating instructions

These installation and operating instructions describe Grundfos SPK pumps.

Sections 1-3 give the information necessary to be able to unpack, install and start up the product in a safe way.

Sections 4-9 give important information about the product, as well as information on service, fault finding and disposal of the product.

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Read this document before installing the product. Installation and operation must comply with local regulations and accepted codes of good practice.

1. General information

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



Dago

Description of 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 explosionproof 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.

2. Installing the product

2.1 Mechanical installation

WARNING

Moving parts



Death or serious personal injury Tighten the coupling screws to the correct torque.

Install the coupling guards securely to the pump with the screws intended for this purpose.

CAUTION

Hot surface

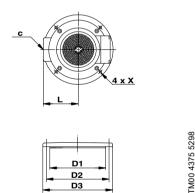


Minor or moderate personal injury The pump must be installed so that

persons cannot accidentally come into contact with the hot surface of the motor.

2.1.1 Pump location

The pump is designed for tank mounting in vertical position. The pump is positioned in a hole cut into the cover of the tank (upper side) and is secured to the tank by four hexagon head screws through the holes in the mounting flange. We recommend to fit a sealing gasket between the pump flange and tank. If the pump is to be installed horizontally, the drain hole of the motor stool must be fitted with a plug.



Fia. 1

Pump mounting flange dimensions:

Pump type	D1	D2	D3	L	с	x
SPK 1, 2 and 4	100	115	130	64	Rp 3/4	Ø7.5
SPK 8	140	160	180	100	Rp 1 1/4	Ø7.5

D3

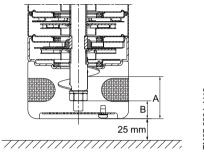
2.1.2 Inlet conditions

The bottom of the pump strainer must be at least 25 mm above the bottom of the tank.

The pumps are designed to provide full performance down to a level of A mm above the bottom of the strainer

At a liquid level between A and B mm above the bottom of the strainer, the built-in priming screw will protect the pump against dry running.

Pump type	A [mm]	B [mm]		
SPK	40	25		





3. Starting up the product

WARNING

Too high pressure and leakage Death or serious personal injury

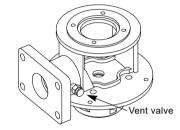
Do not run the pump against a closed outlet valve for more than approx. 5 minutes.

Before starting the pump, make sure:

- that all pipe connections are tight.
- that the pump body is partly filled with liquid (partly submerged).
- that the strainer is not blocked by impurities.

Start the pump as follows:

- 1. Close the isolating valve on the outlet side of the pump.
- 2. If the pump is fitted with a vent valve, this valve must be opened, see fig. 4.



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Fig. 4

- 3. See the correct direction of rotation of the pump on the motor fan cover. When seen from the top, the pump must rotate *counterclockwise*.
- 4. Start the pump and check the direction of rotation.
- 5. Open the outlet isolating valve a little.
- If the pump is fitted with a vent valve, this valve must be closed when a steady stream of liquid runs out of it.
- 7. Completely open the outlet isolating valve.

The pump has now been vented and is ready for operation.

WARNING

Electric shock

Death or serious personal injury

 Before starting any work on the product, make sure that the power supply has been switched off and that it cannot be accidentally switched on.



 Connect the pump to an external main switch close to the pump and to a motor-protective circuit breaker or a CUE frequency converter. Make sure you can lock the main switch in OFF position (isolated). Type and requirements as specified in EN 60204-1, 5.3.2.

The operating voltage and frequency are marked on the pump nameplate. Please make sure that the motor is suitable for the power supply on which it will be used.

Single-phase Grundfos motors incorporate a thermal overload switch and require no additional motor protection.

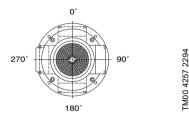
Three-phase motors must be connected to a motor starter.

The terminal box can be turned to four positions, in 90 $^\circ$ steps, see fig. 3.

Proceed as follows:

- 1. Remove the coupling guards. Do *not* remove the coupling.
- 2. Remove the four bolts securing the motor to the motor stool.
- 3. Turn the motor to the required position.
- 4. Replace and tighten the four bolts.
- 5. Replace the coupling guards.

The electric motor must be connected to the supply as shown in the diagram inside the terminal box cover.





4. Product introduction

4.1 Applications

The Grundfos pumps, type SPK, are multistage centrifugal pumps designed for pumping liquids for machine tools, condensate transfer, liquid transfer in industrial washing machines and similar applications.

WARNING

Fire and explosion

Death or serious personal injury Do not use the pump for flammable, combustible or explosive liquids.

The pumps are designed for pumping liquids with a density and viscosity corresponding to those of water. The pumped liquid must not contain abrasive particles or fibres.

When pumping liquids with a density or viscosity higher than that of water, the motor size must be taken into consideration.

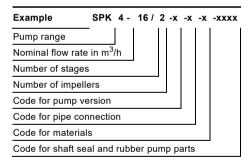
4.2 Identification

The standard range of pumps encompasses complete impeller-in-chamber combinations.

Depending on duty combinations, other lengths can on request be supplied by fitting empty intermediate chambers instead of standard chambers with impellers.

The pump key on the pump nameplate indicates the number of chambers and impellers fitted to the pump.

4.3 Pump key



5. Servicing the product

WARNING

Electric shock



Death or serious personal injury

Before starting any work on the product. make sure that the power supply has been switched off and that it cannot be accidentally switched on

WARNING

Moving parts



- Death or serious personal injury Tighten the coupling screws to the
- correct torque.
 - Install the coupling guards securely to the pump with the screws intended for this purpose.

CAUTION



Corrosive liquids

Death or serious personal injury Wear personal protective equipment.

CAUTION



Toxic liquids

Death or serious personal injury Wear personal protective equipment.



CAUTION

Hot or cold liquid

Minor or moderate personal injury

Wear personal protective equipment.



CAUTION

Hot or cold surface

Minor or moderate personal injury

Make sure that no one can accidentally come into contact with hot or cold surfaces.

5.1 Maintaining the product

Pumps installed in accordance with these instructions require very little maintenance.

The mechanical shaft seal is self-adjusting and has wear-resistant seal rings which are lubricated and cooled by the pumped liquid.

The pump bearings are also lubricated by the pumped liquid. The motor ball bearings are grease packed and sealed for life. No further lubrication is necessarv.

Pumps from 4 kW and up have angular contact bearings.

5.1.1 Filters

Chip trays, filters, etc. must be cleaned at regular intervals to ensure a correct flow of liquid.

5.1.2 Periodic checks

At regular intervals, depending on the conditions and time of operation, the following checks should be made:

- Check the quantity of liquid and operating pressure.
- · Check that there are no leaks.
- Check that the motor is not overheating.
- Check the tripping of the motor starter.
- Check that all controls are operating satisfactorily.

If the above checks do not reveal any abnormal operating details, no further checks are necessary. Should any faults be found, check the symptoms with section 8. Fault finding the product.

5.2 Contaminated products

The product will be classified as contaminated if it has been used for a liquid which is injurious to health or toxic.

If you request Grundfos to service the product, contact Grundfos with details about the liquid before returning the product for service. Otherwise, Grundfos can refuse to accept the product for service.

Any application for service must include details about the liquid.

Clean the product in the best possible way before you return it.

Costs of returning the product are to be paid by the customer.

6. Taking the product out of operation

6.1 Taking the product permanently out of operation

CAUTION

Corrosive liquids

Death or serious personal injury - Wear personal protective equipment.



CAUTION Toxic liquids

Death or serious personal injuryWear personal protective equipment.



CAUTION

Hot or cold liquid

Minor or moderate personal injury - Wear personal protective equipment.



CAUTION

Hot or cold surface Minor or moderate personal injury

Make sure that no one can accidentally



come into contact with hot or cold surfaces.

7. Technical data

Pump type	SPK
Minimum liquid temperature [°C]	-10
Maximum liquid temperature [°C]	+90
Maximum ambient temperature [°C]	+40
Maximum operating pressure [bar]	10
Enclosure class	IP54

7.1 Sound pressure level

Motor	L _{pA} [dB(A)]			
[kW]	50 Hz	60 Hz		
0.06	< 70	< 70		
0.12	< 70	< 70		
0.18	< 70	< 70		
0.25	< 70	< 70		
0.37	< 70	< 70		
0.55	< 70	< 70		
0.75	< 70	< 70		
1.1	< 70	< 70		
1.5	< 70	71		
2.2	< 70	71		

English (GB)

English (GB)

8. Fault finding the product

WARNING

Electric shock



Death or serious personal injury

Before starting any work on the product. make sure that the power supply has been switched off and that it cannot be accidentally switched on.

WARNING

Moving parts

Death or serious personal injury

- Tighten the coupling screws to the correct torque.
 - Install the coupling guards securely to the pump with the screws intended for this purpose.

CAUTION

Corrosive liquids

Death or serious personal injury -

Wear personal protective equipment.

CAUTION



Toxic liquids

Death or serious personal injury Wear personal protective equipment. -



CAUTION

Hot or cold liquid

Minor or moderate personal injury Wear personal protective equipment.



CAUTION



Hot or cold surface Minor or moderate personal injury

Make sure that no one can accidentally



-

come into contact with hot or cold surfaces.

Fault		Cause		Remedy	
1.	Motor does not run when started.	a)	Supply failure.	Connect the power supply.	
		b)	Fuses are blown.	Replace fuses.	
		c)	Motor starter overload has tripped.	Reactivate the motor protection.	
		d)	Main contacts in motor starter are not making contact or the coil is faulty.	Replace contacts or magnetic coil.	
		e)	Control circuit is defective.	Repair the control circuit.	
		f)	Motor is defective.	Replace the motor.	
2.	Motor starter overload trips out	a)	One fuse/automatic circuit breaker is blown.	Cut in the fuse.	
	immediately when supply is switched on.	b)	Contacts in motor starter overload are faulty.	Replace motor starter contacts.	
		c)	Cable connection is loose or faulty.	Fasten or replace the cable connection.	
		d)	Motor winding is defective.	Replace the motor.	
		e)	Pump mechanically blocked.	Remove the mechanical blocking of the pump.	
		f)	Overload setting is too low.	Set the motor starter correctly.	
3.	Motor starter overload trips out occasionally.	a)	Overload setting is too low.	Set the motor starter correctly.	
		b)	Low voltage at peak times.	Check the power supply.	
4.	 Motor starter has not tripped but the pump does not run. 		Check 1 a), b), d) and e).		
5.	Pump runs but gives no liquid or pump capacity is not constant.	a)	Pump strainer partly blocked by impurities.	Clean the strainer.	
		b)	Liquid level in tank too low.	Increase the liquid level.	
		c)	Pump rotates in the wrong direction.	Change the direction of rotation of the motor.	

9. Disposing of the product

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.



The crossed-out wheelie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local

waste disposal authorities. The separate collection and recycling of such products will help protect the environment and human health.

See also end-of-life information at www.grundfos.com/product-recycling.

Appendix

中国 RoHS

产品中有害物质的名称及含量

				有害物质		
部件名称	铅	汞	镉	六价铬	多溴联苯	多溴联苯醚
	(Pb)	(Hg)	(Cd)	(Cr6+)	(PBB)	(PBDE)
泵壳	Х	0	0	0	0	0
紧固件	Х	0	0	0	0	0
管件	Х	0	0	0	0	0
定子	Х	0	0	0	0	0
转子	Х	0	0	0	0	0

本表格依据 SJ/T 11364 的规定编制

O:表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 该规定的限量要求。

Ð

该产品环保使用期限为10年,标识如左图所示。 此环保期限只适用于产品在安装与使用说明书中所规定的条件下工作

GB: EU declaration of conformity

We, Grundfos, declare under our sole responsibility that the product SPK, to which the declaration below relates, is in conformity with the Council Directives listed below on the approximation of the laws of the EU member states.

KO: EU 적합성 선언

Grundfos 는 아래의 선언과 관련된 SPK 제품이 EU 회원국 법률에 기 반하여 아래의 이사회 지침을 준수함을 단독 책임 하에 선언합니다.

CN: 欧盟符合性声明

我们,格兰富,在我们的全权责任下声明,产品 SPK 系列,其制造和 性能完全符合以下所列欧盟委员会指令。

TW: EU 合格聲明

- Machinery Directive (2006/42/EC).
 Standard used: EN 809:1998, A1:2009.
- Ecodesign Directive (2009/125/EC).
 Electric motors:
 Commission Regulation No 640/2009.
 Applies only to three-phase Grundfos motors marked IE2 or IE3.
 See motor nameplate.
 Standard used: EN 60034-30:2009.
- Ecodesign Directive (2009/125/EC). Water pumps: Commission Regulation No 547/2012. Applies only to water pumps marked with the minimum efficiency index MEI. See pump nameplate.
- RoHS Directives: (2011/65/EU and 2015/863/EU) Standard used: EN IEC 63000:2018

This EC/EU declaration of conformity is only valid when published as part of the Grundfos installation and operating instructions (96496965).

Bjerringbro, 5th of January 2021

Erik Andersen Senior Manager GRUNDFOS Holding A/S Poul Due Jensens Vej 7 8850 Bjerringbro, Denmark

Manufacturer and person empowered to sign the EC/EU declaration of conformity.

UK declaration of conformity

We, Grundfos, declare under our sole responsibility that the product **SPK**, to which this declaration relates, is in conformity with UK regulations, standards and specifications to which conformity is declared, as listed below:

- Supply of Machinery (Safety) Regulations 2008 Standard used: EN 809:1998, A1:2009.
- The Ecodesign for Energy-Related Products and Energy Information Regulations 2019 Electric motors: Regulation (EC) No 640/2009 and Regulation (EU) No 4/2014 Applies only to three-phase Grundfos motors marked IE2 or IE3. See motor nameplate. Standard used: EN 60034-30-1:2009.
- The Ecodesign for Energy-Related Products and Energy Information Regulations 2019 Water pumps: Regulation (EU) No 547/2012. Applies only to water pumps marked with the minimum efficiency index MEI. See pump nameplate.
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2019 Standard used: EN IEC 63000:2018

This UK declaration of conformity is only valid when published as part of the Grundfos installation and operating instructions.

UK Importer: Grundfos Pumps Itd. Grovebury Road, Leighton Buzzard, LU7 4TL.

Bjerringbro, January 1, 2021

Erik Andersen Senior Manager Grundfos Holding A/S Poul Due Jensens Vej 7 8850 Bjerringbro, Denmark

Manufacturer and person empowered to sign the UK declaration of conformity.

10000335766

Argentina

Bombas GRUNDFOS de Argentina S.A. Ruta Panamericana km. 37.500 Centro Industrial Garin 1619 Garín Pcia. de B.A. Phone: +54-3327 414 444 Telefax: +54-3327 45 3190

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 Tél.: +32-3-870 7300 Télécopie: +32-3-870 7301

Belarus

Представительство ГРУНДФОС в Минске 220125, Минск ул. Шафарнянская, 11, оф. 56, БЦ «Порт» Тел.: +375 17 397 397 3 +375 17 397 397 4 Факс: +375 17 397 397 1 Е-mail: minsk@grundfos.com

Bosnia and Herzegovina

GRUNDFOS Sarajevo Zmaja od Bosne 7-7A, BH-71000 Sarajevo Phone: +387 33 592 480 Telefax: +387 33 590 465 www.ba.grundfos.com e-mail: grundfos@bih.net.ba

Brazil

BOMBAS GRUNDFOS DO BRASIL 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 Bulgaria EOOD Slatina District Iztochna Fangenta street no. 100 BG - 1592 Sofia Tel. +359 2 49 22 200 Fax. +359 2 49 22 201 email: bulgaria@grundfos.bg

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. 10F The Hub, No. 33 Suhong Road Minhang District Shanghai 201106 PRC Phone: +86 21 612 252 22 Telefax: +86 21 612 253 33

COLOMBIA

GRUNDFOS Colombia S.A.S. Km 1.5 via Siberia-Cota Conj. Potrero Chico, Parque Empresarial Arcos de Cota Bod. 1A. Cota, Cundinamarca Phone: +57(1)-2913444 Telefax: +57(1)-8764586

Croatia

GRUNDFOS CROATIA d.o.o. Buzinski prilaz 38, Buzin HR-10010 Zagreb Phone: +385 1 6595 400 Telefax: +385 1 6595 499 www.hr.grundfos.com

GRUNDFOS Sales Czechia and

Slovakia s.r.o. Čajkovského 21 779 00 Olomouc Phone: +420-585-716 111

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 Trukkikuja 1 FI-01360 Vantaa Phone: +358-(0) 207 889 500

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

GRUNDFÖS 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. Tópark 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 Thoraipakkam Chennai 600 096 Phone: +91-44 2496 6800

Indonesia

PT. GRUNDFOS POMPA Graha Intirub Lt. 2 & 3 Jln. Cililitan Besar No.454. Makasar, Jakarta Timur ID-Jakarta 13650 Phone: +62 21-469-51900 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.I. Via Gran Sasso 4 I-20060 Truccazzano (Milano) Tel.: +39-02-95838112 Telefax: +39-02-95309290 / 95838461

Japan

GRUNDFOS Pumps K.K. 1-2-3, Shin-Miyakoda, Kita-ku, Hamamatsu 431-2103 Japan Phone: +81 53 428 4760 Telefax: +81 53 428 5005

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

Brundfos companies

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

Mexico

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

Romania

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 www.grundfos.ro

Russia

ООО Грундфос Россия ул. Школьная, 39-41 Москва, RU-109544, Russia Тел. (+7) 495 564-88-00 (495) 737-30-00 Факс (+7) 495 564 8811 Е-mail grundfos.moscow@grundfos.com

Serbia

Grundfos Srbija d.o.o. Omladinskih brigada 90b 11070 Novi Beograd Phone: +381 11 2258 740 Telefax: +381 11 2281 769 www.rs.grundfos.com

Singapore

GRUNDFOS (Singapore) Pte. Ltd. 25 Jalan Tukang Singapore 619264 Phone: +65-6681 9688 Telefax: +65-6681 9689

Slovakia

GRUNDFOS s.r.o. Prievozská 4D 821 09 BRATISLAVA Phona: +421 2 5020 1426 sk.grundfos.com

Slovenia

GRUNDFOS LJUBLJANA, d.o.o. Leskoškova 9e, 1122 Ljubljana Phone: +386 (0) 1 568 06 10 Telefax: +386 (0)1 568 06 19 E-mail: tehnika-si@grundfos.com

South Africa

Grundfos (PTY) Ltd. 16 Lascelles Drive, Meadowbrook Estate 1609 Germiston, Johannesburg Tel.: (+27) 10 248 6000 Fax: (+27) 10 248 6002 E-mail: Igradidge@grundfos.com

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 31 332 23 000 Telefax: +46 31 331 94 60

Switzerland

GRUNDFOS Pumpen AG Bruggacherstrasse 10 CH-8117 Fällanden/ZH Tel.: +41-44-806 8111 Telefax: +41-44-806 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 Chaloem 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

Бізнес Центр Європа Столичне шосе, 103 м. Київ, 03131, Україна Телефон: (+38 044) 237 04 00 Факс.: (+38 044) 237 04 01 Е-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 4TL Phone: +44-1525-850000 Telefax: +44-1525-850011

U.S.A.

GRUNDFOS Pumps Corporation 9300 Loiret Blvd. Lenexa, Kansas 66219 Phone: +1-913-227-3400 Telefax: +1-913-227-3500

Uzbekistan

Grundfos Tashkent, Uzbekistan The Representative Office of Grundfos Kazakhstan in Uzbekistan 38a, Oybek street, Tashkent Tenedph: (+998) 71 150 3290 / 71 150 3291 Φakc: (+998) 71 150 3292

Addresses Revised 09.09.2020

99264365 03.2021

ECM: 1308676



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