
UPS, UPSD Series 200

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



(GB) Declaration of Conformity

We **Grundfos** declare under our sole responsibility that the products **UPS** and **UPSD**, to which this declaration relates, are in conformity with the Council Directives on the approximation of the laws of the EC Member States relating to

- Machinery (98/37/EC).
- Electrical equipment designed for use within certain voltage limits (2006/95/EC).
Standards used: EN 60335-1: 2002 and EN 60335-2-51: 2003.
- Electromagnetic compatibility (2004/108/EC).

(F) Déclaration de Conformité

Nous **Grundfos** déclarons sous notre seule responsabilité que les produits **UPS** et **UPSD** auxquels se réfère cette déclaration sont conformes aux Directives du Conseil concernant le rapprochement des législations des Etats membres CE relatives à

- Machines (98/37/CE).
- Matériel électrique destiné à employer dans certaines limites de tension (2006/95/CE).
Standards utilisés: EN 60335-1: 2002 et EN 60335-2-51: 2003.
- Compatibilité électromagnétique (2004/108/CE).

(E) Declaración de Conformidad

Nosotros **Grundfos** declaramos bajo nuestra única responsabilidad que los productos **UPS** y **UPSD** a los cuales se refiere esta declaración son conformes con las Directivas del Consejo relativas a la aproximación de las legislaciones de los Estados Miembros de la CE sobre

- Máquinas (98/37/CE).
- Material eléctrico destinado a utilizarse con determinadas límites de tensión (2006/95/CE).
Normas aplicadas: EN 60335-1: 2002 y EN 60335-2-51: 2003.
- Compatibilidad electromagnética (2004/108/CE).

(GR) Δήλωση Συμμόρφωσης

Εμείς η **Grundfos** δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα **UPS** και **UPSD** συμμορφώνονται με την Οδηγία του Συμβουλίου επί της σύγκλισης των νόμων των Κρατών Μελών της Ευρωπαϊκής Ένωσης σε σχέση με τα

- Μηχανήματα (98/37/EC).
- Ηλεκτρικές συσκευές σχεδιασμένες για χρήση εντός ορισμένου ορίων ηλεκτρικής τάσης (2006/95/EC).
Πρότυπα που χρησιμοποιήθηκαν: EN 60335-1: 2002 και EN 60335-2-51: 2003.
- Ηλεκτρομαγνητική συμβατότητα (2004/108/EC).

(S) Försäkran om överensstämmelse

Vi **Grundfos** försäkrar under ansvar, att produkterna **UPS** och **UPSD**, som omfattas av denna försäkran, är i överensstämmelse med Rådets direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende

- Maskinell utrustning (98/37/EC).
- Elektrisk material avsedd för användning inom vissa spänningsgränser (2006/95/EC).
Använda standarder: EN 60335-1: 2002 och EN 60335-2-51: 2003.
- Elektromagnetisk kompatibilitet (2004/108/EC).

(DK) Overensstemmelseserklæring

Vi **Grundfos** erklærer under ansvar, at produkterne **UPS** og **UPSD**, som denne erklæring omhandler, er i overensstemmelse med Rådets direktiver om indbyrdes tilnærmede til EF medlemsstaternes lovgivning om

- Maskiner (98/37/EF).
- Elektrisk materiel bestemt til anvendelse inden for visse spændingsgrænser (2006/95/EF).
Anvendte standarder: EN 60335-1: 2002 og EN 60335-2-51: 2003.
- Elektromagnetisk kompatibilitet (2004/108/EF).

(D) Konformitätserklärung

Wir **Grundfos** erklären in alleiniger Verantwortung, dass die Produkte **UPS** und **UPSD**, auf die sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EG-Mitgliedstaaten übereinstimmen

- Maschinen (98/37/EG).
- Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen (2006/95/EG).
Normen, die verwendet wurden: EN 60335-1: 2002 und EN 60335-2-51: 2003.
- Elektromagnetische Verträglichkeit (2004/108/EG).

(I) Dichiarazione di Conformità

Noi **Grundfos** dichiariamo sotto la nostra esclusiva responsabilità che i prodotti **UPS** e **UPSD** ai quali questa dichiarazione se riferisce sono conformi alle Direttive del Consiglio concernente il ravvicinamento delle legislazioni degli Stati membri CE relative a

- Macchine (98/37/CE).
- Materiale elettrico destinato ad essere utilizzato entro certi limiti di tensione (2006/95/CE).
Standard usati: EN 60335-1: 2002 e EN 60335-2-51: 2003.
- Compatibilità elettromagnetica (2004/108/CE).

(P) Declaração de Conformidade

Nós **Grundfos** declaramos sob nossa única responsabilidade que os produtos **UPS** e **UPSD** aos quais se refere esta declaração estão em conformidade com as Directivas do Conselho das Comunidades Europeias relativas à aproximação das legislações dos Estados Membros respeitantes à

- Máquinas (98/37/CE).
- Material eléctrico destinado a ser utilizado dentro de certos limites de tensão (2006/95/CE).
Normas utilizadas: EN 60335-1: 2002 e EN 60335-2-51: 2003.
- Compatibilidade electromagnética (2004/108/CE).

(NL) Overeenkomstigheidsverklaring

Wij **Grundfos** verklaren geheel onder eigen verantwoordelijkheid dat de producten **UPS** en **UPSD** waarop deze verklaring betrekking heeft in overeenstemming zijn met de Richtlijnen van de Raad inzake de onderlinge aanpassing van de wetgevingen van de Lid-Staten betreffende

- Machines (98/37/EG).
- Elektrisch materiaal bestemd voor gebruik binnen bepaalde spanningsgrenzen (2006/95/EG).
Normen: EN 60335-1: 2002 en EN 60335-2-51: 2003.
- Elektromagnetische compatibiliteit (2004/108/EG).

(FIN) Vastaavuusvakuutus

Me **Grundfos** vakuutamme yksin vastuullisesti, että tuotteet **UPS** ja **UPSD**, jota tämä vakuutus koskee, noudattavat direktiivejä jotka käsittelevät EY:n jäsenvaltioiden koneellisia laitteita koskevien lakien yhdenmukaisuutta seur:

- Koneet (98/37/EY).
- Määrättyjen jänniterajoitusten puitteissa käytettävät sähköiset laitteet (2006/95/EY).
Käytetyt standardit: EN 60335-1: 2002 ja EN 60335-2-51: 2003.
- Elektromagneettinen vastaavuus (2004/108/EY).

(PL) Deklaracja zgodności

My, **Grundfos**, oświadczamy z pełną odpowiedzialnością, że nasze wyroby **UPS** oraz **UPSD**, których deklaracja niniejsza dotyczy, są zgodne z następującymi wytycznymi Rady d/s ujednoczenia przepisów prawnych krajów członkowskich EG:

- maszyny (98/37/EG).
- wyposażenie elektryczne do stosowania w określonym zakresie napięć (2006/95/EG).
- zastosowane normy: EN 60335-1: 2002 i EN 60335-2-51: 2003.
- zgodność elektromagnetyczna (2004/108/EG).

(RU) Свидетельство о соответствии требованиям

Мы, фирма **Grundfos**, со всей ответственностью заявляем, что изделия **UPS** и **UPSD**, к которым и относится данное свидетельство, отвечают требованиям следующих указаний Совета ЕС об унификации законодательных предписаний стран-членов ЕС:

- Машиностроение (98/37/EC).
- Электрические машины для эксплуатации в пределах определенного диапазона значений напряжения (2006/95/EC).
Применявшиеся стандарты: Евростандарт EN 60335-1: 2002 и EN 60335-2-51: 2003.
- Электромагнитная совместимость (2004/108/EC).

(SI) Izjava o ustreznosti

Ми, **Grundfos**, pod polno odgovornostjo izjavljamo, da so izdelki **UPS** in **UPSD**, na katere se ta izjava nanaša, v skladu z naslednjimi smernicami Sveta za uskladitev pravnih predpisov držav članic Evropske skupnosti:

- Stroji (98/37/EG).
- Električna pogonska sredstva za uporabo v določenih napetostnih mejah (2006/95/EG).
Uporabljeni normi: EN 60335-1: 2002 in EN 60335-2-51: 2003.
- Elektromagnetna kompatibilnost (2004/108/EG).

(SER) Izjava o konformitetu

Ми, **Grundfos**, izjavljajemo pod potpunom odgovornošću da su proizvodi **UPS** i **UPSD** na koje se ova izjava u saglasnosti sa smernicama i uputstvima Saveta za usaglašavanje pravnih propisa članica Evropske unije:

- mašine (98/37/EG).
- električna oprema razvijena za korišćenje unutar određenih naponskih granica (2006/95/EG),
korišćeni standardi: EN 60335-1: 2002 i EN 60335-2-51: 2003.
- elektromagnetna usaglašenost (2004/108/EG).

(BG) Декларация за съответствие

Ние, фирма **Grundfos** заявяваме с пълна отговорност, че продуктите **UPS** и **UPSD**, за които се отнася настоящата декларация, отговарят на следните указания на Съвета за уеднаквяване на правните разпоредби на държавите членки на ЕО:

- Машини (98/37/ЕГ).
- Електрически машини и съоръжения за употреба в рамките на определени граници на напрежение на електрическия ток (2006/95/ЕГ).
- Приложени норми: EN 60335-1: 2002 и EN 60335-2-51: 2003.
- Електромагнитна поносимост (2004/108/ЕО).

(SK) Prehlásenie o konformite

My firma **Grundfos**, na svoju plnú zodpovednosť prehlasujeme, že výrobky **UPS**, **UPSD**, na ktoré sa toto prehlásenie vzťahuje, sú v súlade s nasledovnými smernicami Rady pre zblíženie právnych predpisov členských zemí Európskej únie:

- Stroje (98/37/EG).
- Elektrické prevádzkové prostriedky, použité v určitom napätovom rozsahu (2006/95/EG),
Použité normy: EN 60335-1: 2002 a EN 60335-2-51: 2003.
- Elektromagnetická kompatibilita (2004/108/EG).

(EE) Vastavuse deklaratsioon

Meie **Grundfos** deklareerime enda ainuvastutusel, et toode **UPS** ja **UPSD**, mille kohta käesolev juhend käib, on vastavuses EL nõukogu Direktiividega EMÜ liikmesriikide seaduste ühitamise kohta, mis käsitlevad:

- Masinad (98/37/EC).
- Madalapinge-elektriseadmed (2006/95/EC).
- Kasutatud standardid: EN 60335-1: 2002 ja EN 60335-2-51: 2003.
- Elektrimagneetlist ühilduvust (2004/108/EC).

(H) Konformitási nyilatkozat

Mi, a **Grundfos**, egyedüli felelősséggel kijelentjük, hogy az **UPS** és **UPSD** termékek, amelyekre jelen nyilatkozat vonatkozik, megfelelnek az Európai Unió tagállamainak jogi irányelveit összehangoló tanács alábbi irányelveinek:

- Gépek (98/37/EK).
- Meghatározott feszültség határokron belül használt elektromos eszközök (2006/95/EK).
Alkalmazott szabványok: EN 60335-1: 2002 és EN 60335-2-51: 2003.
- Elektromágneses összeférhetőség (2004/108/EK).

(HR) Izjava o usklađenosti

Ми, **Grundfos**, izjavljujemo uz punu odgovornost, da su proizvodi **UPS** i **UPSD**, na koje se ova izjava odnosi, sukladni smjernicama Savjeta za prilagodbu propisa država-članica EZ:

- Strojevi (98/37/EZ).
- Električni pogonski uređaji za korištenje unutar određenih granica napona (2006/95/EZ).
Korištene norme: EN 60335-1: 2002 i EN 60335-2-51: 2003.
- Elektromagnetska kompatibilnost (2004/108/EZ).

(RO) Declarație de conformitate

Noi, **Grundfos**, declarăm asumându-ne întreaga responsabilitate că produsele **UPS**, **UPSD** la care se referă această declarație sunt în conformitate cu Directivele Consiliului în ceea ce privește alinierea legislațiilor Statelor Membre ale CE, referitoare la:

- Utilaje (98/37/CE).
- Echipamente electrice destinate utilizării între limite exacte de tensiune (2006/95/CE).
Standarde aplicate: EN 60335-1: 2002 și EN 60335-2-51: 2003.
- Compatibilitate electromagnetică (2004/108/CE).

(CZ) Prohlášení o shodě

My firma **Grundfos** prohlašujeme na svou plnou odpovědnost, že výrobky **UPS** a **UPSD** na něž se toto prohlášení vztahuje, jsou v souladu s ustanoveními směrnice Rady pro sblížení právních předpisů členských států Evropského společenství v oblastech:

- strojírenství (98/37/EG).
- provozování spotřebičů v toleranci napětí (2006/95/EG),
použité normy: EN 60335-1: 2002 a EN 60335-2-51: 2003.
- elektromagnetická kompatibilita (2004/108/EG).

(TR) Uygunluk Bildirgesi

Biz **Grundfos** olarak, bu beyanda belirtilen **UPS** ve **UPSD** ürünlerinin,

- Makina (98/37/EC).
- Belli voltaj sınırlarında kullanılmak üzere üretilmiş elektrik donanımı (2006/95/EC).
Kullanılan standartlar: EN 60335-1: 2002 ve EN 60335-2-51: 2003.
- Elektromanyetik uyumluluk (2004/108/EC).

ile ilgili olarak Avrupa topluluğu'na Üye Devletlerin yasalarında yer alan Belediye Yönetimliklerine uygun olduğunu, tüm sorumluluğu bize ait olmak üzere beyan ederiz.

(LT) Atitikties deklaracija

Mes, **Grundfos**, su visa atsakomybe pareiškiame, kad gaminiai **UPS** ir **UPSD**, kuriems skirta ši deklaracija, atitinka Tarybos Direktivas dėl Europos Ekonominės Bendrijos šalių narių įstatymų suderinimo šiose srityse:

- Mašinos (98/37/EC).
- Elektriniai prietaisai, skirti naudoti tam tikrose įtampų ribose (2006/95/EC).
Naudojami standartai: EN 60335-1: 2002 ir EN 60335-2-51: 2003.
- Elektromagnetiską sąviejimą (2004/108/EC).

LV Paziņojums par atbilstību prasībām

Sabiedrība **Grundfos** ar pilnu atbildību dara zināmu, ka izstrādājumi **UPS** un **UPSD**, uz kuriem attiecas šis paziņojums, atbilst šādām Padomes direktīvām par tuvināšanos EK dalībvalstu likumdošanas normām:

- Mašīnbūve (98/37/EK).
- Elektriskais aprīkojums, kas paredzēts lietošanai zināmu sprieguma robežvērtību ietvaros (2006/95/EK).
Piemērotie standarti: EN 60335-1: 2002 un EN 60335-2-51: 2003.
- Elektromagnētiskā savienojamība (2004/108/EK).

Bjerringbro, 1st June 2006



Svend Aage Kaas
Technical Director

UPS, UPSD Series 200

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

1. General

UPS/UPSD multi-speed circulator pumps are capable of operating at three different speeds.

The pumps are available as single-head or twin-head pumps. All pumps incorporate a thermal overload switch in the stator.

The pumps are available as

- cast-iron pumps with black nameplate and
- bronze pumps with bronze nameplate and a B in the type designation.

Terminal box modules

Single-head pumps are fitted with a standard module in the terminal box.

Twin-head pumps are fitted with a standard module or a relay module in the terminal box.

The relay module can be supplied as an optional extra for single-head pumps.

2. Applications

The pumps are designed to circulate liquids in heating and air-conditioning systems. The pumps can also be used in domestic hot-water systems.

2.1 Pumped liquids

Thin, clean, non-aggressive and non-explosive liquids, not containing solid particles, fibres or mineral oil.

If the pump is installed in a **heating system**, the water should meet the requirements of accepted standards on water quality in heating systems, e.g. the German standard VDI 2035.

In **domestic hot-water systems**, it is advisable to use UPS and UPSD pumps only for water with a degree of hardness lower than approx. 14 g dH. For water with a higher degree of hardness a direct-coupled TP pump is recommended.

Liquid temperature, see section 8. *Technical data*.



The pump must not be used for the transfer of inflammable liquids such as diesel oil, petrol or similar liquids.

3. Function

3.1 Single-head and twin-head pumps with standard module

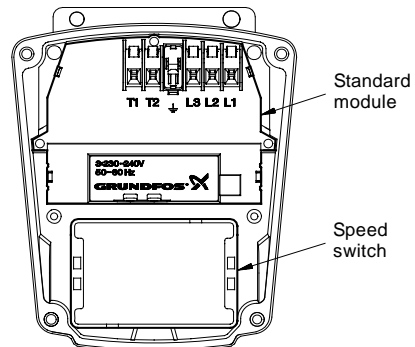


Fig. 1

The function of the indicator lights on the pump is as shown in the following tables.

Single-phase pumps

Single-phase pumps incorporate a green indicator light only:

Indicator light	Description
On	The electricity supply has been switched on.
Off	The electricity supply has been switched off or the pump has been cut out by the thermal overload switch.

TM00 9237 0602

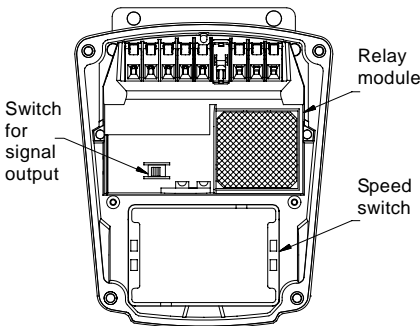
Three-phase pumps

Three-phase pumps incorporate a green and a red indicator light:

Indicator lights		Description
Green	Red	
Off	Off	The electricity supply has been switched off or the pump has been cut out by the thermal overload switch.
On	Off	The electricity supply has been switched on.
On	On	The electricity supply has been switched on. The direction of rotation is wrong.

3.2 Twin-head pumps with relay module

The two terminal boxes are connected via a four-core cable.



TM02 6328 0203

Fig. 2

The relay module has a signal output for the connection of a transmitter for external operating or fault indication or for the control of the alternating operation of pump 1 and 2.

By means of a selector switch the signal output can be set to activation during:



Operation: The output is activated when the pump is operating.



Fault: The output is activated in case of fault.



Alternating operation: Use this setting when the pumps are to operate alternately as duty and standby pump.

All pumps with relay module incorporate a green and a red indicator light. The function of the two indicator lights and the signal output is shown in the following table.

Indicator lights		Signal output activated during		Description
Green	Red	Operation	Fault	
Off	Off			The pump has been stopped. The electricity supply has been switched off or phase missing.
On	Off			The pump is operating.
On	On			Three-phase pumps only: The pump is operating, but the direction of rotation is wrong.
Off	On			The pump has been cut out by the thermal overload switch.
Flashes	Off			The pump has been stopped by an external on/off switch.
Flashes	On			The pump is or has been cut out by the thermal overload switch and the external on/off switch is switched off.

Three operating modes are possible:

- Alternating operation** (factory setting). The pumps operate alternately as duty and standby pump.
- Standby operation.** One pump operates constantly as duty pump and the other constantly as standby pump.
- Single-pump operation.** The pumps operate independently of each other.
Note: If the pumps are to run simultaneously, they must be set to the same speed. Otherwise the non-return flap will close off the pump running at the lowest speed.

4. Installation

GB



The pump must be positioned so that persons cannot accidentally come into contact with hot surfaces of the pump.

When installing pumps, types UPS(D) 32-xx, 40-xx, 50-xx and 65-xx, with oval bolt holes in the pump flange, washers must be used as shown in fig. 3.

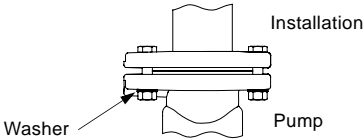


Fig. 3

The pump must be installed with the motor shaft horizontal, see fig. 4.

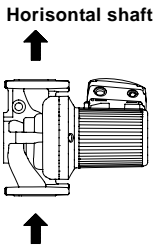


Fig. 4

Arrows on the pump housing indicate the liquid flow direction through the pump.

Note: Twin-head pumps mounted in horizontal pipes must be fitted with an automatic air vent in the upper part of the pump housing, see fig. 6. The automatic air vent is not supplied with the pump.

Note: The technical data in section 8. must be observed.

4.1 Terminal box positions

At the bottom close to the pump housing, the stator housing has two drain holes to enable condensed water to escape. The drain holes must point downwards.

Possible terminal box positions for single-head pumps are shown in fig. 5. The positions apply to mounting in both vertical and horizontal pipes.

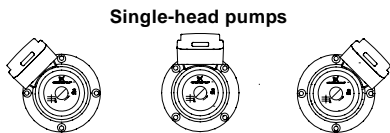


Fig. 5

Possible terminal box positions for twin-head pumps are shown in fig. 6.

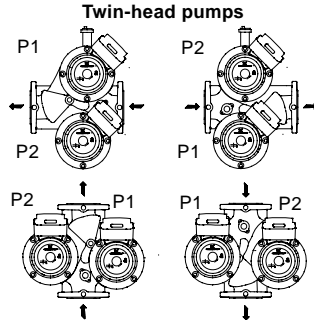


Fig. 6

Note: The terminal box must only be turned to the above positions.

For standard terminal box positions, see fig. 7.

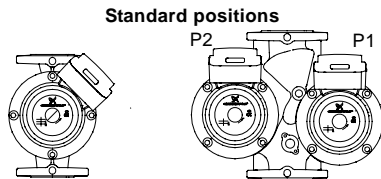


Fig. 7



Before the screws are removed, the system must be drained or the isolating valves on either side of the pump must be closed as the pumped liquid may be scalding hot and under high pressure.

Change the terminal box position as follows:

1. Remove the four screws holding the pump head.
2. Turn the pump head to the required position.
3. Replace the four screws and tighten securely.

When changing the terminal box position of twin-head pumps, it may be necessary to remove the cable connecting the two terminal boxes. It is advisable to disconnect the cable from pump 1.



Never make any connections in the pump terminal box unless the electricity supply has been switched off.

Do not start the pump until the system has been filled with liquid and vented. Furthermore, the required minimum inlet pressure must be available at the pump inlet, see page 260.

Note: When the terminal box position has been changed, the pump nameplate **must** be turned so that the cutout points downwards. This allows water from a possible venting to escape.

To change the nameplate position, ease the outer edge of the nameplate at the cutout with a screwdriver, turn the nameplate to the new position and push it into place.

TM01 0683 1997

TM02 1404 1101

TM02 1398 2701

TM02 1399 2701

TM02 1400 2701

4.2 Frost protection

If the pump is not being used during periods of frost, the necessary steps must be taken to prevent frost bursts.

5. Electrical connection

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



Never make any connections in the pump terminal box unless the electricity supply has been switched off.

The pump must be earthed.

The pump must be connected to an external mains switch with a minimum contact gap of 3 mm in all poles.

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

The thermal overload must be adjusted to the pump full-load current (stated on the pump nameplate) according to the speed selected, see fig. I at the end of these instructions.

Earthing or neutralization can be used for protection against indirect contact. A current- or voltage-operated earth-leakage circuit breaker can be used as extra protection.

5.1 Single-head and twin-head pumps with standard module

The pump must be connected to the electricity supply via an external contactor.

The contactor must be connected to the thermal switch incorporated in the pump, terminals T1 and T2, to protect the pump against overloading at all three speeds.

Note: If the pump is also protected by means of a motor starter, this starter must be set to the current consumption of the pump at the selected speed. The motor starter setting must be changed every time the pump speed is changed. The current consumption at the individual speeds is stated on the pump nameplate.

Figures A and B at the end of these instructions show the possible connections:

- **Fig. A** shows the electrical connections when using external **impulse contacts** for start/stop.
- **Fig. B** shows the electrical connections when using an external **changeover contact** for start/stop.

5.2 Twin-head pumps with relay module

The pump is connected directly to the mains as it incorporates overload protection at all three speeds.

The pumps are factory-set to alternating operation as duty and standby pump. Pump change takes place every 24 hours.

Figures C to E at the end of these instructions show the possible connections and the setting of the selector switch for the various operating modes.

- **Fig. C: Alternating operation.**
- **Fig. D: Standby operation** with pump 1 as duty pump and pump 2 as standby pump.
Note: The selector switch of pump 2 **must** have been set to either fault or operating indication in this operating mode.
- **Fig. E: Standby operation** with pump 2 as duty pump and pump 1 as standby pump.
Note: The selector switch of pump 1 **must** have been set to either fault or operating indication in this operating mode.

In the case of **single-pump operation**, the cable between the pumps is to be removed. The pumps must be set individually and connected separately to the mains as shown in figs. F and G:

- **Fig. F:** Electrical connection and setting of the selector switch when using the signal output for **operating indication**.
- **Fig. G:** Electrical connection and setting of the selector contact when using the signal output for **fault indication**.

Note: In the case of single-pump operation, the selector switch **must** be set to either fault or operating indication.

Fault or operating indication for twin-head pumps in alternating operation

If the signal output is to be used for fault or operating indication, an intermediate relay **must** be used.

Figure H shows a single-phase pump in alternating operation with external fault indication if pump 2 or both pumps are faulty.

Fault or operating indication for twin-head pumps in standby operation

If the signal output of the **duty pump** is to be used for fault or operating indication, an intermediate relay **must** be used.

If the signal output of the **standby pump** is to be used for fault or operating indication, proceed as shown in fig. F or G.

5.3 Frequency converter operation

All three-phase pumps with standard module can be connected to a frequency converter, but please note the following:

- Even if the red indicator light is on, the pump is operating normally.
- Pumps fitted with other modules than the standard module **must not** be connected to a frequency converter.
- Depending on the frequency converter type, this may cause increased acoustic noise from the motor. Furthermore, it may cause the motor to be exposed to detrimental voltage peaks.
- The motors must be protected against voltage peaks higher than 650 V between the motor terminals.

Acoustic noise and detrimental voltage peaks can be reduced by fitting an LC filter between the frequency converter and the motor.

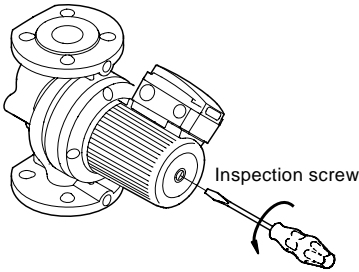
For further information, please contact the frequency converter supplier or Grundfos.

6. Start-up

Do not start the pump until the system has been filled with liquid and vented. Furthermore, the required minimum inlet pressure must be available at the pump inlet, see page 260. The system cannot be vented through the pump.



If the inspection screw is to be slackened, see fig. 8, care should be taken to ensure that the escaping, scalding hot liquid does not cause personal injury or damage to components.



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Fig. 8

7. Speed selection

The speed switch in the terminal box can be turned to three positions. The speed in the three positions appears from the table below:

Switch position	Speed in % of maximum speed	
	Single-phase pumps	Three-phase pumps
1	approx. 60%	approx. 70%
2	approx. 80%	approx. 85%
3	100%	100%

Change to lower speed settings offers considerable reduction in energy consumption and less noise in the system.

Pump performance at speed settings

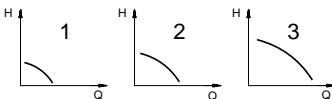


Fig. 9



Never make any connections in the pump terminal box unless the electricity supply has been switched off.

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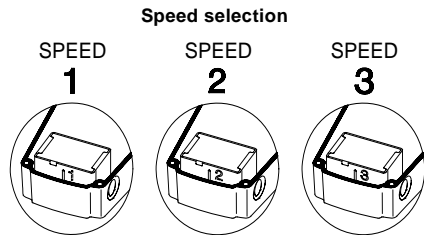
Change the pump performance as follows:

1. Switch off the electricity supply to the pump by means of the external mains switch. The green indicator light in the terminal box must be off.
2. Remove the terminal box cover.
3. Pull out the speed switch module and insert it so that the number of the required speed is visible through the window in the terminal box, see fig. 10.

Note: When changing to/from speed 1, the cover of the speed switch must be removed and fitted on the other side of the switch.

4. Fit the terminal box cover.
5. Switch on the electricity supply. Check that the green indicator light is permanently on or flashing.

Note: The speed switch module must not be used as an on/off switch.



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Fig. 10

8. Technical data

Supply voltage

	Single-phase pumps	Three-phase pumps
Europe except Norway	1 x 230-240 V 50 Hz	3 x 400-415 V 50 Hz
Norway	1 x 230-240 V 50 Hz	3 x 200-230 V 50 Hz
Japan	1 x 100-110 V 50 Hz 1 x 100-110 V 60 Hz	3 x 200-230 V 50 Hz 3 x 200-230 V 60 Hz

Supply voltage tolerances

The motors meet the requirements to temperature rise at $\pm 6\%$.

Furthermore, the motors have been tested at $\pm 10\%$ of the voltage range. During these tests, the motors operate without problems and without being thermally cut out.

The motor voltage tolerances are intended for mains voltage variations. They should not be used for running motors at other voltages than those stated on the nameplates.

Enclosure class

IP 44.

Ambient temperature

0°C to 40°C.

Relative air humidity

Maximum 95%.

Liquid temperature

Water in heating systems:

Continuously: -10°C to +120°C.

Up to +140°C for short periods.

Domestic hot-water: Up to +60°C.

Special version with FKM seals: Up to +80°C.

Insulation of pump

The pump head must not be insulated.

If the liquid temperature is lower than the ambient temperature, the drain holes in the stator housing must not be covered if the pump is insulated.

System pressure

The system pressure is indicated on the pump flanges.

The table shows the maximum permissible system pressure at different temperatures:

Pres- sure	Cast-iron pumps			Bronze pumps
	≤20°C	130°C	140°C	≤40°C
	[bar] / [MPa]			
PN 6	6 / 0.6	5.8 / 0.58	5.6 / 0.56	6 / 0.6
PN 10	10 / 1.0	9.7 / 0.97	9.4 / 0.94	10 / 1.0
PN 6/10	See PN 6 and PN 10			
PN 16	16 / 1.6	15.6 / 1.56	15 / 1.5	16 / 1.6

Marking

Pump type	PN 6	PN 10	PN 6/10	PN 16	Number of bolt holes
UPS(D) 32-xx			●	●	4
UPS(D) 40-xx			●	●	4
UPS(D) 50-xx			●	●	4
UPS(D) 65-xx			●	●	4
UPS(D) 80-xx	●				4
		●		●	8
UPS(D) 100-xx	●				4
		●			8

Test pressure

PN 6: 10 bar ~ 1.0 MPa.

PN 10: 15 bar ~ 1.5 MPa.

PN 6 / PN 10: 15 bar ~ 1.5 MPa.

PN 16: 20.8 bar ~ 2.08 MPa.

The pressure test has been made with water containing anti-corrosive additives at a temperature of +20°C.

Inlet pressure

The minimum pressures required at the pump inlet during operation can be found on page 260.

Sound pressure level

The sound pressure level of the pump is lower than 70 dB(A).

Thermal overload switch

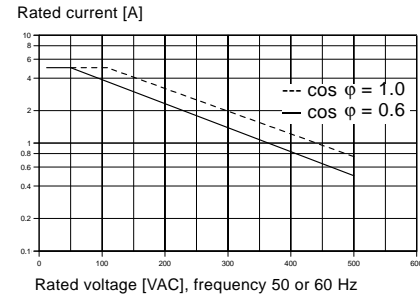
Operating voltage	12.....500 VAC	
Rated voltage	250 VAC	500 VAC
Rated current	cos φ = 1.0	2.5 A
	cos φ = 0.6	1.6 A
Maximum switching current	5.0 A	2.5 A

Curves

For rated currents at other voltages than those listed above, the curves below can be used.

The switching current can be calculated from the formula:

Rated voltage x switching current = constant
(at cos φ = 1.0).



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Start/stop input (basic module/relay module)

External potential-free contact.
Maximum load: 250 V, 1.5 mA.
Minimum load: 100 V, 0.5 mA.

Operating/fault signal output (relay module)

Internal potential-free changeover contact.
Maximum load: 250 V, 2 A, AC.
Minimum load: 5 V, 100 mA, DC.

9. Fault finding chart

This section consists of two subsections, i.e. for pumps with terminal box with standard module and for twin-head pumps with terminal box with relay module.

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Before removing the terminal box cover, make sure that the electricity supply has been switched off and that it cannot be accidentally switched on.

The pumped liquid may be scalding hot and under high pressure. Before any removal or dismantling of the pump, the system must therefore be drained or the isolating valves on either side of the pump must be closed.

9.1 Single-head and twin-head pumps with standard module

Fault	Cause	Remedy
The pump does not run. None of the indicator lights are on.	One fuse in the installation is blown.	Replace the fuse.
	External mains switch switched off.	Switch on the mains switch.
	Current-/voltage-operated earth-leakage circuit breaker has tripped out.	Repair insulation defects and cut in the circuit breaker.
	The pump has been cut out by the thermal overload switch.	Check that the liquid temperature falls within the specified range. With external on/off changeover contact : The pump will restart automatically when it has cooled to normal temperature. With external on/off impulse contacts : The pump can be restarted when it has cooled to normal temperature.
The pump does not run. The green indicator light is on.	Rotor blocked, but the pump has not been cut out by the thermal overload switch.	Switch off the electricity supply and clean/repair the pump.
	The speed switch module has not been fitted.	Switch off the electricity supply by means of the external mains switch and fit the speed switch module.
Only three-phase pumps: The pump is running. The red and green indicator lights are on.	The pump is running with wrong direction of rotation.	Switch off the electricity supply by means of the external mains switch and interchange two phases in the pump terminal box.
Noise in the system. The green indicator light is on.	Air in the system.	Vent the system.
	The pump flow is too high.	Reduce the pump performance (change to lower speed).
	The pressure is too high.	Reduce the pump performance (change to lower speed).
Noise in the pump. The green indicator light is on.	Air in the pump.	Vent the pump.
	The inlet pressure is too low.	Increase the inlet pressure and/or check the air volume in the expansion tank (if installed).
Insufficient heat in some places in the heating system.	The pump performance is too low.	Increase the pump performance (change to higher speed), if possible, or replace the pump with a pump with a higher flow.

9.2 Twin-head pumps with relay module

Fault	Cause	Remedy
The pump does not run. None of the indicator lights are on.	One fuse in the installation is blown.	Replace the fuse.
	External mains switch switched off.	Switch on the mains switch.
	Current-/voltage-operated earth-leakage circuit breaker has tripped out.	Repair insulation defects and cut in the circuit breaker.
The pump does not run. The green indicator light flashes.	Missing phase (only three-phase pumps).	Check fuses and connections.
	The pump has been stopped by the external on/off switch.	Switch on the external on/off switch.
The pump does not run. The green indicator light is on.	Rotor blocked, but the pump has not been cut out by the thermal overload switch.	Switch off the electricity supply and clean/repair the pump.
The pump does not run. The red indicator light is on. The green indicator light is off.	The pump has been cut out by the thermal overload switch due to high liquid temperature or blocked rotor.	Check that the liquid temperature falls within the specified range. The pump will restart automatically when it has cooled to normal temperature. Note: If the thermal overload switch has cut out the pump three times within a short period, the pump must be restarted manually by switching off the electricity supply.
	The speed switch module has not been fitted.	Switch off the electricity supply by means of the external mains switch and fit the speed switch module.
The pump does not run. The green indicator light flashes. The red indicator light is on.	The pump is or has been cut out by the thermal overload switch and the external on/off switch is switched off.	Check that the liquid temperature falls within the specified range. Note: If the thermal overload switch has cut out the pump three times within a short period, the pump must be restarted manually by switching off the electricity supply.
	The pump has been stopped by the external on/off switch. The pump will be running with wrong direction of rotation, if started.	Switch off the electricity supply by means of the external mains switch and interchange two phases in the terminal box.
The pump is running. The red and green indicator lights are on.	The pump is running with wrong direction of rotation (only three-phase pumps).	
Noise in the system. The green indicator light is on.	Air in the system.	Vent the system.
	The pump flow is too high.	Reduce the pump performance (change to lower speed).
Noise in the pump. The green indicator light is on.	The pressure is too high.	Reduce the pump performance (change to lower speed).
	Air in the pump.	Vent the pump.
Insufficient heat in some places in the heating system.	The inlet pressure is too low.	Increase the inlet pressure and/or check the air volume in the expansion tank (if installed).
	The pump performance is too low.	Increase the pump performance (change to higher speed), if possible, or replace the pump with a pump with a higher flow.

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.

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Fig. A

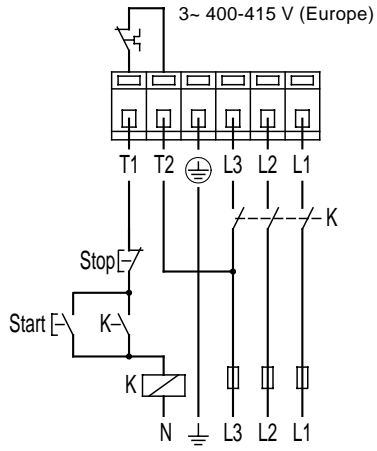
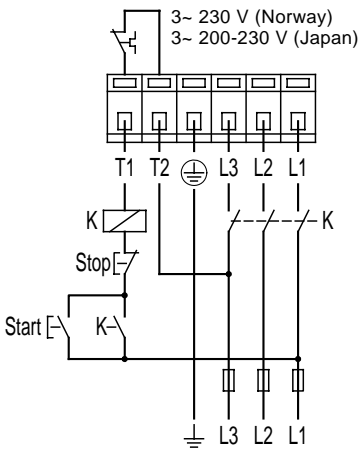
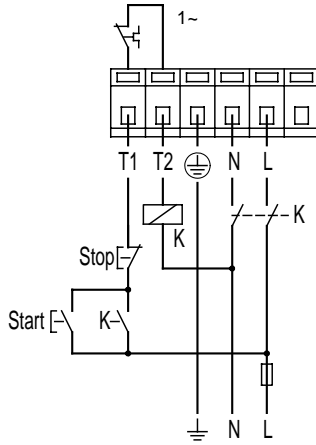
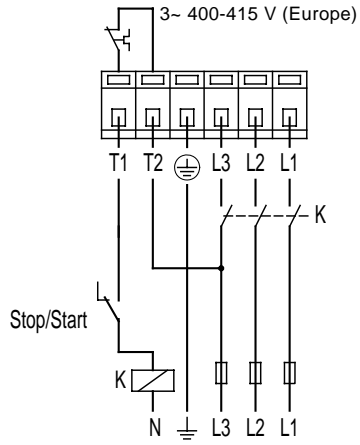
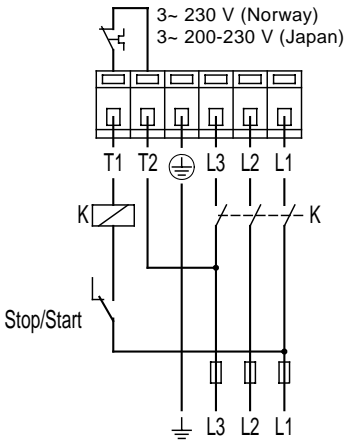
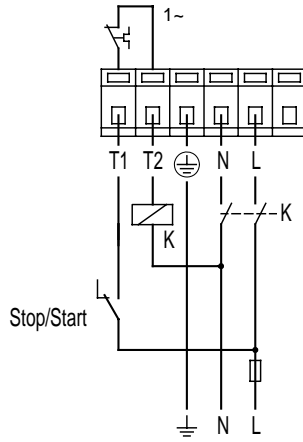


Fig. B



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Fig. C

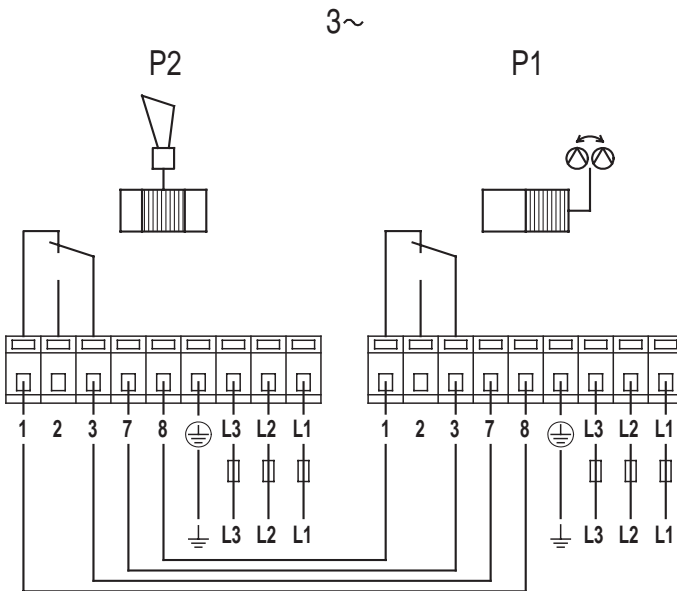
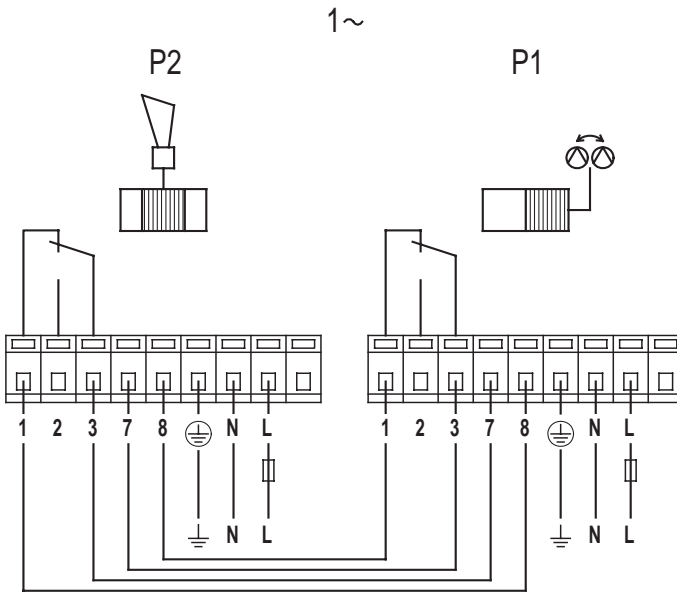


Fig. D

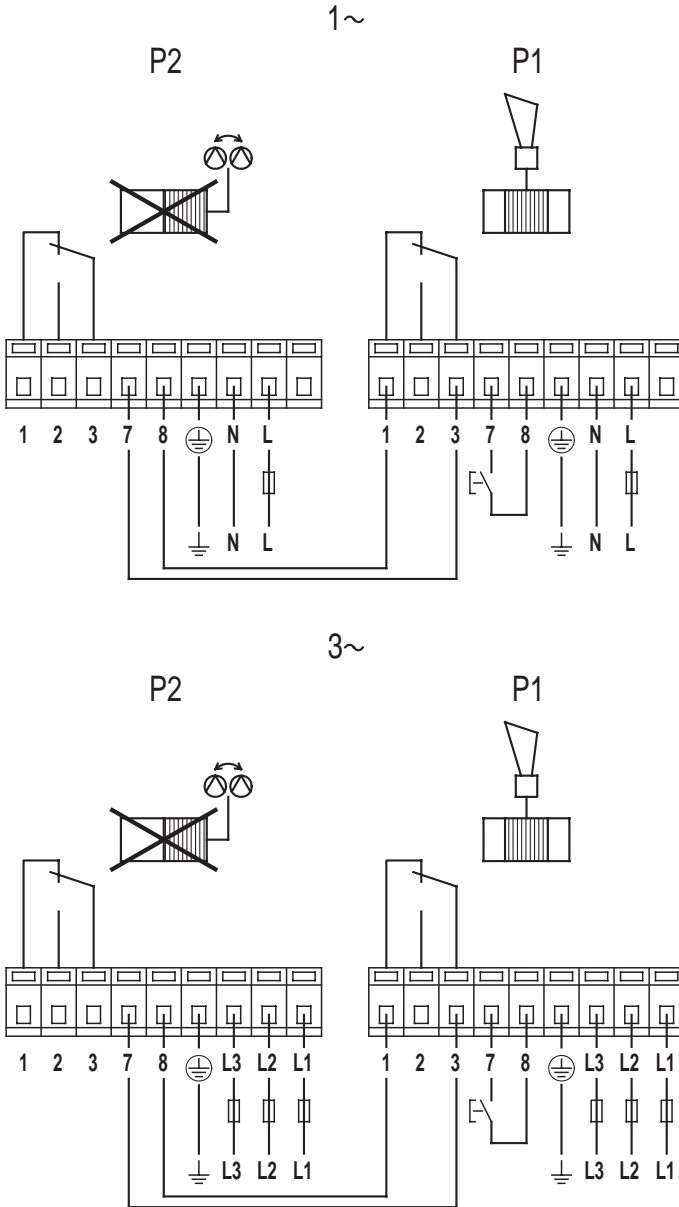


Fig. E

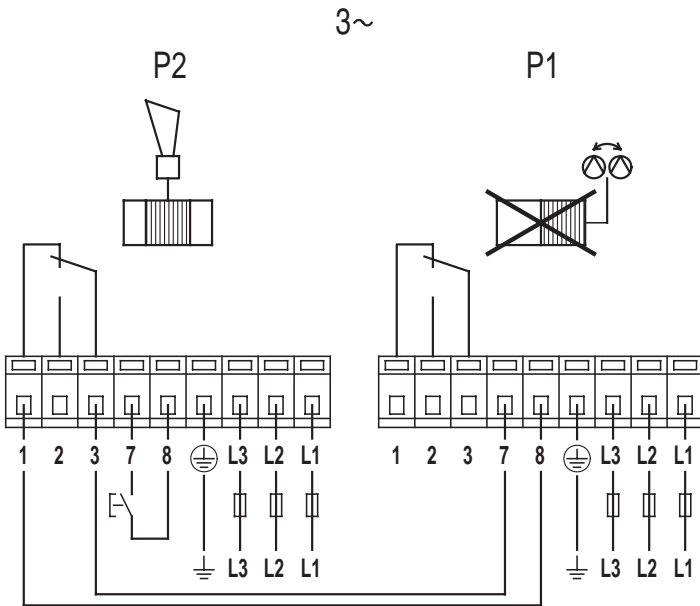
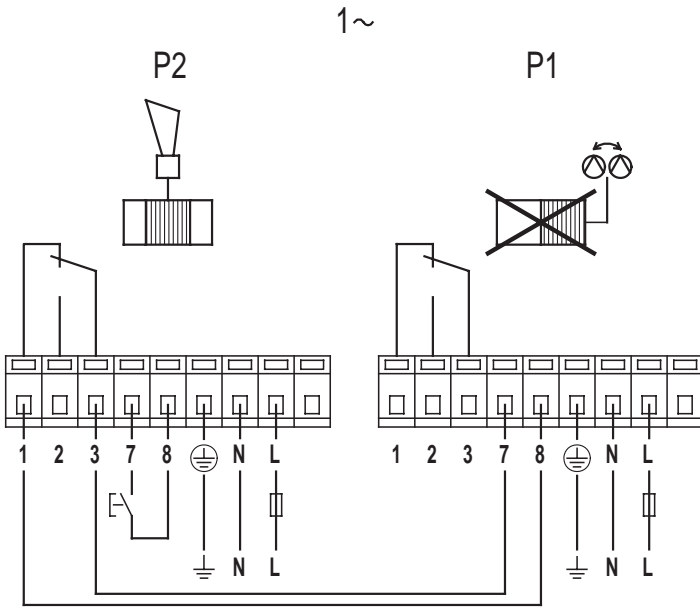


Fig. F

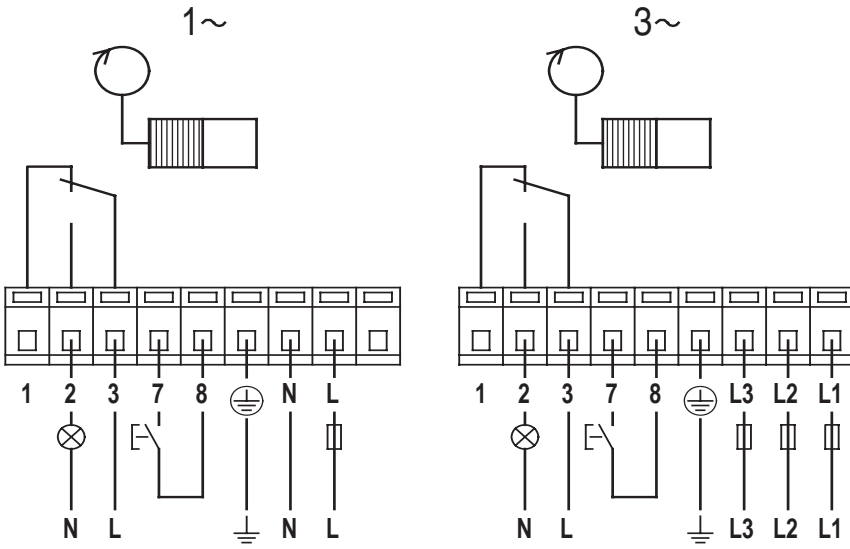
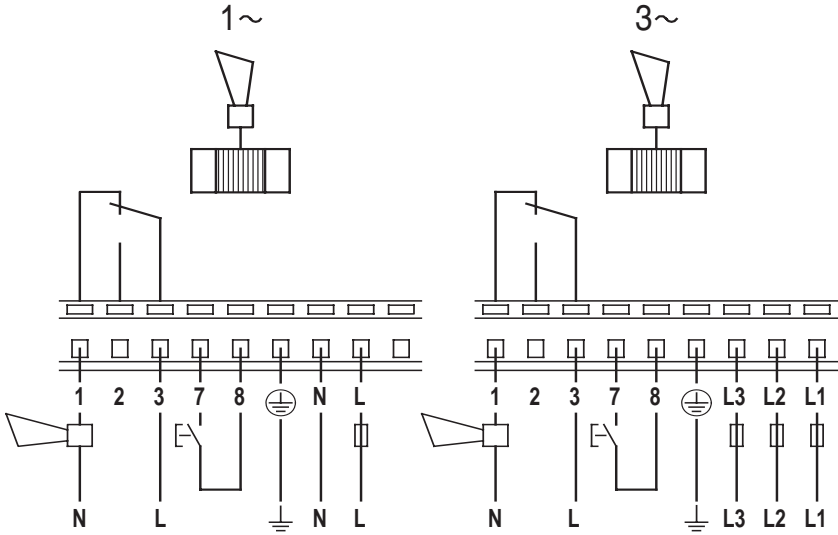


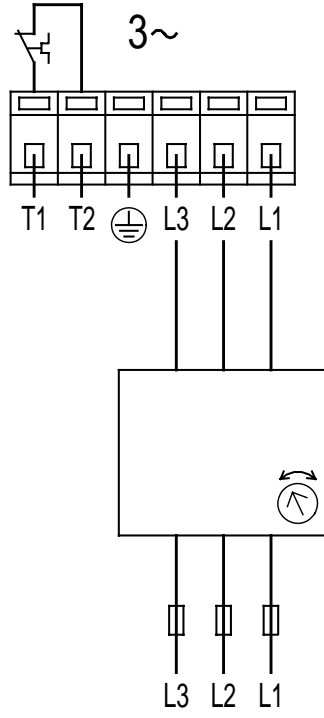
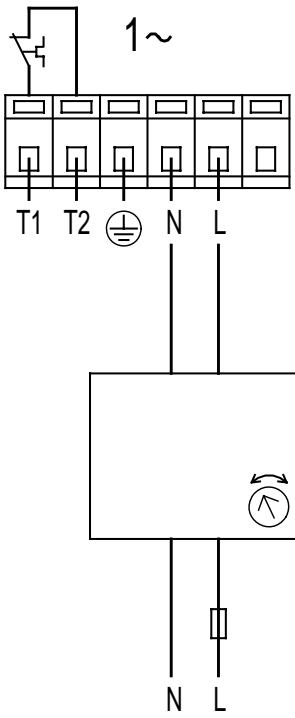
Fig. G



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TM00 9175 2407

Fig. 1



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50 Hz

Pump type	Liquid temperature		
	75°C	90°C	120°C
UPS / UPSD	[bar]	[bar]	[bar]
32-30	0.05	0.05	1.3
32-60	0.05	0.2	1.5
32-120	0.4	0.7	1.95
40-30	0.05	0.15	1.45
40-60/4	0.05	0.05	1.3
40-60/2	0.15	0.45	1.75
40-120	0.1	0.4	1.7
40-180	0.4	0.7	1.95
40-185	0.55	0.9	1.8
50-30	0.05	0.1	1.4
50-60/4	0.05	0.15	1.45
50-60/2	0.05	0.35	1.65
50-120	0.4	0.7	1.95
50-180	0.35	0.65	1.9
50-185	0.85	1.0	2.15
65-30	0.4	0.7	1.95
65-60/4	0.55	0.85	2.1
65-60/2	0.45	0.75	2.0
65-120	0.9	1.2	2.45
65-180	0.7	1.0	2.25
65-185	0.9	1.3	2.35
80-30	1.15	1.45	2.7
80-60	1.2	1.5	2.75
80-120	1.6	1.9	3.15
100-30	1.05	1.35	2.6

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