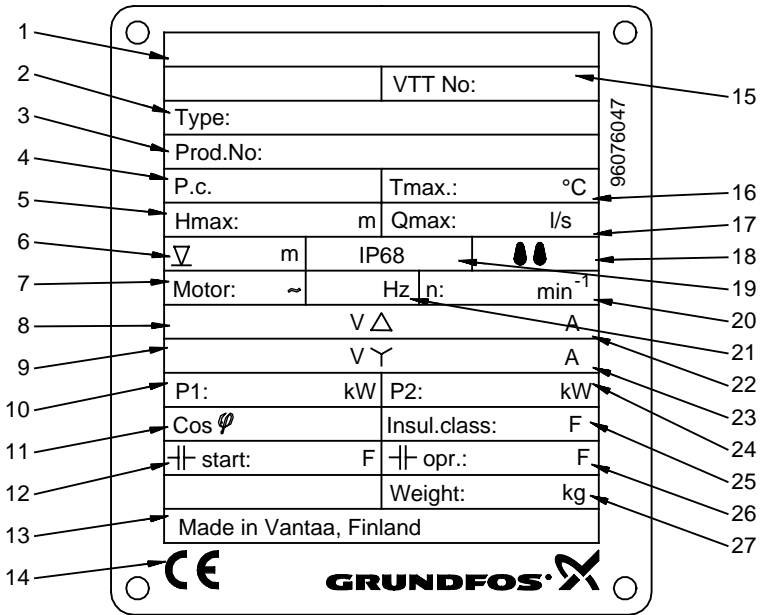

DP 10, 0.9-2.6 kW

EF 30, 0.6-1.5 kW

Installation and operating instructions

GB D F I E P GR NL S FIN DK
PL RU H SI HR YU RO BG CZ SK TR





TM02 5375 2802

Pos.	Description (GB)	Beschreibung (D)	Description (F)	Descrizione (I)
1	Ex mark	Ex-Marke	Marque Ex	Marcatatura Ex
2	Type designation	Typenbezeichnung	Désignation de type	Tipo
3	Product number	Produktnummer	Numéro du produit	Codice prodotto
4	Production code	Produktionscode	Code de production	Codice produzione
5	Maximum head	Max. Förderhöhe	Hauteur manométrique maxi	Massima prevalenza
6	Maximum installation depth	Max. Eintauchtiefe	Profondeur maxi d'installation	Massima profondità di installazione
7	Number of phases	Anzahl der Phasen	Nombre de phases	Numero delle fasi
8	Rated voltage, Δ	Bemessungsspannung, Δ	Tension nominale, Δ	Tensione nominale, Δ
9	Rated voltage, Y	Bemessungsspannung, Y	Tension nominale, Y	Tensione nominale, Y
10	Rated power input	Bemessungsleistungsaufnahme	Puissance d'entrée nominale	Potenza d'ingresso nominale
11	Power factor	Leistungsfaktor	Facteur de puissance	Fattore di potenza
12	Starting capacitor	Anlaufkondensator	Condensateur de démarrage	Condensatore di avviamento
13	Country of production	Produktionsland	Pays de production	Nazione di produzione
14	CE mark	CE-Kennzeichnung	Marque CE	Marcatatura CE
15	VTT approval number	VTT-Zulassungsnummer	Numéro d'agrément VTT	Numero di approvazione VTT
16	Maximum liquid temperature	Max. Medientemperatur	Température maxi du liquide	Massima temperatura del liquido
17	Maximum flow	Max. Förderstrom	Débit maxi	Portata massima
18	Enclosure class to CEE	Schutzart nach CEE	Indice de protection selon CEE	Grado di protezione CEE
19	Enclosure class to IEC	Schutzart nach IEC	Indice de protection selon IEC	Grado di protezione IEC
20	Rated speed	Bemessungsdrehzahl	Vitesse nominale	N° di giri nominale
21	Frequency	Frequenz	Fréquence	Frequenza
22	Rated current, Δ	Bemessungsstrom, Δ	Courant nominal, Δ	Corrente nominale, Δ
23	Rated current, Y	Bemessungsstrom, Y	Courant nominal, Y	Corrente nominale, Y
24	Shaft power	Wellenleistung	Puissance à l'arbre	Potenza all'albero
25	Insulation class	Wärmeklasse	Classe d'isolation	Classe di isolamento
26	Operating capacitor	Betriebskondensator	Condensateur de fonctionnement	Condensatore di marcia
27	Weight without cable	Gewicht ohne Kabel	Poids sans câble	Peso senza cavo

Pos.	Descripción (E)	Descrição (P)	Περιγραφή (GR)	Omschrijving (NL)
1	Marca Ex	Marca Ex	Χαρακτηρισμός Ex	Ex markering
2	Denominación de tipo	Descrição do tipo	Επεξήγηση τύπου	Type omschrijving
3	Número de producto	Número do produto	Αριθμός προϊόντος	Productnummer
4	Código de fabricación	Código de produção	Κωδικός παραγωγής	Productie code
5	Altura máx.	Altura manométrica máxima	Μέγιστο μανομετρικό ύψος	Maximale opvoerhoogte
6	Profundidad máx. de instalación	Profundidade máxima de instalação	Μέγιστο βάθος εγκατάστασης	Maximale installatie diepte
7	Número de fases	Número de fases	Αριθμός φάσεων	Aantal fase
8	Tensión nominal, Δ	Tensão nominal, Δ	Ονομαστική φάση, Δ	Spanning, Δ
9	Tensión nominal, Υ	Tensão nominal, Υ	Ονομαστική φάση, Υ	Spanning, Υ
10	Potencia de entrada nominal	Potência de entrada nominal	Ονομαστική εισόδος ισχύος	Opgenomen vermogen
11	Factor de potencia	Factor de potência	Συντελεστής ισχύος	cos φ
12	Condensador de arranque	Condensador de arranque	Πυκνωτής εκκίνησης	Start condensator
13	País de fabricación	País de produção	Χώρα παραγωγής	Productie land
14	Marca CE	Marca CE	Σήμα ΕΕ	CE markering
15	Número de homologación VTT	Número de aprovação VTT	Αριθμός έγκρισης VTT	VVT keuringsnummer
16	Temperatura máx. del líquido	Temperatura máxima do líquido	Μέγιστη θερμοκρασία υγρού	Maximale vloeistoftemperatuur
17	Caudal máx.	Caudal máximo	Μέγιστη παροχή	Maximale capaciteit
18	Grado de protección según CEE	Classe de protecção (CEE)	Κατηγορία προστασίας σύμφωνα με την ΕΟΚ	Beschermingsklasse volgens CEE
19	Grado de protección según IEC	Classe de protecção (IEC)	Κατηγορία προστασίας σύμφωνα με IEC	Beschermingsklasse volgens IEC
20	Velocidad nominal	Velocidade nominal	Ονομαστική ταχύτητα	Berekent toerental
21	Frecuencia	Frequência	Συχνότητα	Frequentie
22	Intensidad nominal, Δ	Corrente nominal, Δ	Ονομαστικό ρεύμα, Δ	Ampèrage, Δ
23	Intensidad nominal, Υ	Corrente nominal, Υ	Ονομαστικό ρεύμα, Υ	Ampèrage, Υ
24	Potencia del eje	Potência do veio	Ισχύος άξονα	Afgegeven vermogen
25	Clase de aislamiento	Classe de isolamento	Κατηγορία μόνωσης	Isolatie klasse
26	Condensador de funcionamiento	Condensador de funcionamento	Πυκνωτής λειτουργίας	Bedrijfscondensator
27	Peso sin cable	Peso sem cabo	Βάρος χωρίς καλώδιο	Gewicht zonder kabel

Pos.	Beskrivning (S)	Kuvaus (FIN)	Beskrivelse (DK)	Opis (PL)
1	Ex-märke	Ex-tunnus	Ex-mærke	Znak Ex
2	Typbeteckning	Tyypimerkintä	Typebetegnelse	Oznaczenie typu
3	Produktnummer	Tuotenumero	Produktnummer	Nr katalogowy
4	Tillverkningsnummer	Tuotantokoodi	Produktionskode	Nr fabryczny
5	Max. tryck	Suurin nostokorkeus	Maks. løftehøjde	Max wysokość podnoszenia
6	Max. installationsdjup	Suurin asennussyvyys	Maks. installationsdybde	Max głębokość zanurzenia
7	Antal faser	Vaihelukumäärä	Antal faser	Liczba faz
8	Märkspänning, Δ	Nimellisjännite, Δ	Mærkespænding, Δ	Napięcie znamionowe, Δ
9	Märkspänning, Y	Nimellisjännite, Y	Mærkespænding, Y	Napięcie znamionowe, Y
10	Upptagen effekt	Ottamatcho	Optagen effekt	Moc wejściowa
11	Effektfaktor	Tehokerroin	Effektfaktor	Współczynnik mocy
12	Startkondensator	Käynnistyskondensaattori	Startkondensator	Kondensator rozruchowy
13	Tillverkningsland	Tuotantomaa	Produktionsland	Kraj produkcji
14	CE-märkning	CE-tunnus	CE-mærke	Znak CE
15	VTT-godkännandenummer	Hyväksymysmerkki VTT	Godkendelsesnummer VTT	Nr dopuszczenia VTT
16	Max. vätsketemperatur	Korkein pumpattavan nesteen lämpötila	Maks. medietemperatur	Max temperatura cieczy
17	Max. flöde	Suurin tilavuusvirta	Maks. flow	Wydajność max.
18	Kapslingsklass enligt CEE	Kotelointiluokka CEE	Kapslingsklasse CEE	Stopień ochrony CEE
19	Kapslingsklass enligt IEC	Kotelointiluokka IEC	Kapslingsklasse IEC	Stopień ochrony IEC
20	Märkvarvtal	Nimelliskierrosluku	Nominel omdrejnings-hastighed	Prędkość obrotowa
21	Frekvens	Taajuus	Frekvens	Częstotliwość
22	Märkström, Δ	Nimellisvirta, Δ	Mærkestrøm, Δ	Prąd znamionowy, Δ
23	Märkström, Y	Nimellisvirta, Y	Mærkestrøm, Y	Prąd znamionowy, Y
24	Axeffekt	Akseliteho	Akseleffekt	Moc na wale
25	Isolationsklass	Eristysluokka	Isolationsklasse	Klasa izolacji
26	Driftkondensator	Käyntikondensaattori	Driftskondensator	Kondensator roboczy
27	Vikt utan kabel	Paino ilman kaapelia	Vægt uden kabel	Masa bez kabli

Pos.	Наименование (RU)	Megnevezés (H)	Opis (SI)
1	Маркировка взрывобезопасного исполнения	Ex-jelölés	Ex oznaka
2	Обозначение модели	Típus	Oznaka tipa
3	Номер изделия	Gyártmányszám	Številka izdelka
4	Код изделия	Gyártmánykód	Proizvodna koda
5	Максимальный напор	Maximális nyomómagasság	Maksimalna tlačna višina
6	Максимальная глубина погружения на месте монтажа в м	Maximális telepítési mélység	Maksimalna instalacijska globina
7	Число фаз	Fázisok száma	Številko faz
8	Номинальное напряжение в В при включении по схеме "треугольник"	Névleges feszültség, Δ	Nominalna napetost, Δ
9	Номинальное напряжение в В при включении по схеме "звезда"	Névleges feszültség, Y	Nominalna napetost, Y
10	Номинальная потребляемая мощность электродвигателя в кВт	Névleges teljesítményfelvétel	Nominalna vstopna moč
11	Коэффициент мощности	Teljesítménytényező	Faktor moči
12	Пусковой конденсатор: емкость в Ф	Indítókondenzátor	Zagonski kondenzator
13	Страна изготовления	Gyártó ország	Država izdelave
14	Маркировка Электротехнической комиссии ЕЭС	CE jelölés	CE oznaka
15	Номер допуска к эксплуатации VTT	VTT tanúsítás száma	VTT odobritvena številka
16	Макс. температура перекачиваемой жидкости	Maximális közeghőmérséklet	Maksimalna temperatura tekočine
17	Макс. подача в л/с	Maximális térfogatáram	Maksimalni pretok
18	Степень защиты по CEE	Burkolat besorolása CEE szerint	Omejitevni razred CEE
19	Степень защиты по IEC	Burkolat besorolása IEC szerint	Omejitevni razred IEC
20	Номинальная частота вращения в об/мин	Névleges fordulatszám	Nominalna hitrost
21	Частота тока в сети в Гц	Frekvencia	Frekvenca
22	Номинальный ток в А при включении по схеме "треугольник"	Névleges áramfelvétel, Δ	Nominalni tok, Δ
23	Номинальный ток в А при включении по схеме "звезда"	Névleges áramfelvétel, Y	Nominalni tok, Y
24	Мощность электродвигателя на выходном валу	Leadott teljesítmény	Moč na osi
25	Класс нагревостойкости изоляции	Szigetelési osztály	Izolacijski razred
26	Рабочий конденсатор: емкость в Ф	Üzemi kondenzátor	Delovni kondenzator
27	Масса в кг без учета массы кабеля	Tömeg (kábel nélkül)	Teža brez kabla

Pos.	Opis (HR)	Naziv (YU)	Instalație fixă (RO)	Описание (BG)
1	Ex-oznaka	Ex - oznaka	Marcă Ex	Символ за взривообезопасеност
2	oznaka tipa	Oznaka tipa proizvoda	Tip	Модел
3	proizvodni broj	Broj proizvoda	Serie produs	Продуктов номер
4	proizvodni kôd	Šifra proizvoda	Cod produs	Продуктов код
5	max. visina dizanja	Maksimalni napor	Înălțime maximă	Максимален напор
6	max. dubina uranjanja	Maksimalna dubina ugradnje	Adâncime maximă instalație	Максимална дълбочина на монтаж
7	broj faza	Broj faza	Număr faze	Брой на фазите
8	nazivni napon, Δ	Nazivni napon, Δ	Tensiune, Δ	Номинално напрежение, Δ
9	nazivni napon, Y	Nazivni napon, Y	Tensiune, Y	Номинално напрежение, Y
10	nazivni ulazni napon	Nazivna ulazna snaga	Putere	Номинална входяща мощност
11	faktor snage	Faktor snage	Factor de putere	Фактор на мощността
12	startni kondenzator	Startni kondenzator	Condensator de pornire	Пусков кондензатор
13	zemlja proizvodnje	Zemlja proizvodnje	Țara de origine	Страна на произход
14	CE-oznaka	CE-oznaka	Marca CE	CE символ
15	VTT-registarski broj	VTT broj odobrenja	Număr aprobare VTT	VTT номер
16	max. temperatura medija	Maksimalna temperatura tečnosti	Temperatură maximă lichid	Максимална температура на течността
17	max. dizani protok	Maksimalni protok	Debit maxim	Максимален дебит
18	zaštita prema CEE	Klasa zaštite kućišta prema CEE	Clasă de izolare CEE	Клас на приложение CEE
19	zaštita prema IEC	Klasa zaštita kućišta prema IEC	Clasă de izolare IEC	Клас на приложение IEC
20	nazivna brzina vrtnje	Nazivna brzina	Viteză	Номинална скорост
21	frekvencija	Frekvencija	Frecvență	Честота
22	nazivna struja, Δ	Nazivna struja, Δ	Curent, Δ	Номинален ток, Δ
23	nazivna struja, Y	Nazivna struja, Y	Curent, Y	Номинален ток, Y
24	snaga vratila	Snaga na osovini	Putere arbore	Мощност при вала
25	toplinska klasa	Klasa izolacije	Clasa de izolare	Клас на изолация
26	pogonski kondenzator	Radni kapacitet	Condensator	Работен кондензатор
27	težina bez kabela	Težina bez kabla	Greutate fără cablu	Тегло без кабела

Pos.	Popis (CZ)	Popis (SK)	Tanım (TR)
1	Značka Ex	Značka Ex	Ex işareti
2	Typové označení	Typové označenie	Tip göstergesi
3	Číslo výrobku	Číslo výrobku	Ürün numarası
4	Výrobní kód	Výrobný kód	Ürün kodu
5	Maximální dopravní výška	Maximálna dopravná výška	Maksimum basma yüksekliği
6	Maximální instalační hloubka	Maximálna inštalačná hĺbka	Maksimum montaj derinliği
7	Počet fází	Počet fáz	Faz sayısı
8	Jmenovité napětí, Δ	Menovité napätie, Δ	Nominal voltaj, Δ
9	Jmenovité napětí, Y	Menovité napätie, Y	Nominal voltaj, Y
10	Jmenovitý příkon	Menovitý príkon	Nominal giriş gücü
11	Účinnost	Üçinlik	Güç faktörü
12	Spouštěcí kondenzátor	Spúšťací kondenzátor	İlk hareket kondansatörü
13	Země výroby	Krajina výroby	Üretildiği ülke
14	Značka CE	Značka CE	CE işareti
15	Číslo schvalovacího protokolu VTT	Číslo schvaľovacieho protokolu VTT	VTT onay numarası
16	Maximální teplota kapaliny	Maximálna teplota kvapaliny	Maksimum sıvı sıcaklığı
17	Maximální průtok	Maximálny prietok	Maksimum debi
18	Třída krytí dle CEE	Trieda krytia podľa CEE	CEE koruma sınıfı
19	Třída krytí dle IEC	Trieda krytia podľa IEC	IEC koruma sınıfı
20	Jmenovitá otáčky	Menovitá otáčky	Nominal hız
21	Kmitočet	Kmitočet	Frekans
22	Jmenovitý proud, Δ	Menovitý prúd, Δ	Nominal akım, Δ
23	Jmenovitý proud, Y	Menovitý prúd, Y	Nominal akım, Y
24	Výkon na hřídeli	Výkon na hriadeli	Mil gücü
25	Třída izolace	Trieda izolácie	Yalıtım sınıfı
26	Provozní kondenzátor	Prevádzkový kondenzátor	Çalıştırma kondansatörü
27	Hmotnost bez kabelu	Hmotnosť bez kábla	Kablo hariç ağırlık

Declaration of Conformity

We **Grundfos** declare under our sole responsibility that the products **DP** and **EF** 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).
Standard used: EN ISO 12100
- Electromagnetic compatibility (89/336/EEC).
Standards used: EN 61 000-6-2 and EN 61 000-6-3.
- Electrical equipment designed for use within certain voltage limits (73/23/EEC) [95].
Standards used: EN 60 335-1 and EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (applies only to products with the ATEX mark on the nameplate).
Standards used: EN 50 014, EN 50 018, EN 13 463-1 and EN 13 463-5.

Déclaration de Conformité

Nous **Grundfos** déclarons sous notre seule responsabilité que les produits **DP** et **EF** 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).
Standard utilisé: EN ISO 12100.
- Compatibilité électromagnétique (89/336/CEE).
Standards utilisés: EN 61 000-6-2 et EN 61 000-6-3.
- Matériel électrique destiné à employer dans certaines limites de tension (73/23/CEE) [95].
Standards utilisés: EN 60 335-1 et EN 60 335-2-41.
- ATEX 94/9/CE (ATEX 100) (s'applique uniquement aux produits avec norme ATEX citée sur la plaque signalétique).
Standards utilisés: EN 50 014, EN 50 018, EN 13 463-1 et EN 13 463-5.

Declaración de Conformidad

Nosotros **Grundfos** declaramos bajo nuestra única responsabilidad que los productos **DP** y **EF** 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).
Norma aplicada: EN ISO 12100.
- Compatibilidad electromagnética (89/336/CEE).
Normas aplicadas: EN 61 000-6-2 y EN 61 000-6-3.
- Material eléctrico destinado a utilizarse con determinadas límites de tensión (73/23/CEE) [95].
Normas aplicadas: EN 60 335-1 y EN 60 335-2-41.
- ATEX 94/9/CE (ATEX 100) (se refiere sólo a productos con la marca ATEX en la placa de características).
Normas aplicadas: EN 50 014, EN 50 018, EN 13 463-1 y EN 13 463-5.

Δήλωση Συμμόρφωσης

Εμείς η **Grundfos** δηλώνουμε με αποκλειστικά δική μας ευθύνη ότι τα προϊόντα **DP** και **EF** 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).
Πρότυπο που χρησιμοποιήθηκε: EN ISO 12100.
- Ηλεκτρομαγνητική συμβατότητα (89/336/EEC).
Πρότυπα που χρησιμοποιήθηκαν: EN 61 000-6-2 και EN 61 000-6-3.
- Ηλεκτρικές συσκευές σχεδιασμένες για χρήση εντός ορισμένων ορίων ηλεκτρικής τάσης (73/23/EEC) [95].
Πρότυπα που χρησιμοποιήθηκαν: EN 60 335-1 και EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (εφαρμόζεται μόνο σε προϊόντα με το σήμα ATEX στην πινακίδα τους).
Πρότυπα που χρησιμοποιήθηκαν: EN 50 014, EN 50 018, EN 13 463-1 και EN 13 463-5.

Försäkran om överensstämmelse

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

- Maskinell utrustning (98/37/EC).
Använd standard: EN ISO 12100.
- Elektromagnetisk kompatibilitet (89/336/EC).
Använda standarder: EN 61 000-6-2 och EN 61 000-6-3.
- Elektrisk material avsedd för användning inom vissa spänningsgränser (73/23/EC) [95].
Använda standarder: EN 60 335-1 och EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (bästär för produkter med ATEX-märkning på typskylten).
Använda standarder: EN 50 014, EN 50 018, EN 13 463-1 och EN 13 463-5.

Konformitätserklärung

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

- Maschinen (98/37/EG).
Norm, die verwendet wurde: EN ISO 12100.
- Elektromagnetische Verträglichkeit (89/336/EWG).
Normen, die verwendet wurden: EN 61 000-6-2 und EN 61 000-6-3.
- Elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen (73/23/EWG) [95].
Normen, die verwendet wurden: EN 60 335-1 und EN 60 335-2-41.
- ATEX 94/9/EG (ATEX 100) (gilt nur für Produkte mit der ATEX-Kennzeichnung auf dem Leistungsschild).
Normen, die verwendet wurden: EN 50 014, EN 50 018, EN 13 463-1 und EN 13 463-5.

Dichiarazione di Conformità

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

- Macchine (98/37/CE).
Standard usato: EN ISO 12100.
- Compatibilità elettromagnetica (89/336/CEE).
Standard usati: EN 61 000-6-2 e EN 61 000-6-3.
- Materiale elettrico destinato ad essere utilizzato entro certi limiti di tensione (73/23/CEE) [95].
Standard usati: EN 60 335-1 e EN 60 335-2-41.
- ATEX 94/9/CE (ATEX 100) (si applica solo ai prodotti che riportano la sigla ATEX sull'etichetta).
Standard usati: EN 50 014, EN 50 018, EN 13 463-1 e EN 13 463-5.

Declaração de Conformidade

Nós **Grundfos** declaramos sob nossa única responsabilidade que os produtos **DP** e **EF** 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).
Norma utilizada: EN ISO 12100.
- Compatibilidade electromagnética (89/336/CEE).
Normas utilizadas: EN 61 000-6-2 e EN 61 000-6-3.
- Material eléctrico destinado a ser utilizado dentro de certos limites de tensão (73/23/CEE) [95].
Normas utilizadas: EN 60 335-1 e EN 60 335-2-41.
- ATEX 94/9/CE (ATEX 100) (apenas aplicável a produtos com a inscrição ATEX gravada na chapa de características).
Normas utilizadas: EN 50 014, EN 50 018, EN 13 463-1 e EN 13 463-5.

Overeenkomstigheidsverklaring

Wij **Grundfos** verklaren geheel onder eigen verantwoordelijkheid dat de producten **DP** en **EF** 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).
Norm: EN ISO 12100.
- Elektromagnetische compatibiliteit (89/336/EEG).
Normen: EN 61 000-6-2 en EN 61 000-6-3.
- Elektrisch materiaal bestemd voor gebruik binnen bepaalde spanningsgrenzen (73/23/EEG) [95].
Normen: EN 60 335-1 en EN 60 335-2-41.
- ATEX 94/9/EG (ATEX 100) (alleen van toepassing voor producten met de ATEX marking op de typeplaat).
Normen: EN 50 014, EN 50 018, EN 13 463-1 en EN 13 463-5.

Vastaavuusvakuutus

Me **Grundfos** vakuutamme yksin vastuullisesti, että tuotteet **DP** ja **EF**, jota tämä vakuutus koskee, noudattavat direktiivejä jotka käsittelevät EY:n jäsenvaltioiden koneellisia laitteita koskevien lakien yhdenmukaista seura:

- Koneet (98/37/EY).
Käytetty standardi: EN ISO 12100.
- Elektromagneettinen vastaavuus (89/336/EY).
Käytetty standardi: EN 61 000-6-2 ja EN 61 000-6-3.
- Määrättyjen jännitearajoitusten puitteissa käytettävät sähköiset laitteet (73/23/EY) [95].
Käytetty standardi: EN 60 335-1 ja EN 60 335-2-41.
- ATEX 94/9/EY (ATEX 100) (soveltuu vain tuotteisiin, joissa on ATEX-merkintä arvokilvessä).
Käytetty standardi: EN 50 014, EN 50 018, EN 13 463-1 ja EN 13 463-5.

Overensstemmelseserklæring

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

- Maskiner (98/37/EF).
Anvendt standard: EN ISO 12100.
- Elektromagnetisk kompatibilitet (89/336/EØF).
Anvendte standarder: EN 61 000-6-2 og EN 61 000-6-3.
- Elektrisk materiel bestemt til anvendelse inden for visse spændingsgrænser (73/23/EØF) [95].
Anvendte standarder: EN 60 335-1 og EN 60 335-2-41.
- ATEX 94/9/EF (ATEX 100) (gælder kun for produkter med ATEX-mærkning på typeskiltet).
Anvendte standarder: EN 50 014, EN 50 018, EN 13 463-1 og EN 13 463-5.

Deklaracja zgodności

My **Grundfos**, oświadczamy z pełną odpowiedzialnością, że nasze wyroby **DP** i **EF**, których deklaracja niniejsza dotyczy, są zgodne z następującymi wytycznymi Rady d/s ujednolicenia przepisów prawnych krajów EG:

- Maszyny (98/37/EG).
- Zastosowana norma: EN ISO 12100.
- Zgodność elektromagnetyczna (89/336/EWG).
- Zastosowane normy: EN 61 000-6-2 i EN 61 000-6-3.
- Wyposażenie elektryczne do stosowania w określonym zakresie napięć (73/23/EWG) [95].
- Zastosowane normy: EN 60 335-1 i EN 60 335-2-41.
- ATEX 94/9/EG (ATEX 100) (dotyczy tylko wyrobów ze znakiem ATEX na tabliczce znamionowej).
- Zastosowane normy: EN 50 014, EN 50 018, EN 13 463-1 i EN 13 463-5.

Заявление о соответствии

Мы, фирма **Grundfos**, со всей ответственностью заявляем, что изделия **DP** и **EF**, к которым относится данное заявление, соответствуют следующим предписаниям Совета Евросоюза об унификации законодательных предписаний стран-членов ЕС, касающихся:

- машиностроительного оборудования (98/37/EC), применяющиеся стандарты: EN ISO 12100;
- электромагнитной совместимости (89/336/EEC), применяющиеся стандарты: EN 61 000-6-2 и EN 61 000-6-3;
- электрооборудования, спроектированного для эксплуатации в определенном диапазоне значений напряжения (73/23/EEC) [95], применяющиеся стандарты: EN 60 335-1 и EN 60 335-2-41;
- ATEX 94/9/EC (ATEX 100) (действительно только для изделий с маркировкой ATEX на фирменной табличке с техническими данными), применяющиеся стандарты: EN 50 014, EN 50 018, EN 13 463-1 и EN 13 463-5.

Megfelelőségi nyilatkozat

Grundfos teljes felelősséggel kijelenti, hogy a **DP** és **EF** típusú szivattyúk, amelyre ezen nyilatkozat vonatkozik, megfelelnek az Európai Unió tagállamainak jogi irányelveit összehangoló tanács alábbi előírásainak:

- Gépek (98/37/EC).
- Alkalmazott szabvány: EN ISO 12100.
- Elektromágneses összeférhetőség (89/336/EEC).
- Alkalmazott szabvány: EN 61 000-6-2 és EN 61 000-6-3.
- Meghatározott feszültséghatárok belül használt elektromos eszközök (73/23/EEC) [95].
- Alkalmazott szabvány: EN 60 335-1 és EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (csak az ATEX jelzéssel ellátott termékekre vonatkozik).
- Alkalmazott szabvány: EN 50 014, EN 50 018, EN 13 463-1 és EN 13 463-5.

Izjava o skladnosti

Mi, **Grundfos**, pod svojo izključno odgovornostjo izjavljamo, da so izdelki **DP** i **EF**, na katere se ta izjava nanaša, skladni z Direktivami sveta o približevanju zakonodaji držav članic EC glede:

- Strojev (98/37/EC).
- Uporabljeni standard: EN ISO 12100.
- Elektromagnetne kompatibilnosti (89/336/EEC).
- Uporabljeni standarda: EN 61 000-6-2 i EN 61 000-6-3.
- Električna oprema, izdelane za uporabo v okviru določenih meja napetosti (73/23/EEC) [95].
- Uporabljeni standarda: EN 60 335-1 i EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (vevja samo za izdelke z oznako ATEX na tipski ploščici).
- Uporabljeni standarda: EN 50 014, EN 50 018, EN 13 463-1 i EN 13 463-5.

Izjava o uskladenosti

Mi, **Grundfos**, izjavljujemo uz punu odgovornost, da su proizvodi **DP** i **EF**, na koje se ova izjava odnosi, skladni slijedećim smjernicama Savjeta za prilagodbu propisa država-članica EZ:

- strojevi (98/37/EZ);
- korištena norma: EN ISO 12100.
- Elektromagnetska kompatibilnost (89/336/EEZ);
- korištene norme: EN 61 000-6-2 i EN 61 000-6-3.
- Električni pogonski uređaji za uporabu unutar određenih granica napona (73/23/EEZ) [95];
- korištene norme: EN 60 335-1 i EN 60 335-2-41.
- ATEX 94/9/EZ (ATEX 100) (vrijedi samo za proizvode s ATEX-znakom na natpisnoj pločici);
- korištene norme: EN 50 014, EN 50 018, EN 13 463-1 i EN 13 463-5.

Izjava o konformitetu

Mi, **Grundfos**, izjavljujemo pod potpunom odgovornošću da su proizvodi **DP** i **EF**, na koje se odnosi ova izjava, u saglasnosti sa smjernicama i uputstvima Saveta za usaglašavanje pravnih propisa članica Evropske Unije:

- Mašine (98/37/EC).
- Korišćen standard: EN ISO 12100.
- Elektromagnetna kompatibilnost (89/336/EEC).
- Korišćeni standardi: EN 61 000-6-2 i EN 61 000-6-3.
- Električna oprema razvijena za korišćenje unutar određenih naponskih granica (73/23/EEC) [95].
- Korišćeni standardi: EN 60 335-1 i EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (odnosi se samo na proizvode sa natpisom ATEX na natpisnoj pločici).
- Korišćeni standardi: EN 50 014, EN 50 018, EN 13 463-1 i EN 13 463-5.

Declarația de conformitate

Grundfos declară pe propria răspundere că produsele **DP** și **EF**, la care se referă această declarație sunt în conformitate cu Directivele Consiliului și legile Statelor membre EC, referitoare la:

- Utilaj (98/37/EC).
- Standard fotosit: EN ISO 12100.
- Compatibilitatea electromagnetică (89/336/EEC).
- Standarde fotosite: EN 61 000-6-2 și EN 61 000-6-3.
- Echipament electric proiectat pentru a fi fotosit în anumite limite de tensiune (73/23/EEC) [95].
- Standarde fotosite: EN 60 335-1 și EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (se aplică numai la produsele cu marca ATEX pe plăcuța de înmatriculare).
- Standarde fotosite: EN 50 014, EN 50 018, EN 13 463-1 și EN 13 463-5.

Декларация за съответствие

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

- Машины (98/37/EO).
- Приложена норма: EN ISO 12100.
- Электромагнитна поносимост (89/336/ЕИО).
- Приложени норми: EN 61 000-6-2 и EN 61 000-6-3.
- Электрически машини и съоръжения за употреба в рамките на определени граници на напрежение на електрическия ток (73/23/ЕИО) [95].
- Приложени норми: EN 60 335-1 и EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (отнася се само за продукти със символа ATEX върху табелата с данни).
- Приложени норми: EN 50 014, EN 50 018, EN 13 463-1 и EN 13 463-5.

Prohlášení o shodě

My, firma **Grundfos**, prohlašujeme na svou plnou odpovědnost, že výrobky **DP** a **EF**, na něž se toto prohlášení vztahuje, odpovídají ustanovením následujících směrníc Rady EU pro harmonizaci právních předpisů členských zemí Evropských společenství:

- Strojní zařízení (98/37/EC).
- Použitá norma: EN ISO 12100.
- Elektromagnetická kompatibilita (89/336/EEC).
- Použité normy: EN 61 000-6-2 a EN 61 000-6-3.
- Provozování elektrotechnických zařízení v rámci určitých napětových tolerancí (73/23/EEC) [95].
- Použité normy: EN 60 335-1 a EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (týká se pouze výrobků nesoucích na typovém štítku značku ATEX).
- Použité normy: EN 50 014, EN 50 018, EN 13 463-1 a EN 13 463-5.

Prehlásenie o zhode

My, firma **Grundfos**, prehlasujeme na svoju plnú zodpovednosť, že výrobky **DP** a **EF**, na ktoré sa toto prehlásenie vzťahuje, zodpovedajú ustanoveniam nasledujúcich smerníc Rady EÚ pre harmonizáciu právnych predpisov členských zemí Európskych spoločenstiev:

- Strojné zariadenia (98/37/EC).
- Použitá norma: EN ISO 12100.
- Elektromagnetická kompatibilita (89/336/EEC).
- Použitá normy: EN 61 000-6-2 a EN 61 000-6-3.
- Prevádzkovanie elektrotechnických zariadení v rámci určitých napätových tolerancií (73/23/EEC) [95].
- Použitá normy: EN 60 335-1 a EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (týka sa iba výrobkov nesúcich na typovom štítku značku ATEX).
- Použitá normy: EN 50 014, EN 50 018, EN 13 463-1 a EN 13 463-5.

Uygunluk Bildirgesi

Biz **Grundfos** olarak, bu bildirmede belirtilen **DP** ve **EF** ürünlerinin,

- Makina (98/37/EC).
- Kullanılan standart: EN ISO 12100.
- Elektromanyetik uyumluluk (89/336/EEC).
- Kullanılan standartlar: EN 61 000-6-2 ve EN 61 000-6-3.
- Belli voltaj sınırlarında kullanılmak üzere üretilmiş elektrik donanımı (73/23/EEC) [95].
- Kullanılan standartlar: EN 60 335-1 ve EN 60 335-2-41.
- ATEX 94/9/EC (ATEX 100) (sadece bilgi etiketinde ATEX işareti bulunan ürünlere uygulanmaktadır).
- Kullanılan standartlar: EN 50 014, EN 50 018, EN 13 463-1 ve EN 13 463-5.

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

Bjerringbro, 1st March 2005



Jan Strandgaard
Technical Director

DP 10, 0.9-2.6 kW

EF 30, 0.6-1.5 kW

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Before beginning installation procedures, these installation and operating instructions should be studied carefully. The installation and operation should also be in accordance with local regulations and accepted codes of good practice.

1. General description

Grundfos DP and EF wastewater pumps are portable and designed for pumping domestic and industrial wastewater.

Two types of pumps are available:

- **DP 10.50** and **DP 10.65** drainage pumps
- **EF 30.50** effluent pump.

The pumps are designed for free-standing installation.

DP 10.65.26 pumps can be installed on an auto-coupling system.

The pumps can be controlled via the Grundfos LC/D 107, LC/D 108, LC/D 110 pump controllers or the Grundfos CU 100 control box, see installation and operating instructions for the selected unit.

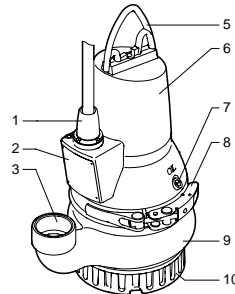


Fig. 1 DP 10.50 pump

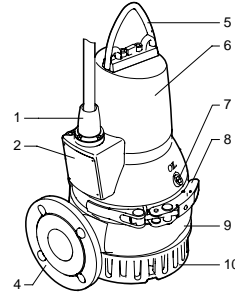


Fig. 2 DP 10.65 pump

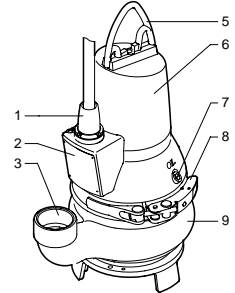


Fig. 3 EF 30.50 pump

Explanation to figures 1, 2 and 3:

Pos.	Description
1	Cable plug
2	Nameplate
3	Discharge port Rp 2
4	Discharge flange DN 65, PN 10
5	Lifting bracket
6	Stator housing
7	Oil screw
8	Clamp
9	Pump housing
10	Suction strainer (DP pumps only)

TM02 7339 3203

TM02 7340 3203

TM02 7341 3203

1.1 Applications

DP 10 pumps are designed for pumping

- drainage and surface water
- groundwater
- industrial process water without solids or fibres.

EF 30 pumps are designed for pumping

- drainage and surface water with small impurities
- wastewater with fibres, e.g. from laundries
- wastewater without discharge from toilets
- wastewater from commercial buildings without discharge from toilets.

The compact design makes the pumps suitable for both temporary and permanent installation.

The pumps are designed for free-standing installation.

DP 10.65.26 pumps can be installed on an auto-coupling system.

1.1.1 Potentially explosive environments

Use explosion-proof pumps for applications in potentially explosive environments.



The explosion protection classification of the pump is CE II 2 G, EEx d IIB T4. The classification of the installation site **must** in each individual case be approved by the local fire-fighting authorities.

2. Safety



Pump installation in pits must be carried out by specially trained persons.

For safety reasons, all work in pits must be supervised by a person outside the pump pit.

Pits for submersible wastewater pumps contain wastewater with toxic and/or disease-causing substances. Therefore, all persons involved must wear appropriate personal protective equipment and clothing and all work on and near the pump must be carried out under strict observance of the hygiene regulations in force.

3. Transportation and storage

The pump may be transported and stored in a vertical or horizontal position. Make sure that it cannot roll or fall over.

Always lift the pump by its lifting bracket, **never** by the motor cable or the hose/pipe.

The polyurethane-embedded plug prevents water from penetrating into the motor via the motor cable.

For long periods of storage, the pump must be protected against moisture and heat.

After a long period of storage, the pump should be inspected before it is put into operation. Make sure that the impeller can rotate freely. Pay special attention to the shaft seals and the cable entry.

4. Installation

The loose nameplate supplied with the pump should be fixed at the installation site or kept in the cover of this booklet.

All safety regulations must be observed at the installation site, e.g. the use of blowers for fresh-air supply to the pit.

Prior to installation, check the oil level in the oil chamber, see section 7. *Maintenance and service.*

The pumps are suitable for different installation types which are described in sections 4.1 and 4.2.

The pump housings have an Rp 2 discharge port or a DN 65, PN 10 flange.

Note: The pumps are designed for intermittent operation. When completely submerged in the pumped liquid, the pumps can also operate continuously. See section 10. *Technical data and operating conditions.*

4.1 Installation on auto-coupling

DP 10.65.26 pumps for permanent installation can be mounted on a stationary auto-coupling guide rail system or a "hookup" auto-coupling system.

Both auto-coupling systems facilitate maintenance and service as the pump can easily be lifted out of the pit.

DP 10.65.26 pumps have a cast DN 65, PN 10 discharge flange.



Before beginning installation procedures, make sure that the atmosphere in the pit is not potentially explosive.

Auto-coupling guide rail system, see fig. A, page 289.

Proceed as follows:

1. Drill mounting holes for the guide rail bracket on the inside of the pit and fasten the guide rail bracket provisionally with two screws.
 2. Place the auto-coupling base unit on the bottom of the pit. Use a plumb line to establish the correct positioning. Fasten with heavy-duty expansion bolts. If the bottom of the pit is uneven, the auto-coupling base unit must be supported so that it is level when being fastened.
 3. Assemble the discharge line in accordance with the generally accepted procedures and without exposing the line to distortion or tension.
 4. Insert the guide rails in the auto-coupling base unit and adjust the length of the rails accurately to the guide rail bracket.
 5. Unscrew the provisionally fastened guide rail bracket, fit it on top of the guide rails and finally fasten it firmly to the pit wall.
- Note:** The guide rails must not have any axial play as this would cause noise during pump operation.
6. Clean out debris from the pit before lowering the pump into the pit.

7. Fit the guide claw to the discharge port of the pump. Then slide the guide claw down the guide rails and lower the pump into the pit by means of a chain fastened to the lifting bracket. When the pump reaches the auto-coupling base unit, the pump will automatically connect tightly.
8. Hang up the end of the chain on a suitable hook at the top of the pit and in such a way that the chain cannot come into contact with the pump housing.
9. Adjust the length of the motor cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook at the top of the pit. Make sure that the cables are not sharply bent or pinched.
10. Connect the motor cable and the monitoring cable, if any.

Hookup auto-coupling system, see fig. B, page 290.

Proceed as follows:

1. Fit the crossbar in the pit.
2. Fit the adapted piece of pipe for the movable part of the hookup auto-coupling to the pump discharge port.
3. Fasten a shackle and a chain to the movable part of the hookup auto-coupling.
4. Clean out debris from the pit before lowering the pump.
5. Lower the pump into the pit by means of the chain fastened to the lifting bracket.
6. Hang up the end of the chain on a suitable hook at the top of the pit and in such a way that the chain cannot come into contact with the pump housing.
7. Adjust the length of the motor cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook at the top of the pit. Make sure that the cables are not sharply bent or pinched.
8. Connect the motor cable and the monitoring cable, if any.

4.2 Free-standing submerged installation

Pumps for free-standing submerged installation can stand freely on the bottom of the pit or the like, see fig. C, page 291, and fig. D, page 292.

In order to facilitate service on the pump, fit a flexible union or coupling to the discharge line for easy separation.

If a hose is used, make sure that the hose does not buckle and that the inside diameter of the hose matches that of the discharge port.

If a rigid pipe is used, the union or coupling, non-return valve and isolating valve should be fitted in the order mentioned, when viewed from the pump.

If the pump is installed in muddy conditions or on uneven ground, it is recommended to support the pump on bricks or a similar support.

Proceed as follows:


1. Fit a 90° elbow to the pump discharge port and connect the discharge pipe/hose.
2. Lower the pump into the liquid by means of a chain secured to the lifting bracket of the pump. It is recommended to place the pump on a plane, solid foundation. Make sure that the pump is hanging from the chain and **not** the cable.
3. Hang up the end of the chain on a suitable hook at the top of the pit and in such a way that the chain cannot come into contact with the pump housing.
4. Adjust the length of the motor cable by coiling it up on a relief fitting to ensure that the cable is not damaged during operation. Fasten the relief fitting to a suitable hook. Make sure that the cables are not sharply bent or pinched.
5. Connect the motor cable and the monitoring cable, if any.

5. Electrical connection

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

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

If the pump is protected by means of a motor starter, this starter must be set to the current consumption of the pump. The current consumption is stated on the pump nameplate.

The explosion protection classification of the pump is CE  II 2 G, EEx d IIB T4. The classification of the installation site **must** in each individual case be approved by the local fire-fighting authorities.



Control boxes and pump controllers **must not** be installed in potentially explosive environments.

Make sure that all protective equipment has been connected correctly.

Float switches used in explosive environments must be approved for this application. They **must** be connected to the Grundfos LC/D 108 pump controller via the intrinsically safe LC-Ex4 barrier to ensure a safe circuit.

The supply voltage and frequency are marked on the pump nameplate. The voltage tolerance must be within -10%/+6% of the rated voltage. Make sure that the motor is suitable for the electricity supply available at the installation site.

All pumps are supplied with 10 metres of cable and a free cable end.

The pump must be connected to

- a control box with motor starter, e.g. Grundfos CU 100 control box, or
- a Grundfos LC/D 107, LC/D 108 or LC/D 110 pump controller.

See fig. 4 or 5 and the installation and operating instructions for the selected control box or pump controller.

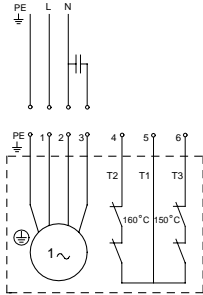


Fig. 4 Wiring diagram for single-phase pumps

TM02 5587 4302

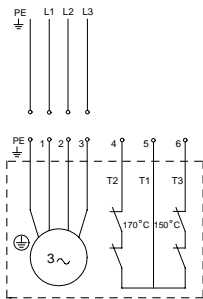


Fig. 5 Wiring diagram for three-phase pumps

TM02 5588 3602

5.1 CU 100 control box

The CU 100 control box incorporates a motor starter and is available with level switch and cable.

Single-phase pumps: An operating capacitor must be connected to the control box.

For capacitor size, see the table:

Pump type	Cd, operating capacitor	
	[μ F]	[V]
DP and EF	30	450

The difference in level between start and stop can be adjusted by changing the free cable length.

Large difference in level: Long free cable.

Small difference in level: Short free cable.

- To prevent air intake and vibrations, the **stop level switch** must be fitted in such a way that the pump is stopped before the liquid level is lowered below the upper edge of the clamp on the pump.



The CU 100 control box must not be used for Ex applications.
See section 5.2 *Pump controllers*.

- The **start level switch** should be installed in such a way that the pump is started at the required level; however, the pump must always be started before the liquid level reaches the bottom inlet pipe to the pit.

Note: Both points must be observed.

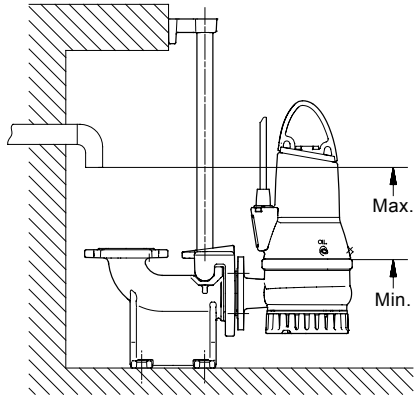


Fig. 6 Start and stop levels

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5.2 Pump controllers

The following LC and LCD pump controllers are available:

LC controllers are for one-pump-installations and LCD controllers are for two-pump-installations.

- LC 107 and LCD 107 with level pickups.
- LC 108 and LCD 108 with float switches.
- LC 110 and LCD 110 with electrodes.

In the following description, "level switches" can be level pickups, float switches or electrodes, depending on the pump controller selected.

Controllers for single-phase pumps incorporate capacitors.

The **LC** controller is fitted with two or three level switches: One for start and the other for stop of pump. The third level switch, which is optional, is for high-level alarm.

The **LCD** controller is fitted with three or four level switches: One for common stop and two for start of the pumps. The fourth level switch, which is optional, is for high-level alarm.

When installing the level switches, the following points should be observed:

- To prevent air intake and vibrations, the **stop level switch** must be fitted in such a way that the pump is stopped before the liquid level is lowered below the upper edge of the clamp on the pump.
- The **start level switch** should be installed in such a way that the pump is started at the required level; however, the pump must always be started before the liquid level reaches the bottom inlet pipe to the pit.

- The **high-level alarm switch**, if installed, should always be installed about 10 cm above the start level switch; however, the alarm must always be given before the liquid level reaches the inlet pipe to the pit.

For further settings, see the installation and operating instructions for the pump controller selected.

The pump must not run dry.

An additional level switch must be installed to ensure that the pump is stopped in case the stop level switch is not operating.

Stop the pump when the liquid level reaches the upper edge of the clamp on the pump.

Float switches used in explosive environments must be approved for this application. They **must** be connected to the Grundfos LC/D 108 pump controller via the intrinsically safe LC-Ex4 barrier to ensure a safe circuit.



5.3 Thermal switches

All pumps have two sets of thermal switches incorporated in the stator windings.

Thermal switch (circuit 1 – T1-T3): Breaks the circuit at a winding temperature of approx. 150°C.

Note: This thermal switch **must** be used for all pumps.

Thermal switch (circuit 2 – T1-T2): Breaks the circuit at a winding temperature of approx. 170°C (three-phase pumps) or 160°C (single-phase pumps).

After thermal cutout, explosion-proof pumps **must** be restarted manually.

The thermal switch (circuit 2) **must** be used for manual restarting of these pumps.

Maximum operating current of the thermal switches is 0.5 A at 500 VAC and $\cos \varphi$ 0.6. The switches must be able to break a coil in the supply circuit.

In the case of **standard pumps**, both thermal switches can (when closing the circuit after cooling) generate automatic restarting of the pump via the controller.



The separate motor starter/control box must not be installed in potentially explosive environments.



6. Start-up

Before starting work on the pump, make sure that the fuses have been removed or the mains switch has been switched off. It must be ensured that the electricity supply cannot be accidentally switched on.

Make sure that all protective equipment has been connected correctly.

The pump must not run dry.



The pump must not be started if a potentially explosive atmosphere is present in the pit.

Proceed as follows:

1. Remove the fuses and check whether the impeller can rotate freely. Turn the impeller by hand.
2. Check the condition of the oil in the oil chamber. See also section 7.5 *Oil change*.
3. Check whether the monitoring units, if used, are operating satisfactorily.
4. Check the setting of the level pickups, float switches or electrodes.
5. Open the isolating valves, if fitted.
6. Lower the pump into the liquid and insert the fuses.
7. Check whether the system has been filled with liquid and vented. The pump is self-venting.
8. Start the pump.

Note: In case of abnormal noise or vibrations from the pump or other pump or supply failures, stop the pump immediately. Do not attempt to restart the pump before the cause of the fault has been found and the fault corrected.

After one week of operation after replacement of the the shaft seal, the condition of the oil in the chamber should be checked. See section 7. *Maintenance and service* for procedure.

6.1 Operating modes

The pumps are designed for intermittent operation (S3). When completely submerged, the pumps can also operate continuously (S1).

• S3, intermittent operation:

The operating mode is S3 - 40% - 10 minutes (S3 - 40% = Operating for 4 minutes, stopped for 6 minutes).

In this operating mode, the pump is partly submerged in the pumped liquid, i.e. the liquid level reaches the middle of the motor.

The pump is allowed to operate 40% of the duty cycle (ts) and it must be stopped for the remaining 60% to cool, see fig. 7.

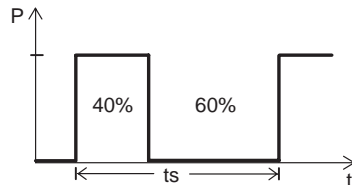


Fig. 7 S3 operation

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• **S1, continuous operation:**

In this operating mode, the pump can operate continuously without having to be stopped for cooling. Being completely submerged, the pump is sufficiently cooled by the surrounding liquid, see fig. 8.

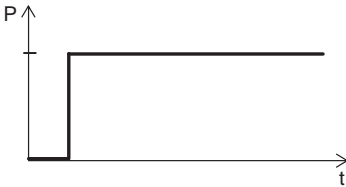


Fig. 8 S1 operation

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6.2 Direction of rotation

Note: The pump may be started for a very short period without being submerged for checking of the direction of rotation.

All **single-phase** pumps are factory-wired for the correct direction of rotation.

Before starting up **three-phase** pumps, the direction of rotation must be checked.

An arrow on the side of the stator housing indicates the correct direction of rotation.

The pump should rotate clockwise when viewed from above. When started, the pump will jerk in the opposite direction of the direction of rotation.

If the direction of rotation is wrong, interchange any two of the incoming supply wires, see fig. 4 or 5.

Checking the direction of rotation:

The direction of rotation should be checked in one of the following ways every time the pump is connected to a new installation.

Procedure 1:

1. Start the pump and measure the flow or the discharge pressure.
2. Stop the pump and interchange any two of the incoming supply wires.
3. Restart the pump and measure the quantity of liquid or the discharge pressure.
4. Stop the pump.
5. Compare the results taken under points 1 and 3. The connection which gives the larger quantity of liquid or the higher pressure is the correct direction of rotation.

Procedure 2:

1. Let the pump hang from a lifting device, e.g. the hoist used for lowering the pump into the pit.
2. Start and stop the pump while observing the movement (jerk) of the pump.
3. If connected correctly, the pump will jerk in the opposite direction of the direction of rotation, see fig. 9. If not, interchange any two of the incoming supply wires.

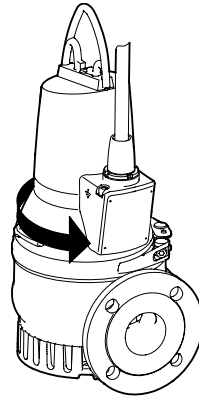


Fig. 9 Jerk direction

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7. Maintenance and service

Before starting work on the pump, make sure that the fuses have been removed or the mains switch has been switched off. It must be ensured that the electricity supply cannot be accidentally switched on.



All rotating parts must have stopped moving.



Except for service on the hydraulic part, all other service work **must** be carried out by **Grundfos or an authorized service workshop.**

Before carrying out maintenance and service, it must be ensured that the pump has been thoroughly flushed with clean water. Rinse the pump parts in water after dismantling.



When slackening the screws of the oil chamber, note that pressure may have built up in the chamber. Do not remove the screws until the pressure has been fully relieved.

7.1 Inspection intervals

Pumps running normal operation should be checked at least once a year, but at least after 3000 operating hours. If the pumped liquid is very muddy or sandy, check the pump at shorter intervals.

The following points should be checked:

- **Power consumption**
See pump nameplate.
- **Oil level and oil condition**
When the pump is new or after replacement of the shaft seal, check the oil level after one week of operation.
The oil becomes greyish white like milk if it contains water. This may be the result of a defective shaft seal. The oil should be changed after 3000 operating hours or once a year.
Use Shell Ondina 917 oil or similar type.
See sections 7.5 *Oil change* and 7.6 *Service kits*.
Note: Used oil must be disposed of in accordance with local regulations.
The table states how much oil the pumps must have in the oil chamber:

Pump type	Quantity of oil in oil chamber[l]
DP and EF pumps up to 1.5 kW	0.17
DP pumps, 2.6 kW	0.42

- **Cable entry**
Make sure that the cable entry is watertight and that the cables are not sharply bent and/or pinched.
See section 7.6 *Service kits*.
- **Pump parts**
Check the impeller, pump housing, etc. for possible wear. Replace defective parts.
See section 7.6 *Service kits*.
- **Ball bearings**
Check the shaft for noisy or heavy operation (turn the shaft by hand). Replace defective ball bearings.
A general overhaul of the pump is usually required in case of defective ball bearings or poor motor function. This work must be carried out by Grundfos or an authorized service workshop.

7.2 Adjustment of impeller clearance

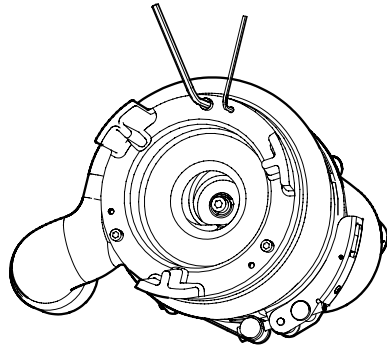
For position numbers, see page 300, 301 or 302.

Procedure:

1. **DP pumps only:** Slacken and remove the screws (pos. 188c) holding the suction strainer (pos. 84). Remove the strainer.
2. Slacken the locking screws (pos. 188b).
3. Slacken the adjusting screws (pos. 189) and push the wear plate until it touches the impeller.
4. Tighten the adjusting screws so that the wear plate still touches the impeller. Then slacken all the adjusting screws about half a turn.
Note: The impeller must be able to rotate freely without touching the wear plate.
5. Tighten the locking screws.

6. Rotate the impeller by hand to check that it is not touching the wear plate.
7. **DP pumps only:** Fit the suction strainer and tighten the screws (pos. 188c).

See also section 7.3 *Cleaning the pump housing*.



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Fig. 10 Pump viewed from suction port

7.3 Cleaning the pump housing

For position numbers, see page 300, 301 or 302.

To clean the pump housing, proceed as follows:

Dismantling:

1. Loosen and remove the clamp (pos. 92) holding the pump housing and motor together.
2. Lift the motor part out of the pump housing (pos. 50). The impeller is removed together with the motor part.
3. Clean the pump housing and the impeller.

Assembly:

1. Place the motor part with impeller in the pump housing.
2. Fit and tighten the clamp.

See also section 7.4 *Checking/replacing the shaft seal*.

7.4 Checking/replacing the shaft seal

To make sure that the shaft seal is intact, the oil should be checked.

If the oil is greyish white like milk or contains a large quantity of water, the shaft seal should be replaced as the primary part of the seal is worn. If the seal is still used, the motor will be damaged within a short time.

If the oil is clean, it can be reused. See also section 7. *Maintenance and service*.

For position numbers, see page 300, 301 or 302.

To check the shaft seal, proceed as follows:

1. Loosen and remove the clamp (pos. 92) holding the pump housing and motor together.
2. Lift the motor part out of the pump housing (pos. 50). The impeller is removed together with the motor part.

3. Remove the screw (pos. 188a) from the shaft end.
4. Remove the impeller (pos. 49) from the shaft.
5. Drain the oil from the oil chamber.
See section 7.5 *Oil change*.

Note: Used oil must be disposed of in accordance with local regulations.



When slackening the screws of the oil chamber, note that pressure may have built up in the chamber. Do not remove the screws until the pressure has been fully relieved.

The shaft seal is a complete unit for all pumps.

6. Remove the screws (pos. 188a) securing the shaft seal (pos. 105).
7. Lift the shaft seal (pos. 105) out of the oil chamber according to the lever principle using the two dismantling holes in the shaft seal carrier (pos. 58) and two screwdrivers.
8. Check the condition of the shaft where the secondary seal of the shaft seal touches the shaft. The bush (pos. 103) fitted to the shaft must be intact. If it is worn and must be replaced, the pump must be checked by Grundfos or an authorized service workshop.

If the shaft is intact, proceed as follows:

1. Check/clean the oil chamber.
2. Lubricate the faces in contact with the shaft seal with oil (pos. 105a) (O-rings and shaft).
3. Insert the new shaft seal (pos. 105) using the plastic bush included in the kit.
4. Tighten the screws (pos. 188a) securing the shaft seal to 16 Nm.
5. Fit the impeller. Make sure that the key (pos. 9a) is fitted correctly.
6. Fit and tighten the screw (pos. 188a) securing the impeller to 22 Nm.
7. Fit the pump housing (pos. 50).
8. Fit and tighten the clamp (pos. 92).
9. Fill the oil chamber with oil, see section 7.5 *Oil change*.

For adjustment of impeller clearance, see section 7.2.

7.5 Oil change

After 3000 operating hours or once a year, change the oil in the oil chamber as described below.

If the shaft seal has been changed, the oil must be changed as well, see section 7.4 *Checking/replacing the shaft seal*.

Draining of oil:



When slackening the screws of the oil chamber, note that pressure may have built up in the chamber. Do not remove the screws until the pressure has been fully relieved.

1. Slacken and remove both oil screws to allow all the oil to drain from the chamber.
2. Check the oil for water and impurities. If the shaft seal has been removed, the oil will give a good indication of the condition of the shaft seal.

Note: Used oil must be disposed of in accordance with local regulations.

Oil filling, pump lying down, see fig. 11:

1. Place the pump in such a position that it is lying on the stator housing and the discharge flange and that the oil screws are pointing upwards.
2. Fill oil into the oil chamber through the upper hole until it starts running out of the lower hole. The oil level is now correct.
For oil quantity, see section 7.1 *Inspection intervals*.

3. Fit both oil screws using the packing material included in the kit.
See section 7.6 *Service kits*.

Oil filling, pump in upright position:

1. Place the pump on a plane, horizontal surface.
2. Fill oil into the oil chamber through one of the holes until it starts running out of the other hole. For oil quantity, see section 7.1 *Inspection intervals*.
3. Fit both oil screws using the packing material included in the kit.
See section 7.6 *Service kits*.

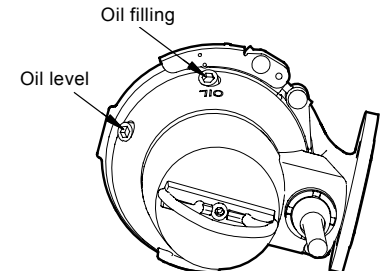


Fig. 11 Oil filling holes

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7.6 Service kits



Before starting work on the pump, make sure that the fuses have been removed or the mains switch has been switched off. It must be ensured that the electricity supply cannot be accidentally switched on.

All rotating parts must have stopped moving.

The following service kits are available for all pumps.

The kits can be ordered as required:

Service kit	Contents	Pump type	Order number
Shaft seal kit	Shaft seal complete	0.6 kW - 1.5 kW	96106536
		2.6 kW	96076123
O-ring kit	O-rings and gaskets for oil screws	0.6 kW - 1.5 kW	96115107
		2.6 kW	96115108
Impeller	Impeller complete with adjusting screw, shaft screw and key	EF 30.50.06	96115101
		EF 30.50.09	96115109
		EF 30.50.11	96115102
		EF 30.50.15	96115103
		DP 10.50.09	96115104
		DP 10.50.15	96115105
Oil	1 litre of oil, type Shell Ondina 917. See section 7. <i>Maintenance and service</i> for required quantity in oil chamber.	DP 10.65.26	96115106
		All types	96076171

Note: A possible replacement of the cable **must** be carried out by **Grundfos or an authorized service workshop**.

7.7 Contaminated pumps

Note: If a pump has been used for a liquid which is injurious to health or toxic, the pump will be classified as contaminated.

If Grundfos is requested to service the pump, Grundfos must be contacted with details about the pumped liquid, etc. *before* the pump is returned for service. Otherwise Grundfos can refuse to accept the pump for service.

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

However, any application for service (no matter to whom it may be made) must include details about the pumped liquid if the pump has been used for liquids which are injurious to health or toxic.

Before a pump is returned, it must be cleaned in the best possible way.

8. Fault finding chart



Before attempting to diagnose any fault, make sure that the fuses have been removed or the mains switch has been switched off. It must be ensured that the electricity supply cannot be accidentally switched on.

All rotating parts must have stopped moving.



All regulations applying to pumps installed in potentially explosive environments must be observed. It must be ensured that no work is carried out in potentially explosive atmospheres.

GB

Fault	Cause	Remedy
1. Motor does not start. Fuses blow or motor starter trips out immediately. Caution: Do not start again!	a) Supply failure; short-circuit; earth-leakage fault in cable or motor winding.	Have the cable and motor checked and repaired by a qualified electrician.
	b) Fuses blow due to use of wrong type of fuse.	Install fuses of the correct type.
	c) Impeller blocked by impurities.	Clean the impeller.
	d) Level pickup, float switch or electrode out of adjustment or defective.	Check the level pickups, float switches or electrodes.
2. Pump operates, but motor starter trips out after a short while.	a) Low setting of thermal relay in motor starter.	Set the relay in accordance with the specifications on the nameplate.
	b) Increased current consumption due to large voltage drop.	Measure the voltage between two motor phases. Tolerance: -10%/+6%.
	c) Impeller blocked by impurities. Increased current consumption in all three phases.	Clean the impeller.
	d) Adjustment of impeller clearance incorrect.	Readjust the impeller, see section 7.2, fig. 10.
3. Pump operates at below-standard performance and power consumption.	a) Impeller blocked by impurities.	Clean the impeller.
	b) Wrong direction of rotation.	Check the direction of rotation and possibly interchange any two of the incoming supply wires, see section 6.2 <i>Direction of rotation</i> .
4. Pump operates, but gives no liquid.	a) Discharge valve closed or blocked.	Check the discharge valve and possibly open and/or clean.
	b) Non-return valve blocked.	Clean the non-return valve.
	c) Air in pump.	Vent the pump.

9. Disposal

Disposal of this product or parts of it must be carried out according to the following guidelines:

1. Use the local public or private waste collection service.
2. In case such waste collection service does not exist or cannot handle the materials used in the product, please deliver the product or any hazardous materials from it to your nearest Grundfos company or service workshop.

10. Technical data and operating conditions

Supply voltage

- 1 x 230 V -10%/+6%, 50 Hz.
- 3 x 230 V -10%/+6%, 50 Hz.
- 3 x 400 V -10%/+6%, 50 Hz.

Winding resistances


Motor size	Winding resistance *	
Single-phase		
	Starting winding	Main winding
0.6 kW	4.5 Ω	2.75 Ω
0.9 kW		
1.1 kW		
Three-phase		
	3 x 230 V	3 x 400 V
0.6 kW	6.8 Ω	9.1 Ω
0.9 kW		
1.1 kW		
1.5 kW		
2.6 kW		
	3.4 Ω	4.56 Ω

* The table values do not include the cable.
Resistance in cables: 2 x 10 m, approx. 0.28 Ω.

Enclosure class

IP 68. According to IEC 60 529.

Ex protection

CE  II 2 G, EEx d IIB T4. According to EN 50 018.

Insulation class

F (155°C).

pH value

Pumps in permanent installations can cope with pH values ranging from 4 to 10.

Liquid temperature

0°C to +40°C.

For short periods up to +60°C.



Explosion-proof pumps must never pump liquids with a temperature higher than 40°C.

Density of pumped liquid

Maximum 1100 kg/m³.

In the case of higher values, contact Grundfos.

Installation depth

Maximum 10 metres below liquid level.

Operation

Maximum 30 starts per hour.

The pumps are designed for intermittent operation. When completely submerged in the pumped liquid, the pumps can also operate continuously.

Partly submerged: Intermittent operation (S3 - 40% - 10 minutes).

(S3 - 40% = Operating for 4 minutes, stopped for 6 minutes).

Completely submerged: Continuous operation (S1).

Pump curves

Pump curves are available via internet www.grundfos.com.

The curves are to be considered as a guide. They must not be used as guarantee curves.

Test curves for the supplied pump are available on request.

Sound pressure level

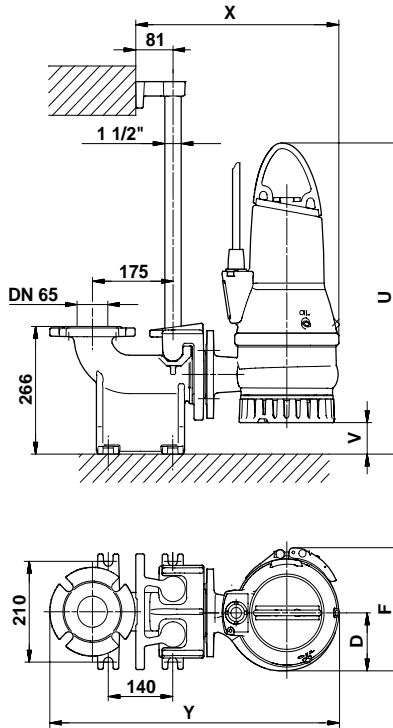
The sound pressure level of the pumps is lower than the limiting values stated in the EC Council Directive 98/37/EC relating to machinery.

GB: One-pump installation on auto-coupling

D: Eine Pumpe mit automatischer "Hänge"-Kupplung

Fig. A

DP 10.65.26



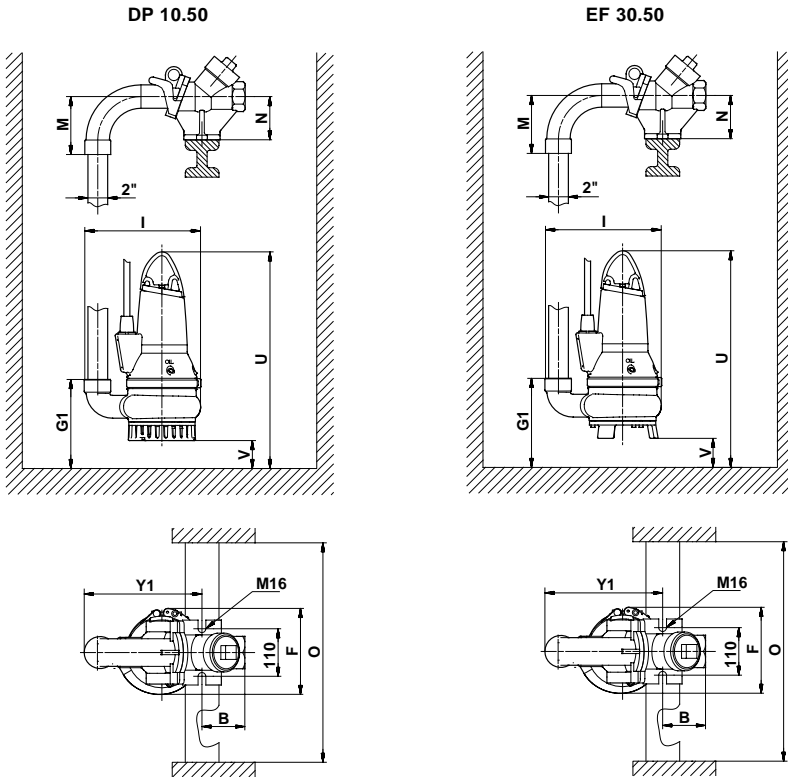
TM02 7346 3303

Power [kW]	F	D	U	V	X	Y
0.6, 0.9, 1.1 and 1.5	252	115	655	64	443	630

GB: One-pump installation on hookup auto-coupling

D: Eine Pumpe mit automatischer "Hänge"-Kupplung

Fig. B



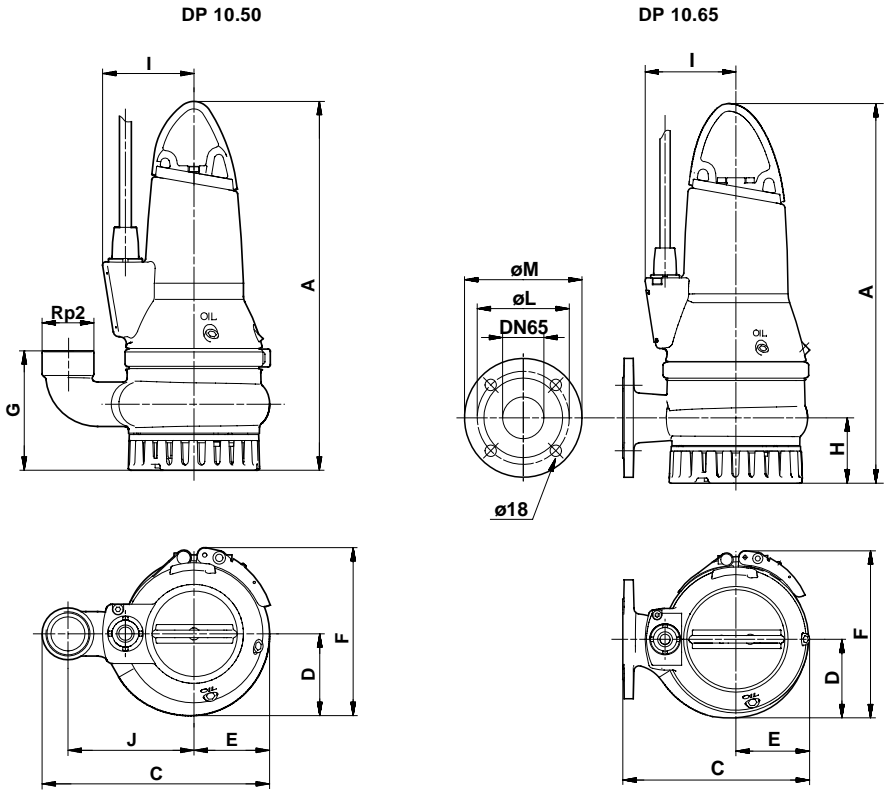
TM02 8502 0304 / TM02 8503 0304

Power [kW]	B	F	G1	I	M	N	O	U	V	Y1
0.6, 0.9 and 1.5	75	227	141	123	140	100	600	517	30	286

GB: Free-standing installation

D: Freistehender Einbau

Fig. C



TM02 7231 2803/ TM02 7234 2803

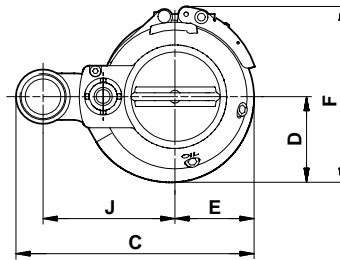
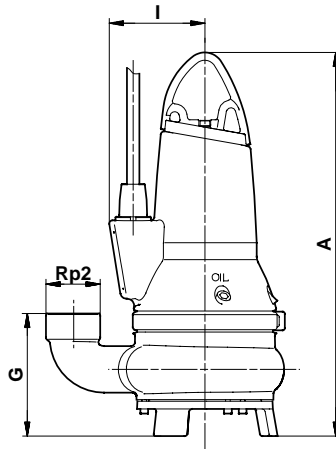
Power [kW]	A	C	D	E	F	G	H	J	øL	øM
0.6, 0.9 and 1.5	497	307	110	102	227	161	–	170	–	–
2.6	591	294	115	116	252	–	102	–	143	185

GB: Free-standing installation

D: Freistehender Einbau

Fig. D

EF 30.50



Power [kW]	A	C	D	E	F	G	J
0.6, 0.9 and 1.5	494	307	110	102	227	159	170

TM02 7348 3303

Pos.	Description (GB)	Beschreibung (D)	Description (F)	Descrizione (I)
6a	Pin	Stift	Broche	Perno
7a	Rivet	Kerbnagel	Rivet	Rivetto
9a	Key	Keil	Clavette	Chiavetta
26a	O-ring	O-Ring	Joint torique	O-ring
37	O-ring	O-Ring	Joint torique	O-ring
37a	O-ring	O-Ring	Joint torique	O-ring
48	Stator	Stator	Stator	Statore
48a	Terminal board	Klemmbrett	Bornier	Morsettiere
49	Impeller	Laufrad	Roue	Girante
50	Pump housing	Pumpengehäuse	Corps de pompe	Corpo pompa
55	Stator housing	Statorgehäuse	Logement de stator	Cassa statore
58	Shaft seal carrier	Dichtungshalter	Support de garniture mécanique	Supporto tenuta meccanica
66	Locking ring	Sicherungsring	Anneau de serrage	Anello di arresto
76	Nameplate	Leistungsschild	Plaque signalétique	Targhetta di identificazione
84	Suction strainer	Einlaufsieb	Crépine d'aspiration	Griglia di aspirazione
92	Clamp	Spannband	Collier de serrage	Fascetta
102	O-ring	O-Ring	Joint torique	O-ring
103	Bush	Buchse	Douille	Bussola
104	Seal ring	Dichtungsring	Anneau d'étanchéité	Anello di tenuta
105 105a	Shaft seal	Wellenabdichtung	Garniture mécanique	Tenuta meccanica
107	O-ring	O-Ring	Joint torique	O-ring
153	Bearing	Lager	Roulement	Cuscinetto
154	Bearing	Lager	Roulement	Cuscinetto
155	Oil chamber	Ölsperkkammer	Chambre à huile	Camera dell'olio
158	Corrugated spring	Gewellte Feder	Ressort ondulé	Molla ondulata
159	O-ring	O-Ring	Joint torique	O-ring
162	Wear plate	Verschleißplatte	Plaque d'usure	Flangia
172	Rotor/shaft	Rotor/Welle	Rotor/arbre	Gruppo rotore/albero
173	Screw	Schraube	Vis	Vite
173a	Washer	Unterlegscheibe	Rondelle	Rondella
176	Inner plug part	Kabelanschluss, innerer Teil	Partie intérieure de la fiche	Parte interna del connettore
181	Outer plug part	Kabelanschluss, äußerer Teil	Partie extérieure de la fiche	Parte esterna del connettore
185	O-ring	O-Ring	Joint torique	O-ring
187	O-ring	O-Ring	Joint torique	O-ring
188a	Screw	Schraube	Vis	Vite
188b	Locking screw	Sicherungsschraube	Vis de fixation	Vite di chiusura
188c	Screw	Schraube	Vis	Vite
189	Adjusting screw	Justierschraube	Vis d'ajustement	Vite di regolazione
190	Lifting bracket	Transportbügel	Poignée de levage	Maniglia
193	Oil screw	Ölschraube	Bouchon d'huile	Tappo dell'olio
193a	Oil	Öl	Huile	Olio
194	Gasket	Dichtung	Joint d'étanchéité	Guarnizione
198	O-ring	O-Ring	Joint torique	O-ring

Pos.	Descripción (E)	Descrição (P)	Περιγραφή (GR)	Omschrijving (NL)
6a	Pasador	Pino	Πείρος	Paspen
7a	Remache	Rebite	Πριτσίνι	Klinknagel
9a	Chaveta	Chaveta	Κλειδί	Spie
26a	Junta tórica	O-ring	Δακτύλιος-Ο	O-ring
37	Junta tórica	O-ring	Δακτύλιος-Ο	O-ring
37a	Junta tórica	O-ring	Δακτύλιος-Ο	O-ring
48	Estator	Estator	Στάτης	Stator
48a	Caja de conexiones	Caixa terminais	Κλέμες σύνδεσης	Aansluitblok
49	Impulsor	Impulsor	Πτερωτή	Waaier
50	Cuerpo de bomba	Voluta da bomba	Περιβλημα αντλίας	Pomphuis
55	Alojamiento de estator	Carcaça do motor	Περιβλημα στάτη	Motorhuis
58	Soporte de cierre	Suporte do empanque	Φορέας στυπιοθλίπτη άξονα	Dichtingsplaat
66	Anillo de cierre	Anilha de fixação	Ασφαλιστικός δακτύλιος	Borgring
76	Placa de identificación	Chapa de característi-cas	Πινακίδα	Typeplaatje
84	Filtro de aspiración	Grelha de aspiração	Φίλτρο αναρρόφησης	Zuigkorf
92	Abrazadera	Grampo	Σφιγκτήρας	Span ring
102	Junta tórica	O-ring	Δακτύλιος-Ο	O-ring
103	Casquillo	Anilha	Αντιπριβικός δακτύλιος	Bus
104	Anillo de cierre	Anilha do empanque	Στεγανοποιητικός δακτύλιος	Olie keerring
105 105a	Cierre	Empanque	Στυπιοθλίπτης άξονα	As afdichting
107	Junta tórica	O-ring	Δακτύλιος-Ο	O-ring
153	Cojinete	Rolamento	Έδρανο	Kogellager
154	Cojinete	Rolamento	Έδρανο	Kogellager
155	Cámara de aceite	Compartimento do óleo	Θάλαμος λαδιού	Oliekamer
158	Muelle ondulado	Mola	Αυλακωτό ελατήριο	Drukring
159	Arandela	Anilha	Ροδέλα	Ring
162	Placa de desgaste	Base de desgaste	Πλάκα φθοράς	Slijtplaat
172	Rotor/eje	Rotor/veio	Ρότορας/άξονας	Rotor/as
173	Tornillo	Parafuso	Βίδα	Schroef
173a	Arandela	Anilha	Ροδέλα	Ring
176	Parte de clavija interior	Parte interna do bujão	Εσωτερικό τμήμα φις	Kabel connector inwendig
181	Parte de clavija exterior	Parte externa do bujão	Εξωτερικό τμήμα φις	Kabel connector uitwendig
185	Junta tórica	O-ring	Δακτύλιος-Ο	O-ring
187	Junta tórica	O-ring	Δακτύλιος-Ο	O-ring
188a	Tornillo	Parafuso	Βίδα	Inbusbout
188b	Tornillo de apriete	Parafuso de segurança	Βίδα συγκράτησης	Borgbout
188c	Tornillo	Parafuso	Βίδα	Inbusbout
189	Tornillo de ajuste	Parafuso de ajuste	Βίδα ρύθμισης	Stelbout
190	Asa	Suporte de elevação	Χειρολαβή	Ophangbeugel
193	Tornillo de aceite	Parafuso do óleo	Βίδα λαδιού	Inbusbout
193a	Aceite	Óleo	Λάδι	Olie
194	Junta	Junta	Τσιμούχα	Pakking ring
198	Junta tórica	O-ring	Δακτύλιος-Ο	O-ring

Pos.	Beskrivning (S)	Kuvaus (FIN)	Beskrivelse (DK)	Opis (PL)
6a	Stift	Tappi	Stift	Kolek
7a	Nit	Niitti	Nitte	Nit
9a	Kil	Kiila	Feder	Klin
26a	O-ring	O-rengas	O-ring	Pierścień O-ring
37	O-ring	O-rengas	O-ring	Pierścień O-ring
37a	O-ring	O-rengas	O-ring	Pierścień O-ring
48	Stator	Staattori	Stator	Stator
48a	Kopplingsplint	Kytkentälevy	Klembræt	Listwa przyłączeniowa
49	Pumphjul	Juoksupyörä	Løber	Wirnik
50	Pumphus	Pumpupesä	Pumpehus	Korpus pompy
55	Statorhus	Staattoripesä	Statorhus	Obudowa statora
58	Axeltätningshållare	Akselitiivestekannatin	Akseltætningsholder	Mocowanie uszczelnienia wału
66	Låsring	Lukkorengas	Låsering	Pierścień mocujący
76	Typskylt	Arvokilpi	Typeskilt	Tabliczka znamionowa
84	Sugsil	Imusihti	Indløbssi	Sito pompy
92	Spännband	Kiinnityspanta	Spændebånd	Zacisk
102	O-ring	O-rengas	O-ring	Pierścień O-ring
103	Bussning	Holkki	Bøsning	Tulejka
104	Simmerring	Tiivisterengas	Simmerring	Pierścień uszczelniający
105 105a	Axeltätning	Akselitiiviste	Akseltætning	Uszczelnienie wału
107	O-ring	O-rengas	O-ring	Pierścień O-ring
153	Lager	Laakeri	Leje	Łożysko
154	Lager	Laakeri	Leje	Łożysko
155	Oljekammare	Öljytila	Oliekammer	Komorze olejowej
158	Fjäder	Aaltojousi	Bølgfjeder	Sprężyna falista
159	Bricka	Aluslevy	Skive	Pierścień O-ring
162	Slitplatta	Kulutuslevy	Slidplade	Tarcza
172	Rotor/axel	Roottori/akseli	Rotor/aksel	Rotor/wał
173	Skruv	Ruuvi	Skruer	Śruba
173a	Bricka	Aluslevy	Skive	Podkładka
176	Kontakt, inre del	Sisäpuolinen tulppaosa	Indvendig stikdel	Część zewn. wtyczki
181	Kontakt, yttre del	Ulkopuolinen tulppaosa	Udvendig stikdel	Część wewn. wtyczki
185	O-ring	O-rengas	O-ring	Pierścień O-ring
187	O-ring	O-rengas	O-ring	Pierścień O-ring
188a	Skruv	Ruuvi	Skruer	Śruba
188b	Låsskruv	Lukitusruuvi	Låseskrue	Śruba mocująca
188c	Skruv	Ruuvi	Skruer	Śruba
189	Justerskruv	Säätöruuvi	Justerskrue	Śruba regulacyjna
190	Lyftbygel	Nostosanka	Løftebøjle	Uchwyt
193	Oljeskruv	Öljytulppa	Olieskrue	Śruba olejowa
193a	Olja	Öljy	Olie	Olej
194	Packning	Tiiviste	Pakning	Uszczelka
198	O-ring	O-rengas	O-ring	Pierścień O-ring

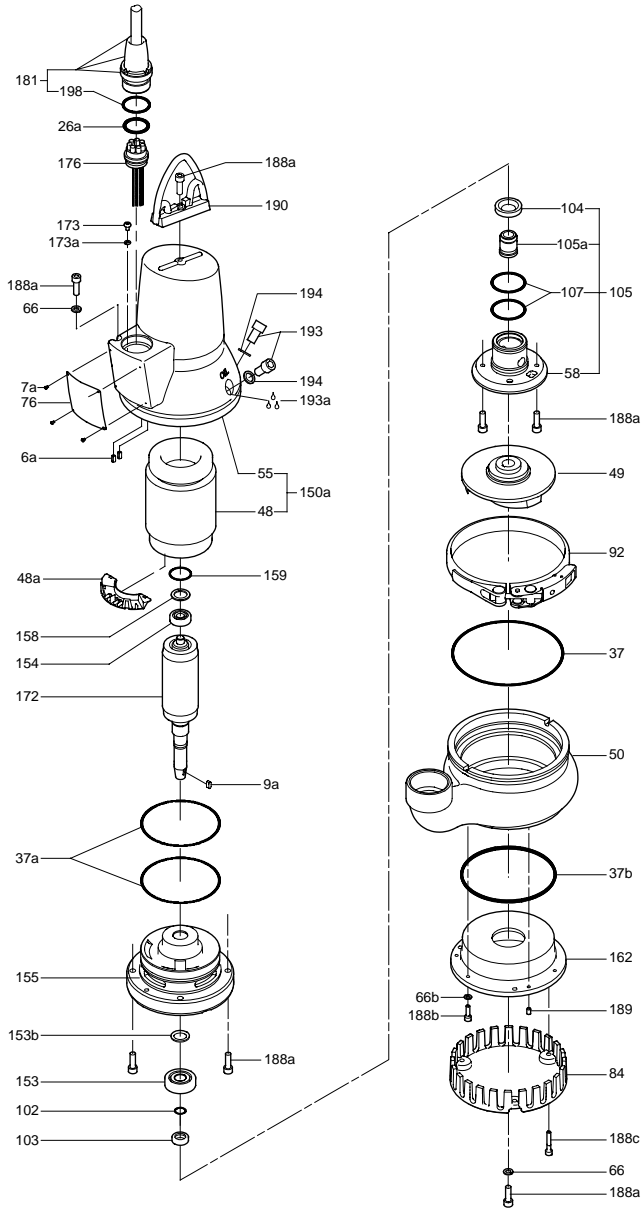
Pos.	Наименование (RU)	Megnevezés (H)	Opis (SI)
6a	Штифт	Csap	Zatič
7a	Заклепка	Szegecs	Zakovica
9a	Шпонка	Rögzítőék	Ključ
26a	Уплотнительное кольцо круглого сечения	O-gyűrű	O-obroč
37	Уплотнительное кольцо круглого сечения	O-gyűrű	O-obroč
37a	Уплотнительное кольцо круглого сечения	O-gyűrűk	O-obroči
48	Статор	Állórész	Stator
48a	Клеммная колодка	Kapcsoló tábla	Priključna letvica
49	Рабочее колесо	Járókerék	Tekalno kolo
50	Корпус насоса	Szivattyúház	Ohišje črpalke
55	Корпус статора	Állórészház	Ohišje statorja
58	Корпус уплотнения вала	Tengelytömítés-keret	Nosilec tesnila osi
66	Стопорная шайба	Rögzítőgyűrű	Zaklepni obroček
76	Фирменная табличка с номинальными техническими данными	Adattábla	Típska ploščica
84	Фильтр	Szívókosár	Sesalno sito
92	Хомут	Bilincs	Sponka
102	Уплотнительное кольцо круглого сечения	O-gyűrű	O-obroč
103	Втулка	Tömítőgyűrű	Podloga ležaja
104	Уплотнительное кольцо	Tömítőgyűrű	Tesnilni obroč
105 105a	Уплотнение вала	Tengelytömítés	Tesnilo osi
107	Уплотнительное кольцо круглого сечения	O-gyűrűk	O-obroči
153	Подшипник	Csapágy	Ležaj
154	Подшипник	Csapágy	Ležaj
155	Масляная камера	Olajkamra	Oljni komori
158	Упорное нажимное кольцо	Hullámrugó	Vzmet
159	Уплотнительное кольцо круглого сечения	O-gyűrű	O-obroč
162	Нижняя крышка	Kopóelem	Obraabna ploščica
172	Ротор/вал	Forgórész/tengely	Rotor/os
173	Винт	Csavar	Vijak
173a	Шайба	Alátét	Tesnilni obroč
176	Внутренняя часть разъема кабеля	Belső kábelbevezetés	Notranji vtični del
181	Наружная часть разъема кабеля	Külső kábelbevezetés	Zunanji vtični del
185	Уплотнительное кольцо круглого сечения	O-gyűrű	O-obroč
187	Уплотнительное кольцо круглого сечения	O-gyűrű	O-obroč
188a	Винт	Csavar	Vijak
188b	Болт	Rögzítő csavar	Varnostni vijak
188c	Винт	Csavar	Vijak
189	Регулировочный винт	Beállító csavar	Nastavitveni vijak
190	Ручка	Emelőfűl	Ročaj
193	Резьбовая пробка	Olajtöltőnyílás zárócsavarja	Oljni vijak
193a	Масло	Olaj	Olje
194	Прокладка	Tömítés	Tesnilni obroč
198	Уплотнительное кольцо круглого сечения	O-gyűrű	O-obroč

Pos.	Opis (HR)	Naziv (YU)	Instalație fixă (RO)
6a	nožica	Klin	Pin
7a	zareznani čavao	Zakovica	Nit
9a	opruga	Klin	Cheie
26a	O-prsten	O-prsten	Inel tip O
37	O-prsten	O-prsten	Inel tip O
37a	O-prsten	O-prsten	Inel tip O
48	stator	Stator	Stator
48a	priključna letvica	Priključna letva	Înveliș stator
49	rotor	Propeler	Rotor
50	kućište crpke	Kućište pumpe	Carcasă pompa
55	kućište statora	Stator kućišta	Carcasă stator
58	držač brtve	Nosač zaptivanja osovine	Etanșare
66	sigurnosni prsten	Prsten pričvršćivanja	Inel închidere
76	natpisna pločica	Pločica za obeležavanje	Etichetă
84	ulazno sito	Usisni filter	Filteru de aspirație
92	zatezna traka	Obujmica spajanja	Șurub
102	O-prsten	O-prsten	Inel tip O
103	brtvenica	Čaura	Bucșă
104	brtveni prsten	Zaptivni prsten	Inel etanșare
105 105a	brtva vratila	Zaptivka osovine	Etanșare
107	O-prsten	O-prsten	Inel tip O
153	ležaj	Kuglični ležaj	Rulment
154	ležaj	Kuglični ležaj	Rulment
155	komora za ulje	Uljnoj komori	Camera de ulei
158	valovita opruga	Sigurnosni prste	Arc canelat
159	O-prsten	O-prsten	Inel tip O
162	žrtvena pločica	Ploča	Placă uzată
172	rotor/vratilo	Rotor/osovina	Rotor/ax
173	vijak	Zavrtnaj	Filet
173a	podložna pločica	Prsten podloške	Spălător
176	kabel. priključak, nutarnji dio	Unutrašnji deo konektora	Cablu conector intrare
181	kabel. priključak, vanjski dio	Spoljni deo konektora	Cablu conector ieșire
185	O-prsten	O-prsten	Inel tip O
187	O-prsten	O-prsten	Inel tip O
188a	vijak	Zavrtnaj	Filet
188b	sigurnosni vijak	Zavrtnaj	Șurub de fixare
188c	vijak	Zavrtnaj	Filet
189	vijak za justiranje	Zavrtnaj za podešavanje	Șurub de ajustare
190	transportni stremen	Ručica	Mâner
193	vijak za ulje	Zavrtnaj za ulje	Șurub ulei
193a	ulje	Ulje	Ulei
194	brtva	Podloška	Spălător
198	O-prsten	O-prsten	Inel tip O

Pos.	Описание BG	Popis CZ	Popis SK
6a	Щифт	Kolík	Kolík
7a	Нит	Nýt	Nýt
9a	Фиксатор	Pero	Pero
26a	О-пръстен	O-kroužek	O-krúžok
37	О-пръстен	O-kroužek	O-krúžok
37a	О-пръстени	O-kroužky	O-krúžky
48	Статор	Stator	Stator
48a	Клеморед	Svorkovnice	Svorkovnica
49	Работно колело	Oběžné kolo	Obežné koleso
50	Помпен корпус	Těleso čerpadla	Teleso čerpadla
55	Корпус на статора	Těleso statoru	Teleso statora
58	Носач на уплътнението при вала	Unašeč ucpávky	Unášač upchávky
66	Фиксиращ пръстен	Pojistný kroužek	Poistný krúžok
76	Табела	Typový štítek	Typový štítok
84	Смукателна решетка	Sací síto	Sacie sito
92	Скоба	Fixační objímka	Fixačná objímka
102	О-пръстен	O-kroužek	O-krúžok
103	Втулка	Pouzdro	Púzdro
104	Уплътняващ пръстен	Těsnicí kroužek	Tesniaci krúžok
105 105a	Уплътнение при вала	Hřídellová ucpávka	Hriadeľová upchávka
107	О-пръстени	O-kroužky	O-krúžky
153	Лагер	Ložisko	Ložisko
154	Лагер	Ložisko	Ložisko
155	Маслото в камерата	Olejevý komoře	Olejovej komore
158	Гофрирана пружина	Tlačná pružina	Tlačná pružina
159	О-пръстен	O-kroužek	O-krúžok
162	Износваща се плоча	Těsnicí deska	Tesniacia doska
172	Ротор/вал	Rotor/hřídel	Rotor/hriadeľ
173	Винт	Šroub	Skrutka
173a	Шайба	Podložka	Podložka
176	Вътрешна част на щепсела	Vnitřní část kabelové průchodky	Vnútorná časť káblovej priechodky
181	Външна част на щепсела	Vnější část kabelové průchodky	Vonkajšia časť káblovej priechodky
185	О-пръстен	O-kroužek	O-krúžok
187	О-пръстен	O-kroužek	O-krúžok
188a	Винт	Šroub	Skrutka
188b	Фиксиращ винт	Pojistný šroub	Poistná skrutka
188c	Винт	Šroub	Skrutka
189	Винт за настройка	Stavěcí šroub	Nastavovacia skrutka
190	Ръкохватка	Zvedací rukojeť	Dvíhacia rukoväť
193	Винт при камерата за масло	Olejevá zátka	Olejová zátka
193a	Масло	Olej	Olej
194	Гарнитура	Těsnicí kroužek	Tesniaci krúžok
198	О-пръстен	O-kroužek	O-krúžok

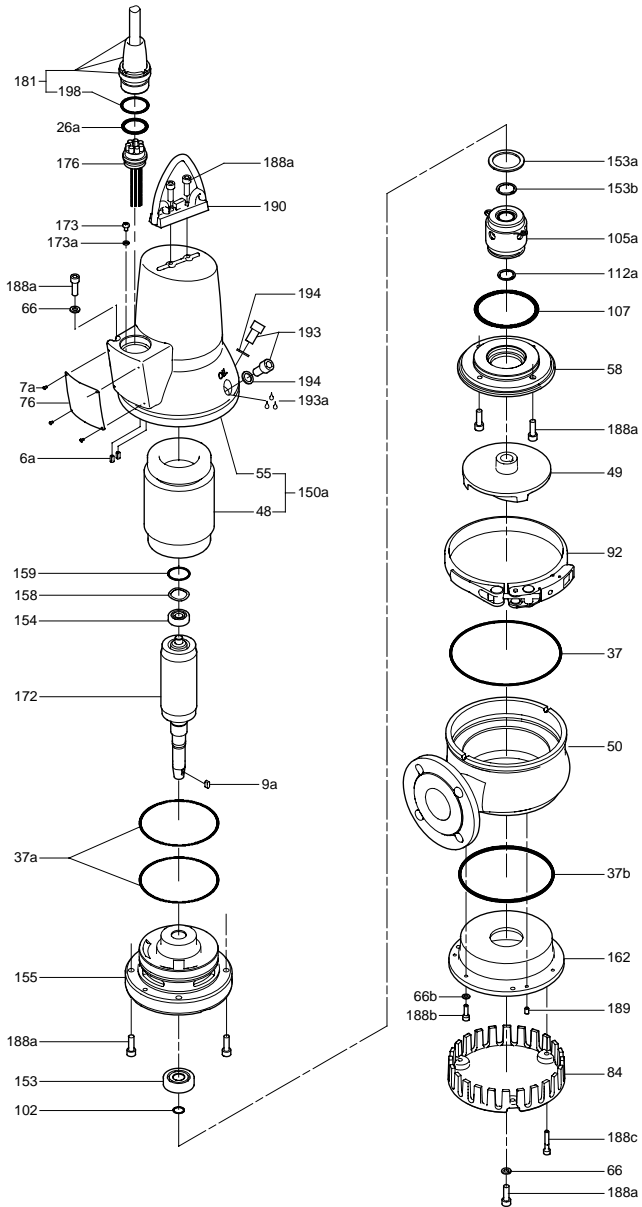
Pos.	Tanım
	TR
6a	Pim
7a	Perçin
9a	Anahtar
26a	O-ring
37	O-ring
37a	O-ringler
48	Stator
48a	Klemens bağlantısı
49	Çark
50	Pompa gövdesi
55	Stator muhafazası
58	Salmastra taşıyıcı
66	Kilitleme halkası
76	Bilgi etiketi
84	Emiş süzgeci
92	Kelepçe
102	O-ring
103	Burç
104	Sızdırmazlık halkası
105	Salmastra
105a	
107	O-ringler
153	Rulman
154	Rulman
155	Yağ bölmesi
158	Oluklu yay
159	O-ring
162	Aşınma plakası
172	Rotor/mil
173	Vida
173a	Pul
176	İç fiş kısmı
181	Dış fiş kısmı
185	O-ring
187	O-ring
188a	Vida
188b	Tespit vidası
188c	Vida
189	Ayar vidası
190	Kaldırma kolu
193	Yağ vidası
193a	Yağ
194	Conta
198	O-ring

Fig. A Exploded view of DP 10.50 pump



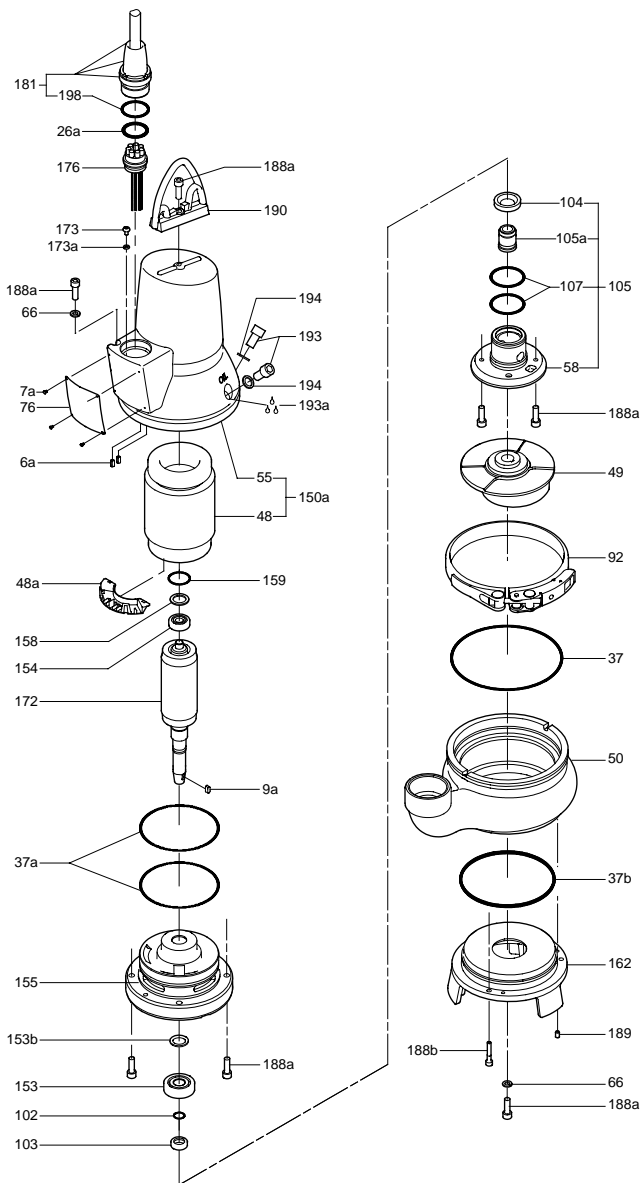
TM02 7229 2803

Fig. B Exploded view of DP 10.65 pump



TM02 7232 2803

Fig. C Exploded view of EF 30.50 pump



TM02 7362 3303

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