CM

Installation and operating instructions

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GRUNDFOS

Declaration of conformity

GB: EC declaration of conformity

We, Grundfos, declare under our sole responsibility that the products CM, to which this declaration relates, are in conformity with these Council directives on the approximation of the laws of the EC member states:

- Machinery Directive (2006/42/EC).
  Standard used: EN 809:1998 + A1:2009.
- Low Voltage Directive (2006/95/EC).
  Applicable when the rated power is lower than 2.2 kW.
  Standards used: EN 60335-1:2002 and EN 60335-2-51:2003.
- 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.

This EC declaration of conformity is only valid when published as part of the Grundfos installation and operating instructions (publication number 95121197 1113).

BG: ЕС декларация за съответствие

Ние, фирма Grundfos, заявяваме с пълна отговорност, че продуктите CM, за които се отнася настоящата декларация, отговарят на следните указания на Съвета за уеднаквяване на правните разпоредби на държавите членки на ЕС:

- Директива за машините (2006/42/EC).
  Приложен стандарт: EN 809:1998 + A1:2009.
- Директива за нисковолтови системи (2006/95/EC).
  Приложим за помпи с номинална мощност по-малка от 2,2 kW.
  Приложени стандарти: EN 60335-1:2002 и EN 60335-2-51:2003.
- Директива за екодизайн (2009/125/EC).
  Електродвигатели:
  Наредба No 640/2009 на Европейската комисия.
  Отнася се само за трифазни електродвигатели на Grundfos, маркирани с IE2 или IE3. Вижте табелата с данни на двигателя.
  Приложен стандарт: EN 60034-30:2009.
- Директива за екодизайн (2009/125/EC).
  Водни помпи:
  Наредба No 547/2012 на Европейската комисия.
  Отнася се само за водни помпи, маркирани с минималният индекс за ефективност MEI. Вижте табелата с данни на помпата.

Тази ЕС декларация за съответствие е валидна само когато е публикувана като част от инструкциите за монтаж и експлоатация на Grundfos (номер на публикацията 95121197 1113).

CZ: ES prohlášení o shodě

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

- Směrnice pro strojní zařízení (2006/42/ES).
  Použitá norma: EN 809:1998 + A1:2009.
- Směrnice pro nízkonapěťové aplikace (2006/95/ES).
  Použitelné, pokud je jmenovitý výkon nižší než 2,2 kW.
  Použité normy: EN 60335-1:2002 a EN 60335-2-51:2003.
- Směrnice o ekodesignu (2009/125/ES).
  Elektrické motory:
  Nařízení Komise č. 640/2009.
  Platí pouze pro třífázové motory Grundfos označené IE2 nebo IE3. Viz typový štítek motoru.
  Použitá norma: EN 60034-30:2009.
- Směrnice o ekodesignu (2009/125/ES).
  Vodní čerpadla:
  Nařízení Komise č. 547/2012.
  Vztahuje se pouze na vodní čerpadla označená minimální účinností index MEI. Viz typový štítek čerpadla.

Toto ES prohlášení o shodě je platné pouze tehdy, pokud je zveřejněno jako součást instalačních a provozních návodů Grundfos (publikace číslo 95121197 1113).

DK: EF-overensstemmelseserklæring

Vi, Grundfos, erklærer under ansvar at produkterne CM som denne erklæring omhandler, er i overensstemmelse med disse af Rådets direktiver om indbyrdes tilnærmelse til EF-medlemsstaternes lovgivning:

- Maskindirektivet (2006/42/EF).
  Anvendt standard: EN 809:1998 + A1:2009.
- Lavspændingsdirektivet (2006/95/EF).
  Gælder når mærkeeffekten er lavere end 2,2 kW.
  Anvendte standarder: EN 60335-1:2002 og EN 60335-2-51:2003.
- Ecodesigndirektivet (2009/125/EF).
  Elektriske motorer:
  Kommissionens forordning nr. 640/2009.
  Gælder kun 3-fasede Grundfos-motorer der er mærket IE2 eller IE3. Se motorens typeskilt.
  Anvendt standard: EN 60034-30:2009.
- Ecodesigndirektivet (2009/125/EF).
  Vandpumper:
  Kommissionens forordning nr. 547/2012.
  Gælder kun vandpumper der er mærket med mindsteeffektivitetsindekset MEI. Se pumpens typeskilt.

Denne EF-overensstemmelseserklæring er kun gyldig når den publiceres som en del af Grundfos-monterings- og driftsinstruktionen (publikationsnummer 95121197 1113).

DE: EG-Konformitätserklärung

Wir, Grundfos, erklären in alleiniger Verantwortung, dass die Produkte CM, auf die sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmen:

- Maschinenrichtlinie (2006/42/EG).
  Norm, die verwendet wurde: EN 809:1998 + A1:2009.
- Niederspannungsrichtlinie (2006/95/EG).
  Zutreffend für Nennleistungen kleiner 2,2 kW.
  Normen, die verwendet wurden: EN 60335-1:2002 und EN 60335-2-51:2003.
- ErP-Richtlinie (2009/125/EG).
  Elektromotoren:
  Verordnung der Europäischen Kommission Nr. 640/2009.
  Gilt nur für dreiphasige Motoren von Grundfos mit der Kennzeichnung IE2 bzw. IE3. Siehe Typenschild des Motors.
  Norm, die verwendet wurde: EN 60034-30:2009.
- ErP-Richtlinie (2009/125/EG).
  Wasserpumpen:
  Verordnung der Europäischen Kommission Nr. 547/2012.
  Gilt nur für Pumpen, für die der Mindesteffizienzindex (MEI) anzugeben ist. Siehe Typenschild der Pumpe.

Diese EG-Konformitätserklärung gilt nur, wenn sie in Verbindung mit der Grundfos Montage- und Betriebsanleitung (Veröffentlichungsnummer 95121197 1113) veröffentlicht wird.

EE: EL vastavusdeklaratsioon

Meie, Grundfos, deklareerime enda ainuvastutusel, et tooted CM, mille kohta käesolev juhend käib, on vastavuses EÜ Nõukogu direktiividega EMÜ liikmesriikide seaduste ühitamise kohta, mis käsitlevad:

- Masinate ohutus (2006/42/EC).
  Kasutatud standard: EN 809:1998 + A1:2009.
- Madalpinge direktiiv (2006/95/EC).
  Rakendatav kui võimsus on vähem kui 2,2 kW.
  Kasutatud standardid: EN 60335-1:2002 ja EN 60335-2-51:2003.
- Ökodisaini direktiiv (2009/125/EC).
  Elektrimootorid:
  Komisjoni regulatsioon nr 640/2009.
  Kehtib ainult IE2- või IE3-märgisega Grundfosi kolmefaasiliste mootorite kohta. Vaata mootori sildilt.
  Kasutatud standard: EN 60034-30:2009.
- Ökodisaini direktiiv (2009/125/EC).
  Veepumbad:
  Komisjoni regulatsioon nr 547/2012.
  Kehtiv ainult veepumpadele, mis on märgitud miinimum kasuteguri indeksiga MEI. Vaata pumba silti.

Käesolev EL-i vastavusdeklaratsioon kehtib ainult siis, kui see avaldatakse Grundfosi paigaldus- ja kasutusjuhendi (avaldamisnumber 95121197 1113) osana.

GR: Δήλωση συμμόρφωσης EC

Εμείς, η Grundfos, δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα CM στα οποία αναφέρεται η παρούσα δήλωση, συμμορφώνονται με τις εξής Οδηγίες του Συμβουλίου περί προσέγγισης των νομοθεσιών των κρατών μελών της ΕΕ:

– Οδηγία για μηχανήματα (2006/42/EC).
  Πρότυπο που χρησιμοποιήθηκε: EN 809:1998 + A1:2009.
– Οδηγία χαμηλής τάσης (2006/95/EC).
  Ισχύει όταν η ονομαστική ισχύς είναι κάτω από 2,2 kW.
  Πρότυπα που χρησιμοποιήθηκαν: EN 60335-1:2002 και EN 60335-2-51:2003.
– Οδηγία Οικολογικού Σχεδιασμού (2009/125/EC).
  Ηλεκτρικοί κινητήρες:
  Ρύθμιση πρώτης εκκίνησης No 640/2009.
  Ισχύει μόνο σε τριφασικούς κινητήρες της Grundfos με σήμανση IE2 ή IE3. Βλέπε πινακίδα κινητήρα.
  Πρότυπο που χρησιμοποιήθηκε: EN 60034-30:2009.
– Οδηγία Οικολογικού Σχεδιασμού (2009/125/EC).
  Αντλίες νερού:
  Ρύθμιση πρώτης εκκίνησης No 547/2012.
  Ισχύει μόνο για αντλίες νερού που φέρουν τον ελάχιστο δείκτη απόδοσης MEI. Βλέπε πινακίδα αντλίας.

Αυτή η δήλωση συμμόρφωσης EC ισχύει μόνον όταν συνοδεύει τις οδηγίες εγκατάστασης και λειτουργίας της Grundfos (κωδικός εντύπου 95121197 1113).

ES: Declaración CE de conformidad

Nosotros, Grundfos, declaramos bajo nuestra entera responsabilidad que los productos CM, a los cuales se refiere esta declaración, están conformes con las Directivas del Consejo en la aproximación de las leyes de las Estados Miembros del EM:

– Directiva de Maquinaria (2006/42/CE).
  Norma aplicada: EN 809:1998 + A1:2009.
– Directiva de Baja Tensión (2006/95/CE).
  Aplicable cuando la potencia nominal es inferior a 2,2 kW.
  Normas aplicadas: EN 60335-1:2002 y EN 60335-2-51:2003.
– Directiva sobre diseño ecológico (2009/125/CE).
  Motores eléctricos:
  Reglamento de la Comisión Nº 640/2009.
  Válido sólo para motores trifásicos Grundfos pertenecientes a las categorías IE2 e IE3. Véase la placa de características del motor.
  Norma aplicada: EN 60034-30:2009.
– Directiva sobre diseño ecológico (2009/125/CE).
  Bombas de agua:
  Reglamento de la Comisión Nº 547/2012.
  Aplicable únicamente a las bombas de agua marcadas con el índice de eficiencia mínima (IEM). Véase la placa de características de la bomba.

Esta declaración CE de conformidad sólo es válida cuando se publique como parte de las instrucciones de instalación y funcionamiento de Grundfos (número de publicación 95121197 1113).

FR: Déclaration de conformité CE

Nous, Grundfos, déclarons sous notre seule responsabilité, que les produits CM, auxquels se réfère cette déclaration, sont conformes aux Directives du Conseil concernant le rapprochement des législations des Etats membres CE relatives aux normes énoncées ci-dessous:

– Directive Machines (2006/42/CE).
  Norme utilisée: EN 809:1998 + A1:2009.
– Directive Basse Tension (2006/95/CE).
  Applicable lorsque la puissance nominale est inférieure à 2,2 kW.
  Normes utilisées: EN 60335-1:2002 et EN 60335-2-51:2003.
– Directive sur l'éco-conception (2009/125/CE).
  Moteurs électriques:
  Règlement de la Commission Nº 640/2009.
  S'applique uniquement aux moteurs triphasés Grundfos marqués IE2 ou IE3. Voir plaque signalétique du moteur.
  Norme utilisée: EN 60034-30:2009.
– Directive sur l'éco-conception (2009/125/CE).
  Pompes à eau:
  Règlement de la Commission Nº 547/2012.
  S'applique uniquement aux pompes à eau marquées de l'indice de performance minimum IEM. Voir plaque signalétique de la pompe.

Cette déclaration de conformité CE est uniquement valide lors de sa publication dans la notice d'installation et de fonctionnement Grundfos (numéro de publication 95121197 1113).

HR: EZ izjava o usklađenosti

Mi, Grundfos, izjavljujemo pod vlastitom odgovornošću da je proizvod CM, na koji se ova izjava odnosi, u skladu s direktivama ovog Vijeća o usklađivanju zakona država članica EU:

– Direktiva za strojeve (2006/42/EZ).
  Korištena norma: EN 809:1998 + A1:2009.
– Direktiva za niski napon (2006/95/EZ).
  Primjenjuje se kada je nazivna snaga niža od 2,2 kW.
  Korištene norme: EN 60335-1:2002 i EN 60335-2-51:2003.
– Direktiva o ekološkoj izvedbi (2009/125/EZ).
  Električni motori:
  Uredba Komisije No 640/2009.
  Odnosi se samo na trofazne Grundfos motore s oznakama IE2 ili IE3. Pogledajte natpisnu pločicu motora.
  Korištena norma: EN 60034-30:2009.
– Direktiva o ekološkoj izvedbi (2009/125/EZ).
  Crpke za vodu:
  Uredba Komisije No 547/2012.
  Odnosi se samo na crpke za vodu označene s indeksom minimalne učinkovitosti MEI. Pogledajte natpisnu pločicu crpke.

Ova EZ izjava o usklađenosti važeća je jedino kada je izdana kao dio Grundfos montažnih i pogonskih uputa (broj izdanja 95121197 1113).

IT: Dichiarazione di conformità CE

Grundfos dichiara sotto la sua esclusiva responsabilità che i prodotti CM, ai quali si riferisce questa dichiarazione, sono conformi alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri CE:

– Direttiva Macchine (2006/42/CE).
  Norma applicata: EN 809:1998 + A1:2009.
– Direttiva Bassa Tensione (2006/95/CE).
  E' applicabile quando la potenza nominale è inferiore a 2,2 kW.
  Norme applicate: EN 60335-1:2002 e EN 60335-2-51:2003.
– Direttiva Ecodesign (2009/125/CE).
  Motori elettrici:
  Regolamento CE n. 640/2009.
  Applicabile solo ai motori trifase Grundfos contrassegnati IE2 o IE3. Vedere la targhetta di identificazione del motore.
  Norma applicata: EN 60034-30:2009.
– Direttiva Ecodesign (2009/125/CE).
  Pompe per acqua:
  Regolamento CE n. 547/2012.
  Applicabile solo a pompe per acqua con l'indice di efficienza minimo MEI. Vedere la targhetta di identificazione della pompa.

Questa dichiarazione di conformità CE è valida solo quando pubblicata come parte delle istruzioni di installazione e funzionamento Grundfos (pubblicazione numero 95121197 1113).

LV: EK atbilstības deklarācija

Sabiedrība GRUNDFOS ar pilnu atbildību dara zināmu, ka produkti CM, uz kuriem attiecas šis paziņojums, atbilst šādām Padomes direktīvām par tuvināšanos EK dalībvalstu likumdošanas normām:

– Mašīnbūves direktīva (2006/42/EK).
  Piemērotais standarts: EN 809:1998 + A1:2009.
– Zema sprieguma direktīva (2006/95/EK).
  Piemērojama, ja nominālā jauda ir mazāka par 2,2 kW.
  Piemērotie standarti: EN 60335-1:2002 un EN 60335-2-51:2003.
– Ekodizaina direktīva (2009/125/EK).
  Elektriskie motori:
  Komisijas regula Nr. 640/2009.
  Attiecas tikai uz trīsfāžu Grundfos motoriem, kas apzīmēti ar IE2 vai IE3. Sk. motora pases datu plāksnītē.
  Piemērotais standarts: EN 60034-30:2009.
– Ekodizaina direktīva (2009/125/EK).
  Ūdens sūkņi:
  Komisijas regula Nr. 547/2012.
  Attiecas tikai uz ūdens sūkņiem, kuriem ir minimālais efektivitātes indekss MEI. Sk. sūkņa pases datu plāksnītē.

Šī EK atbilstības deklarācija ir derīga vienīgi tad, ja ir publicēta kā daļa no GRUNDFOS uzstādīšanas un ekspluatācijas instrukcijām (publikācijas numurs 95121197 1113).

LT: EB atitikties deklaracija

Mes, Grundfos, su visa atsakomybe pareiškiame, kad gaminiai CM, kuriems skirta ši deklaracija, atitinka šias Tarybos Direktyvas dėl Europos Ekonominės Bendrijos šalių narių įstatymų suderinimo:

– Mašinų direktyva (2006/42/EB).
  Taikomas standartas: EN 809:1998 + A1:2009.
– Žemų įtampų direktyva (2006/95/EB).
  Galioja, kai nominali galia yra mažesnė kaip 2,2 kW.
  Taikomi standartai: EN 60335-1:2002 ir EN 60335-2-51:2003.
– Ekologinio projektavimo direktyva (2009/125/EB).
  Elektros varikliai:
  Komisijos reglamentas Nr. 640/2009.
  Taikoma tik trifaziams Grundfos varikliams, pažymėtiems IE2 arba IE3. Žr. variklio vardinę plokštelę.
  Taikomas standartas: EN 60034-30:2009.
– Ekologinio projektavimo direktyva (2009/125/EB).
  Vandens siurbliai:
  Komisijos reglamentas Nr. 547/2012.
  Galioja tik vandens siurbliams, ant kurių nurodytas minimalus efektyvumo koeficientas MEI. Žr. siurblio vardinę plokštelę.

Ši EB atitikties deklaracija galioja tik tuo atveju, kai yra pateikta kaip "Grundfos" įrengimo ir naudojimo instrukcijos (leidinio numeris 95121197 1113) dalis.

HU: EK megfelelőségi nyilatkozat

Mi, a Grundfos, egyedüli felelősséggel kijelentjük, hogy a CM termékek, amelyekre jelen nyilatkozik vonatkozik, megfelelnek az Európai Unió tagállamainak jogi irányelveit összehangoló tanács alábbi előírásainak:

– Gépek (2006/42/EK).
  Alkalmazott szabvány: EN 809:1998 + A1:2009.
– Kisfeszültségű Direktíva (2006/95/EK).
  Akkor alkalmazható, amikor a névleges teljesítmény kisebb mint 2,2 kW.
  Alkalmazott szabványok: EN 60335-1:2002 és EN 60335-2-51:2003.
– Környezetbarát tervezésre vonatkozó irányelv (2009/125/EK).
  Villamos motorok:
  Az Európai Bizottság 640/2009. számú rendelete.
  Csak az IE2 vagy IE3 jelzésű háromfázisú Grundfos motorokra vonatkozik. Lásd a motor adattábláját.
  Alkalmazott szabvány: EN 60034-30:2009.
– Környezetbarát tervezésre vonatkozó irányelv (2009/125/EK).
  Víz szivattyúk:
  Az Európai Bizottság 547/2012. számú rendelete.
  Csak a MEI minimum hatásfok index-el jelölt víz szivattyúkra vonatkozik. Lásd a szivattyú adattábláján.

Ez az EK megfelelőségi nyilatkozat kizárólag akkor érvényes, ha Grundfos telepítési és üzemeltetési utasítás (kiadvány szám 95121197 1113) részeként kerül kiadásra.

NL: EC overeenkomstigheidsverklaring

Wij, Grundfos, verklaren geheel onder eigen verantwoordelijkheid dat de producten CM waarop deze verklaring betrekking heeft, in overeenstemming zijn met de Richtlijnen van de Raad in zake de onderlinge aanpassing van de wetgeving van de EG Lidstaten betreffende:

– Machine Richtlijn (2006/42/EC).
  Gebruikte norm: EN 809:1998 + A1:2009.
– Laagspannings Richtlijn (2006/95/EC).
  Van toepassing bij nominaal vermogen lager dan 2,2 kW.
  Gebruikte normen: EN 60335-1:2002 en EN 60335-2-51:2003.
– Ecodesign Richtlijn (2009/125/EC).
  Elektromotoren:
  Verordening (EG) Nr. 640/2009 van de Commissie.
  Geldt alleen voor de driefase elektromotoren van Grundfos, aangeduid met IE2 of IE3. Zie het typeplaatje van de motor.
  Gebruikte norm: EN 60034-30:2009.
– Ecodesign Richtlijn (2009/125/EC).
  Waterpompen:
  Verordening (EG) Nr. 547/2012 van de Commissie.
  Is alleen van toepassing op waterpompen die gekenmerkt worden door de minimale efficiëntie index MEI. Zie het typeplaatje van de pomp.

Deze EC overeenkomstigheidsverklaring is alleen geldig wanneer deze gepubliceerd is als onderdeel van de Grundfos installatie- en bedieningsinstructies (publicatienummer 95121197 1113).

UA: Декларація відповідності ЄС

Компанія Grundfos заявляє про свою виключну відповідальність за те, що продукти CM, на які поширюється дана декларація, відповідають таким рекомендаціям Ради з уніфікації правових норм країн - членів ЄС:

– Механічні прилади (2006/42/ЄС).
  Стандарти, що застосовувалися: EN 809:1998 + A1:2009.
– Низька напруга (2006/95/ЄС).
  Може застосовуватися при потужності до 2,2 кВт.
  Стандарти, що застосовувалися: EN 60335-1:2002 та EN 60335-2-51:2003.
– Директива з екодизайну (2009/125/ЄС).
  Електродвигуни:
  Регламент Комісії № 640/2009.
  Застосовується тільки до трифазних електродвигунів Grundfos, позначених IE2 або IE3. Дивіться паспортну табличку електродвигуна.
  Стандарти, що застосовувалися: EN 60034-30:2009.
– Директива з екодизайну (2009/125/ЄС).
  Насоси для води:
  Регламент Комісії № 547/2012.
  Стосується тільки насосів для води, що відзначені мінімальним показником ефективності MEI. Дивіться паспортну табличку на насоси.

Ця декларація відповідності ЄС дійсна тільки в тому випадку, якщо публікується як частина інструкцій Grundfos з монтажу та експлуатації (номер публікації 95121197 1113).

ID: EC pernyataan kesesuaian

Dengan ini, Grundfos, sebagai penanggung jawab tunggal menyatakan bahwa produk CM telah sesuai dengan ketentuan-ketentuan Dewan yang merujuk pada hukum negara-negara anggota Komisi Eropa berikut ini:

– Ketentuan Mesin (2006/42/EC).
  Standar yang digunakan: EN 809:1998 + A1:2009.
– Ketentuan Mengenai Keamanan Peralatan Bertegangan Rendah (2006/95/EC).
  Dapat digunakan saat aliran daya lebih rendah dari 2.2 kW.
  Standar yang digunakan: EN 60335-1:2002 dan EN 60335-2-51:2003.
– Ecodesign Directive (2009/125/EC).
  Motor elektrik:
  Regulasi Komisi No. 640/2009.
  Berlaku hanya untuk motor tiga fasa Grundfos yang diberi tanda IE2 atau IE3. Lihat pelat label.
  Standar yang digunakan: EN 60034-30:2009.
– Ecodesign Directive (2009/125/EC).
  Pompa air:
  Regulasi Komisi No. 547/2012.
  Berlaku hanya untuk pompa air bertanda MEI atau indeks efisiensi minimum. Lihat pelat nama pompa.

Deklarasi kesesuaian dengan EC hanya berlaku jika diterbitkan sebagai bagian dari petunjuk pengoperasian dan pemasangan Grundfos (nomor publikasi 95121197 1113).

PL: Deklaracja zgodności WE

My, Grundfos, oświadczamy z pełną odpowiedzialnością, że nasze wyroby CM, których deklaracja niniejsza dotyczy, są zgodne z następującymi wytycznymi Rady d/s ujednolicenia przepisów prawnych krajów członkowskich WE:

– Dyrektywa Maszynowa (2006/42/WE).
  Zastosowana norma: EN 809:1998 + A1:2009.
– Dyrektywa Niskonapięciowa (LVD) (2006/95/WE).
  Ma zastosowanie tylko dla mocy silnika mniejszej od 2,2 kW.
  Zastosowane normy: EN 60335-1:2002 oraz EN 60335-2-51:2003.
– Dyrektywa Ekoprojektowa (2009/125/WE).
  Silniki elektryczne:
  Rozporządzenie komisji nr 640/2009.
  Dotyczy tylko trójfazowych silników firmy Grundfos z oznaczeniami IE2 lub IE3. Patrz tabliczka znamionowa silnika.
  Zastosowana norma: EN 60034-30:2009.
– Dyrektywa Ekoprojektowa (2009/125/WE).
  Pompy do wody:
  Rozporządzenie komisji nr 547/2012.
  Dotyczy tylko pomp do tłoczenia wody z minimalnym indeksem sprawności MEI. Patrz tabliczka znamionowa pompy.

Deklaracja zgodności WE jest ważna tylko i wyłącznie wtedy kiedy jest opublikowana przez firmę Grundfos i umieszczona w instrukcji montażu i eksploatacji (numer publikacji 95121197 1113).

PT: Declaração de conformidade CE

A Grundfos declara sob sua única responsabilidade que os produtos CM, aos quais diz respeito esta declaração, estão em conformidade com as seguintes Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da CE:

- Directiva Máquinas (2006/42/CE).
  Norma utilizada: EN 809:1998 + A1:2009.
- Directiva Baixa Tensão (2006/95/CE).
  Aplicável quando a gama de potência for inferior a 2,2 kW.
  Normas utilizadas: EN 60335-1:2002 e EN 60335-2-51:2003.
- Directiva de Concepção Ecológica (2009/125/CE).
  Motores eléctricos:
  Regulamento da Comissão No 640/2009.
  Aplica-se apenas a motores trifásicos Grundfos assinalados como IE2 ou IE3. Ver a chapa de características do motor.
  Norma utilizada: EN 60034-30:2009.
- Directiva de Concepção Ecológica (2009/125/CE).
  Bombas de água:
  Regulamento da Comissão No 547/2012.
  Aplica-se apenas a bombas de água registadas com o índice de eficiência mínimo MEI. Ver a chapa de características da bomba.

Esta declaração de conformidade CE é apenas válida quando publicada como parte das instruções de instalação e funcionamento Grundfos (número de publicação 95121197 1113).

RU: Декларация о соответствии ЕС

Мы, компания Grundfos, со всей ответственностью заявляем, что изделия CM, к которым относится настоящая декларация, соответствуют следующим Директивам Совета Евросоюза об унификации законодательных предписаний стран-членов ЕС:

- Механические устройства (2006/42/EC).
  Применявшийся стандарт: EN 809:1998 + A1:2009.
- Низковольтное оборудование (2006/95/EC).
  Применяется, если номинальная мощность ниже 2,2 кВт.
  Применявшиеся стандарты: EN 60335-1:2002 и EN 60335-2-51:2003.
- Директива по экологическому проектированию энергопотребляющей продукции (2009/125/EC).
  Электродвигатели:
  Регламент Комиссии ЕС № 640/2009.
  Применяется только к трехфазным электродвигателям Grundfos, обозначенным IE2 или IE3. См. шильдик с техническими данными двигателя.
  Применявшийся стандарт: EN 60034-30:2009.
- Директива по экологическому проектированию энергопотребляющей продукции (2009/125/EC).
  Насосы для перекачивания воды:
  Регламент Комиссии ЕС № 547/2012.
  Применимо только к насосам для перекачивания воды, промаркированным показателем минимальной эффективности MEI. См. фирменную табличку насоса.

Данная декларация о соответствии ЕС имеет силу только в случае публикации в составе инструкции по монтажу и эксплуатации на продукцию производства компании Grundfos (номер публикации 95121197 1113).

RO: Declarație de conformitate CE

Noi, Grundfos, declarăm pe propria răspundere că produsele CM, la care se referă această declarație, sunt în conformitate cu aceste Directive de Consiliu asupra armonizării legilor Statelor Membre CE:

- Directiva Utilaje (2006/42/CE).
  Standard utilizat: EN 809:1998 + A1:2009.
- Directiva Tensiune Joasă (2006/95/CE).
  Aplicabilă când consumul estimat este de până la 2,2 kW.
  Standarde utilizate: EN 60335-1:2002 şi EN 60335-2-51:2003.
- Directiva Ecodesign (2009/125/CE).
  Motoare electrice:
  Regulamentul Comisiei nr. 640/2009.
  Se aplică numai motoarelor trifazate Grundfos cu marca IE2 sau IE3. Vezi plăcuța de identificare a motorului.
  Standard utilizat: EN 60034-30:2009.
- Directiva Ecodesign (2009/125/CE).
  Pompe de apa:
  Regulamentul Comisiei nr. 547/2012.
  Se aplica numai pompelor de apa cu marca de eficienta minima index MEI. Vezi plăcuța de identificare a pompei.

Această declarație de conformitate CE este valabilă numai când este publicată ca parte a instrucțiunilor Grundfos de instalare și funcționare (număr publicație 95121197 1113).

SK: Prehlásenie o konformite ES

My firma Grundfos prehlasujeme na svoju plnú zodpovednosť, že výrobky CM, na ktoré sa toto prehlásenie vzťahuje, sú v súlade s ustanovením smernice Rady pre zblíženie právnych predpisov členských štátov Európskeho spoločenstva v oblastiach:

- Smernica pre strojové zariadenie (2006/42/ES).
  Použitá norma: EN 809:1998 + A1:2009.
- Smernica pre nízkonapäťové aplikácie (2006/95/ES).
  Môže sa používať v prípade, ak menovitý výkon je nižší než 2,2 kW.
  Použité normy: EN 60335-1:2002 a EN 60335-2-51:2003.
- Smernica o ekodizajne (2009/125/ES).
  Elektromotory:
  Nariadenie Komisie č. 640/2009.
  Platné iba pre trojfázové motory Grundfos, označené ako IE2 alebo IE3. Viď typový štítok motora.
  Použitá norma: EN 60034-30:2009.
- Smernica o ekodizajne (2009/125/ES).
  Čerpadlá na vodu:
  Nariadenie Komisie č. 547/2012.
  Vzťahuje sa iba na čerpadlá pre vodu označené minimálnym indexom energetickej účinnosti MEI. Viď typový štítok čerpadla.

Toto prehlásenie o konformite ES je platné iba vtedy, ak je zverejnené ako súčasť montážnych a prevádzkových pokynov Grundfos (publikácia číslo 95121197 1113).

SI: ES izjava o skladnosti

V Grundfosu s polno odgovornostjo izjavljamo, da so naši izdelki CM, na katere se ta izjava nanaša, v skladu z naslednjimi direktivami Sveta o približevanju zakonodaje za izenačevanje pravnih predpisov držav članic ES:

- Direktiva o strojih (2006/42/ES).
  Uporabljena norma: EN 809:1998 + A1:2009.
- Direktiva o nizki napetosti (2006/95/ES).
  Aplicirano, kadar je nominalna moč nižja od 2,2 kW.
  Uporabljeni normi: EN 60335-1:2002 in EN 60335-2-51:2003.
- Eco-design direktiva (2009/125/ES).
  Električni motorji:
  Uredba Komisije št. 640/2009.
  Se nanaša samo na trofazne motorje Grundfos z oznako IE2 ali IE3. Glejte tipsko ploščico motorja.
  Uporabljena norma: EN 60034-30:2009.
- Eco-design direktiva (2009/125/ES).
  Vodne črpalke:
  Uredba Komisije št. 547/2012.
  Velja le za vodne črpalke označene z indeksom minimalne učinkovitosti MEI. Glejte tipsko ploščico črpalke.

ES izjava o skladnosti velja samo kadar je izdana kot del Grundfos instalacije in navodil delovanja (publikacija številka 95121197 1113).

RS: EC deklaracija o usaglašenosti

Mi, Grundfos, izjavljujemo pod vlastitom odgovornošću da je proizvod CM, na koji se ova izjava odnosi, u skladu sa direktivama Saveta za usklađivanje zakona država članica EU:

- Direktiva za mašine (2006/42/EC).
  Korišćen standard: EN 809:1998 + A1:2009.
- Direktiva niskog napona (2006/95/EC).
  Primenljivo kada je nominalna snaga manja od 2,2 kW.
  Korišćeni standardi: EN 60335-1:2002 i EN 60335-2-51:2003.
- Direktiva o ekološkom projektovanju (2009/125/EC).
  Električni motori:
  Uredba komisije br. 640/2009.
  Važi samo za trofazne Grundfos motore označene sa IE2 ili IE3. Pogledajte natpisnu pločicu motora.
  Korišćen standard: EN 60034-30:2009.
- Direktiva o ekološkom projektovanju (2009/125/EC).
  Pumpe za vodu:
  Uredba Komisije br. 547/2012.
  Odnosi se samo na pumpe za vodu označene sa indeksom minimalne efikasnosti MEI. Pogledajte natpisnu pločicu pumpe.

Ova EC deklaracija o usaglašenosti važeća je jedino kada je izdata kao deo Grundfos uputstava za instalaciju i rad (broj izdanja 95121197 1113).

FI: EY-vaatimustenmukaisuusvakuutus

Me, Grundfos, vakuutamme omalla vastuullamme, että tuotteet CM, joita tämä vakuutus koskee, ovat EY:n jäsenvaltioiden lainsäädännön yhdenmukaistamiseen tähtäävien Euroopan neuvoston direktiivien vaatimusten mukaisia seuraavasti:

– Konedirektiivi (2006/42/EY).
  Sovellettu standardi: EN 809:1998 + A1:2009.
– Pienjännitedirektiivi (2006/95/EY).
  Voimassa vain alle 2,2 kW nimellistehoille.
  Sovellettavat standardit: EN 60335-1:2002 ja EN 60335-2-51:2003.
– Ekologista suunnittelua koskeva direktiivi (2009/125/EY).
  Sähkömoottorit:
  Komission asetus nro 640/2009.
  Koskee vain Grundfosin IE2- tai IE3-merkittyjä 3-vaihemoottoreita. Katso moottorin arvokilvestä.
  Sovellettu standardi: EN 60034-30:2009.
– Ekologista suunnittelua koskeva direktiivi (2009/125/EY).
  Vesipumput:
  Komission asetus nro 547/2012.
  Koskee vain vesipumppuja, jotka on merkitty minimihyötysuhdeindeksillä MEI. Katso pumpun tyyppikilvestä.

Tämä EY-vaatimustenmukaisuusvakuutus on voimassa vain, kun se julkaistaan osana Grundfosin asennus- ja käyttöohjeita (julkaisun numero 95121197 1113).

SE: EG-försäkran om överensstämmelse

Vi, Grundfos, försäkrar under ansvar att produkterna CM, som omfattas av denna försäkran, är i överensstämmelse med rådets direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende:

– Maskindirektivet (2006/42/EG).
  Tillämpad standard: EN 809:1998 + A1:2009.
– Lågspänningsdirektivet (2006/95/EG).
  Gäller för nominell effekt under 2,2 kW.
  Tillämpade standarder: EN 60335-1:2002 och EN 60335-2-51:2003.
– Ekodesigndirektivet (2009/125/EG).
  Elektriska motorer:
  Kommissionens förordning nr. 640/2009.
  Gäller endast trefas Grundfos-motorer märkta med IE2 eller IE3. Se motorns typskylt.
  Tillämpad standard: EN 60034-30:2009.
– Ekodesigndirektivet (2009/125/EG).
  Vattenpumpar:
  Kommissionens förordning nr. 547/2012.
  Avser endast vattenpumpar markerade med min. effektivitetsindex (MEI). Se pumpens typskylt.

Denna EG-försäkran om överensstämmelse är endast giltig när den publiceras som en del av Grundfos monterings- och driftsinstruktion (publikation nummer 95121197 1113).

TR: EC uygunluk bildirgesi

Grundfos olarak bu beyannameye konu olan CM ürünlerinin, AB Üyesi Ülkelerin kanunlarını birbirine yaklaştırma üzerine Konsey Direktifleriyle uyumlu olduğunun yalnızca bizim sorumluluğumuz altında olduğunu beyan ederiz:

– Makineler Yönetmeliği (2006/42/EC).
  Kullanılan standart: EN 809:1998 + A1:2009.
– Düşük Voltaj Yönetmeliği (2006/95/EC).
  Hesaplanmış güç 2,2 kW'tan düşükse uygulanabilir.
  Kullanılan standartlar: EN 60335-1:2002 ve EN 60335-2-51:2003.
– Çevreye duyarlı tasarım (Ecodesign) Direktifi (2009/125/EC).
  Elektrikli motorlar:
  640/2009 sayılı Komisyon Yönetmeliği.
  Sadece IE2 veya IE3 işaretli trifaze Grundfos motorlar için geçerlidir. Motor bilgi etiketine bakınız.
  Kullanılan standart: EN 60034-30:2009.
– Çevreye duyarlı tasarım (Ecodesign) Direktifi (2009/125/EC).
  Devirdaim su pompaları:
  547/2012 sayılı Komisyon Yönetmeliği.
  Yalnızca Minimum Enerji Verimlilik Endeksine (MEI) dahil olan olan devirdaim su pompaları için geçerlidir. Pompanın bilgi etiketine bakın.

İşbu EC uygunluk bildirgesi, yalnızca Grundfos kurulum ve çalıştırma talimatlarının (basım numarası 95121197 1113) bir parçası olarak basıldığı takdirde geçerlilik kazanmaktadır.

CN: EC 产品合格声明书

我们格兰富在我们的全权责任下声明，产品 CM，即该合格证所指之产品，符合欧共体使其成员国法律趋于一致的以下欧共理事会指令：

— 机械设备指令 (2006/42/EC)。
  所用标准：EN 809:1998 + A1:2009。
— 低电压指令 (2006/95/EC)。
  适用于额定功率小于 2,2 kW。
  所用标准：EN 60335-1:2002 和 EN 60335-2-51:2003。
— 生态化设计指令 (2009/125/EC)。
  电动机：
  欧委会规定第 640/2009 号。
  只适用于带有 IE2 或 IE3 标志的格兰富三相电机。参见电机铭牌。
  所用标准：EN 60034-30:2009。
— 生态化设计指令 (2009/125/EC)。
  水泵：
  欧委会规定第 547/2012 号。
  仅适用于标有最低效率指标 （MEI）的水泵。见泵铭牌。

本EC合格性声明仅在作为格兰富安装与操作指导手册（95121197 1113）的一部分时有效。

JP: EC 適合宣言

Grundfos は、その責任の下に、CM 製品が EC 加盟諸国の法規に関連する、以下の評議会指令に適合していることを宣言します：

– 機械指令（2006/42/EC）。
  適用規格：EN 809:1998 + A1:2009。
– 低電圧指令（2006/95/EC）。
  定格出力 2.2 kW 以下に適用されます。
  適用規格：EN 60335-1:2002 および EN 60335-2-51:2003。
– エコデザイン指令 (2009/125/EC)。
  電気モーター：
  委員会規定 No 640/2009。
  IE2 または IE3 の表示がある三相 Grundfos モーターにのみ該当します。モーターの ネーム プレートをご確認ください。
  適用規格：EN 60034-30:2009。
– エコデザイン指令 （2009/125/EC）。
  水用ポンプ：
  委員会規定 No 547/2012。
  最小効率指数 MEI を表示した水用ポンプのみに適用。ポンプ銘板を参照ください。

このEC適合宣言は、グルンドフォス取扱説明書（出版番号 95121197 1113）の一部に掲載される場合のみ有効です。

KO: EC 적합성 선언

Grundfos 에서는 자사의 단독 책임에 따라 이 선언과 관련된 CM 제품이 EC 회원국 법률에 기반한 다음 이사회 지침을 준수함을 선언합니다：

— 기계류 지침 (2006/42/EC).
  사용된 표준：EN 809:1998 + A1:2009.
— 저전압 지침 (2006/95/EC).
  2.2 kW 이하에 적용됨 .
  사용된 표준：EN 60335-1:2002 및 EN 60335-2-51:2003.
— 에코디자인 지침 (2009/125/EC).
  전기 모터：
  관련 규정 번호 640/2009.
  IE2 또는 IE3 이 표시된 3 상 Grundfos 모터에만 적용됩니다 .
  모터 명판을 참조하십시오 .
  사용된 표준：EN 60034-30:2009.
— 에코디자인 지침 (2009/125/EC).
  물 펌프：
  수수료 규정 번호 547/2012.
  MEI 최저효율관리 인덱스는 물을 매체로 펌핑 했을때만 유효합니다 . 펌프 명판 참조 .

본 EC 인증은 그런포스에서 인쇄 배포한 설치 가이드 및 작업 매뉴얼에 포함되어 발행되었을 경우에만 유효합니다 (발행 번호 95121197 1113).

Tatabánya, 12th August 2013

Jannek Uldal Christensen
Research and Developement Manager
GRUNDFOS Manufacturing Ltd.
Búzavirág u. 14, Ipari Park
2800 Tatabánya, Hungary

Person authorised to compile technical file and
empowered to sign the EC declaration of conformity.

Декларация о соответствии на территории РФ

Насосы типа CM сертифицированы на соответствие требованиям Технического регламента о безопасности машин и оборудования (Постановление правительства РФ от 15.09.2009 № 753).
Сертификат соответствия:
№ C-DK.АЯ56.В.03740, срок действия до 27.05.2017 г.

Истра, 15 ноября 2012 г.

Касаткина В. В.
Руководитель отдела качества,
экологии и охраны труда
ООО Грундфос Истра, Россия
143581, Московская область,
Истринский район,
дер. Лешково, д.188

English (GB) Installation and operating instructions

Original installation and operating instructions.

CONTENTS

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.

Warning

If these instructions are not observed, it may lead to electric shock with consequent risk of serious personal injury or death.

Warning

The surface of the product may be so hot that it may cause burns or 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. Introduction

This manual describes the installation and operation of Grundfos CM pumps.

3. Delivery and handling

Grundfos CM pumps are delivered from factory in a packaging specially designed for manual transport or transport by fork-lift truck or a similar vehicle.

Note

In order to ensure safe transport, we recommend that you transport the pumps with suitable lifting tools.

4. Applications

CM pumps are horizontal, multistage centrifugal pumps for the pumping of clean, thin and non-flammable liquids, not containing solid particles or fibres that may attack the pump mechanically or chemically.

Warning

The pump must not be used for the transfer of flammable or toxic liquids.

5. Identification

5.1 Nameplates

The pump and motor nameplates are positioned on the motor fan cover or terminal box.

5.1.1 Nameplate for pump

The data and information on the pump nameplate are described in the table below. See the nameplate in fig. 11 on page 21.

Pos.	Description
1	Pump type
2	Pump model
3	Maximum ambient temperature
4	Temperature class
5	Minimum efficiency index
6	Maximum system pressure
7	Maximum liquid temperature
8	Hydraulic efficiency at best efficiency point
9	Insulation class
10	Motor protection
11	Rated flow
12	Head at rated flow
13	Maximum head

5.1.2 Nameplate for motor

The data and information on the motor nameplate are described in the table below. See the nameplate in fig. 12 on page 21.

Pos.	Description
1	Motor type
2	Number of poles
3	Number of phases and voltage
4	Rated current
5	Output power
6	Output power
7	**Three-phase pumps only** Motor efficiency at best efficiency point
8	**Single-phase pumps only** Capacitor size and voltage
9	CE mark
10	TR mark
11	IE2 mark
12	Company name and address
13	Country of manufacture

6. Mechanical installation

Before installing the pump, check that the pump type and parts are as ordered.

Warning

When pumping hot or cold liquids, make sure that persons cannot accidentally come into contact with hot or cold surfaces.

6.1 Installation of pump

Install the pump on a plane surface and fix it so that it cannot be displaced during start-up and operation.

Install the pump so that air locks are avoided in the pump housing and pipework.

Figure 1 and the table below show the permissible pump positions.

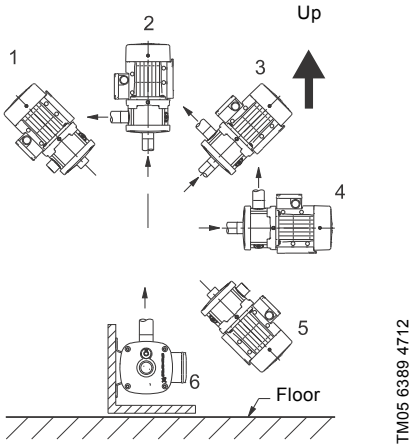

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Fig. 1 Pump positions

Pump position	Non-self-priming pumps	Self-priming pumps
1	-	-
2	●	-
3	●	-
4	●	●
5	-	-
6	●	●

● Mounting in this position is allowed.

Install the pump so that inspection, maintenance and service can easily be performed.

Install the pump in a well-ventilated location.

6.2 Pipework

We recommend to fit isolating valves on either side of the pump. It is thus not necessary to drain the system if the pump needs service.

If the pump is installed above the liquid level, a non-return valve must be fitted in the suction pipe below the liquid level. See fig. 4.

Self-priming pumps:

Note

We recommend an opening pressure of the non-return valve which is lower than 0.05 bar. Otherwise the additional resistance will reduce the suction capability of the pump.

If the pump is to be used for pumping rainwater or well water, we recommend to fit a filter to the inlet of the suction pipe.

The pump must not be stressed by the pipework.

Install the pipes according to the design requirements given in EN ISO 13480-3:2012. Tolerances must comply with EN ISO 13920:1996, class C.

The pipework must be correctly sized taking due account of the pump inlet pressure.

Install the pipes so that air locks are avoided, especially on the suction side of the pump. See fig. 2.

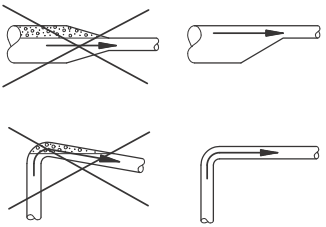

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Fig. 2 Pipework

6.2.1 Pipe connection (non-self-priming pumps)

Caution

Take care not to damage the pump when connecting the suction and discharge pipes.

Tightening torque: 50-60 Nm. The stated torque must not be exceeded.

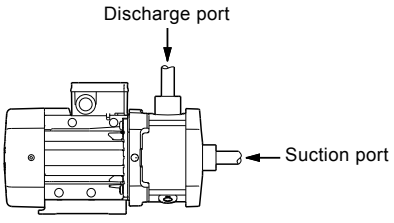

Fig. 3 Suction and discharge ports

6.2.2 Pipe connection (self-priming pumps)

The pump must be installed correctly to ensure that it can self-prime.

The following precautions must be taken:

See fig. 4.

- The minimum height from the centre of the suction port to the first tapping point (H_1) must be observed.
  If a pressure manager is installed in the system, H_1 is the height from the centre of the pump suction port to the pressure manager.
  Minimum heights appear from the table below.
- The suction pipe must be at least 0.5 metres below the liquid level (H_3).

Note

For optimum suction capability, the pump should be located near the well or tank to ensure that the suction pipe is as short as possible. This will reduces the self-priming time, especially in the case of a high suction lift.

We recommend to install a filling plug in the discharge pipe. This facilitates liquid filling before start-up. See fig. 4, pos. A.

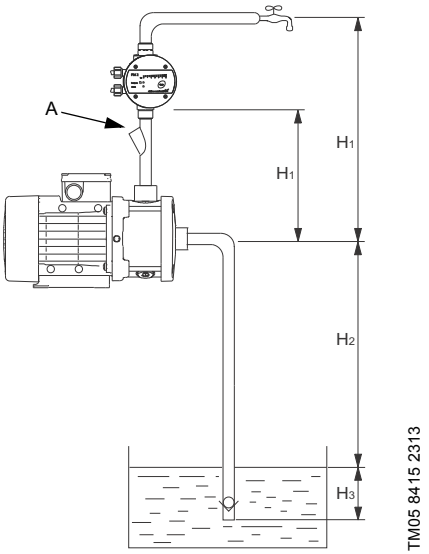

Fig. 4 Recommended piping for a self-priming pump

Suction lift (H_2) [m]	Minimum height (H_1) [m]
4	0.2
5	0.35
6	0.5
7	0.6
8	0.7

6.3 Alternative connection positions

CM pumps are available with various connection positions on special request. See fig. 5.

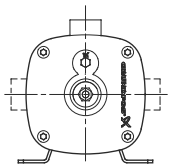

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Fig. 5 Alternative connection positions

Self-priming pumps:

Note

These pumps are only available with the discharge port pointing upwards, i.e. in the same direction as the filling hole.

6.4 Terminal box positions

The pump is available with various terminal box positions on special request. See fig. 6.

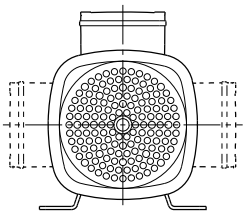

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Fig. 6 Terminal box positions

7. Electrical installation

Carry out the electrical connection according to local regulations.

Check that the supply voltage and frequency correspond to the values stated on the nameplate.

Warning

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

Before starting work on the pump, switch off the power supply. Make sure that the power supply cannot be accidentally switched on.

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

7.1 Supply cable

In order to comply with the EN 60335-1 standard, the supply cable must as minimum be rated for an operating temperature of +105 °C (+221 °F).

7.2 Motor protection

Single-phase motors, 1 x 115 / 230 V, 60 Hz

These motors do not incorporate motor protection and must be connected to a motor-protective circuit breaker which can be manually reset.
Set the motor-protective circuit breaker according to the rated current of the motor ($I_{1/1}$). See nameplate.

Other single-phase motors

These motors have built-in current- and temperature-dependent motor protection in accordance with IEC 60034-11 and require no further motor protection. The motor protection is of the TP 211 type which reacts to both slow- and quick-rising temperatures. The motor protection is automatically reset.

Three-phase motors up to 3 kW

These motors must be connected to a motor-protective circuit breaker which can be manually reset.
Set the motor-protective circuit breaker according to the rated current of the motor ($I_{1/1}$). See nameplate.

Three-phase motors of 3 kW and up

These motors have built-in thermistors (PTC)*. The thermistors are designed according to DIN 44082. The motor protection is of the TP 211 type which reacts to both slow- and quick-rising temperatures.

* Applies only to motors for the following supply voltages:

- 3 x 200 V / 346 V, 50 Hz
- 3 x 200-220 V / 346-380 V, 60 Hz
- 3 x 220-240 V / 380-415 V, 50 Hz.

Motors for other supply voltages must be connected to a motor-protective circuit breaker as described for three-phase motors up to 3 kW.

7.3 Electrical connection

Carry out the electrical connection as shown in the diagram inside the terminal box cover.

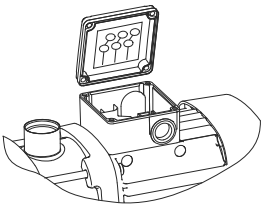

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Fig. 7 Wiring diagram

7.4 Frequency converter operation

All single- and three-phase motors can 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.

Caution

MG 71- and MG 80-based motors have no phase insulation* and must therefore be protected against voltage peaks higher than 650 V (peak value) between the supply terminals.

* MG 71- and MG 80-based motors with phase insulation are available on request.

The above disturbances, i.e. both increased acoustic noise and detrimental voltage peaks, can be eliminated by fitting an LC filter between the frequency converter and the motor.

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

Note

Self-priming pumps only:

If the pump is connected to a frequency converter, operation at low speed may cause the internal recirculation valve to open. This will result in a drop in pressure and flow.

8. Startup

8.1 Non-self-priming pumps

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

8.1.1 Liquid filling

Warning

Pay attention to the direction of the vent hole, and make sure that the escaping hot or cold liquid does not cause injury to persons or damage to the equipment.

1. Close the isolating valve on the discharge side of the pump.
2. Open the isolating valve in the suction pipe completely before starting the pump.
3. Remove the filling plug. See fig. 8.
4. Fill the pump housing and the suction pipe completely with liquid until a steady stream of liquid runs out of the filling hole.
5. Fit and tighten the filling plug.
6. Start the pump and slowly open the discharge isolating valve while the pump is running. This ensures venting and pressure build-up during start-up.

Caution ***The discharge isolating valve must be opened immediately after start-up of the pump. Otherwise the temperature of the pumped liquid may become too high and cause damage to the equipment.***

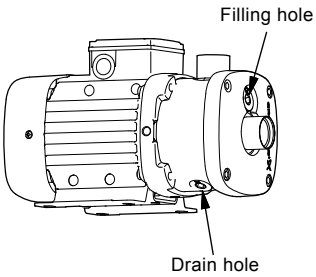

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Fig. 8 Position of filling hole and drain hole

Note ***If it is difficult for the pump to build up pressure, it may be necessary to repeat steps 1 to 6.***

8.2 Self-priming pumps

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

8.2.1 Liquid filling

Warning

Pay attention to the direction of the vent hole, and make sure that the escaping hot or cold liquid does not cause injury to persons or damage to the equipment.

1. Make sure that the discharge pipe is empty and that the height from the centre of the suction port to the first tapping point (H_1) meets the requirements. See section *6.2.2 Pipe connection (self-priming pumps)*.
2. Open the isolating valves in the suction and discharge pipes.
3. Open a tap close to the pump so that air can escape.
4. Remove the filling plug in the pump. See fig. 9.
5. If a filling plug has been installed in the discharge pipe, remove this plug and use this hole for filling. Otherwise use the filling hole in the pump.
6. Fill the pump housing and the suction pipe completely with liquid until a steady stream of liquid runs out of the filling hole.
7. Fit and tighten the filling plug(s).
8. Start the pump and wait until liquid is pumped. If the filling hole in the pump has been used, it may be necessary to repeat steps 1 to 8 to ensure that the pump is completely filled with liquid.

Note ***If connected to a frequency converter, the pump must run at maximum speed (3450 min^{-1}) during start-up.***

9. If the pump does not operate properly after several start-up attempts, see section *12. Fault finding*.

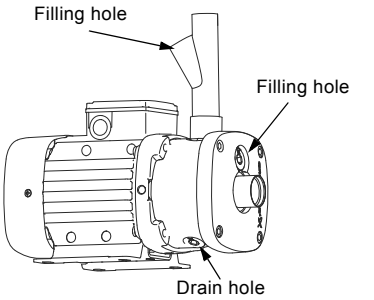

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Fig. 9 Position of filling holes and drain hole

Note ***The pump is allowed to run for 5 minutes to attempt to suck liquid. If the pump does not build up pressure and flow, repeat steps 1 to 8.***

8.3 Checking the direction of rotation

Note ***The description below applies to three-phase motors only.***

The motor fan cover has an installation indicator. See fig. 10. Based on the motor cooling air, it indicates the direction of rotation of the motor.

Before the motor is started for the first time or if the position of the indicator has been changed, the indicator function should be checked, for instance by moving the indicator field with a finger.

To determine whether the direction of rotation is correct or wrong, compare the indication with the table below.

Indicator field	Direction of rotation
Black	Correct
White/reflecting	Wrong*

* To reverse the direction of rotation, switch off the power supply and interchange any two of the incoming supply wires.

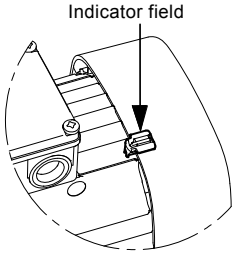

Fig. 10 Installation indicator

The indicator can be placed in various positions on the motor, but it must not be placed between the cooling fins close to the screws holding the fan cover.

The correct direction of rotation is also shown by arrows on the motor fan cover.

9. Maintenance

Warning

Before starting work on the pump, switch off the power supply. Make sure that the power supply cannot be accidentally switched on.

Warning

Make sure that the escaping water does not cause injury to persons or damage to the equipment.

The internal pump parts are maintenance-free. It is important to keep the motor clean in order to ensure adequate cooling of the motor. If the pump is installed in dusty environments, it must be cleaned and checked regularly. Take the enclosure class of the motor into account when cleaning.

The motor has maintenance-free, greased-for-life bearings.

9.1 Frost protection

Pumps which are not being used during periods of frost should be drained to avoid damage.

Remove the filling and drain plugs from the pump. See fig. 8.

Do not refit the plugs until the pump is taken into operation again.

Caution ***Before start-up after a period of inactivity, the pump and the suction pipe should be completely filled with liquid. See section 8. Startup.***

9.2 Cleaning

Prior to a long period of inactivity, the pump must be flushed with clean water to prevent corrosion and deposits in the pump.

Use acetic acid to remove possible lime deposits from the pump.

10. Service

Caution ***If used for a liquid which is injurious to health or toxic, the pump will be classified as contaminated.***

Before the pump is returned to Grundfos for service, the safety declaration at the end of these instructions must be filled in by authorised personnel and attached to the pump in a visible position.

If Grundfos is requested to service the pump, it must be cleaned before it is returned.

If proper cleaning is not possible, all relevant information about the pumped liquid must be provided.

If the above is not fulfilled, Grundfos can refuse to accept the pump for service.

Possible costs of returning the pump are to be paid by the customer.

The safety declaration can be found at the end of these instructions (only in English).

11. Technical data

11.1 Enclosure class

- Standard: IP55.

11.2 Sound pressure level

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

11.3 Ambient temperature

Caution ***Self-priming pumps:***
The liquid temperature must not exceed 60 °C (140 °F).

Maximum ambient temperature	Liquid temperature
+55 °C (131 °F)	+90 °C (194 °F)
+50 °C (122 °F)	+100 °C (212 °F)*
+45 °C (113 °F)	+110 °C (230 °F)*
+40 °C (104 °F)	+120 °C (248 °F)*

* **Note:** Only the stainless-steel variant (EN 1.4301/AISI 304) is suitable for pumping liquids with temperatures above +90 °C (194 °F).

11.4 Maximum system pressure and permissible liquid temperature

Material variant	Shaft seal	Permissible liquid temperature*		Maximum system pressure	
Cast iron (EN-GJL-200)	AVBx	-20 °C to +40 °C +41 °C to +90 °C	(-4 °F to 104 °F) (105.8 °F to 194 °F)	10 bar 6 bar	(145 psi) (87 psi)
	AQQx	-20 °C to +90 °C	(-4 °F to 194 °F)	10 bar	(145 psi)
Stainless steel (EN 1.4301/AISI 304)	AVBx	-20 °C to +40 °C +41 °C to +90 °C	(-4 °F to 104 °F) (105.8 °F to 194 °F)	10 bar 6 bar	(145 psi) (87 psi)
	AQQx	-20 °C*** to +90 °C +91 °C to +120 °C**	(-4 °F to 194 °F) (195.8 °F to 248 °F)	16 bar 10 bar	(232 psi) (145 psi)
Stainless steel (EN 1.4401/AISI 316)	AVBx	-20 °C to +40 °C +41 °C to +90 °C	(-4 °F to 104 °F) (105.8 °F to 194 °F)	10 bar 6 bar	(145 psi) (87 psi)
	AQQx	-20 °C*** to +90 °C +91 °C to +120 °C**	(-4 °F to 194 °F) (195.8 °F to 248 °F)	16 bar 10 bar	(232 psi) (145 psi)

* At liquid temperatures below 0 °C (32 °F), higher motor outputs may be needed due to increased viscosity, for instance if glycol has been added to the water.

** 120 °C applies only if the pump has an AQQE shaft seal.

*** CM pumps for pumping liquids at temperatures below -20 °C are available on request. Please contact Grundfos.

11.5 Minimum inlet pressure

The minimum inlet pressure "H" in metres head required during operation to avoid cavitation in the pump can be calculated from the following formula:

$H = p_b \times 10.2 - NPSH - H_f - H_v - H_s$

p_b = Barometric pressure in bar. (Barometric pressure can be set to 1 bar.) In closed systems, p_b indicates the system pressure in bar.

NPSH = Net Positive Suction Head in metres head (to be read from the NPSH curves on pages 22 to 24 at the highest flow the pump will be delivering).

H_f = Friction loss in suction pipe in metres head.

H_v = Vapour pressure in metres head. See fig. 18, page 25. t_m = liquid temperature.

H_s = Safety margin = min. 0.5 metres head.

If the calculated value of "H" is positive, the pump can operate with a maximum suction lift of "H" metres.

If the calculated value of "H" is negative, a minimum suction head of "H" metres is required during operation to avoid cavitation.

Example

p_b = 1 bar.

Pump type: CM 3, 50 Hz.

Flow rate: 4 m^3/h.

NPSH (from fig. 14, page 22): 3.3 metres head.

H_f = 3.0 metres head.

Liquid temperature: 90 °C.

H_v (from fig. 18, page 25): 7.2 metres head.

$H = p_b \times 10.2 - NPSH - H_f - H_v - H_s$ [metres head].

$H = 1 \times 10.2 - 3.0 - 3.3 - 7.2 - 0.5 = -3.8$ metres head.

This means that a suction head of 3.8 metres is required during operation.

Pressure calculated in bar: 3.8 x 0.0981 = 0.37 bar.

Pressure calculated in kPa: 3.8 x 9.81 = 37.3 kPa.

11.6 Maximum inlet pressure

The actual inlet pressure plus the pressure when the pump is operating against a closed valve should always be lower than the maximum system pressure.

12. Fault finding

Warning

Before removing the terminal box cover, switch off the power supply. Make sure that the power supply cannot be accidentally switched on.

Warning

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.

Fault	Cause	Remedy
1. The pump does not run.	a) Supply failure.	Switch on the switch. Check cables and cable connections for defects and loose connections.
	b) Fuses are blown.	Check cables and cable connections for defects, and replace the fuses.
	c) Motor protection tripped.	See 2. a), b), c), d), e), f).
	d) Control-current circuit defective.	Repair or replace the control-current circuit.
2. Motor-protective circuit breaker has tripped (trips out immediately when power supply is switched on).	a) Fuses are blown.	See 1. b).
	b) Contacts of the motor-protective circuit breaker or magnet coil defective.	Replace the contacts of the motor-protective circuit breaker, the magnet coil or the entire motor-protective circuit breaker.
	c) Cable connection is loose or faulty.	Check cables and cable connections for defects, and replace the fuses.
	d) Motor winding is defective.	Repair or replace the motor.
	e) The pump is mechanically blocked.	Switch off the power supply, and clean or repair the pump.
	f) The setting of the motor-protective circuit breaker is too low.	Set the motor-protective circuit breaker according to the rated current of the motor ($I_{1/1}$). See nameplate.
3. The motor-protective circuit breaker trips out occasionally.	a) The setting of the motor-protective circuit breaker is too low.	See 2. f).
	b) Periodic supply failure.	See 2. c).
	c) Periodically low voltage.	Check cables and cable connections for defects and loose connections. Check that the supply cable of the pump is correctly sized.
4. The motor-protective circuit breaker has not tripped out, but the pump is inadvertently out of operation.	a) See 1. a), b), d) and 2. e).	
5. The pump performance is unstable.	a) Pump inlet pressure too low.	Check the inlet conditions of the pump.
	b) Suction pipe is partly blocked by impurities.	Remove and clean the suction pipe.
	c) Leakage in suction pipe.	Remove and repair the suction pipe.
	d) Air in suction pipe or pump.	Vent the suction pipe/pump. Check the inlet conditions of the pump.

Fault	Cause	Remedy
6. The pump performance is unstable and the pump is noisy.	**Self-priming pumps only:**	
	a) The differential pressure across the pump is too low.	Close the tap gradually until the discharge pressure is stable and the noise has ceased.
7. The pump runs, but gives no water.	a) Pump inlet pressure too low.	See 5. a).
	b) The suction pipe is partly clogged by impurities.	See 5. b).
	c) The foot or non-return valve is stuck in its closed position.	Remove and clean, repair or replace the valve.
	d) Leakage in suction pipe.	See 5. c).
	e) Air in suction pipe or pump.	See 5. d).
8. When start-up is attempted, the pump will start, but delivers no pressure or flow.	**Self-priming pumps only:**	
	a) Liquid column above non-return valve in discharge pipe prevents the pump from self-priming.	Empty the discharge pipe. Make sure that the non-return valve does not hold back liquid in the discharge pipe. Repeat the start-up procedure in section *6.2.2*.
	b) Suction pipe draws in air.	Make sure that the suction pipe is airtight from pump to liquid level. Repeat the start-up procedure in section *6.2.2*.
9. The pump runs, but does not deliver the rated flow.	**Self-priming pumps only:**	
	a) The internal valve did not close.	Close the tap gradually until a sudden rise in pressure or flow can be seen. Then open the tap gradually until the required flow is reached.
10. The pump runs backwards when switched off.	a) Leakage in suction pipe.	See 5. c).
	b) Foot or non-return valve defective.	See 6. c).
	c) The foot valve is stuck in completely or partly open position.	See 6. c).
11. The pump runs with reduced performance.	a) Wrong direction of rotation.	**Three-phase pumps only:** Switch off the power supply with the external circuit breaker, and interchange two phases in the pump terminal box. See also section *8.3 Checking the direction of rotation*.
	b) See 5. a), b), c), d).	

13. Further product information

13.1 Service documentation

Service documentation is available on www.grundfos.com > International website > WebCAPS > Service.

If you have any questions, please contact the nearest Grundfos company or service workshop.

14. 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.

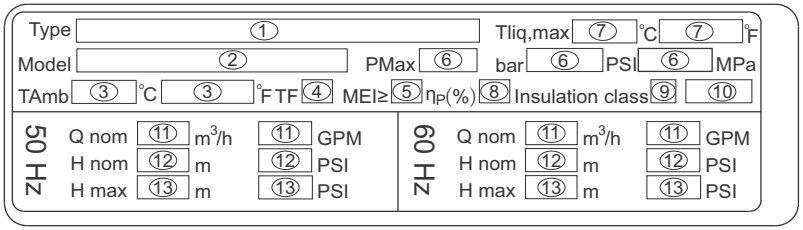

Fig. 11 Nameplate for pump

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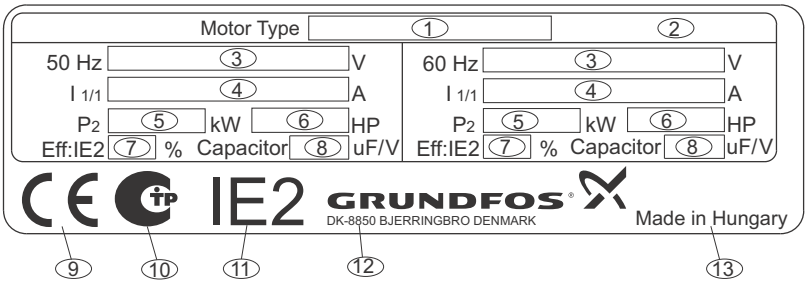

Fig. 12 Nameplate for motor

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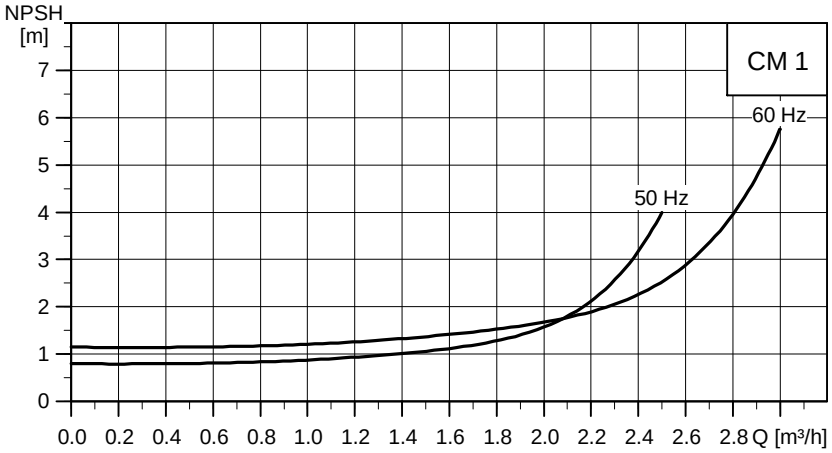

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Fig. 13 NPSH curve for CM 1

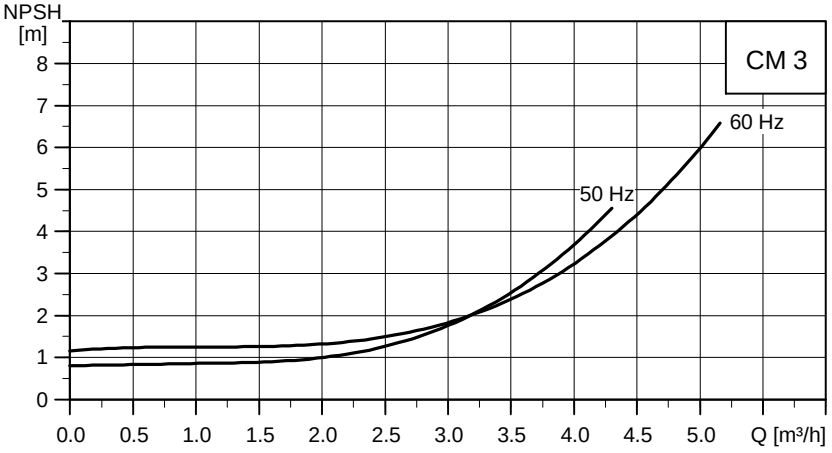

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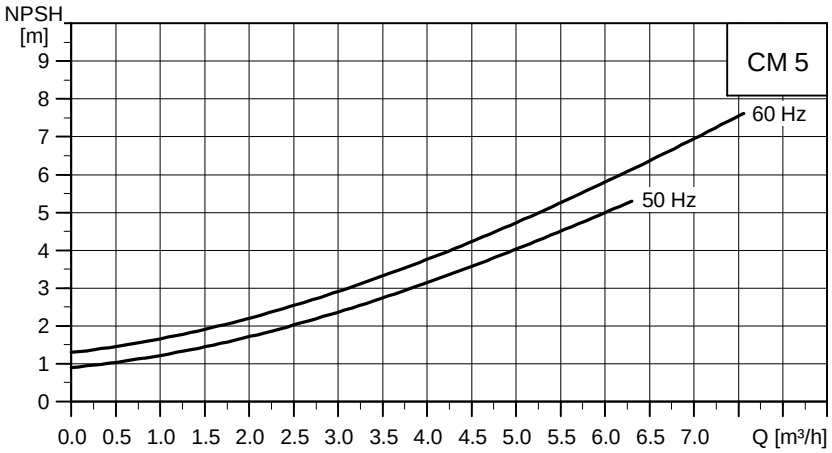
Fig. 14 NPSH curves for CM 3



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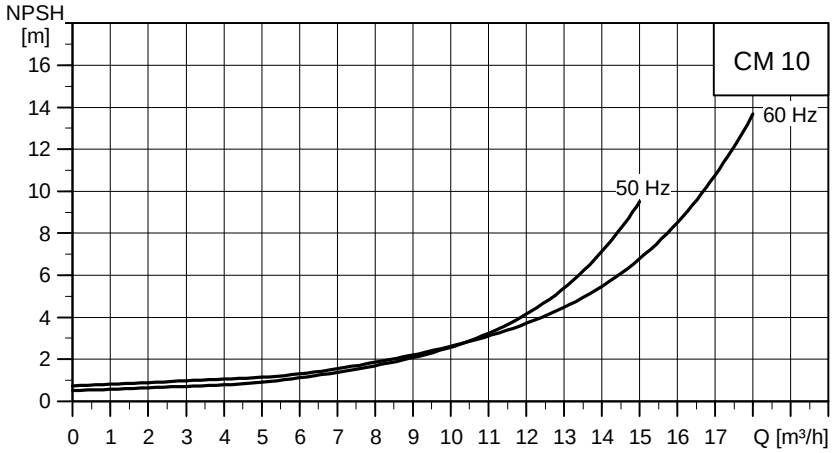

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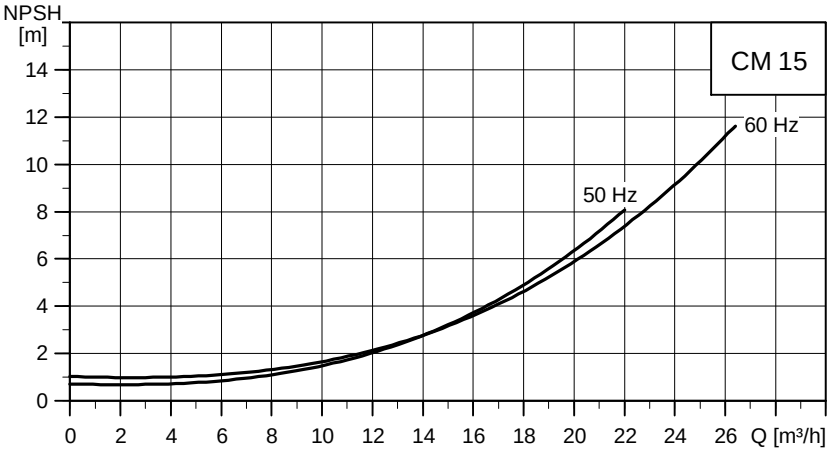
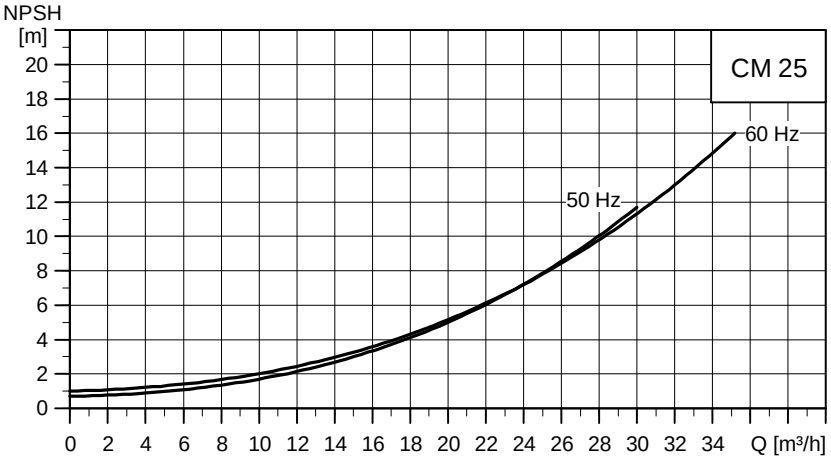
Fig. 15 NPSH curves for CM 10



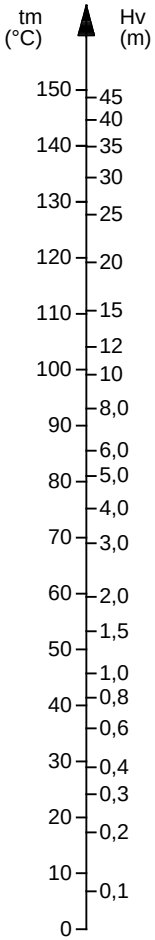
TM04 0462 0309

Fig. 16 NPSH curves for CM 15



TM04 0463 0309

Fig. 17 NPSH curves for CM 25



TM00 3037 0800

Fig. 18 Vapour pressure

Safety declaration

Please copy, fill in and sign this sheet and attach it to the pump returned for service.

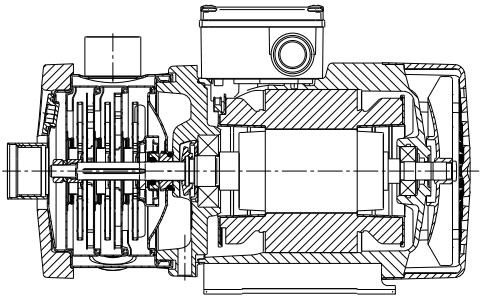
Media and application

Which media has the pump been used for: _____

In which application has the pump been used: _____

Fault description

If possible please make a circle around the faulty part.
(In case of an electrical fault, please mark the terminal box.)



TM04 0359 1008

Please give a short description of the fault:

_____
_____
_____
_____
_____
_____
_____

We hereby declare that this product is free from hazardous chemicals, biological and radioactive substances.

_____ _____

Date and signature Company stamp

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