

# Hydro Solo-S

Installation and operating instructions



# English (GB) Installation and operating instructions

## 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.

#### 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. 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 description

### 2.1 Applications

The Grundfos single-pump booster set is designed for water boosting and transfer in small blocks of flats, farms, cottages, etc. where the water requirements are relatively low.

### 2.2 Operating conditions

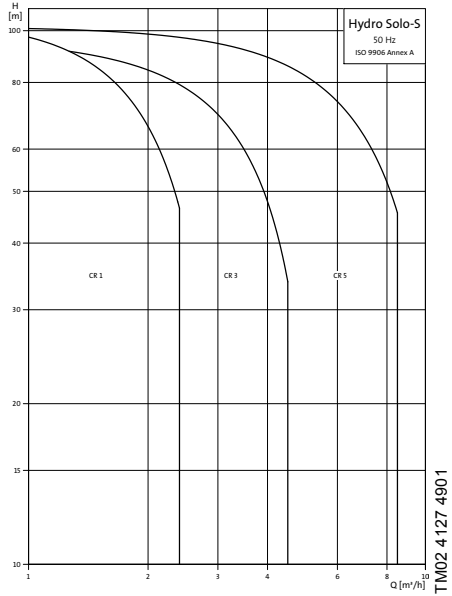


Fig. 1

<b>Water temperature</b>	Maximum +60 °C
<b>System pressure</b>	
CR 1-4, 1-7, 1-10	Maximum 6 bar
CR 1-13, 1-17	Maximum 10 bar
CR 3-4, 3-7, 3-10	Maximum 6 bar
CR 3-12, 3-15	Maximum 10 bar
CR 5-3, 5-4, 5-5, 5-8	Maximum 6 bar
CR 5-10, 5-15	Maximum 10 bar
<b>Flow rate, Q</b>	1-8 m <sup>3</sup> /h

### 3. System configuration

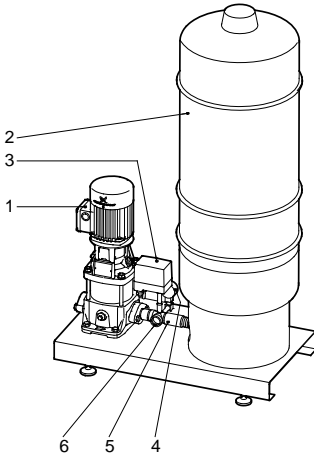


Fig. 2

Pos.	Description
1	Pump
2	Diaphragm tank
3	Pressure switch
4	Pressure gauge
5	Discharge pipe, brass
6	Isolating valve

#### 3.1 Function

The booster set is cut in and out by means of the pressure switch. When water is consumed, this is tapped from the diaphragm tank.

Then the pressure drops to a preset pump cut-in pressure and the pump starts.

When the water consumption falls, the discharge pressure rises. The pump stops when the cut-out pressure preset on the pressure switch is reached.

### 4. Installation

#### 4.1 Location

The booster set should be installed and electrically connected in accordance with local regulations.

The booster set should be located in a well ventilated room. The motor requires an adequate air supply to prevent overheating.

#### 4.2 Pipe connection

Arrows on the pump base show the direction of flow of water through the pump.

The pipes connected to the booster set must be adequately sized.

**Caution** The booster set has no non-return valve. A non-return/foot valve must be fitted to the suction pipe.

#### 4.3 Priming

Do not start the pump until it has been filled with liquid.

#### Closed systems or open systems where the liquid level is above the pump inlet

1. Close the isolating valve on the discharge pipe.
2. Remove the priming plug (pos. 1) from the pump head. See fig. 3.
3. Gradually open the isolating valve on the suction pipe until a steady stream of liquid runs out the priming port.
4. Refit the priming plug and tighten securely.
5. Open the isolating valve(s).

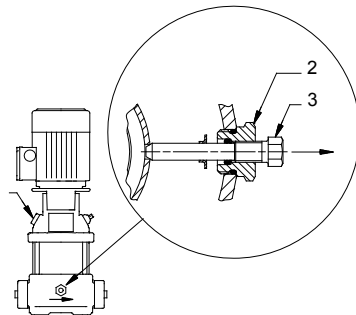


Fig. 3

Pos.	Description
1	Priming plug
2	Drain plug
3	Drain plug/bypass valve

TM02 2587 2702

TM02 6431 0603

### Open systems where the liquid level is below the pump inlet

1. Close the isolating valve on the discharge pipe.
2. Slacken the small screw of the bypass valve (pos. 3) and pull it out against stop. See fig. 3.
3. Remove the priming plug (pos. 1) from the pump head.
4. Pour liquid through the priming hole (use a funnel) until the suction pipe and pump are completely filled with liquid. The liquid can be seen in the priming hole.
5. Tighten the screw of the bypass valve.
6. Refit the priming plug and tighten securely.
7. Open the isolating valve(s).

### 4.4 Electrical connection

The electrical connection should be carried out in accordance with local regulations.

#### Warning



Never make any connections in the terminal box or in the pressure switch unless the power supply has been switched off.

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

### 4.5 Direction of rotation

The direction of rotation of the pump is counter-clockwise when seen from the top.

If the direction of rotation is wrong, switch off the power supply and interchange two phases of the mains supply.

### 4.6 Motor protection

Single-phase motors incorporate thermal protection and consequently require no additional motor protection.

Three-phase motors must be connected to a motor-protective circuit breaker in accordance with local regulations.

In order to protect the motor against quick and slow overload, it must be connected to an external thermomagnetic relay, type GV2-ME. See fig. 4.

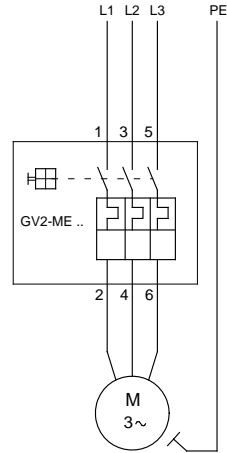


Fig. 4

## 5. Settings

All pressure settings are described in the following sections.

Figure 5 shows the relationship between system/cut-out pressure, differential pressure, cut-in pressure and precharge pressure of the diaphragm tank.

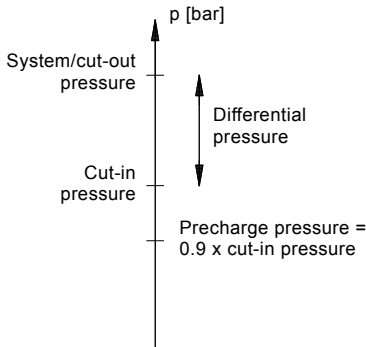


Fig. 5

### 5.1 Precharge pressure

The tank precharge pressure has been factory-set to 0.9 x cut-in pressure (see section [5.2 Cut-in pressure](#)) or to 2 bar.

If not otherwise stated, the factory-set cut-in pressure is 0.5 x maximum pump pressure.

If the cut-in pressure is changed, the tank precharge pressure must also be adjusted to ensure optimum operation.

Calculate the precharge pressure as follows:

Precharge pressure = 0.9 x cut-in pressure.

The precharge pressure must be measured in a pressure-less system.

It is recommended to use nitrogen gas for precharging.

#### Checking of tank precharge pressure

To ensure optimum operation of the system, i.e. frequency of starts and stops, it is recommended to check the precharge pressure of the diaphragm tank at regular intervals (at least once a year).

### 5.2 Cut-in pressure

The cut-in pressure is set on the pressure switch by means of the adjusting screws for cut-out pressure and differential pressure.

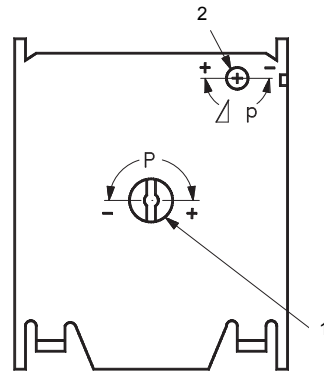


Fig. 6

Pos.	Description
1	Cut-out pressure screw
2	Differential pressure screw

Cut-out pressure: The pump stops.

Differential pressure: Pressure drop - the pump restarts.

The cut-in pressure can be calculated as cut-out pressure - differential pressure.

#### Example

Cut-out pressure	5 bar
Differential pressure	1.5 bar
Cut-in pressure	3.5 bar

### 5.3 Cut-out pressure

Figure 7 shows the curve for cut-out pressure setting.

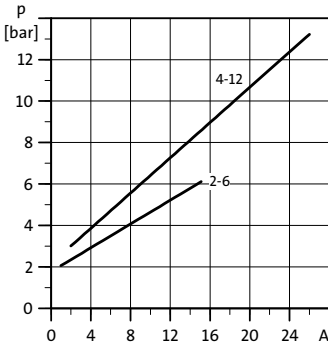


Fig. 7

A = Number of turns of the cut-out pressure screw (pos. 1), fig. 6.

### 5.4 Differential pressure

Proceed as follows (see fig. 8 or 9):

1. Mark the cut-out pressure on the axis to the left and the differential pressure on the axis to the right.
2. Draw a line between the two points.
3. Read the value on the number line. This value is the number of turns of the differential pressure screw (pos. 2), fig. 6.

#### Example

The example in fig. 8 shows:

Cut-out pressure = 5 bar.

Differential pressure = 1.5 bar.

The number line from 0 to 9 is intersected at a value of 4.5, i.e. that the differential pressure screw must be turned 4.5 times.

#### Nomogram for differential pressure

2 to 6 bar

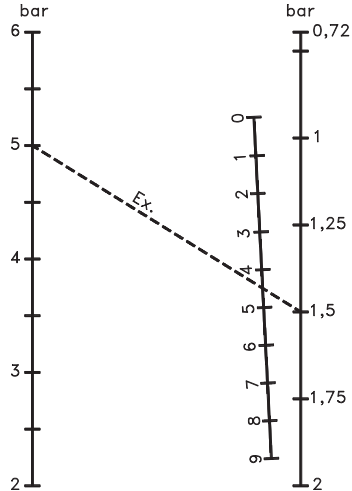


Fig. 8

#### Nomogram for differential pressure

4 to 12 bar

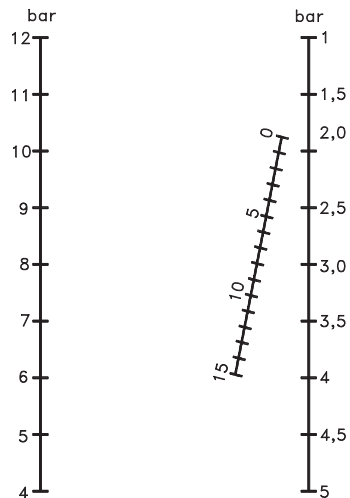


Fig. 9

If the differential pressure has been set to a value which is higher than the cut-out pressure, the booster set cannot start. Set the differential pressure to a lower value (turn the differential pressure screw clockwise).

**Note**

## 6. Fault finding chart



### Warning

Never make any connections in the terminal box or in the pressure switch unless the power supply has been switched off.

<b>Fault</b>	<b>Cause</b>
1. Motor does not run when started.	a) Supply failure. b) Motor protection has tripped (in the case of single-phase operation, the motor starts automatically after a short time). c) Main contacts in motor-protective circuit breaker are not making contact or the magnetic coil is faulty (three-phase operation).
2. Motor-protective circuit breaker has tripped (trips immediately when supply is switched on).	a) Contacts in motor-protective circuit breaker are faulty (three-phase operation). b) Cable connection is loose or faulty. c) Motor winding is defective. d) Pump is mechanically blocked. e) Setting of motor-protective circuit breaker too low (three-phase operation).
3. Motor-protective circuit breaker trips out occasionally (three-phase operation).	a) Setting of motor-protective circuit breaker too low. b) Periodic supply failure. c) Low voltage at peak times.
4. Booster set capacity is not constant.	a) Suction pipe is too small for capacity of booster set. b) Insufficient water is available at the pump inlet. c) Water level is too low. d) Suction pipe is partly blocked by impurities.
5. Booster set runs but gives no water.	a) Suction pipe is blocked by impurities. b) Leakage in suction pipe. c) Air in suction pipe or booster set. d) Non-return/foot valve is blocked in closed position.
6. Pump starts and stops too frequently.	a) Pressure switch setting is incorrect. b) Tank precharge pressure is incorrect. c) Non-return/foot valve in suction pipe does not shut tight. d) Leakage in diaphragm of tank. Lower the tank precharge pressure. If the diaphragm leaks, water will run out the valve when the booster set is operating.

## 7. 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.

Subject to alterations.

## Declaration of conformity

**GB: EU declaration of conformity**

We, Grundfos, declare under our sole responsibility that the product Hydro Solo S, 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.

**CZ: Prohlášení o shodě EU**

My firma Grundfos prohlašujeme na svou plnou odpovědnost, že výrobek Hydro Solo S, na který se toto prohlášení vztahuje, je v souladu s níže uvedenými ustanoveními směrnice Rady pro sbližení právních předpisů členských států Evropského společenství.

**DK: EU-overensstemmelseerklæring**

Vi, Grundfos, erklærer under ansvar at produktet Hydro Solo S som erklæringen nedenfor omhandler, er i overensstemmelse med Rådets direktiver der er nævnt nedenfor, om indbyrdes tilnærmelse til EU-medlemsstaternes lovgivning.

**ES: Declaración de conformidad de la UE**

Grundfos declara, bajo su exclusiva responsabilidad, que el producto Hydro Solo S al que hace referencia la siguiente declaración cumple lo establecido por las siguientes Directivas del Consejo sobre la aproximación de las legislaciones de los Estados miembros de la UE.

**FR: Déclaration de conformité UE**

Nous, Grundfos, déclarons sous notre seule responsabilité, que le produit Hydro Solo S, auquel se réfère cette déclaration, est conforme aux Directives du Conseil concernant le rapprochement des législations des États membres UE relatives aux normes énoncées ci-dessous.

**HR: EU deklaracija sukladnosti**

Mi, Grundfos, izjavljujemo s punom odgovornošću da je proizvod Hydro Solo S, na koja se izjava odnosi u nastavku, u skladu s direktivama Vijeća dolje navedenih o usklađivanju zakona država članica EU-a.

**IT: Dichiarazione di conformità UE**

Grundfos dichiara sotto la sua esclusiva responsabilità che il prodotto Hydro Solo S, al quale si riferisce questa dichiarazione, è conforme alle seguenti direttive del Consiglio riguardanti il ravvicinamento delle legislazioni degli Stati membri UE.

**LV: ES atbilstības deklarācija**

Sabiedrība Grundfos ar pilnu atbildību paziņo, ka produkts Hydro Solo S, uz kuru attiecas tālāk redzamā deklarācija, atbilst tālāk norādītajām Padomes direktīvam par ES dalībvalstu normatīvo aktu tuvināšanu.

**PL: Deklaracja zgodności UE**

My, Grundfos, oświadczamy z pełną odpowiedzialnością, że nasz produkt Hydro Solo S, którego deklaracja niniejsza dotyczy, jest zgodny z następującymi dyrektywami Rady w sprawie zbliżenia przepisów prawnych państw członkowskich.

**RO: Declarația de conformitate UE**

Noi Grundfos declarăm pe propria răspundere că produsul Hydro Solo S, la care se referă această declarație, este în conformitate cu Directivele de Consiliu specificate mai jos privind armonizarea legilor statelor membre UE.

**RU: Декларация о соответствии нормам ЕС**

Мы, компания Grundfos, со всей ответственностью заявляем, что изделие Hydro Solo S, к которому относится нижеприведенная декларация, соответствует нижеприведенным Директивам Совета Евросоюза о тождественности законов стран-членов ЕС.

**SI: Izjava o skladnosti EU**

V Grundfosu s polno odgovornostjo izjavljamo, da je izdelek Hydro Solo S, na katerega se spodnja izjava nanaša, v skladu s spodnjimi direktivami Sveta o približevanju zakonodaje za izenačevanje pravnih predpisov držav članic EU.

**TR: AB uygunluk bildirgesi**

Grundfos olarak, aşağıdaki bildirim konusuna olan Hydro Solo S ürünlerinin, AB üye ülkelerinin direktiflerini yakınılaştırılması ilgili durumun aşağıdaki Konsey Direktifleriyle uyumlu olduğunu ve bununla ilgili olarak tüm sorumluluğun bize ait olduğunu beyan ederiz.

**BG: Декларация за съответствие на ЕО**

Ние, фирма Grundfos, заявяваме с пълна отговорност, че продуктът Hydro Solo S, за който се отнася настоящата декларация, отговаря на следните директиви на Съвета за уеднаквяване на правните разпоредби на държавите-членки на ЕО.

**DE: EU-Konformitätserklärung**

Wir, Grundfos, erklären in alleiniger Verantwortung, dass das Produkt Hydro Solo S, auf das sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmt.

**EE: EÜvastavusdeklaratsioon**

Meie, Grundfos, kinnitame ja kanname ainiisikulist vastutust selle eest, et toode Hydro Solo S, mille kohta all olev deklaratsioon käib, on kooskõlas Nõukogu Direktiividega, mis on nimetatud all pool vastavalt vastuvõetud õigusaktidele ühtlastamiseks kohta EU liikmesriikides.

**FI: EU-vaatimustenmukaisuusvakuutus**

Grundfos vakuuttaa omalla vastuullaan, että tuote Hydro Solo S, jota tämä vakuutus koskee, on EU:n jäsenvaltioiden lainsäädännön lähentämiseen tähtäävien Euroopan neuvoston direktiivien vaatimusten mukainen seuraavasti.

**GR: Δήλωση συμμόρφωσης ΕΕ**

Εμείς, η Grundfos, δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι το προϊόν Hydro Solo S, στο οποίο αναφέρεται η παρακάτω δήλωση, συμμορφώνεται με τις παρακάτω Οδηγίες του Συμβουλίου περί προσέγγισης των νομοθεσιών των κρατών μελών της ΕΕ.

**HU: EU megfelelőségi nyilatkozat**

Mi, a Grundfos vállalata, teljes felelősséggel kijelentjük, hogy a(z) Hydro Solo S termék, amelyre az alábbi nyilatkozat vonatkozik, megfelel az Európai Unió tagállamainak jogi irányelveit összehangoló társalt alábbi előírásainak.

**LT: ES atitikties deklaracija**

Mes, Grundfos, su visa atsakomybe pareiškiame, kad produktas Hydro Solo S, kuriam skirta ši deklaracija, atitinka žemiau nurodytas Tarybos Direktyvas dėl ES šalių narių įstatymų suderinimo.

**NL: EU-conformiteitsverklaring**

Wij, Grundfos, verklaren geheel onder eigen verantwoordelijkheid dat product Hydro Solo S, waarop de onderstaande verklaring betrekking heeft, in overeenstemming is met de onderstaande Richtlijnen van de Raad inzake de onderlinge aanpassing van de wetgeving van de EU-lidstaten.

**PT: Declaração de conformidade UE**

A Grundfos declara sob sua única responsabilidade que o produto Hydro Solo S, ao qual diz respeito a declaração abaixo, está em conformidade com as Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da UE.

**RS: Deklaracija o uskladenosti EU**

Mi, kompanija Grundfos, izjavljujemo pod punom vlastitom odgovornošću da je proizvod Hydro Solo S, na koji se odnosi deklaracija ispod, u skladu sa dole prikazanim direktivama Saveta za usklađivanje zakona država članica EU.

**SE: EU-försäkran om överensstämmelse**

Vi, Grundfos, försäkrar under ansvar att produkten Hydro Solo S, som omfattas av nedanstående försäkran, är i överensstämmelse med de råddirektiv om inbördes närmande till EU-medlemsstaternas lagstiftning som listas nedan.

**SK: ES vyhlásenie o zhode**

My, spoločnosť Grundfos, vyhlasujeme na svoju plnú zodpovednosť, že produkt Hydro Solo S, na ktorý sa vyhlásenie uvedené nižšie vzťahuje, je v súlade s ustanoveniami nižšie uvedených smerníc Rady pre zblíženie právnych predpisov členských štátov EU.

**UA: Декларация відповідності директивам ЕУ**

Ми, компанія Grundfos, під нашу односторонню відповідальність заявляємо, що виріб Hydro Solo S, до якого відноситься нижченаведена декларація, відповідає директивам ЕУ, переліченим нижче, щодо тотожності законів країн-членів ЄС.



**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 Hydro Solo S，即该合格证所指之产品，欧盟使其成员国法律趋于一致的以下理事会指令。

**KO: EU**

Grundfos Hydro Solo S EU

**JP: EU 適合宣言**

Grundfos は、その責任の下に、Hydro Solo S 製品が EU 加盟諸国の法規に關連する、以下の評議令指令に適合していることを宣言します。

**BS: Izjava o usklađenosti EU**

Mi, kompanija Grundfos, izjavljujemo pod vlastitom odgovornošću da je proizvod Hydro Solo S, na koji se odnosi Izjava ispod, u skladu sa niže prikazanim direktivama Vijeća o usklađivanju zakona država članica EU.

**ID: Deklarasi kesesuaian Uni Eropa**

Kami, Grundfos, menyatakan dengan tanggung jawab kami sendiri bahwa produk Hydro Solo S, yang berkaitan dengan pernyataan ini, sesuai dengan Petunjuk Dewan yang serbagain mungkin sesuai dengan hukum negara-negara anggota Uni Eropa.

**KZ: Сәйкестік жөніндегі ЕО декларациясы**

Біз, Grundfos, ЕО мүше елдерінің заңдарына жақын төменде көрсетілген Кеңес директиваларына сәйкес төмендегі декларацияға қатысты Hydro Solo S өнімі біздің жеке жауапкершілігімізде екенін мәлімдейміз.

**MK: Декларација за сообразност на ЕУ**

Ние, Grundfos, изјавуваме под целосна одговорност дека производот Hydro Solo S, на кого се однесува долунаведената декларација, е во согласност со овие директиви на Советот за приближување на законите на земјите-членки на ЕУ.

**MY: Perisytiharan keakuran EU**

Kami, Grundfos, mengisytiharkan di bawah tanggungjawab kami semata-mata bahawa produk Hydro Solo S, yang berkaitan dengan perisytiharan di bawah, akur dengan Perintah Majlis yang disenaraikan di bawah ini tentang penghampiran undang-undang negara ahli EU.

**NO: EUs samsvarsærklæring**

Vi, Grundfos, erklærer under vårt eneansvar at produktet Hydro Solo S, som denne erklæringen gjelder, er i samsvar med Det europeiske råds direktiver om tilnærming av forordninger i EU-landene.

**AR: إقرار مطابقة EU**

نقرر نحن، جرونڤوس، بمقتضى مسؤوليتنا الفردية بأن المنتج Hydro Solo S، الذي يخص به الإقرار أدناه، يكون مطابقاً لتوجيهات المجلس المذكورة أدناه بشأن التقريب بين قوانين الدول أعضاء المجموعة الأوروبية/الاتحاد الأوروبي (EU).

**TH: คำประกาศความสอดคล้องตามมาตรฐาน EU**

เราในนามของบริษัท Grundfos ขอประกาศภายใต้ความรับผิดชอบของเราแต่เพียงผู้เดียวว่าผลิตภัณฑ์ Hydro Solo S ซึ่งเกี่ยวข้องกับคำประกาศนี้มีความสอดคล้องกับระเบียบคำสั่งตามรายการด้านล่างนี้ของสภาราชชีพว่าด้วยค่าประมาณตามกฎหมายของรัฐที่เป็นสมาชิก EU

**TW: EU 合格聲明**

葛蘭富根據我們唯一的責任，茲聲明與以下聲明相關之 Hydro Solo S 產品，符合下列近似 EU 會員國法律之議會指令。

**VI: TUYÊN BỐ TUÂN THỦ EU**

Chúng tôi, Grundfos, tuyên bố trong phạm vi trách nhiệm duy nhất của mình rằng sản phẩm Hydro Solo S mà tuyên bố dưới đây có liên quan tuân thủ các Chỉ thị Hội đồng sau về việc áp dụng luật pháp của các nước thành viên EU.

**AL: Deklara e konformitetit të BE**

Ne, Grundfos, deklarojmë vetëm nën përgjegjësinë tonë se produkti Hydro Solo S, me të cilin ka lidhje kjo deklaratë, është në pajtim me direktivat e Këshillit të renditura më poshtë për përiferimin e ligjeve të shteteve anëtare të BE-së.

- Machinery Directive (2006/42/EC).  
Standards used: EN809: 1998 + A1: 2009
- Low Voltage Directive (2014/35/EU).  
Standards used: EN60335-1: 2012 + A11:2014, EN60335-2-41: 2003 + A1: 2004 + A2: 2010.
- Pressure Equipment Directive (97/23/EC).  
Standards used: EN13831: 2007

This EU declaration of conformity is only valid when published as part of the Grundfos safety instructions (publication number 003C0370 0516).

Bjerringbro, 06/01/2016



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