The Drive & Control Company

Rexroth
Bosch Group

Rexroth Sytronix FcP 50xx/70xx

Motor-Pump Unit
MPES2

Operating Instruction
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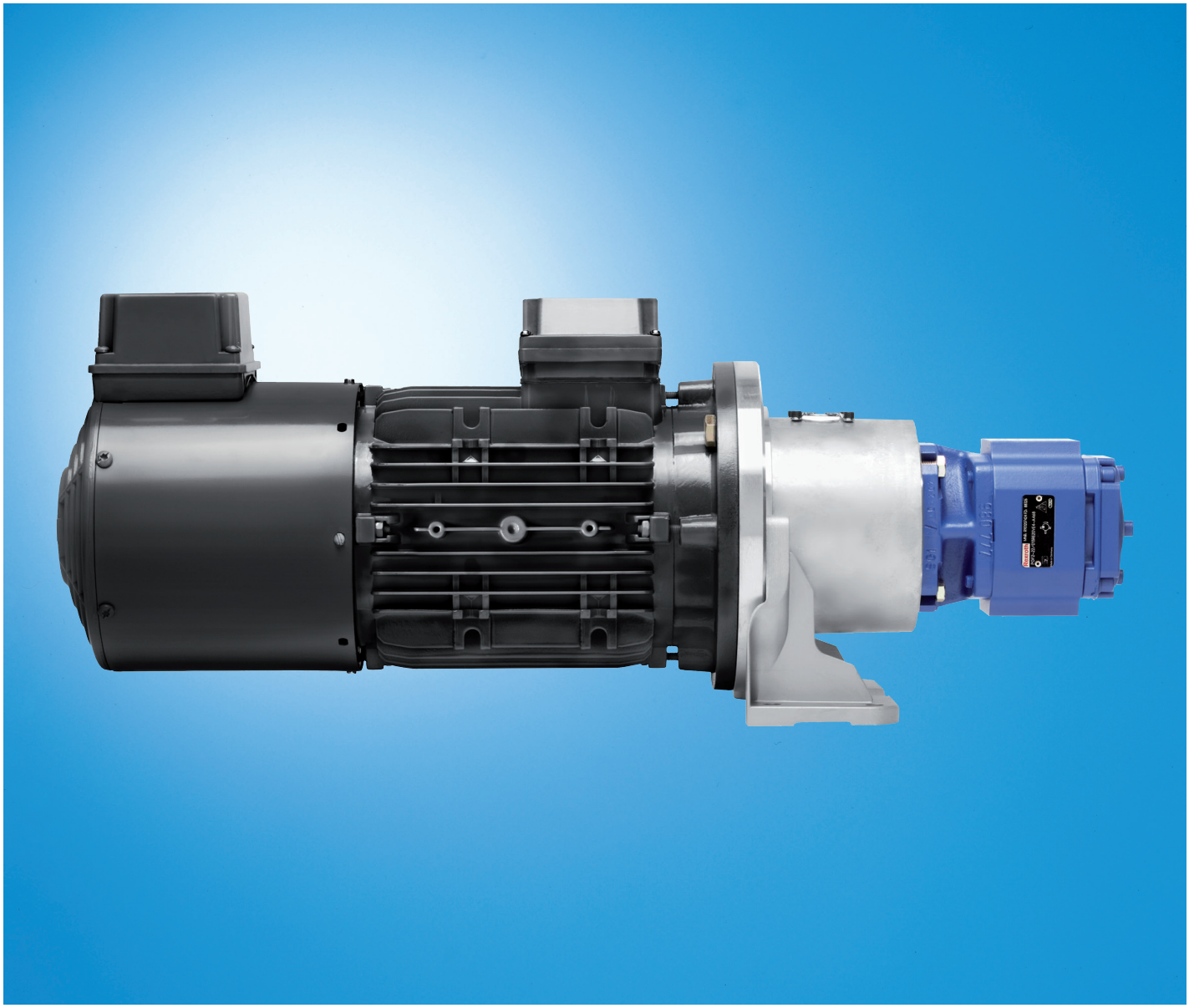
Edition 01



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D Deutsch	USA English	F Français
⚠WARNUNG Lebensgefahr bei Nichtbeachtung der nachstehenden Sicherheitshinweise! Nehmen Sie die Produkte erst dann in Betrieb, nachdem Sie die mit dem Produkt gelieferten Unterlagen und Sicherheitshinweise vollständig durchgelesen, verstanden und beachtet haben. Sollten Ihnen keine Unterlagen in Ihrer Landessprache vorliegen, wenden Sie sich an Ihren zuständigen Rexroth-Vertriebspartner. Nur qualifiziertes Personal darf an Antriebskomponenten arbeiten. Nähere Erläuterungen zu den Sicherheitshinweisen entnehmen Sie Kapitel 1 dieser Dokumentation.	**⚠WARNING Danger to life in case of non-compliance with the below-mentioned safety instructions!** Do not attempt to install or put these products into operation until you have completely read, understood and observed the documents supplied with the product. If no documents in your language were supplied, please consult your Rexroth sales partner. Only qualified persons may work with drive components. For detailed explanations on the safety instructions, see chapter 1 of this documentation.	**⚠AVERTISSEMENT Danger de mort en cas de non-respect des consignes de sécurité figurant ci-après !** Ne mettez les produits en service qu'après avoir lu complètement et après avoir compris et respecté les documents et les consignes de sécurité fournis avec le produit. Si vous ne disposez pas de la documentation dans votre langue, merci de consulter votre partenaire Rexroth. Seul un personnel qualifié est autorisé à travailler sur les composants d'entraînement. Vous trouverez des explications plus détaillées relatives aux consignes de sécurité au chapitre 1 de la présente documentation.
⚠WARNUNG Hohe elektrische Spannung! Lebensgefahr durch elektrischen Schlag! Betreiben Sie Antriebskomponenten nur mit fest installiertem Schutzleiter. Schalten Sie vor Zugriff auf Antriebskomponenten die Spannungsversorgung aus. Beachten Sie die Entladezeiten von Kondensatoren.	**⚠WARNING High electrical voltage! Danger to life by electric shock!** Only operate drive components with a permanently installed equipment grounding conductor. Disconnect the power supply before accessing drive components. Observe the discharge times of the capacitors.	**⚠AVERTISSEMENT Tensions électriques élevées ! Danger de mort par électrocution !** N'exploitez les composants d'entraînement que si un conducteur de protection est installé de manière permanente. Avant d'intervenir sur les composants d'entraînement, coupez toujours la tension d'alimentation. Tenez compte des délais de décharge de condensateurs.
⚠WARNUNG Gefahrbringende Bewegungen! Lebensgefahr! Halten Sie sich nicht im Bewegungsbereich von Maschinen und Maschinenteilen auf. Verhindern Sie den unbeabsichtigten Zutritt für Personen. Bringen Sie vor dem Zugriff oder Zutritt in den Gefahrenbereich die Antriebe sicher zum Stillstand.	**⚠WARNING Dangerous movements! Danger to life!** Keep free and clear of the ranges of motion of machines and moving machine parts. Prevent personnel from accidentally entering the range of motion of machines. Make sure that the drives are brought to safe standstill before accessing or entering the danger zone.	**⚠AVERTISSEMENT Mouvements entraînant une situation dangereuse ! Danger de mort !** Ne séjournez pas dans la zone de mouvement de machines et de composants de machines. Évitez tout accès accidentel de personnes. Avant toute intervention ou tout accès dans la zone de danger, assurez-vous de l'arrêt préalable de tous les entraînements.
⚠WARNUNG Elektromagnetische / magnetische Felder! Gesundheitsgefahr für Personen mit Herzschrittmachern, metallischen Implantaten oder Hörgeräten! Zutritt zu Bereichen, in denen Antriebskomponenten montiert und betrieben werden, ist für oben genannten Personen untersagt bzw. nur nach Rücksprache mit einem Arzt erlaubt.	**⚠WARNING Electromagnetic / magnetic fields! Health hazard for persons with heart pacemakers, metal implants or hearing aids!** The above-mentioned persons are not allowed to enter areas in which drive components are mounted and operated, or rather are only allowed to do this after they consulted a doctor.	**⚠AVERTISSEMENT Champs électromagnétiques / magnétiques ! Risque pour la santé des porteurs de stimulateurs cardiaques, d'implants métalliques et d'appareils auditifs !** L'accès aux zones où sont montés et exploités les composants d'entraînement est interdit aux personnes susmentionnées ou bien ne leur est autorisé qu'après consultation d'un médecin.
⚠VORSICHT Heiße Oberflächen (> 60 °C)! Verbrennungsgefahr! Vermeiden Sie das Berühren von metallischen Oberflächen (z. B. Kühlkörpern). Abkühlzeit der Antriebskomponenten einhalten (mind. 15 Minuten).	**⚠CAUTION Hot surfaces (> 60 °C [140 °F])! Risk of burns!** Do not touch metallic surfaces (e.g. heat sinks). Comply with the time required for the drive components to cool down (at least 15 minutes).	**⚠ATTENTION Surfaces chaudes (> 60 °C)! Risque de brûlure !** Évitez de toucher des surfaces métalliques (p. ex. dissipateurs thermiques). Respectez le délai de refroidissement des composants d'entraînement (au moins 15 minutes).

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D Deutsch	USA English	F Français
⚠VORSICHT Unsachgemäße Handhabung bei Transport und Montage! Verletzungsgefahr! Verwenden Sie geeignete Montage- und Transporteinrichtungen. Benutzen Sie geeignetes Werkzeug und persönliche Schutzausrüstung.	**⚠CAUTION Improper handling during transport and mounting! Risk of injury!** Use suitable equipment for mounting and transport. Use suitable tools and personal protective equipment.	**⚠ATTENTION Manipulation incorrecte lors du transport et du montage ! Risque de blessure !** Utilisez des dispositifs de montage et de transport adéquats. Utilisez des outils appropriés et votre équipement de protection personnel.
⚠VORSICHT Unsachgemäße Handhabung von Batterien! Verletzungsgefahr! Versuchen Sie nicht, leere Batterien zu reaktivieren oder aufzuladen (Explosions- und Verätzungsgefahr). Zerlegen oder beschädigen Sie keine Batterien. Werfen Sie Batterien nicht ins Feuer.	**⚠CAUTION Improper handling of batteries! Risk of injury!** Do not attempt to reactivate or recharge low batteries (risk of explosion and chemical burns). Do not dismantle or damage batteries. Do not throw batteries into open flames.	**⚠ATTENTION Manipulation incorrecte de piles! Risque de blessure!** N'essayez pas de réactiver des piles vides ou de les charger (risque d'explosion et de brûlure par acide). Ne désassemblez et n'endommagez pas les piles. Ne jetez pas des piles dans le feu.

E Español	P Português	I Italiano
⚠ADVERTENCIA ¡Peligro de muerte en caso de no observar las siguientes indicaciones de seguridad! Los productos no se pueden poner en servicio hasta después de haber leído por completo, comprendido y tenido en cuenta la documentación y las advertencias de seguridad que se incluyen en la entrega. Si no dispusiera de documentación en el idioma de su país, diríjase a su distribuidor competente de Rexroth. Solo el personal debidamente cualificado puede trabajar en componentes de accionamiento. Encontrará más detalles sobre las indicaciones de seguridad en el capítulo 1 de esta documentación.	**⚠ATENÇÃO Perigo de vida em caso de inobservância das seguintes instruções de segurança!** Utilize apenas os produtos depois de ter lido, compreendido e tomado em consideração a documentação e as instruções de segurança fornecidas juntamente com o produto. Se não tiver disponível a documentação na sua língua, dirija-se ao seu parceiro de venda responsável da Rexroth. Apenas pessoal qualificado pode trabalhar nos componentes de acionamento. Explicações mais detalhadas relativamente às instruções de segurança constam no capítulo 1 desta documentação.	**⚠AVVERTENZA Pericolo di morte in caso di inosservanza delle seguenti indicazioni di sicurezza!** Mettere in funzione i prodotti solo dopo aver letto, compreso e osservato per intero la documentazione e le indicazioni di sicurezza fornite con il prodotto. Se non dovesse essere presente la documentazione nella vostra lingua, siete pregati di rivolgervi al rivenditore Rexroth competente. Solo personale qualificato può eseguire lavori sui componenti di comando. Per ulteriori spiegazioni riguardanti le indicazioni di sicurezza consultare il capitolo 1 di questa documentazione.
⚠ADVERTENCIA ¡Alta tensión eléctrica! ¡Peligro de muerte por descarga eléctrica! Active sólo los componentes de accionamiento con el conductor protector firmemente instalado. Desconecte la alimentación eléctrica antes de manipular los componentes de accionamiento. Tenga en cuenta los tiempos de descarga de los condensadores.	**⚠ATENÇÃO Alta tensão elétrica! Perigo de vida devido a choque elétrico!** Opere componentes de acionamento apenas com condutores de proteção instalados. Desligue a alimentação de tensão antes de aceder aos componentes de acionamento. Respeite os períodos de descarga dos condensadores.	**⚠AVVERTENZA Alta tensione elettrica! Pericolo di morte in seguito a scosse elettriche!** Mettere in esercizio i componenti di comando solo con conduttore di messa a terra ben installato. Staccare l'alimentazione prima di intervenire sui componenti di comando. Osservare i tempi di scarica del condensatore.
⚠ADVERTENCIA ¡Movimientos peligrosos! ¡Peligro de muerte! No permanezca en la zona de movimiento de las máquinas ni de sus piezas. Impida el acceso accidental de personas. Antes de acceder o introducir las manos en la zona de peligro, los accionamientos se tienen que haber parado con seguridad.	**⚠ATENÇÃO Movimentos perigosos! Perigo de vida!** Não permaneça na área de movimentação das máquinas e das peças das máquinas. Evite o acesso involuntário para pessoas. Antes de entrar ou aceder à área perigosa, imobilize os acionamentos de forma segura.	**⚠AVVERTENZA Movimenti pericolosi! Pericolo di morte!** Non sostare nelle zone di manovra delle macchine e delle loro parti. Impedire un accesso non autorizzato per le persone. Prima di accedere alla zona di pericolo, arrestare e bloccare gli azionamenti.

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⚠ADVERTENCIA ¡Campos electromagnéticos/magnéticos! ¡Peligro para la salud de las personas con marcapasos, implantes metálicos o audífonos! El acceso de las personas arriba mencionadas a las zonas de montaje o funcionamiento de los componentes de accionamiento está prohibido, salvo que lo autorice previamente un médico.	**⚠ATENÇÃO Campos eletromagnéticos / magnéticos! Perigo de saúde para pessoas com marcapassos, implantes metálicos ou aparelhos auditivos!** Acesso às áreas, nas quais os componentes de acionamento são montados e operados, é proibido para as pessoas em cima mencionadas ou apenas após permissão de um médico.	**⚠AVVERTENZA Campi elettromagnetici / magnetici! Pericolo per la salute delle persone portatrici di pacemaker, protesi metalliche o apparecchi acustici!** L'accesso alle zone in cui sono installati o in funzione componenti di comando è vietato per le persone sopra citate o consentito solo dopo un colloquio con il medico.
⚠ATENCIÓN ¡Superficies calientes (> 60 °C)! ¡Peligro de quemaduras! Evite el contacto con las superficies calientes (p. ej., disipadores de calor). Observe el tiempo de enfriamiento de los componentes de accionamiento (mín. 15 minutos).	**⚠CUIDADO Superfícies quentes (> 60 °C)! Perigo de queimaduras!** Evite tocar superfícies metálicas (p. ex. radiadores). Respeite o tempo de arrefecimento dos componentes de acionamento (mín. 15 minutos).	**⚠ATTENZIONE Superfici bollenti (> 60 °C)! Pericolo di ustioni!** Evitare il contatto con superfici metalliche (ad es. dissipatori di calore). Rispettare i tempi di raffreddamento dei componenti di comando (almeno 15 minuti).
⚠ATENCIÓN ¡Manipulación inadecuada en el transporte y montaje! ¡Peligro de lesiones! Utilice dispositivos de montaje y de transporte adecuados. Utilice herramientas adecuadas y equipo de protección personal.	**⚠CUIDADO Manejo incorreto no transporte e montagem! Perigo de ferimentos!** Utilize dispositivos de montagem e de transporte adequados. Utilize ferramentas e equipamento de proteção individual adequados.	**⚠ATTENZIONE Manipolazione inappropriata durante il trasporto e il montaggio! Pericolo di lesioni!** Utilizzare dispositivi di montaggio e trasporto adatti. Utilizzare attrezzi adatti ed equipaggiamento di protezione personale.
⚠ATENCIÓN ¡Manejo inadecuado de las pilas! ¡Peligro de lesiones! No trate de reactivar o cargar pilas descargadas (peligro de explosión y cauterización). No desarme ni dañe las pilas. No tire las pilas al fuego.	**⚠CUIDADO Manejo incorreto de baterias! Perigo de ferimentos!** Não tente reativar nem carregar baterias vazias (perigo de explosão e de queimaduras com ácido). Não desmonte nem danifique as baterias. Não deite as baterias no fogo.	**⚠ATTENZIONE Utilizzo inappropriato delle batterie! Pericolo di lesioni!** Non tentare di riattivare o ricaricare batterie scariche (pericolo di esplosione e corrosione). Non scomporre o danneggiare le batterie. Non gettare le batterie nel fuoco.

S Svenska	DK Dansk	NL Nederlands
⚠VARNING Livsfara om följande säkerhetsanvisningar inte följs! Använd inte produkterna innan du har läst och förstått den dokumentation och de säkerhetsanvisningar som medföljer produkten, och följ alla anvisningar. Kontakta din Rexroth-återförsäljare om dokumentationen inte medföljer på ditt språk. Endast kvalificerad personal får arbeta med drivkomponenterna. Se kapitel 1 i denna dokumentation för närmare beskrivningar av säkerhetsanvisningarna.	**⚠ADVARSEL Livsfare ved manglende overholdelse af nedenstående sikkerhedsanvisninger!** Tag ikke produktet i brug, før du har læst og forstået den dokumentation og de sikkerhedsanvisninger, som følger med produktet, og overhold de givne anvisninger. Kontakt din Rexroth-forhandler, hvis dokumentationen ikke medfølger på dit sprog. Det er kun kvalificeret personale, der må arbejde på drive components. Nærmere forklaringer til sikkerhedsanvisningerne fremgår af kapitel 1 i denne dokumentation.	**⚠WAARSCHUWING Levensgevaar bij niet-naleving van onderstaande veiligheidsinstructies!** Stel de producten pas in bedrijf nadat u de met het product geleverde documenten en de veiligheidsinformatie volledig gelezen, begrepen en in acht genomen heeft. Mocht u niet beschikken over documenten in uw landstaal, kunt u contact opnemen met uw plaatselijke Rexroth distributiepartner. Uitsluitend gekwalificeerd personeel mag aan de aandrijvingscomponenten werken. Meer informatie over de veiligheidsinstructies vindt u in hoofdstuk 1 van deze documentatie.
⚠VARNING Hög elektrisk spänning! Livsfara genom elchock! Använd endast drivkomponenterna med fastmonterad skyddsledare. Koppla bort spänningsförsörjningen före arbete på drivkomponenter. Var medveten om kondensatorernas urladdningstid.	**⚠ADVARSEL Elektrisk højspænding! Livsfare på grund af elektrisk stød!** Drive components må kun benyttes med et fast installeret jordstik. Sørg for at koble spændingsforsyningen fra, inden du rører ved drive components. Overhold kondensatorernes afladningstider.	**⚠WAARSCHUWING Hoge elektrische spanning! Levensgevaar door elektrische schok!** Bedien de aandrijvingscomponenten uitsluitend met vast geïnstalleerde aardleiding. Schakel voor toegang tot aandrijvingscomponenten de spanningsvoorziening uit. Neem de ontlaadtijden van condensatoren in acht.

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⚠VARNING Farliga rörelser! Livsfara! Uppehåll dig inte inom maskiners och maskindelars rörelseområde. Förhindra att obehöriga personer får tillträde. Innan du börjar arbeta eller vistas inom drivsystemets riskområde måste maskinen vara stillastående.	**⚠ADVARSEL Farlige bevægelser! Livsfare!** Du må ikke opholde dig inden for maskiners og maskindeles bevægelsesradius. Sørg for, at ingen personer kan få utilsigtet adgang. Stands drevene helt, inden du rører ved drevene eller træder ind i deres fareområde.	**⚠WAARSCHUWING Risicovolle bewegingen! Levensgevaar!** Houdt u niet op in het bewegingsbereik van machines en machineonderdelen. Voorkom dat personen onbedoeld toegang verkrijgen. Voor toegang tot de gevaarlijke zone moeten de aandrijvingen veilig tot stilstand gebracht zijn.
⚠VARNING Elektromagnetiska/magnetiska fält! Hälsofara för personer med pacemaker, implantat av metall eller hörapparat! Det är förbjudet för ovan nämnda personer (eller kräver överläggning med läkare) att beträda områden där drivkomponenter är monterade och i drift.	**⚠ADVARSEL Elektromagnetiske/ magnetiske felter! Sundhedsfare for personer med pacemakere, metalliske implantater eller høreapparater!** For disse personer er der adgang forbudt eller kun adgang med tilladelse fra læge til de områder, hvor drive components monteres og drives.	**⚠WAARSCHUWING Elektromagnetische / magnetische velden! Gevaar voor de gezondheid van personen met pacemakers, metalen implantaten of hoorapparaten!** Toegang tot gebieden, waarin aandrijvingscomponenten worden gemonteerd en bediend, is verboden voor voornoemde personen of uitsluitend toegestaan na overleg met een arts.
⚠OBSERVERA Varma ytor (> 60 °C)! Risk för brännskador! Undvik att vidröra metallytor (t.ex. kylelement). Var medveten om att det tar tid för drivkomponenterna att svalna (minst 15 minuter).	**⚠FORSIGTIG Varme overflader (> 60 °C)! Risiko for forbrændinger!** Undgå at berøre metaloverflader (f.eks. køleelementer). Overhold drive components nedkølingstid (min. 15 min.).	**⚠VOORZICHTIG Hete oppervlakken (> 60 °C)! Verbrandingsgevaar!** Voorkom contact met metalen oppervlakken (bijv. Koellichamen). Afkoeltijd van de aandrijvingscomponenten in acht nemen (min. 15 minuten).
⚠OBSERVERA Felaktig hantering vid transport och montering! Skaderisk! Använd passande monterings- och transportanordningar. Använd lämpliga verktyg och personlig skyddsutrustning.	**⚠FORSIGTIG Fejlhåndtering ved transport og montering! Risiko for kvæstelser!** Benyt egnede monterings- og transportanordninger. Benyt egnet værktøj og personligt sikkerhedsudstyr.	**⚠VOORZICHTIG Onjuist gebruik bij transport en montage! Letselgevaar!** Gebruik geschikte montage- en transportinrichtingen. Gebruik geschikt gereedschap en een persoonlijke veiligheidsuitrusting.
⚠OBSERVERA Felaktig hantering av batterier! Skaderisk! Försök inte återaktivera eller ladda upp batterier (risk för explosioner och frätskador). Batterierna får inte tas isär eller skadas. Släng inte batterierna i elden.	**⚠FORSIGTIG Fejlhåndtering af batterier! Risiko for kvæstelser!** Forsøg ikke at genaktivere eller oplade tomme batterier (eksplosions- og ætsningsfare). Undlad at skille batterier ad eller at beskadige dem. Smid ikke batterier ind i åben ild.	**⚠VOORZICHTIG Onjuist gebruik van batterijen! Letselgevaar!** Probeer nooit lege batterijen te reactiveren of op te laden (explosiegevaar en gevaar voor beschadiging van weefsel door cauterisatie). Batterijen niet demonteren of beschadigen. Nooit batterijen in het vuur werpen.

FIN Suomi	PL Polski	CZ Český
⚠VAROITUS Näiden turvaohjeiden noudattamatta jättämisestä on seurauksena hengenvaara! Ota tuote käyttöön vasta sen jälkeen, kun olet lukenut läpi tuotteen mukana toimitetut asiakirjat ja turvallisuusohjeet, ymmärtänyt ne ja ottanut ne huomioon. Jos asiakirjoja ei ole saatavana omalla äidinkielelläsi, ota yhteys asianomaiseen Rexrothin myyntiedustajaan. Käyttölaitteiden komponenttien parissa saa työskennellä ainoastaan valtuutettu henkilöstö. Lisätietoa turvaohjeista löydät tämän dokumentaation luvusta 1.	**⚠OSTRZEŻENIE Zagrożenie życia w razie nieprzestrzegania poniższych wskazówek bezpieczeństwa!** Nie uruchamiać produktów przed uprzednim przeczytaniem i pełnym zrozumieniem wszystkich dokumentów dostarczonych wraz z produktem oraz wskazówek bezpieczeństwa. Należy przestrzegać wszystkich zawartych tam zaleceń. W przypadku braku dokumentów w Państwa języku, prosimy o skontaktowanie się z lokalnym partnerem handlowym Rexroth. Przy zespołach napędowych może pracować wyłącznie wykwalifikowany personel. Bliższe objaśnienia wskazówek bezpieczeństwa znajdują się w Rozdziale 1 niniejszej dokumentacji.	**⚠VAROVÁNÍ Nebezpečí života v případě nedodržení níže uvedených bezpečnostních pokynů!** Před uvedením výrobků do provozu si přečtěte kompletní dokumentaci a bezpečnostní pokyny dodávané s výrobkem, pochopte je a dodržujte. Nemáte-li k dispozici podklady ve svém jazyce, obraťte se na příslušného obchodního partnera Rexroth. Na komponentách pohonu smí pracovat pouze kvalifikovaný personál. Podrobnější vysvětlení k bezpečnostním pokynům naleznete v kapitole 1 této dokumentace.
⚠VAROITUS Voimakas sähköjännite! Sähköiskun aiheuttama hengenvaara! Käytä käyttölaitteen komponentteja ainoastaan maadoitusjohtimen ollessa kiinteästi asennettuna. Katkaise jännitteensyöttö ennen käyttölaitteen komponenteille suoritettavien töiden aloittamista. Huomioi kondensaattoreiden purkausajat.	**⚠OSTRZEŻENIE Wysokie napięcie elektryczne! Zagrożenie życia w wyniku porażenia prądem!** Zespoły napędu mogą być eksploatowane wyłącznie z zainstalowanym na stałe przewodem ochronnym. Przed uzyskaniem dostępu do podzespołów napędu należy odłączyć zasilanie elektryczne. Zwracać uwagę na czas rozładowania kondensatorów.	**⚠VAROVÁNÍ Vysoké elektrické napětí! Nebezpečí života při zasažení elektrickým proudem!** Komponenty pohonu smí být v provozu pouze s pevně nainstalovaným ochranným vodičem. Než začnete zasahovat do komponent pohonu, odpojte je od elektrického napájení. Dodržujte vybíjecí časy kondenzátorů.
⚠VAROITUS Vaarallisia liikkeitä! Hengenvaara! Älä oleskele koneiden tai koneenosien liikealueella. Pidä huolta siitä, ettei muita henkilöitä pääse alueelle vahingossa. Pysäytä käyttölaitteet varmasti ennen vaara-alueelle koskemista tai menemistä.	**⚠OSTRZEŻENIE Niebezpieczne ruchy! Zagrożenie życia!** Nie wolno przebywać w obszarze pracy maszyny i jej elementów. Nie dopuszczać osób niepowołanych do obszaru pracy maszyny. Przed dotknięciem urządzenia/maszyny lub zbliżeniem się do obszaru zagrożenia należy zgodnie z zasadami bezpieczeństwa wyłączyć napędy.	**⚠VAROVÁNÍ Nebezpečné pohyby! Nebezpečí života!** Nezdržujte se v dosahu pohybu strojů a jejich součástí. Zabraňte náhodnému přístupu osob. Před zásahem nebo vstupem do nebezpečného prostoru bezpečně zastavte pohony.
⚠VAROITUS Sähkömagneettisia/ magneettisia kenttiä! Terveydellisten haittojen vaara henkilöille, joilla on sydämentahdistin, metallinen implantti tai kuulolaite! Yllä mainituilta henkilöiltä on pääsy kielletty alueille, joilla asennetaan tai käytetään käyttölaitteen komponentteja, tai heidän on ensin saatava tähän suostumus lääkäriltään.	**⚠OSTRZEŻENIE Pola elektromagnetyczne / magnetyczne! Zagrożenie zdrowia dla osób z rozrusznikiem serca, metalowymi implantami lub aparatami słuchowymi!** Wstęp na teren, gdzie odbywa się montaż i eksploatacja napędów jest dla ww. osób zabroniony względnie dozwolony po konsultacji z lekarzem.	**⚠VAROVÁNÍ Elektromagnetická/ magnetická pole! Nebezpečí pro zdraví osob s kardiostimulátory, kovovými implantáty nebo naslouchadly!** Výše uvedené osoby mají zakázán přístup do prostorů, kde jsou montovány a používány komponenty pohonu, resp. ho mají povolen pouze po poradě s lékařem.
⚠HUOMIO Kuumia pintoja (> 60 °C)! Palovammojen vaara! Vältä metallipintojen koskettamista (esim. jäähdytyslevyt). Noudata käyttölaitteen komponenttien jäähtymisaikoja (väh. 15 minuuttia).	**⚠PRZESTROGA Gorące powierzchnie (> 60 °C)! Niebezpieczeństwo poparzenia!** Unikać kontaktu z powierzchniami metalowymi (np. radiatorami). Przestrzegać czasów schładzania podzespołów napędów (min. 15 minut).	**⚠UPOZORNĚNÍ Horké povrchy (> 60 °C)! Nebezpečí popálení!** Nedotýkejte se kovových povrchů (např. chladicích těles). Dodržujte dobu ochlazení komponent pohonu (min. 15 minut).

FIN Suomi	PL Polski	CZ Český
⚠ HUOMIO Epäasianmukainen käsittely kuljetuksen ja asennuksen yhteydessä! Loukkaantumisvaara! Käytä soveltuvia asennus- ja kuljetuslaitteita. Käytä omia työkaluja ja henkilökohtaisia suojavarusteita.	**⚠ PRZESTROGA Niewłaściwe obchodzenie się podczas transportu i montażu! Ryzyko urazu!** Stosować odpowiednie urządzenia montażowe i transportowe. Stosować odpowiednie narzędzia i środki ochrony osobistej.	**⚠ UPOZORNĚNÍ Nesprávné zacházení při přepravě a montáži! Nebezpečí zranění!** Používejte vhodná montážní a dopravní zařízení. Používejte vhodné nářadí a osobní ochranné vybavení.
⚠ HUOMIO Paristojen epäasianmukainen käsittely! Loukkaantumisvaara! Älä yritä saada tyhjiä paristoja toimimaan tai ladata niitä uudelleen (räjähdys- ja syöpymisvaara). Älä hajota paristoja osiin tai vaurioita niitä. Älä heitä paristoja tuleen.	**⚠ PRZESTROGA Niewłaściwe obchodzenie się z bateriami! Ryzyko urazu!** Nie próbować reaktywować i nie ładować zużytych baterii (niebezpieczeństwo wybuchu oraz poparzenia żrącą substancją). Nie demontować i nie niszczyć baterii. Nie wrzucać baterii do ognia.	**⚠ UPOZORNĚNÍ Nesprávné zacházení s bateriemi! Nebezpečí zranění!** Nepokoušejte se znovu aktivovat nebo dobíjet prázdné baterie (nebezpečí výbuchu a poleptání). Nerozebírejte ani nepoškozujte baterie. Neházejte baterie do ohně.

SLO Slovensko	SK Slovenčina	RO Română
⚠ OPOZORILO Življenjska nevarnost pri neupoštevanju naslednjih napotkov za varnost! Izdelke začnite uporabljati šele, ko v celoti preberete, razumete in upoštevate izdelkom priloženo dokumentacijo in varnostne napotke. Če priložena dokumentacija ni na voljo v vašem maternem jeziku, se obrnite na pristojnega distributerja Rexroth. Samo kvalificirano osebje sme delati na pogonskih komponentah. Podrobnejša pojasnila o varnostnih navodilih najdete v poglavju 1 v tej dokumentaciji.	**⚠ VAROVANIE Nebezpečenstvo ohrozenia života pri nedodržiavaní nasledujúcich bezpečnostných pokynov!** Výrobky uvádzajte do prevádzky až potom, čo ste úplne prečítali, pochopili a zobrali do úvahy podklady a bezpečnostné pokyny dodané s výrobkom. Ak by ste nemali k dispozícii žiadne podklady v jazyku svojej krajiny, obráťte sa prosím na svojho príslušného predajcu Rexroth. Na komponentoch pohonu smie pracovať iba kvalifikovaný personál. Bližšie vysvetlenia k bezpečnostným pokynom zistite z kapitoly 1 tejto dokumentácie.	**⚠ AVERTIZARE Pericol de moarte în cazul nerespectării următoarelor instrucţiuni de siguranţă!** Punerea în funcțiune a produselor trebuie efectuată după citirea, înțelegerea și respectarea documentelor și instrucțiunilor de siguranță, care sunt livrate împreună cu produsele. În cazul în care documentele nu sunt în limba dumneavoastră maternă, vă rugăm să contactați partenerul de vânzări Rexroth. Numai un personal calificat poate lucra cu componentele de acționare. Explicații detaliate privind instrucțiunile de siguranță găsiți în capitolul 1 al acestei documentații.
⚠ OPOZORILO Visoka električna napetost! Življenjska nevarnost zaradi električnega udara! Pogonske komponente uporabljajte samo s fiksno nameščenim zaščitnim vodnikom. Pred dostopom do pogonske komponente odklopite napajanje. Upoštevajte čase praznjenja kondenzatorjev.	**⚠ VAROVANIE Vysoké elektrické napätie! Nebezpečenstvo ohrozenia života v dôsledku zásahu elektrickým prúdom!** Komponenty pohonu prevádzkujte iba s pevne nainštalovaným ochranným vodičom. Pred prístupom na komponenty pohonu odpojte zdroj napätia. Rešpektujte časy vybitia kondenzátorov.	**⚠ AVERTIZARE Tensiune electrică înaltă! Pericol de moarte prin electrocutare!** Exploatați componentele de acționare numai cu împământarea instalată permanent. Înainte de intervenția asupra componentelor de acționare, deconectați alimentarea cu tensiune electrică. Țineți cont de timpii de descărcare ai condensatorilor.
⚠ OPOZORILO Nevarni premiki! Življenjska nevarnost! Ne zadržujte se v območju delovanja strojev. Preprečite nenadzorovan dostop oseb. Pred prijemom ali dostopom v nevarno območje varno zaustavite vse gnane dele.	**⚠ VAROVANIE Pohyby prinášajúce nebezpečenstvo! Nebezpečenstvo ohrozenia života!** Nezdržiavajte sa v oblasti pohybu strojov a častí strojov. Zabráňte nepovolanému prístupu osôb. Pred zásahom alebo prístupom do nebezpečnej oblasti uveďte pohony bezpečne do zastavenia.	**⚠ AVERTIZARE Mişcări periculoase! Pericol de moarte!** Nu staționați în zona de mișcare a mașinilor și a componentelor în mișcare a mașinilor. Împiedicați accesul neintenționat al persoanelor în zona de lucru a mașinilor. Înainte de intervenția sau accesul în zona periculoasă, opriți în siguranță componentele de acționare.

SLO Slovensko	SK Slovenčina	RO Română
⚠ OPOZORILO Elektromagnetna / magnetna polja! Nevarnost za zdravje za osebe s spodbujevalniki srca, kovinskimi vsadki ali slušnimi aparati! Dostop do območij, v katerih so nameščene delujoče pogonske komponente, je za zgoraj navedene osebe prepovedan oz. dovoljen samo po posvetu z zdravnikom.	**⚠ VAROVANIE Elektromagnetické/ magnetické polia! Nebezpečenstvo pre zdravie osôb s kardiostimulátormi, kovovými implantátmi alebo načúvacími prístrojmi!** Prístup k oblastiam, v ktorých sú namontované a prevádzkujú sa komponenty pohonu, je pre hore uvedené osoby zakázaný resp. je dovolený iba po konzultácii s lekárom.	**⚠ AVERTIZARE Câmpuri electromagnetice / magnetice! Pericol pentru sănătatea persoanelor cu stimulatoare cardiace, implanturi metalice sau aparate auditive!** Intrarea în zone, în care se montează sau se exploatează componente de acționare, este interzisă pentru persoanele sus numite respectiv este permisă numai cu acordul medicului.
⚠ POZOR Vroče površine (> 60 °C)! Nevarnost opeklin! Izogibajte se stiku s kovinskimi površinami (npr. hladilnimi telesi). Upoštevajte čas hlajenja pogonskih komponent (najm. 15 minut).	**⚠ UPOZORNENIE Horúce povrchy (> 60 °C)! Nebezpečenstvo popálenia!** Zabráňte kontaktu s kovovými povrchmi (napr. chladiacimi telesami). Dodržiavajte čas vychladenia komponentov pohonu (min. 15 minút).	**⚠ ATENȚIE Suprafețe fierbinți (> 60 °C)! Pericol de arsuri!** Nu atingeți suprafețele metalice (de ex. radiatoare de răcire). Respectați timpii de răcire ai componentelor de acționare (min. 15 minute).
⚠ POZOR Nestrokovno ravnanje med transportom in namestitvijo! Nevarnost poškodb! Uporabljajte ustrezne pripomočke za nameščanje in transport. Uporabite ustrezno orodje in osebno zaščitno opremo.	**⚠ UPOZORNENIE Neodborná manipulácia pri transporte a montáži! Nebezpečenstvo poranenia!** Používajte vhodné montážne a transportné zariadenia. Používajte vhodné náradie a osobné ochranné prostriedky.	**⚠ ATENȚIE Manipulare necorespunzătoare la transport și montaj! Pericol de vătămare!** Utilizați dispozitive adecvate de montaj și transport. Folosiți instrumente corespunzătoare și echipament personal de protecție.
⚠ POZOR Nepravilno ravnanje z baterijami! Nevarnost poškodb! Ne poskušajte ponovno aktivirati ali napolniti praznih baterij (Nevarnost zaradi eksplozij ali jedkanja). Ne razstavljajte ali poškodujte nobenih baterij. Baterij ne mečite v ogenj.	**⚠ UPOZORNENIE Neodborná manipulácia s batériami! Nebezpečenstvo poranenia!** Nepokúšajte sa reaktivovať alebo nabíjať prázdne batérie (nebezpečenstvo výbuchu a poleptania). Batérie nerozoberajte ani nepoškodzujte. Nehádžte batérie do ohňa.	**⚠ ATENȚIE Manipulare necorespunzătoare a bateriilor! Pericol de vătămare!** Nu încercați să reactivați sau să încărcați bateriile goale (pericol de explozie și pericol de arsuri). Nu dezasamblați și nu deteriorați bateriile. Nu aruncați bateriile în foc.

H Magyar	BG Български	LV Latviski
⚠ FIGYELMEZTETÉS! Az alábbi biztonsági útmutatások figyelmen kívül hagyása életveszélyes helyzethez vezethet! Üzembe helyezés előtt olvassa el, értelmezze, és vegye figyelembe a csomagban található dokumentumban foglaltakat és a biztonsági útmutatásokat. Amennyiben a csomagban nem talál az Ön nyelvén írt dokumentumokat, vegye fel a kapcsolatot az illetékes Rexroth-képviselővel. A hajtás alkatrészein kizárólag képzett személy dolgozhat. A biztonsági útmutatókkal kapcsolatban további magyarázatot ennek a dokumentumnak az első fejezetében találhat.	**⚠ ПРЕДУПРЕЖДЕНИЕ Опасност за живота при неспазване на посочените по-долу инструкции за безопасност!** Използвайте продуктите след като сте се запознали подробно с приложената към продукта документация и указания за безопасност, разбрали сте ги и сте се съобразили с тях. Ако текстът не е написан на Вашия език, моля обърнете се към Вашия компетентен търговски представител на Rexroth. Със задвижващите компоненти трябва да работи само квалифициран персонал. Подробни пояснения към инструкциите за безопасност можете да видите в Глава 1 на тази документация.	**⚠ BRĪDINĀJUMS Turpinājumā doto drošības norādījumu neievērošana var apdraudēt dzīvību!** Sāciet lietot izstrādājumu tikai pēc tam, kad esat pilnībā izlasījuši, sapratuši un ņēmuši vērā kopā ar izstrādājumu piegādātos dokumentus. Ja dokumenti nav pieejami Jūsu valsts valodā, vērsieties pie pilnvarotā Rexroth izplatītāja. Darbus pie piedziņas komponentiem drīkst veikt tikai kvalificēts personāls. Detalizētus paskaidrojumus attiecībā uz drošības norādījumiem skatiet šī dokumenta 1. nodaļā.
⚠ FIGYELMEZTETÉS! Magas elektromos feszültség! Életveszély áramütés miatt! A hajtás alkatrészeit csak véglegesen telepített védővezetővel üzemeltesse! Mielőtt hozzányúl a hajtás alkatrészeihez, kapcsolja ki az áramellátást. Ügyeljen a kondenzátorok kisülési idejére!	**⚠ ПРЕДУПРЕЖДЕНИЕ Високо електрическо напрежение! Опасност за живота от удар от електрически ток!** Работете със задвижващите компоненти само при здраво закрепен заземяващ проводник. Преди работа по задвижващите компоненти, изключете захранващото напрежение. Обърнете внимание на времето за разреждане на кондензаторите.	**⚠ BRĪDINĀJUMS Augsts elektriskais spriegums! Dzīvības apdraudējums elektriskā trieciena dēļ!** Piedziņas komponentus darbiniet tikai ar fiksēti uzstādītu zemējumvadu. Pirms darba pie piedziņas komponentiem atslēdziet elektroapgādi. Ņemiet vērā kondensatoru izlādes laikus.

H Magyar	BG Български	LV Latviski
⚠ FIGYELMEZTETÉS! Veszélyes mozgás! Életveszély! Ne tartózkodjon a gépek és a gépalkatrészek mozgási területén belül! Illetéktelen személyeket ne engedjen a gép közelébe! Mielőtt beavatkozik, vagy a veszélyes zónába belép a hajtásokat biztonságosan állítsa le.	**⚠ ПРЕДУПРЕЖДЕНИЕ Опасни движения! Опасност за живота!** Не стойте в обсега на движение на машините и частите на машините. Не допускайте непреднамерен достъп на хора. Преди работа или влизане в опасната зона, спрете надеждно приводния механизъм.	**⚠ BRĪDINĀJUMS Bīstamas kustības! Dzīvības apdraudējums!** Neuzturieties mašīnu un mašīnas detaļu kustību zonā. Novērsiet nepiederošu personu piekļūšanu. Pirms darba bīstamajās zonās pilnībā apstādiniet piedziņu.
⚠ FIGYELMEZTETÉS! Elektromágneses / mágneses mező! Káros hatással lehet a szívritmus-szabályozó készülékkel, fémbeültetéssel vagy hallókészülékkel rendelkezők egészségére! Azokra a területekre, ahol hajtások alkatrészeit szerelik és üzemeltetik, a fent említett személyeknek tilos a belépés, illetve csak orvosi konzultációt követően szabad az adott területekre lépniük.	**⚠ ПРЕДУПРЕЖДЕНИЕ Електромагнитни / магнитни полета! Опасност за здравето на хора със сърдечни стимулатори, метални импланти или слухови апарати!** Достъпът за гореспоменатите лица до зони, в които ще се монтират и ще работят задвижващи компоненти се забранява, или разрешава само след консултация с лекар.	**⚠ BRĪDINĀJUMS Elektromagnētiskais / magnētiskais lauks! Veselības apdraudējums personām ar sirds stimulatoriem, metāliskiem implantiem vai dzirdes aparātiem!** Tuvošanās zonām, kurās tiek montēti un darbināti piedziņas komponenti, iepriekš minētajām personām ir aizliegta, respektīvi, atļauta tikai pēc konsultēšanās ar ārstu.
⚠ VIGYÁZAT! Forró felületek (> 60 °C)! Égésveszély! Ne érjen hozzá fémfelületekhez (pl. hűtőtestekhez)! Vegye figyelembe a hajtás alkatrészeinek kihűlési idejét (min. 15 perc)!	**⚠ ВНИМАНИЕ Горещи повърхности (> 60 °C)! Опасност от изгаряне!** Не докосвайте метални повърхности (например радиатори). Съблюдавайте времето на охлаждане на задвижващите компоненти (мин. 15 минути).	**⚠ UZMANĪBU Karstas virsmas (> 60 °C)! Apdedzināšanās risks!** Neskarieties pie metāliskām virsmām (piemēram, dzesētāja). Ļaujiet piedziņas komponentiem atdzist (min. 15 minūtes).
⚠ VIGYÁZAT! Szakszerűtlen kezelés szállításkor és szereléskor! Sérülésveszély! A megfelelő beszerelési és szállítási eljárásokat alkalmazza! Használjon megfelelő szerszámokat és személyes védőfelszerelést!	**⚠ ВНИМАНИЕ Неправилно боравене по време на транспорт и монтаж!Опасност от нараняване!** Използвайте подходящо монтажно и транспортно оборудване. Използвайте подходящи инструменти и лични предпазни средства.	**⚠ UZMANĪBU Nepareizi veikta transportēšana un montāža! Traumu gūšanas risks!** Izmantojiet piemērotas montāžas un transportēšanas ierīces. Izmantojiet piemērotus instrumentus un individuālos aizsardzības līdzekļus.
⚠ VIGYÁZAT! Akkumulátorok szakszerűtlen kezelése! Sérülésveszély! Üres akkumulátorokat ne aktiváljon újra, illetve ne töltsön fel (robbanás- és marásveszély)! Az akkumulátorokat ne szedje szét, és ne rongálja meg! Az akkumulátort ne dobja tűzbe!	**⚠ ВНИМАНИЕ Неправилно боравене с батерии! Опасност от нараняване!** Не се опитвайте да активирате отново или да зареждате разредени батерии (Опасност от експлозия и напръскване с агресивен агент). Не разглобявайте и не повреждайте батерии. Не хвърляйте батерии в огън.	**⚠ UZMANĪBU Nepareiza bateriju lietošana! Traumu gūšanas risks!** Nemēģiniet no jauna aktivizēt vai uzlādēt tukšas baterijas (eksploziju un ķīmisko apdegumu draudi). Neizjauciet un nesabojājiet baterijas. Nemetiet baterijas ugunī.

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⚠ ĮSPĖJIMAS Pavojus gyvybei nesilaikant toliau pateikiamų saugumo nurodymų! Naudokite gaminį tik kruopščiai perskaitę prie jo pridėtus aprašus, saugumo nurodymus. Susipažinkite su jais ir vadovaukitės naudodami gaminį. Jei Jūs negavote aprašo gimtąja kalba, kreipkitės į įgaliotus Rexroth atstovus. Prie pavaros komponentų leidžiama dirbti tik kvalifikuotam personalui. Išsamesnius saugumo nurodymų paaiškinimus rasite šios dokumentacijos 1 skyriuje.	**⚠ HOIATUS Alljärgnevate ohutusjuhiste eiramine on eluohtlik!** Võtke tooted käiku alles siis, kui olete toodetega kaasasolevad materjalid ning ohutusjuhised täielikult läbi lugenud, neist aru saanud ja neid järginud. Kui Teil puuduvad emakeelsed materjalid, siis pöörduge Rexrothi kohaliku müügiesinduse poole. Ajamikomponentidega tohib töötada üksnes kvalifitseeritud personal. Täpsemaid selgitusi ohutusjuhiste kohta leiate käesoleva dokumentatsiooni peatükist 1.	**⚠ ΠΡΟΕΙΔΟΠΟΙΗΣΗ Κίνδυνος θανάτου σε περίπτωση μη συμμόρφωσης με τις παρακάτω οδηγίες ασφαλείας!** Θέστε το προϊόν σε λειτουργία αφού διαβάσετε, κατανοήσετε και λάβετε υπόψη το σύνολο των οδηγιών ασφαλείας που το συνοδεύουν. Εάν δεν υπάρχει τεκμηρίωση στη γλώσσα σας, απευθυνθείτε σε εξουσιοδοτημένο αντιπρόσωπο της Rexroth. Μόνο εξειδικευμένο προσωπικό επιτρέπεται να χειρίζεται στοιχεία μετάδοσης κίνησης. Περαιτέρω επεξηγήσεις των οδηγιών ασφαλείας διατίθενται στο κεφάλαιο 1 της παρούσας τεκμηρίωσης.
⚠ ĮSPĖJIMAS Aukšta elektros įtampa! Pavojus gyvybei dėl elektros smūgio! Pavaros komponentus eksploatuokite tik su fiksuotai instaliuotu apsauginiu laidu. Prieš prieidami prie pavaros komponentų išjunkite maitinimo įtampą. Atsižvelkite į kondensatorių išsikrovimo trukmę.	**⚠ HOIATUS Kõrge elektripinge! Eluohtlik elektrilöögi tõttu!** Käitage ajamikomponente üksnes püsivalt installeeritud maandusega. Lülitage enne ajamikomponentidega tööde alustamist toitepinge välja. Järgige kondensaatorite mahalaadumisaegu.	**⚠ ΠΡΟΕΙΔΟΠΟΙΗΣΗ Υψηλή ηλεκτρική τάση! Κίνδυνος θανάτου από ηλεκτροπληξία!** Θέτετε σε λειτουργία τα στοιχεία μετάδοσης κίνησης μόνο εφόσον έχει τοποθετηθεί καλά προστατευτικός αγωγός γείωσης. Πριν από οποιαδήποτε παρέμβαση, αποσυνδέστε την τροφοδοσία των στοιχείων μετάδοσης κίνησης. Λάβετε υπόψη τους χρόνους αποφόρτισης των πυκνωτών.
⚠ ĮSPĖJIMAS Pavojingi judesiai! Pavojus gyvybei! Nebūkite mašinų ar jų dalių judėjimo zonoje. Neleiskite netyčia patekti asmenims. Prieš patekdami į pavojaus zoną saugiai išjunkite pavaras.	**⚠ HOIATUS Ohtlikud liikumised! Eluohtlik!** Ärge viibige masina ja masinaosade liikumispiirkonnas. Tõkestage inimeste ettekavatsematu sisenemine masina ja masinaosade liikumispiirkonda. Tagage ajamite turvaline seiskamine enne ohupiirkonda juurdepääsu või sisenemist.	**⚠ ΠΡΟΕΙΔΟΠΟΙΗΣΗ Επικίνδυνες τάσεις! Κίνδυνος θανάτου!** Μην στέκεστε στην περιοχή κίνησης μηχανημάτων και εξαρτημάτων. Αποτρέπετε την τυχαία είσοδο ατόμων. Πριν από την παρέμβαση ή πρόσβαση στην περιοχή κινδύνου, μεριμνήστε για την ασφαλή ακινητοποίηση των συστημάτων μετάδοσης κίνησης.
⚠ ĮSPĖJIMAS Elektromagnetiniai / magnetiniai laukai! Pavojus asmenų su širdies stimuliatoriais, metaliniais implantais arba klausos aparatais sveikatai! Prieiga prie zonų, kuriose montuojami ir eksploatuojami pavaros komponentai, aukščiau nurodytiems asmenims yra draudžiama arba leistina tik pasitarus su gydytoju.	**⚠ HOIATUS Elektromagnetilised / magnetilised väljad! Terviseohtlik südamestimulaatorite, metallimplantaatide ja kuulmisseadmetega inimestele!** Sisenemine piirkondadesse, kus toimub ajamikomponentide monteerimine ja käitamine, on ülalnimetatud isikutele keelatud või lubatud üksnes pärast arstiga konsulteerimist.	**⚠ ΠΡΟΕΙΔΟΠΟΙΗΣΗ Ηλεκτρομαγνητικά/ μαγνητικά πεδία! Κίνδυνος για την υγεία ατόμων με καρδιακούς βηματοδότες, μεταλλικά εμφυτεύματα ή συσκευές ακοής!** Η είσοδος σε περιοχές όπου πραγματοποιείται συναρμολόγηση και λειτουργία στοιχείων μετάδοσης κίνησης απαγορεύεται στα προαναφερθέντα άτομα, εκτός αν τους έχει δοθεί σχετική άδεια κατόπιν συνεννόησης με γιατρό.
⚠ PERSPĖJIMAS Karšti paviršiai (> 60 °C)! Nudegimo pavojus! Venkite liesti metalinius paviršius (pvz., radiatorių). Išlaikykite pavaros komponentų atvėsimo trukmę (bent 15 minučių).	**⚠ ETTEVAATUST Kuumad välispinnad (> 60 °C)! Põletusoht!** Vältige metalsete välispindade (nt radiaatorid) puudutamist. Pidage kinni ajamikomponentide mahajahtumisajast (vähemalt 15 minutit).	**⚠ ΠΡΟΣΟΧΗ Καυτές επιφάνειες (> 60 °C)! Κίνδυνος εγκαύματος!** Αποφεύγετε την επαφή με μεταλλικές επιφάνειες (π.χ. μονάδες ψύξης). Λάβετε υπόψη το χρόνο ψύξης των στοιχείων μετάδοσης κίνησης (τουλάχιστον 15 λεπτά).

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⚠ PERSPĖJIMAS Netinkamas darbas transportuojant ir montuojant! Susižalojimo pavojus! Naudokite tinkamus montavimo ir transportavimo įrenginius. Naudokite tinkamus įrankius ir asmens saugos priemones.	**⚠ ETTEVAATUST Asjatundmatu käsitsemine transportimisel ja montaažil! Vigastusoht!** Kasutage sobivaid montaaži- ja transpordiseadiseid. Kasutage sobivaid tööriistu ja isiklikku kaitsevarustust.	**⚠ ΠΡΟΣΟΧΗ Ακατάλληλος χειρισμός κατά τη μεταφορά και συναρμολόγηση! Κίνδυνος τραυματισμού!** Χρησιμοποιείτε κατάλληλους μηχανισμούς συναρμολόγησης και μεταφοράς. Χρησιμοποιείτε κατάλληλα εργαλεία και ατομικό εξοπλισμό προστασίας.
⚠ PERSPĖJIMAS Netinkamas darbas su baterijomis! Susižalojimo pavojus! Nebandykite tuščių baterijų reaktyvuoti arba įkrauti (sprogimo ir išėsdinimo pavojus). Neardykite ir nepažeiskite baterijų. Nemeskite baterijų į ugnį.	**⚠ ETTEVAATUST Patareide asjatundmatu käsitsemine! Vigastusoht!** Ärge üritage kunagi tühje patareisid reaktiveerida või täis laadida (plahvatus- ja söövitusoht). Ärge demonteerige ega kahjustage patareisid. Ärge visake patareisid tulle.	**⚠ ΠΡΟΣΟΧΗ Ακατάλληλος χειρισμός μπαταριών! Κίνδυνος τραυματισμού!** Μην επιδιώκετε να ενεργοποιήσετε ξανά ή να φορτίσετε κενές μπαταρίες (κίνδυνος έκρηξης και διάβρωσης). Μην διαλύετε ή καταστρέφετε τις μπαταρίες. Μην απορρίπτετε τις μπαταρίες στη φωτιά.

CN 中文
⚠ 警告 如果不按照下述指定的安全说明使用，将会导致人身伤害！ 在没有阅读，理解随本产品附带的文件并熟知正当使用前，不要安装或使用本产品。 如果没有您所在国家官方语言文件说明，请与 Rexroth 销售伙伴联系。 只允许有资格人员对驱动器部件进行操作。 安全说明的详细解释在本文档的第一章。
⚠ 警告 高电压！电击导致生命危险！ 只有在安装了永久良好的设备接地导线后才可以对驱动器的部件进行操作。 在接触驱动器部件前先将驱动器部件断电。 确保电容放电时间。
⚠ 警告 危险运动！生命危险！ 保证设备的运动区域内和移动部件周围无障碍物。 防止人员意外进入设备运动区域内。 在接近或进入危险区域之前，确保传动设备安全停止。
⚠ 警告 电磁场/磁场！对佩戴心脏起搏器、金属植入物和助听器的人员会造成严重的人身伤害！ 上述人员禁止进入安装及运行的驱动器区域，或者必须事先咨询医生。
⚠ 小心 热表面（大于 60 度）！灼伤风险！ 不要触摸金属表面（例如散热器）。驱动器部件断电后需要时间进行冷却（至少 15 分钟）。
⚠ 小心 安装和运输不当导致受伤危险！当心受伤！ 使用适当的运输和安装设备。 使用适合的工具及用适当的防护设备。
⚠ 小心 电池操作不当！受伤风险！ 请勿对低电量电池重新激活或重新充电（爆炸和腐蚀的危险）。 请勿拆解或损坏电池。请勿将电池投入明火中。

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1 About this Documentation

1.1 Validity of this Documentation

This documentation is valid for the following motor-pump unitschapter 5.3 "Product Identification" on page 31.

This documentation is for fitters and service engineers. This documentation contains important information to safely and properly assemble and operate the product.

1.2 Necessary and Supplementary Documentation

Operate this product only, if you have the following documentation available. You must understand and observe this documentation.

Title	Material number (R911...) Documentation Type (Dok-...)
Rexroth Sytronix Safety Notes and Instructions on Use Motor-Pump Unit	R911339831 DOK-SYTROX-SAFETY*MP**-SARS-EN-P
Rexroth Sytronix Mounting and Commissioning Internal Gear Pump PGH/PGM/PGF	R911340908 DOK-SYTROX-PG**-******-ASRS-EN-P
Rexroth Sytronix Mounting and Commissioning Axial Piston Variable Pump A10VZO/A10VSO/ A4VSO	R911341629 DOK-SYTROX-A***-******-ASRS-EN-P
Rexroth Sytronix Motor-Pump Unit MPES2 A4VSO / A10VZO on MOT-FC	R911345048 DOK-SYTROX-MPES2*A****-ASRS-EN-P
Rexroth Sytronix Motor-Pump Unit MPES2 PGF/PGH - MOT-FC	R911345047 DOK-SYTROX-MPES2*PG***-ASRS-EN-P
Rexroth IndraDyn E Standard Motors MOT-FC for Frequency Converter Operation	R911343624 DOK-MOTOR*-MOT-FC*****-PR01-EN-P
Hydraulic Fluids Based on Mineral Oils and Related Hydrocarbons	RE90220
Environmentally Acceptable Hydraulic Fluids	RE90221

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1.3 Presentation of Information

1.3.1 Explanation of signal words and the Safety alert symbol

The Safety Instructions in the available application documentation contain specific signal words (DANGER, WARNING, CAUTION or NOTICE) and, where required, a safety alert symbol (in accordance with ANSI Z535.6-2011).

The signal word is meant to draw the reader's attention to the safety instruction and identifies the hazard severity.

The safety alert symbol (a triangle with an exclamation point), which precedes the signal words DANGER, WARNING and CAUTION, is used to alert the reader to personal injury hazards.

⚠ DANGER

In case of non-compliance with this safety instruction, death or serious injury **will** occur.

⚠ WARNING

In case of non-compliance with this safety instruction, death or serious injury **could** occur.

⚠ CAUTION

In case of non-compliance with this safety instruction, minor or moderate injury could occur.

NOTICE

In case of non-compliance with this safety instruction, property damage could occur.

1.3.2 Symbols

Symbol	Significance
	Reference to supplementary documentation
	This note gives important information, which must be observed.
1. 2. 3.	Numbered action instructions: The numbers show that the action steps must be taken one after the other.
	Warning against dangerous electric voltage
	Warning against hot surfaces
	Warning against rotating machine parts

Symbol	Significance
	Warning against overhead load
	Electrostatic sensitive devices
	Prohibition for persons with cardiac pacemaker
	Do not carry along metal parts or clocks
	Hammer scales are forbidden
	The UL Recognized Compontent Mark shows recognized component parts which are components of a bigger product or system.
	The letters C and E stand for "Conformité Européenne". The CE mark only shows that a product conforms with the respective EC guidelines. Conformity with the Low Voltage Directive 2006/95EC, EN 60034-1, EN 60034-5 is confirmed for motor-pump units.

Tab. 1-1: Meaning of symbols

1.3.3 Abbreviations

Abbreviation	Significance
WEF	Wire end ferrule
ESD	Electro-static discharge
HCS	Bosch Rexroth drive controller
MPE	**M**otor-**P**ump**E**unit
PE	Abbreviation for protective switch (protective earth)
PGx	Internal gear pump, constant displacer volume
RKS	Ring terminal
FcP	Frequency controlled pump system
A10Vxx/A4Vxx	Axial piston pump, variable displacement

Tab. 1-2: Meaning of abbreviations

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2 Safety notes

2.1 About this chapter

This product was manufactured according to the generally accepted rules of technology. There is, however, still a risk of personal injury or material damage.

Please observe the general safety instructions in this chapter and the safety-related guidelines and handling instructions in this manual. This will prevent personal hazards, material damage and errors.

- Read this documentation completely and thoroughly before working with this product.
- Keep this documentation where it is accessible to all users at all times.
- Transfer the product to third parties only together with the necessary documentation.

2.2 Appropriate use

This product is an electro-hydrostatic drive system.

The Sytronix system is designed to be connected to a machine as a part of the system. Sytronix system should be only used in the machine specifically design for the Sytronix system.

The Sytronix system may be operated as follows:

- For pressure-controlled hydraulic supply (for SvP: with detaching volume flow control).
- The Sytronix system is not suited to execute safety-relevant functions.

Within the Sytronix system, a plausibility check of the command and actual value (pressure and speed) is not provided.

- Ensure that the plausibility check is done within the machine control.

An application specific adjustment of the parameters during initial start-up is not permitted.

The product is only defined for industrial use and not for private use.

Appropriate use involves that you have completey read and understood this documentation, especially this chapter.

2.3 Inappropriate use

Improper use of these devices, failure to follow the safety instructions in this document or tampering with the product, including disabling of safety devices, may result in material damage, bodily harm, electric shock or even death!

Bosch Rexroth AG is not liable for damages resulting from non appropriate use. The risks of non appropriate use is in the sole responsibility of the user.

2.4 Qualification of the personnel

The procedures and operatins described in this document are based on the user has the basic knowledge of corresponding terms of the machine, hydraulic and electric system. For transport and handling of the product, addi-

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tional knowledge at handling with lifting devices and corresponding lifting means. To ensure a safe use, these activities must be carried out by skilled personnel or an instructed person under guidance of a skilled personnel.

A system designer must consider all relevant regulations and safe operation of the system. All necessary regulations and safety measures must be implemented to ensure the safe installation and operation.

As additional qualification are needed:

- Knowledge about wiring of electrical components
- Knowledge about parameterization of application software
- Basic knowledge about control engineering

2.5 General safety notes

- Observe the valid regulations about accident prevention and environmental protection.
- Pay special attention to the safety regulations and instructions of the country in which the product is used.
- Use Rexroth products only in proper technical state.
- Please observe all notes on the product.
- Persons, who assemble, operate, disassemble or maintain Rexroth products must not be influenced by alcohol or other drugs which influence the reactions.
- Only use accessories and spare parts which are permitted by the manufacturer to prevent from risk of injury due to unsuitable spare parts.
- Keep the technical data and environmental conditions specified in the product documentation.
- If unsuited products are assembled or used in safety-relevant applications, unintendend operation states can occur in the application, which cause personal or material damage. Only use a product in safety-relevant applications if this application is particularly specified and allowed in the documentation of the product.
- You are allowed to operate the product if it is determined that the final product (for example a machine or system), in which Rexroth products are assembled, is according to the country-specific determinations, safety regulations and standards of the application.

2.6 Product and technology-dependent safety instructions

⚠ WARNING **Danger of life, risk of injury, heavy bodily harm during work on a system which is under pressure.**

- Switch off all power-transmission-components and connections (electric, pneumatic, hdydraulic) according to the manufacturer´s details and secure them against restarting.
- Ensure that the motor-pump-unit is completely depressurized.
- Do not release any cable connections, connections and components as long as the motor-pump-unit is under pressure.

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⚠ WARNING **Danger to life, risk of injury due to electric shock. High electric voltage over 50 volt.**

- De-energize the part of the installation before you mount the motor-pump-unit or connector or terminal box connections.
- Secure the plant against restarting.
- Do measures and tests only with firmly connected protective conductor of components on the provided points.
- Please always wait 30 minutes after switch-off, so live capacitors discharge before they have access to electric components. To exclude andy danger due to any contact, measure electric voltage of live parts before working.
- Do not touch any electric junctions of live components.

⚠ WARNING **Danger to life, risk of injury due to electric shock. High housing voltage and high discharge current.**

- Before switch-on and start-up, ground or connect the components of the motor-pump-unit with the protective conductors on the grounding points.
- Connect the protective conductors of the motor-pump-unit components always fix and continuously with the external supply network. The discharge current is bigger than 3.5 mA.
- Use min. 10mm² copper cross-section for the total path of the protective conductor.

⚠ WARNING **Danger of fire, explosion and pollution due to existing oil dust due to defective or improperly assembled sealings!**

- Do not do any welding on or near pressurized motor-pump-units.
- Keep away open fire or ignition source from motor-pump- units.

⚠ CAUTION **Risk of burns, risk of injury due to hot surfaces of the motor-pump-unit.**

- Do only touch surfaces of the motor-pump-unit with protective gloves or do not work on hot surfaces. During or after operation, temperatures can be over 60°C (140°F).
- Before accessing, let the motor-pump-unit cool down for a sufficiently long time.
- Observe the protective measures of the plant manufacturer.

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⚠ CAUTION **Health risk due to contact with hydraulic fluid.**

Impairment to health, like eye injury, skin injury and contamination possible:

- Avoid contact with hydraulic oil.
- Observe the safety instructions of the manufacturer when working with hydraulic oil.
- Use personal protective equipment (e.g. safety glasses, safety shoes, protective gloves, suitable working clothes).
- Consult a doctor if hydraulic oil attains your eyes or bloodstream or is absorbed.

⚠ CAUTION **Risk of injury, danger of slipping due to greasy surfaces.**

- Make the danger zone safe and designate it.
- Use oil binder agent to bind left hydraulic fluid.
- Use personal protective equipment (e.g. safety shoes, protective gloves, suitable working clothes, ...).
- Remove and dispose of the contamiated oil binding agent corresponding to the national regulations.

⚠ CAUTION **Risk of injury due to uncontrolled outgoing hydraulic fluid on the motor-pump unit.**

- Immediately switch-off the machine in case of an error (emergency stop switch).
- Identify and remove the reason for leackage.
- Do never try to stop or to seal the leakage or the oil jet with a cloth.
- Never get roped into the high pressure oil jet ejection.
- Do regularly visual inspections on the motor-pump unit and all oil-bearing components.

2.7 User responsibilities

The operator of products of Bosch Rexroth AG must train his personnel about the following topics on a regular basis:

- Observance and use of operating instruction and the applicable legal provisions.
- Intended operation of the product.
- Observe the instructions of the factory security offices and the operating instructions of the operator.
- Behavior in the case of emergency.

☞ The Bosch Rexorth AG offers training support for special fields. You can find an overview about trainings in the Internet under http://www.boschrexroth.de/didactic.

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3 General Notes on Material Damage and Product Damage

NOTICE **Material damage due to improper handling, pollution or cleaning!**

Improper Handling

- The motor-pump-unit may only be used according to the section "Appropriate Use".
- Do not apply excessive force or damage the function relevant surfaces such as mounting surfaces and hydraulic connections.
- **Mixing of hydraulic fluids**

  Do not mix different types of hydraulic oils from the same manufacturers or oils from multiple manufacturers.

Premature wear and malfunctions due to pollution by liquids and foreign bodies.

- Pay attention to cleanliness during assembly to prevent foreign objects to contaminate the hydraulic fluid. Foreign objects in the hydraulic fluid can cause excessive wear and malfunctions on the motor-pump unit.
- Ensure clean and chipless connections, hydraulic lines and mounting parts (e.g. measuring devices).
- Use residue-free industrial wipes to remove lubricants and other heavy contamination.
- Ensure before start-up that all hydraulical and mechanical connections are connected.
- Do cleaning procedures on the motor-pump-unit only with locked hydraulic connections.
- Use a filter while filling the hydraulic fluid to minimize the sediment pollution and water in the system.

Improper cleaning

- Lock all apertures with suitable protective caps or protective screwed connections to prevent penetration of cleaning agents.
- Check fit seat of all sealings and fasteners of electrical connections to prevent penetration of cleaning agents.
- Do not use aggressive cleaning agents. Clean the motor-pump-unit with a suitable cleaning fluid.
- Do not use high pressure washer for cleaning.

Operation with too low hydraulic fluid.

- The motor-pump-unit can be damaged or destroyed. Heed the specifications of the machine manufacturer about "Control of hydraulic fluid" and the specified corrective actions to the test result.

Leakage or spillage of hydraulic fluid.

- Use oil binder agent to bind leaked hydraulic fluid.
- Place a catch pan under the motor-pump-unit when filling or discharging hydraulic fluid.
- Please observe the details in the safety data sheet of hydraulic fluid and the regulations of the machine manufacturer.

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4 Scope of Delivery

Motor-Pump Unit

The MPES2 motor-pump unit consists of a MOT-FC standard asynchronous motor with self-ventilation or forced-ventilation, an internal gear pump PGx or an axial piston pump A10VZO/A4VSO, a bellhousing, an optional pump foot, optional distance sleeves and a coupling consisting of a motor hub, pump hub and ring gear.

Special designs can deviate from your ordering data.

On delivery, immediately verify whether the delivered goods are those specified on the delivery note. The forwarder must be promptly informed of any damage on the packaging and goods, which is detected on delivery. It is forbidden to use damaged products.

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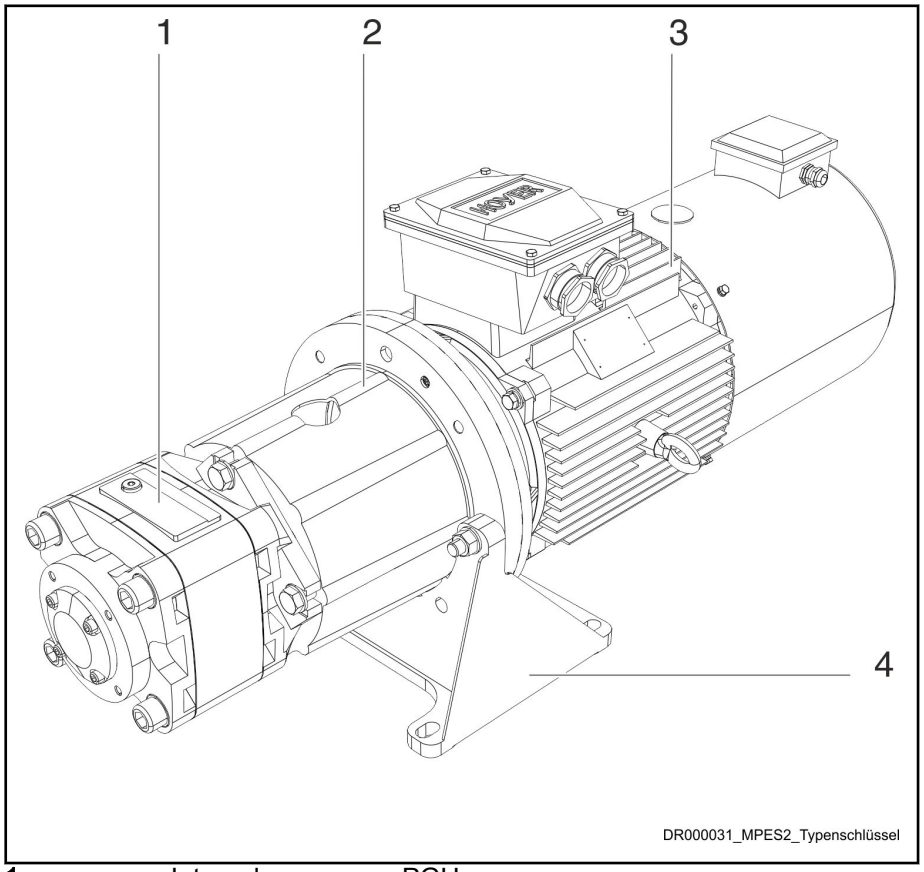
5 About this Product

5.1 Product Description

Motor-pump unit MPES2 consists of a conventionally coupled internal gear or axial piston pump and a standard asynchronous motor MOT-FC. Drive controllers, software and accessories create motor-pump units MPE, efficient and powerful variable-speed pump drives Sytronix.

Motor-pump units can be delivered as kit or completely assembled unit.

See also chapter "Type Code" on page 31.



1 Internal gear pump PGH
2 Bellhousing
3 Standard asynchronous motor MOT-FC
4 Pump foot (option)

Fig. 5-1: MPES2 with PGH completely assembled

5.2 Overview of Components

5.2.1 Internal gear pump PGH

You will find more details about operation conditions, connection conditions and power limits in the data sheet RE10227.

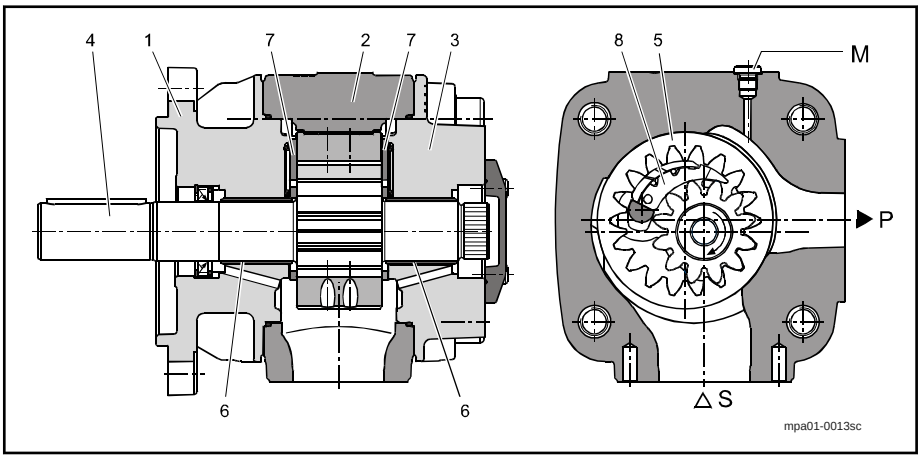


Fig. 5-2: Setup internal gear pump PGH

PGH.-3X hydro pumps are gap-compensated internal gear pumps with fixed displacement.

Mounting flange (1), housing (2), cover with throughdrive (3), pinion shaft (4), internal gear (5), plain bearings (6), axial washers (7), radial compensation (8), suction port (S), pressure connection (P), measuring connection (M)

5.2.2 Internal gear pump PGF

You will find more details about operation conditions, connection conditions and power limits in the data sheet RE10213.

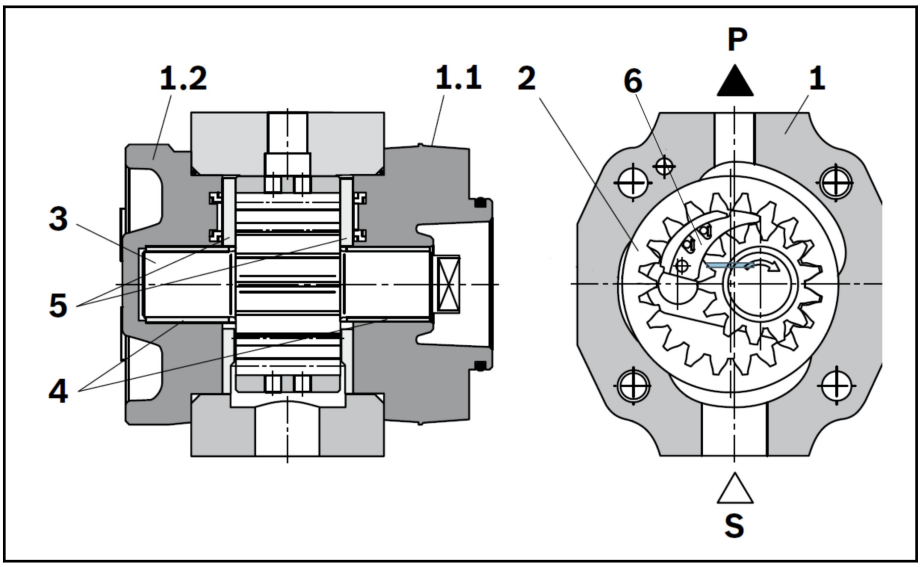


Fig. 5-3: Internal gear pump PGF

Hydraulic pumps of PGF.-2X type are leak-slit compensated internal gear pumps with constant displacement.

Housing (1), bearing lid (1.1), cover lid (1.2), gear ring (2), pinion shaft (3), friction bearing (4), axial washers (5) and radial compensation (6).

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5.2.3 Axial Piston Pump A4VSO

You will find more details about operation conditions, connection conditions and power limits in the data sheet RE 92050-01-B.

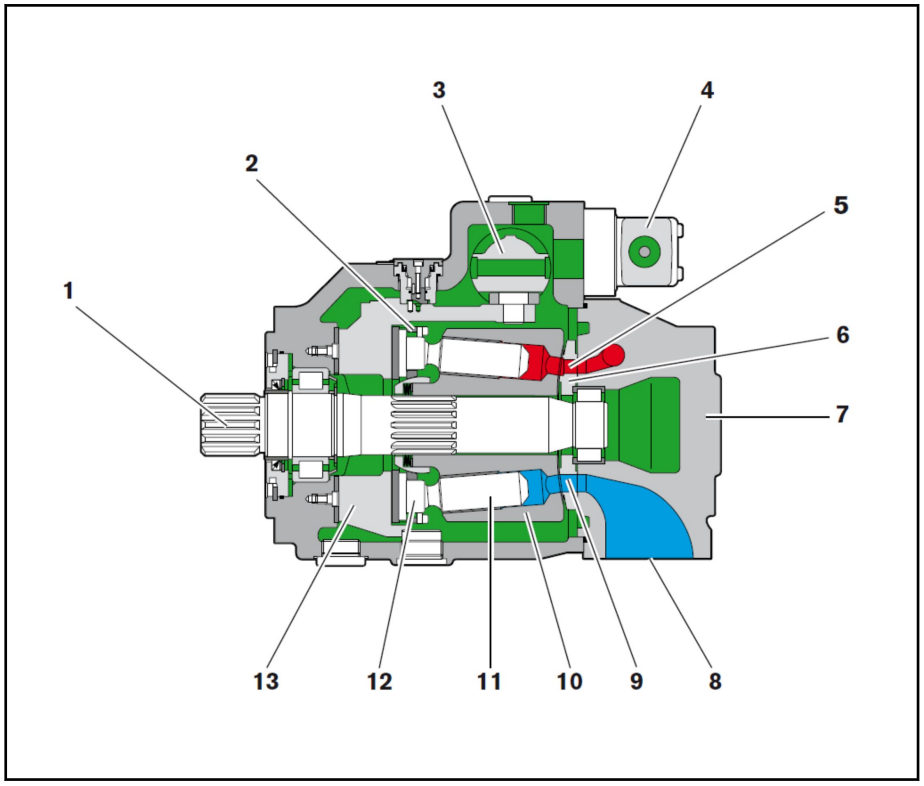

Fig. 5-4: Axial Piston Pump A4

Driving shaft (1), retraction plate (2), servo piston (3), control unit (4), high pressure side (5), control plate (6), connection plate (7), suction port (8), low pressure side (9), cylinder (10), piston (11), slide shoe (12), pivoting cradle (13)

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5.2.4 Axial Piston Pump A10VZO

You will find more details about operation conditions, connection conditions and power limits in the data sheet RE 91485.

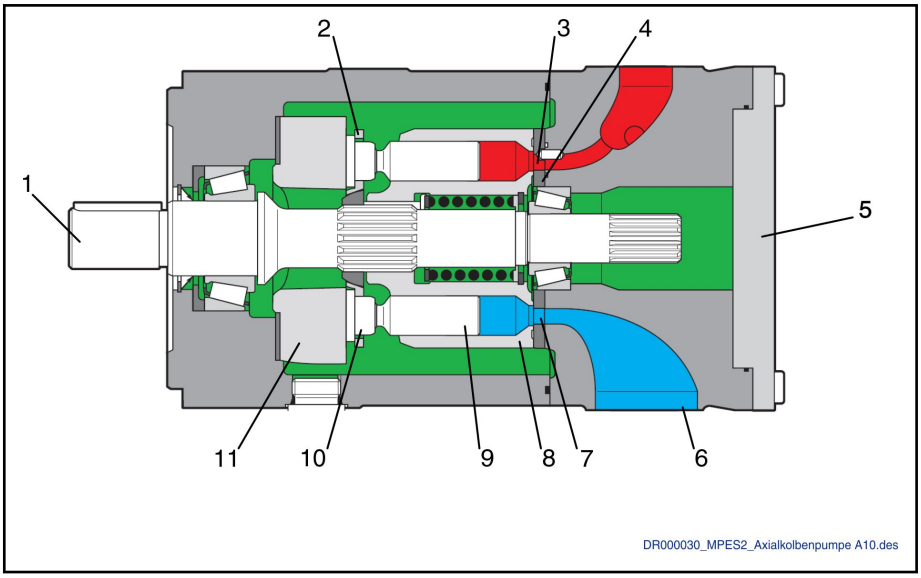

Fig. 5-5: Axial piston pump A10

Driving shaft (1), retraction plate (2), high pressure side (3), control unit (4), connection plate (5), suction port (6), low pressure side (7), cylinder (8), piston (9), slide shoe (10), pivoting cradle (11)

5.2.5 Coupling and Bellhousing

The pump and the motor are connected together with the coupling and the bellhousing. Additionally, an optional pump foot is fastened on the bellhousing or the motor-pump unit is directly connected with the system.

Depending from the size and fastening mode of the motor-pump unit, different couplings and bellhousings are available.

5.2.6 Standard Asynchronous Motor MOT-FC

For motor-pump units, MOT-FC motors with key shaft are used.

5.2.7 Pump Foot

The optional pump foot is fastened on the bellhousing of the motor-pump unit and serves to assemble the motor-pump unit in the system.

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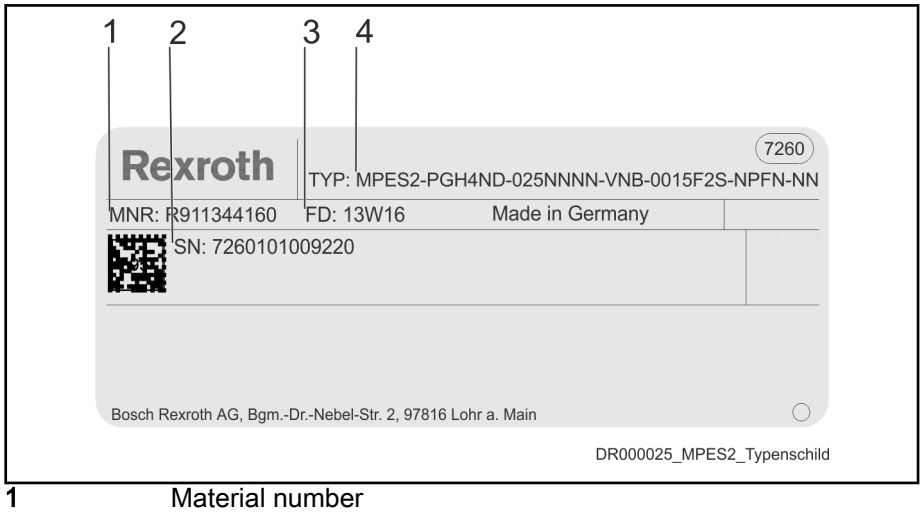
5.3 Product Identification

5.3.1 Motor-Pump Unit MPES2

Type Plate

The motor-pump unit can be identified by the type plate. The following example shows the type plate on a motor-pump unit MPES2:



1 Material number
2 Serial number
3 Date of production
4 Type designation

Fig. 5-6: Type plate motor-pump unit

Type Code

☞ The type code serves for general information of products. The delivery capacity of single combinations must be determined over the ordering system.

About this Product

	01		03	05		07		09	11		13	15	17	19	
Example:	M	P	E	S	2	-	P	G	F	2	N	B	-	0	0
	02		04			06		08		10		12		14	

	8	N	N	N	N	-	V	N	B	-	0	0	0	3	B	2	S	-	N	P	F	N	-	N	N
	16		18			20																			

01 Product

Motor-pump unit	MPE

02 Series

MOT-FC (HOY), IEC, Standard coupling	S2

03 Pump

A4VSO	04VS
A10VZO	10VZ
AZMF	AZMF
PGF frame size 2	PGF2
PGH frame size 2	PGH2
PGH frame size 3	PGH3
PGH frame size 4	PGH4
PGH frame size 5	PGH5

04 Pump Option

none (AZMF, PGF2, PGH 2/3/4/5)	N
EZ4 (10VZ, 04VS)	4

05 Pump Generation

2X (PGF, PGH2, PGH3)	B
12 (AZMF)	C
3X (PGH4, PGH5)	D
10 (10VZ, 04VS NG40/71)	M
30 (04VS NG 125/180)	S

06 Nominal Size 1. Pump

Input acc. to nominal size table; e.g.	005

07 2. Pump

none	N

08 Nominal Size 2. Pump

none	NNN

09 Sealing Material

FPM sealing	U
FKM sealing	V

10 Assembly/Pump Orientation

MPE unassembled	N
MPE assembled	
- suction port bottom	B
- suction port left	L
- suction port right	R
- suction port top	T

11 Fastening

Foot fastening	A
Flange fastening horizontal, Foot on flange	B
Flange fastening vertikal, without foot	V

12 Motor Power

Input acc. to power table; e.g. 1.5 kW	01,5

13 Nominal Voltage/Pole Number

230 V/400 V 4 poles	B
400 V/690 V 4 poles	F

14 Efficiency Class

IE2	2

15 Cooling Mode

Forced ventilated (IC416):	
1 x 230V AC, 50/60 Hz	A
Self ventilated (IC411)	S

16 Encoder

none	N

17 Temperature Evaluation

PTC	P

18 Electrical Connection

Terminal box	F

19 Motor Orientation

Standard	N

20 Other Design

Standard	NN

DR000026_MPES2_Typenschlüssel

Fig. 5-7: Order designations/type code MPES2

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Available motor-pump units

A = IC416 (force-ventilated)

S = IC411 (self-ventilated)

PGF2	Motor performance						
Nominal size	1.5	2.2	3	4	5.5	7.5	11
006	A,S	A,S	S				
008	A,S	A,S	A,S	S			
011	A	A,S	A,S	A,S	S		
013		A	A,S	A,S	S		
016		A	A,S	A,S	A,S	S	
019			A	A,S	A,S	S	
022			A	A,S	A,S	A,S	S

Tab. 5-1: PGF2

PGH2	Motor performance					
Nominal size	1.5	2.2	3	4	5.5	7,5
005	A,S	A,S	S	S		
006	A	A,S	A,S	S		
008	A	A,S	A,S	A,S	S	S

Tab. 5-2: PGH2

PGH3	Motor performance					
Nominal size	2.2	3	4	5.5	7.5	11
011	A	A,S	A,S	A,S	S	
013		A	A,S	A,S	A,S	S
016		A	A	A,S	A,S	S

Tab. 5-3: PGH3

PGH4	Motor performance								
Nominal size	4	5,5	7,5	11	15	18,5	22	30	37
020	A	A,S	A,S	A,S	S				
025		A	A,S	A,S	A,S	S			
032			A	A,S	A,S	A,S	A,S		

About this Product

PGH4	Motor performance								
Nominal size	4	5,5	7,5	11	15	18,5	22	30	37
040			A	A,S	A,S	A,S	A,S	S	
050				A	A,S	A,S	A,S	A,S	S

Tab. 5-4: PGH4

PGH5	Motor performance								
Nominal size	15	18,5	22	30	37	45	55	75	90
063	A	A,S	A,S	A,S	A,S	S	S		
080	A	A	A,S	A,S	A,S	A,S	S		
100		A	A	A,S	A,S	A,S	A,S	S	
125				A	A,S	A,S	A,S	A,S	S
160				A	A	A,S	A,S	A,S	S
200						A	A,S	A,S	S
250							A	A,S	S

Tab. 5-5: PGH5

A10VZO	Motor performance														
Nominal size	2,2	3	4	5,5	7,5	11	15	18,5	22	30	37	45	55	75	90
010	S	S	S	S											
018			S	S	S										
028				S	S	S	S								
045						S	S	S	S						
071							S	S	S	S	S				
100								S	S	S	S	S	S		
140										S	S	S	S	S	
180											S	S	S	S	S

Tab. 5-6: A10VZO

A4VSO	Motor performance							
Nominal size	18,5	22	30	37	45	55	75	90
040	S	S	S					
071			S	S	S	S		

A4VSO	Motor performance							
125						S	S	S
180							S	S

Tab. 5-7: A4VSO

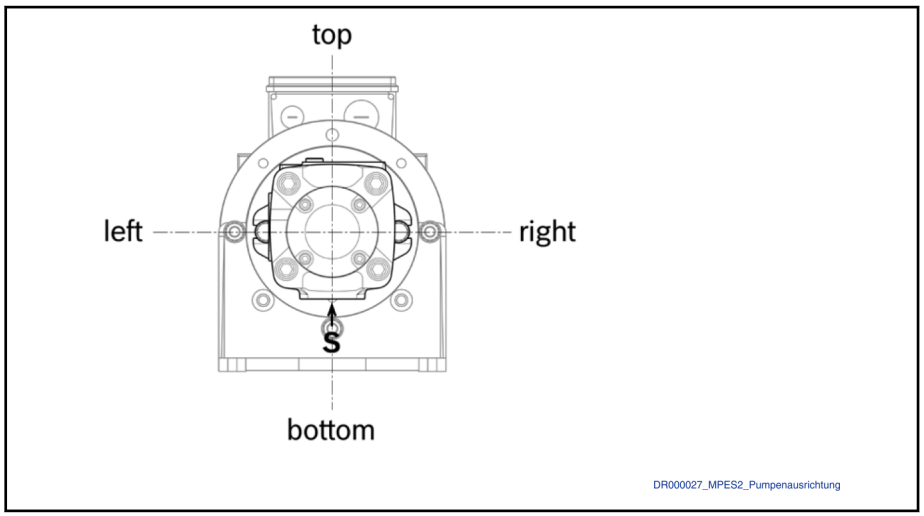
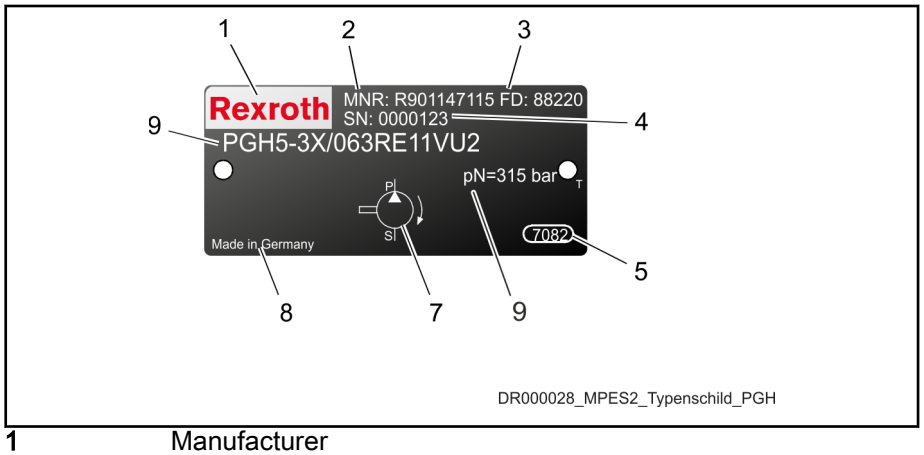


Fig. 5-8: Pump orientation

5.3.2 Components PGH/PGF

Type Plate

The internal gear pump can be identified via its type plate. The following example shows a type plate of an internal gear pump PGH5-3X:



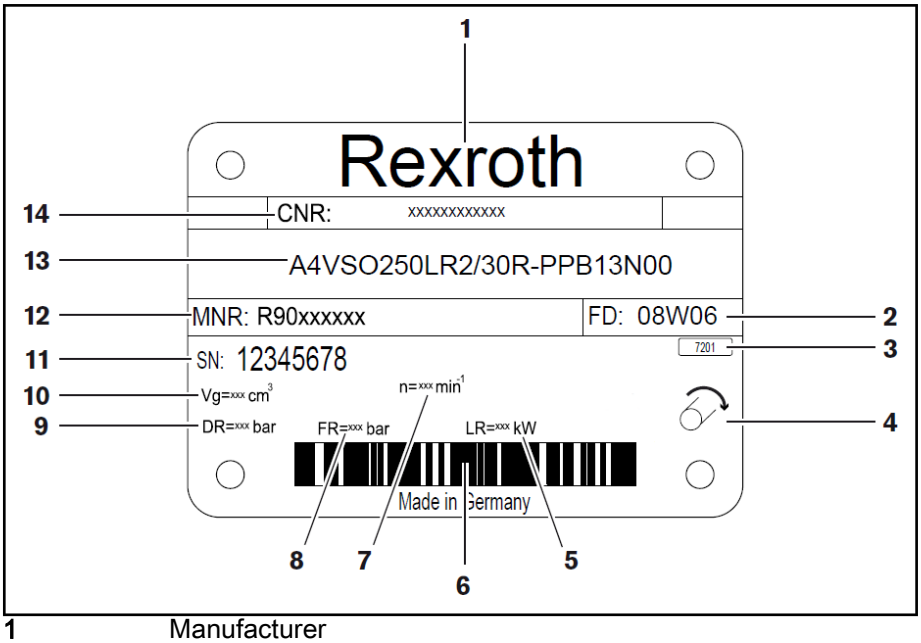
1 Manufacturer
2 Material number
3 Date of production
4 Serial number
5 Division/factory number
6 Rated pressure
7 Symbol acc. to ISO 1219
8 Designation of origin
9 Type designation

Fig. 5-9: Type plate internal gear pump

About this Product

5.3.3 Components A10VZO/A4VSO

The axial piston unit can be identified via its type plate The following example shows a A4VSO type plate:

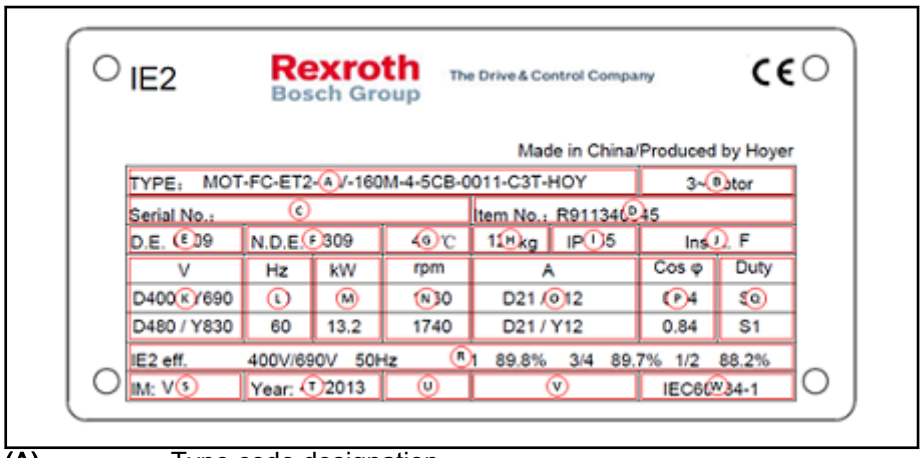


1	Manufacturer
2	Date of production
3	Internal factory code
4	Direction of rotation (view onto drive shaft) - figured: right
5	Power settings (option)
6	Barcode
7	Speed
8	Flow rate settings (option)
9	Pressure control settings (option)
10	Displacement
11	Serial number
12	Material number of axial piston unit
13	Type Code
14	Customer number

Fig. 5-10: Type plate axial piston pump

5.3.4 MOT-FC Components

The MOT-FC motors can be identified via its type plate. The following example shows a type plate of a standard asynchronous motor of series 160M (11 kW):



(A) Type code designation
(B) Motor type
(C) Serial number
(D) Material number
(E) Bearing size (drive end)
(F) Bearing size (non-drive end)
(G) Maximal permitted ambient temperature
(H) Mass
(I) Protection class
(J) Insulation class
(K) Rated voltage
(L) Rated frequency
(M) Rated power
(N) Rated speed
(O) Rated current
(P) Power factor
(Q) Operation mode
(R) Energy efficiency class & efficiency
(S) Design
(T) Manufacturing year
(U) Extra equipment
(V) (blanc)
(W) Manufacturing standard

Fig. 5-11: MOT-FC type plate

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6 Transport and Storage

6.1 Safety

⚠ CAUTION **Risk of injury, damage during transport caused by tumbling, falling or uncontrolled change of position of the FcP system components.**

Assure the weight and the position of the gravity center of the components of the FcP system Use suitable lifting tools and forklift trucks for transport of the FcP systems.

Never walk under hanging loads. Ensure that non-participants are not in the danger zone.

To fasten the means of transportation or to lift the products, exclusively use prepared points and lifting means. Observe the maximum load capacity of the lifting means and forklift trucks.

Place the product on a suitable surface.

Use suitable protective equipment and protective clothing during transport; wear safety shoes

Do not lift the motor on the shaft or on the optional fan housing.

⚠ CAUTION **Danger due to overload or not suited poise of body during lifting and transport!**

Injuries and postural defects!

Always lift the motor-pump unit with lifting means and with suitable lifting gears.

6.2 Transport Components of the Motor-Pump Unit

The components must be transported in their original package taking classes 2K2, 2B1, 2C2, 2S2, 2M1 specified acc. to DIN EN 60721-3-2 into account.

Please observe the following classification limitations:

- Transport temperature range -20 ... +60 °C
- Relative air humidity max. 75% (at +30 °C)
- No occurrence of salt mist
- Observe the notes on transport on the packing.
- Always keep the environmental conditions which are described in the data sheets of the components chapter 1.2 "Necessary and Supplementary Documentation" on page 15 during storage and transport.
- Provide shock absorption if strong vibrations may occur during transport.
- Close the packaging according to the delivery state if it must be opened for control reasons.
- Remove the protective plugs just before assembly, if possible.

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Transport and Storage

☞ The components of motor-pump unit are provided with protective sleeves and covers. These protective devices must stay on the components during transport and storage.

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6.3 Weight of Motor-Pump Units

Designation	[kg]
MOT-FC-1.5 kW	18
MOT-FC-2.2 kW	26
MOT-FC-3 kW	28
MOT-FC-4 kW	37
MOT-FC-5.5 kW	51
MOT-FC-7.5 kW	62
MOT-FC-11 kW	123
MOT-FC-15 kW	153
MOT-FC-18.5 kW	204
MOT-FC-22 kW	215
MOT-FC-30 kW	243
MOT-FC-37 kW	305
MOT-FC-45 kW	328
MOT-FC-55 kW	452
MOT-FC-75 kW	592
MOT-FC-90 kW	672

Tab. 6-1: Weights of asynchronous motors

Designation	[kg]
A10VZO010	8
A10VZO018	12
A10VZO028	15
A10VZO045	30
A10VZO071	47
A10VZO100	69
A10VZO140	73
A10VZO180	78
A4VSO 40	39
A4VSO 71	53
A4VSO 125	88
A4VSO 180	102

Tab. 6-2: Weights of axial piston pumps

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Transport and Storage

Designation	[kg]
PGF2-2X/006	3.6
PGF2-2X/008	3.7
PGF2-2X/011	3.9
PGF2-2X/013	4.0
PGF2-2X/016	4.2
PGF2-2X/019	4.4
PGF2-2X/022	4.6

Tab. 6-3: Weights of internal gear pump PGF

Designation	[kg]
PGH2-2X/005	6.0
PGH2-2X/006	6.2
PGH2-2X/008	6.5
PGH3-2X/011	7.1
PGH3-2X/013	7.4
PGH3-2X/016	7.7
PGH4-3X/020	14.0
PGH4-3X/025	14.6
PGH4-3X/032	15.4
PGH4-3X/040	16.2
PGH4-3X/050	17.3
PGH5-3X/063	40.8
PGH5-3X/080	42.6
PGH5-3X/100	45.0
PGH5-3X/125	47.4
PGH5-3X/160	51.0
PGH5-3X/200	55.0
PGH5-3X/250	60.6

Tab. 6-4: Weights of internal gear pump PGH

Power kW	1,5 - 7.5	11 - 37	45 - 55	75 - 90
Weight kg	< 2,5	< 7	< 16	< 23

Tab. 6-5: Weights couplings

Power kW	1,5 - 22	30 - 45	55 - 90
Weight kg	< 6	< 12	< 16

Tab. 6-6: Weights bellhousing

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The specified weights are valid for the components only, weights of motor-pump combinations add together from the single values.

- Ensure a suffiently dimensioned loading capacity of the lifting tools to ensure a safe transport of the weight of the motor-pump unit or the single parts.

6.4 Transport the Motor-Pump Unit with Cranes or Lifting Tools

The transport with cranes or lifting tools may only be done with suitable lifting means, like e.g. lifting belts, belts and chains.

- For lifting, use the provided positions or lifting points.
- Always fasten the lifting means on 2 lifting points on the motor-pump unit. Never lift the motor-pump unit on one lifting point.
- Do lifting and lowering of the motor-pump unit slowly and carefully.

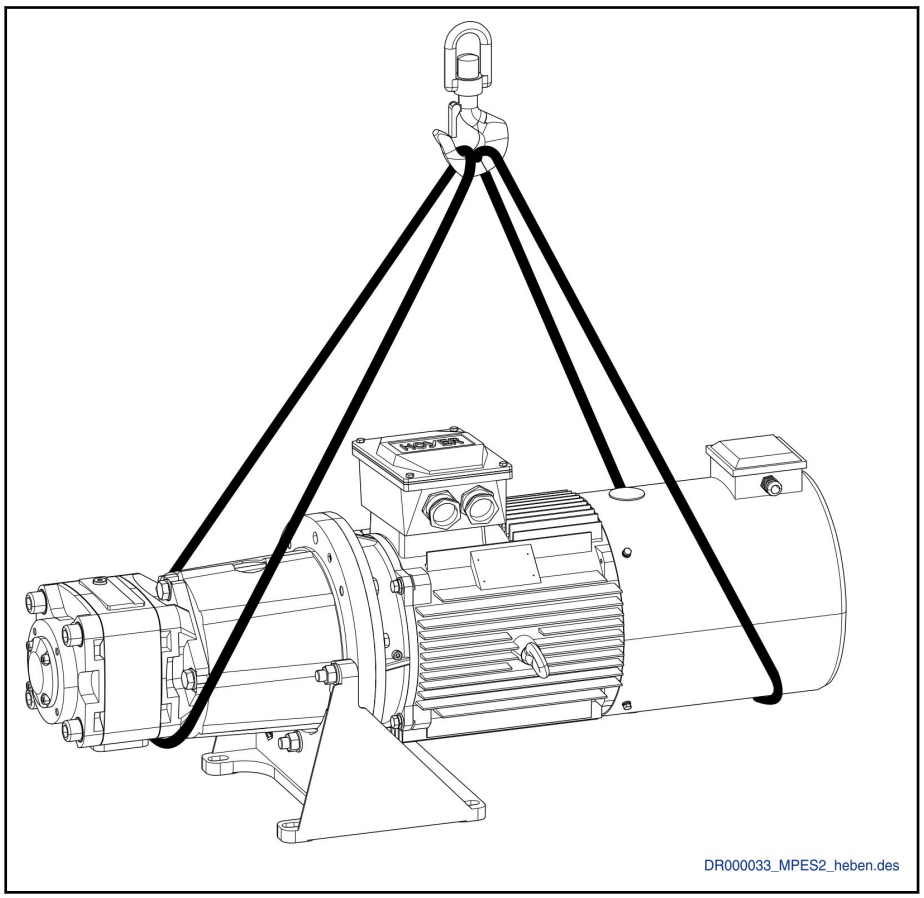

Fig. 6-1: Lift MPES2

Transport and Storage

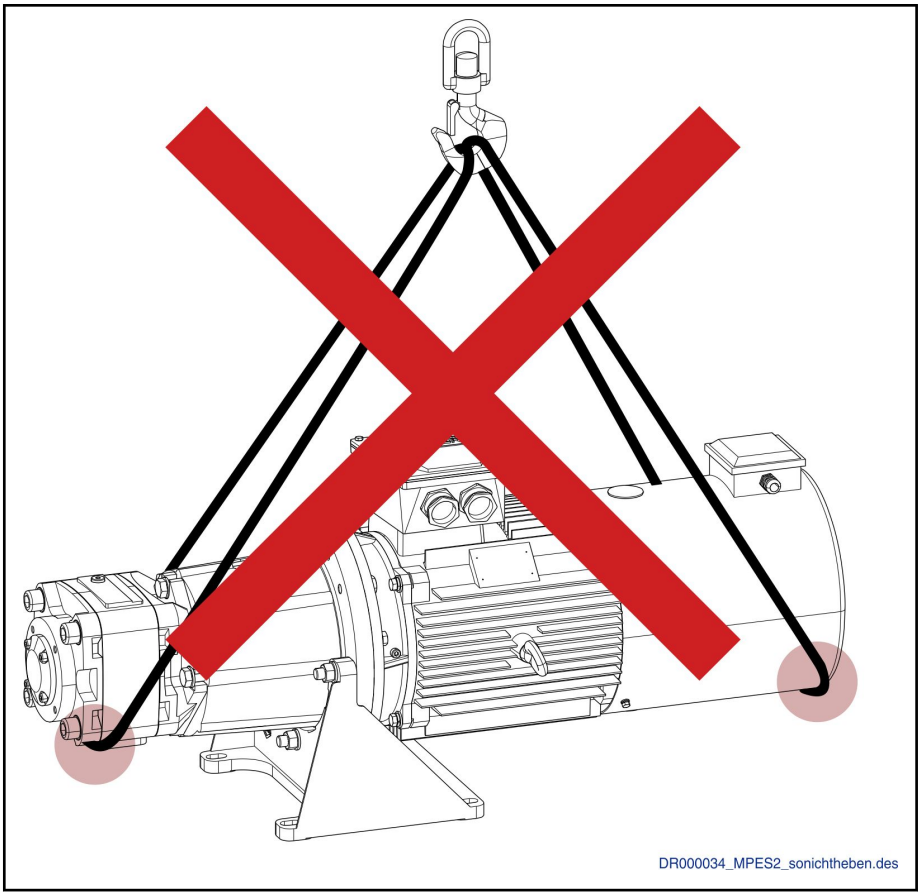

Fig. 6-2: MPES2 danger when lifting

6.5 Product Storage

Store the products in their original package at a dry, dust free, vibration free and light protected place without direct solar radiation. Please observe classes 1K2, 1B1, 1C1,1S1,1M2 specified for storage acc. to DIN EN 60721-3-1.

Please observe the following classification limitations:

- Storage temperature +5 ... +40 °C
- Relative air humidity 5 … 85 %
- Absolute air humidity 1 … 25 g/m³
- No condensation
- No ice formation/freezing
- No occurrence of salt mist

NOTICE **Damage due to moisture and humidity!**

- Protect the products from dampness and corrosion.
- Store them only in rainproof and dry rooms.

☞ Before storage, discharge the liquid coolant from liquid-cooled motors to avoid frost damage.

6.6 Storage Times

Additional measures must be taken before storage and on commissioning to preserve proper functioning – irrespective of the storage time which may be longer than the warranty period of our products. However, this does not involve any additional warranty claims.

Motors

Bearing time / months			Measures for commissioning
> 1	< 24	> 24	
•	•	•	Control all parts to be free of damage.
	•	•	Check all electrical contacts to be free from corrosion.
	•	•	Manually turn the motor shaft in regular distances (min. 1x per year) to spread the grease consistently.
	•	•	Running in the motor without load at startup.
		•	Additonally, in the case of a storage time of more than 2 years, change the motor bearings.

Tab. 6-7: Measures before commissioning motors that have been stored over a prolonged period of time

Cables and Connectors

Bearing time / months			Measures for commissioning
> 1	> 12	> 60	
•	•	•	Control all parts to be free of damage.
	•	•	Check all electrical contacts to be free from corrosion.
		•	Visually inspect the cable jacket. Do not use the cable if you detect any abnormalities (squeezed or kinked spots, color deviations, ...).

Tab. 6-8: Measure before commissioning cables and connectors that have been stored over a prolonged period of time

PGx

Bearing time / months			Measures for storage
< 9	< 24	> 24	
•			Let the internal gear pump in its delivery state (moistened with mineral oil)
	•	•	Fill the internal gear pump with mineral oil
			Measures for commissioning
•	•	•	Before mounting, check the complete internal gear pump for damage and corrosion.
•	•	•	At a test run, check the internal gear pump for functionality and leakproofness.
		•	Change the shaft sealing ring.
		•	After the maximum storage time (24 months) we recommend a preventive check of the internal gear pump with change of the sealings by the responsible Rexroth service!

Tab. 6-9: Measures for storage and before commissioning internal gear pumps that have been stored over a prolonged period of time

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Transport and Storage

A10VZO/A4VSO

Bearing time / months			Measures for storage
< 12	< 24	> 24	
•			Coat the inner side of the axial piston unit with mineral oil by filling in approx. 100 ml mineral oil.
	•	•	Fill in anticorrosion agents VCI 329 (20 ml) into the axial piston unit.
			1. Filling must be done via the tank connection L or L1, refer to Rexroth Sytronix, Assembly and Commissioning, Axial Piston Variable Pump A10VZO/A10VSO/A4VSO, material number: R911341628. **2.** Hermetically seal all connections. **3.** Coat all unpainted surfaces of the axial piston pump with mineral oil. **4.** or suitable, easy to remove anticorrosion agents, e.g. acid-free grease. **5.** Hermetically pack the axial piston pump and a drying agent into anticorrosion foil. 6. Store the axial piston pump shockproof.
			Measures for commissioning
•	•	•	Before mounting, check the complete axial piston pump for damage and corrosion.
•	•	•	At a test run, check the axial piston pump for functionality and leakproofness.
		•	Change the shaft sealing ring.
		•	After the maximum storage time (24 months) we recommend a preventive check of the axial piston pump by the responsible Rexroth service!

Tab. 6-10: Measures for storage and before commissioning axial piston pumps that have been stored over a prolonged period of time

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7 Mounting

7.1 General

Motor-pump units are mounted ex works, or delivered as kit for assembly by the customer. This chapter describes the following assembly procedures:

- Assemble the motor-pump unit composed of components
- Assemble Motor-Pump unit

For information about assembly into the whole machine, especially information about total functions and logical effects refer to the instructions or documentations of the whole machine.

7.2 Unpacking

⚠ CAUTION **Injuries due to uncontrolled movement of the retaining straps when cutting!**

Maintain a sufficient distance and carefully cut the bandages.

Remove the packaging of the motor-pump unit.

Dispose the packaging according to the local valid regulations.

7.3 Installation Conditions Motor-Pump Unit

Before assembling the motor-pump unit, ensure the following:

- Use tools, supplies, measuring and test equipment.
- Check all components for visible damage. Damaged components may not be mounted.
- Ensure that all dimensions and tolerances on the machine side are suited for the component attachment.
- Inspect all components, mounting surfaces and threads to ensure they are clean.
- Make sure that the assembly can be carried out in a dry and dust-free environment.
- Ensure that the motor-pump unit and all other used parts are clean, when they are mounted.

☞ A polluted hydraulic fluid can considerably influence the lifetime of the drive unit.

- Ensure that the temperature of the motor-pump unit is according to the environmental temperature of the installation site. Allow sufficient time to the components to adjust the temperature conditions.
- Before assembling the motor-pump unit, remove fluids that might have been filled in for storing the pump.
- Please observe that the motor-pump unit is not suited for mounting the pump under oil.
- Ensure that the minimum distance between fan screen and machine is kept to suction/blow the air.

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Mounting

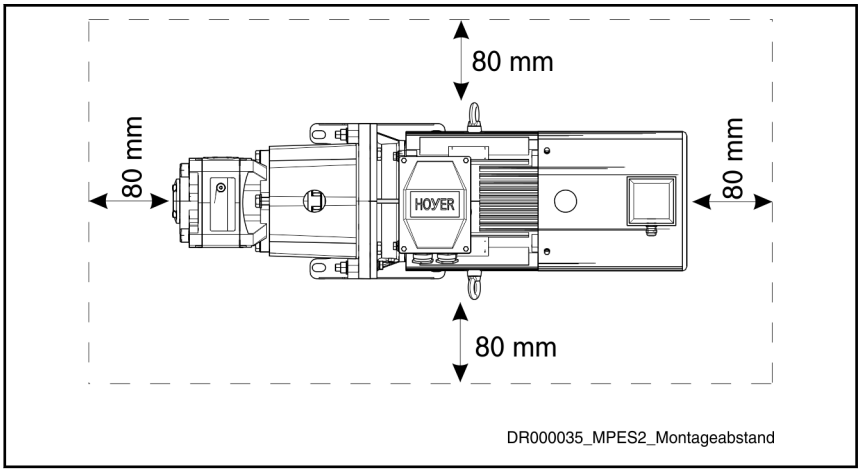

Fig. 7-1: Mounting distance (motor cooling)

7.4 Mounting Instruction Axial Piston Pump

7.4.1 Description Assembly Procedure

The assembly procedure is standardized for various motor-pump combinations. Optional components are indicated in the assembly pictures with (x). Use mounting screws (number, size, tightening torque) acc. to the tables about motor-pump units to be mounted.

Assemble the components according to the drawing and observe all assembly steps. Tolerance of the specified tightening torque (M_A) ±10 %.

For screw connections use screw lock, e.g. Loctite 243 when proceeding the following working steps 1 to 4 and observe the specified tightening torques.

NOTICE **Motor damage due to beats onto the motor shaft**

Do never beat onto the shaft end and do not exceed the allowed axial and radial forces of the motor.

By heating the hubs (approx. 80 °C), it is easier to draw it on onto the shaft.

⚠ CAUTION **Burns by touch of hot hubs!**

Wear protective gloves if you assemble heated coupling elements.

1. Assemble pump hub onto the pump shaft

   Insert the pump hub 3.1 onto the shaft of the pump by considering the adjustment dimensions and fasten the hub with the clamping screw 3.5b.

2. Assemble the motor hub onto the motor shaft

   If provided, insert the distance sleeve 6.2 onto the shaft of the motor.

   Insert the motor hub 3.3 onto the shaft of the motor by considering the adjustment dimensions and fasten the hub with the clamping screw 3.4.

3. Screw on pump on bellhousing

   Fasten the pump 1 with screws 1.1 and washers 1.2 onto the bellhousing 2. The leakage hole within the bellhousing must show down in the case of horizontal assembly.

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4. Screw on motor on bellhousing.

   Fasten the motor 5 with screws 5.1 onto the bellhousing 2. When joining the coupling heed the correct seat of the ring gear 3.2.

   In the case of fastening A and B acc. to the type code, the leakage hole must be at the bottom that escaping oil can flow out.

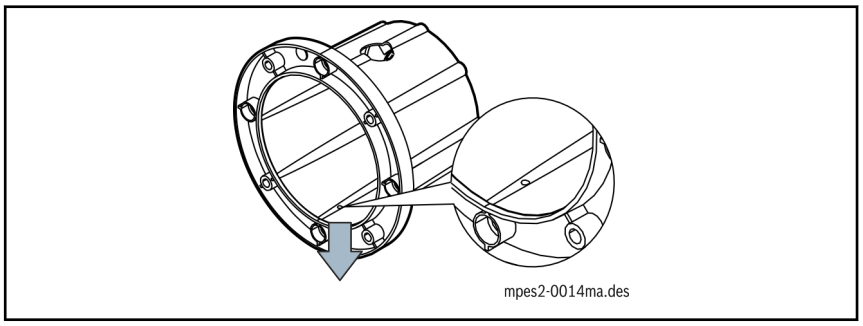
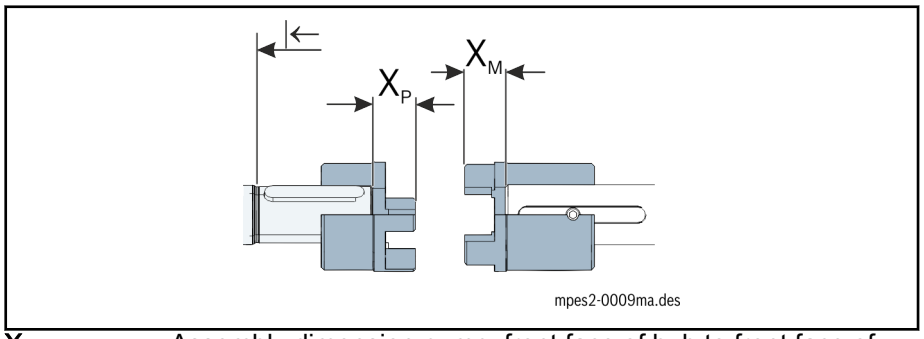


Fig. 7-2: Leakage hole

5. Screw on bellhousing (optionally for A10VZO)

   Fasten the optional pump foot 4 with the screws 4.1, washers 4.2 and hexagon nuts 4.3 on the motor-pump unit.



X_P Assembly dimension pump: front face of hub to front face of pump shaft

X_M Assembly dimension motor hub: front face of hub to front face of motor shaft

|← Assembly of hub as far as it will go

Fig. 7-3: Assembly dimension (see fig. 7-5 "Assembly accessories and setting dimensions" on page 51 and fig. 7-8 "Assembly accessory and setting dimension " on page 54)

Clamping screws coupling hub

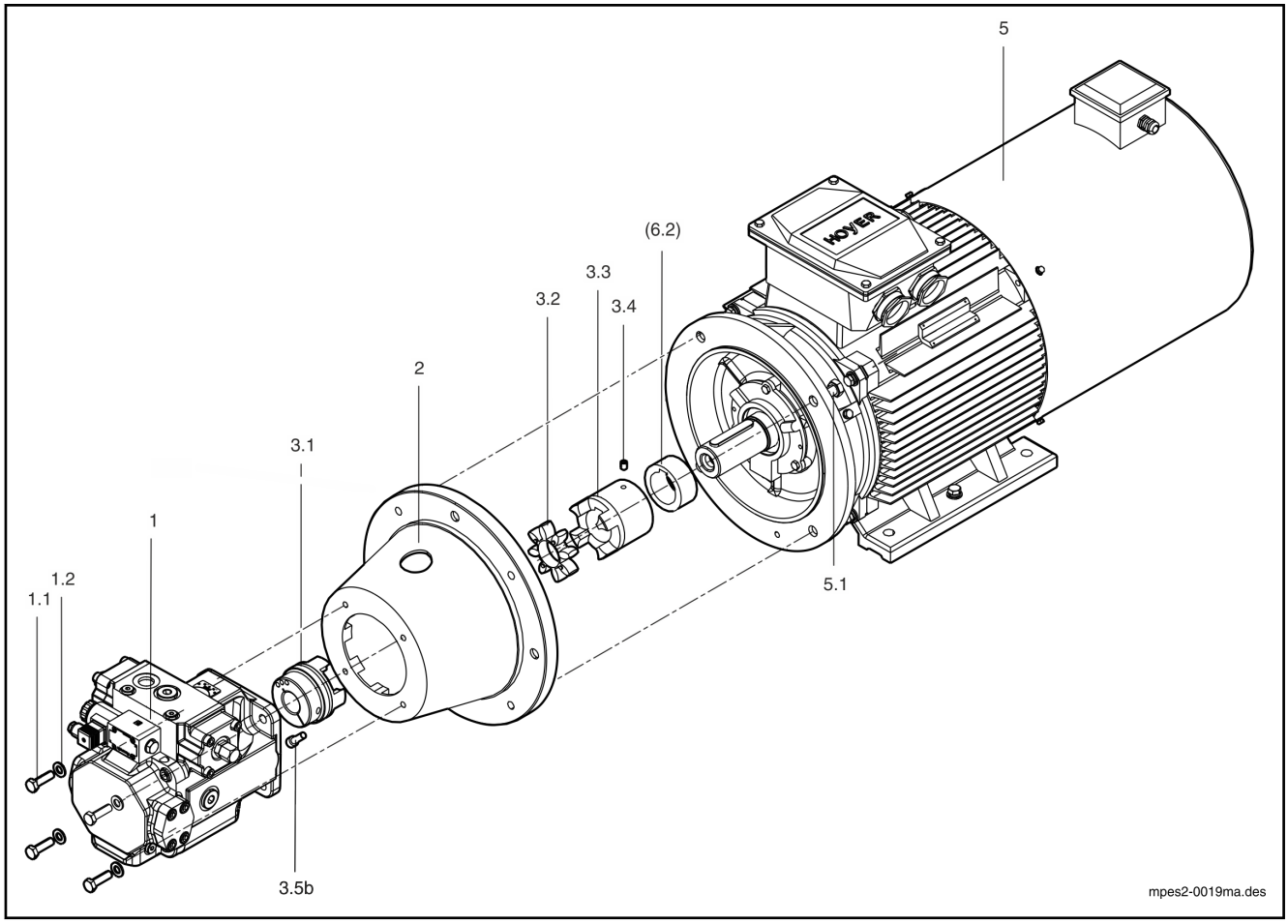
KD	Threaded pin 3.4 3.5a		Cylinder screw 3.5b	
	G	M_A[Nm]	G	M_A[Nm]
24	M5	2	M6	14
28, 38	M8	10	M8	35
42	M8	10	M10	69
48	M8	10	M12	120
55, 65	M10	17	M12	120
75	M10	17	M16	295

KD Coupling size

Tab. 7-1: Tightening torque clamping screws of coupling hub

Mounting

7.4.2 Assembly A4VSO on MOT-FC



1	Axial piston pump (A4VSO)
2	Bellhousing
3.1 - 3.5	Coupling elements
5	Asynchronous motor
6.x	Distance flat washers (partly necessary)
x.x	Assembly accessory see table

Fig. 7-4: Assembly pump A4VSO on MOT-FC

Assembly accessory

Distance sleeve

A14	AB33-35/ 65.1/ 85X 55
A16	AB33-35/ 65.1/ 85X 70
A17	AB33-35/ 75.1/100X 40

Washer

B03	Washer ISO7089-12-200HV
B04	Washer ISO7089-16-200HV

Hexagon bolt

D04	ISO4017-M12X30-8.8 (M_A 93 Nm)
D05	ISO4017-M12X40-8.8 (M_A 93 Nm)
D07	ISO4017-M16X50-8.8 (M_A 230 Nm)

Tab. 7-2: Assembly pump A4VSO on MOT-FC

MPES2-..		KD	X_P	X_M	n	1.1	n	1.2	n	6.1	n	6.2	n	4.1	n	4.2	n	4.3	n	5.1
Pump	MOT-FC		[mm]	[mm]																
04VS4M-040..	..-18,5..	42	|←	31	4	D04	4	B03	-	-	-	-	-	-	-	-	-	-	-	-
04VS4M-040..	..-0022..	42	|←	31																
04VS4M-040..	..-0030..	42	|←	31																
04VS4M-071..	..-0030..	42	|←	31	4	D05	4	B03	-	-	-	-	-	-	-	-	-	-	-	-
04VS4M-071..	..-0037..	48	|←	24,5																
04VS4M-071..	..-0045..	55	|←	43																
04VS4M-071..	..-0055..	65	|←	45,5							1	A14								
04VS4S-125..	..-0055..	65	|←	35,5	4	D07	4	B04	-	-	1	A16	-	-	-	-	-	-	-	-
04VS4S-125..	..-0075..	75	|←	45							1	A17								
04VS4S-125..	..-0090..	75	|←	45																
04VS4S-180..	..-0075..	75	|←	45	4	D07	4	B04	-	-	1	A17	-	-	-	-	-	-	-	-
04VS4S-180..	..-0090..	75	|←	45																

mpes2-0008xl.des

KD	Coupling size
X_P	Assembly dimension pump hub
X_M	Assembly dimension motor hub
n	Number
Pump	Designation pump acc. to MPES2 type code
MOT-FC	Designation motor acc. to MPES2 type code

Fig. 7-5: Assembly accessories and setting dimensions

7.4.3 Assembly Alignment Pump A4VSO

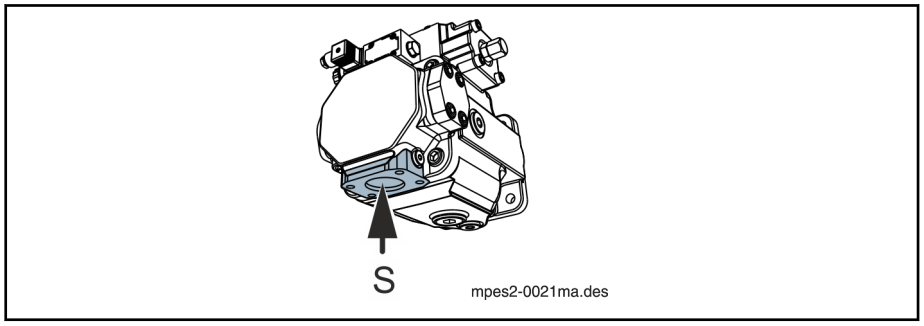
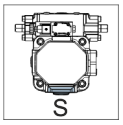
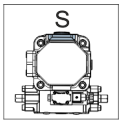
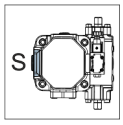
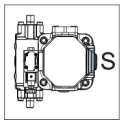


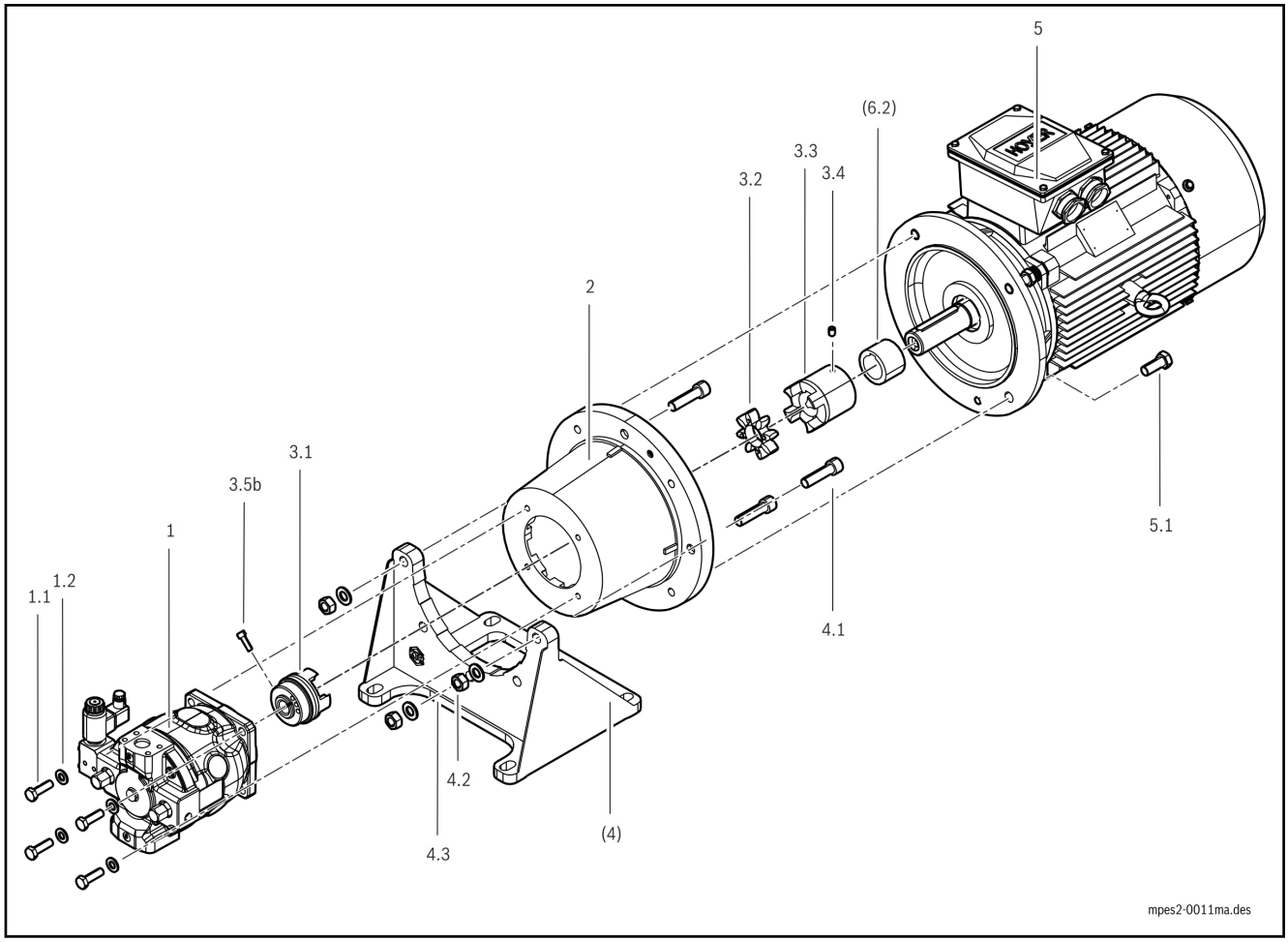
Fig. 7-6: Suction port

	Bottom	Top	Left	Right
				
A4VSO040	✓	✓	✓	✓
A4VSO071	✓	✓	✓	✓
A4VSO125	✓	✓	✓	✓
A4VSO180	✓	✓	✓	✓

Tab. 7-3: Allowed assembly variants (suction port A4VSO)

Mounting

7.4.4 Assembly A4VSO / A10VZO on MOT-FC



1	Axial piston pump (A10VZO)
2	Bellhousing
3.1 - 3.5	Coupling elements
4	Pump foot (option)
5	Asynchronous motor
6.x	Distance washers (partially necessary)
x.x	For assembly accessory see table

Fig. 7-7: Assembly pump A10VZO - MOT-FC

Assembly accessory

Distance sleeve

A13	AB33-35/ 65.1/ 85X 40
A15	AB33-35/ 65.1/ 85X 63
A17	AB33-35/ 75.1/100X 40
A18	AB33-35/ 75.1/100X 55

Washer

B02	Washer ISO7089-10-200HV
B03	Washer ISO7089-12-200HV
B04	Washer ISO7089-16-200HV
B05	Washer ISO7089-20-200HV

Hexagon nut

C02	ISO4032-M12-8 (M_A 93 Nm)
C03	ISO4032-M16-8 (M_A 230 Nm)

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Hexagon nut		
	D03	ISO4017-M10X30-8.8 (M_A 54 Nm)
	D04	ISO4017-M12X30-8.8 (M_A 93 Nm)
	D05	ISO4017-M12X40-8.8 (M_A 93 Nm)
	D06	ISO4017-M16X40-8.8 (M_A 230 Nm)
	D08	ISO4017-M20X60-8.8 (M_A 464 Nm)
Cylinder screw		
	E02	ISO4762-M12X40-8.8
	E03	ISO4762-M16X60-8.8

Tab. 7-4:

Mounting

MPES2-.. Pump	MOT-FC	KD	X_P [mm]	X_M [mm]	n 1.1	n 1.2	n 6.1	n 6.2	n 4.1	n 4.2	n 4.3	n 5.1
..10VZ4M-010..	..-02,2..	24	|←	20	2 **D03**	2 **B02**	- -	- -	3 **E02**	3 **B03**	3 **C02**	4 **D04**
..10VZ4M-010..	..-0003..	24	|←	20								
..10VZ4M-010..	..-0004..	24	|←	20								
..10VZ4M-010..	..-05,5..	28	|←	18,5								
..10VZ4M-018..	..-0004..	24	|←	20	2 **D03**	2 **B02**	- -	- -	3 **E02**	3 **B03**	3 **C02**	4 **D04**
..10VZ4M-018..	..-05,5..	28	|←	18,5								
..10VZ4M-018..	..-07,5..	28	|←	18,5								
..10VZ4M-028..	..-05,5..	28	|←	18,6	2 **D04**	2 **B03**	- -	- -	3 **E02**	3 **B03**	3 **C02**	4 **D04**
..10VZ4M-028..	..-07,5..	28	|←	18,6								
..10VZ4M-028..	..-0011..	38	|←	22,1					3 **E03**	3 **B04**	3 **C03**	4 **D06**
..10VZ4M-028..	..-0015..	38	|←	22,1								
..10VZ4M-045..	..-0011..	38	|←	22,1	4 **D05**	4 **B03**	- -	- -	3 **E03**	3 **B04**	3 **C03**	4 **D06**
..10VZ4M-045..	..-0015..	38	|←	22,1								
..10VZ4M-045..	..-18,5..	42	|←	33,1					- -	- -	- -	- -
..10VZ4M-045..	..-0022..	42	|←	33,1								
..10VZ4M-071..	..-0015..	38	|←	22,1	4 **D05**	4 **B03**	- -	- -	3 **E03**	3 **B04**	3 **C03**	4 **D06**
..10VZ4M-071..	..-18,5..	42	|←	33,1					- -	- -	- -	- -
..10VZ4M-071..	..-0022..	42	|←	33,1								
..10VZ4M-071..	..-0030..	42	|←	33,1								
..10VZ4M-071..	..-0037..	48	|←	26,6								
..10VZ4M-100..	..-18,5..	42	23	29,1	4 **D08**	4 **B05**	- -	- -	- -	- -	- -	- -
..10VZ4M-100..	..-0022..	42	23	29,1								
..10VZ4M-100..	..-0030..	42	23	53,1								
..10VZ4M-100..	..-0037..	48	|←	26,6								
..10VZ4M-100..	..-0045..	55	|←	41,1								
..10VZ4M-100..	..-0055..	65	|←	35,6				1 **A13**				
..10VZ4M-140..	..-0030..	42	23	40	4 **D08**	4 **B05**	- -	- -	- -	- -	- -	- -
..10VZ4M-140..	..-0037..	48	24,5	34,5								
..10VZ4M-140..	..-0045..	55	26	34								
..10VZ4M-140..	..-0055..	65	|←	30,5				1 **A15**				
..10VZ4M-140..	..-0075..	75	35	45				1 **A17**				
..10VZ4M-180..	..-0037..	48	24,5	34,5	4 **D08**	4 **B05**	- -	- -	- -	- -	- -	- -
..10VZ4M-180..	..-0045..	55	26	34								
..10VZ4M-180..	..-0055..	65	|←	30,5								
..10VZ4M-180..	..-0075..	75	35	45				1 **A17**				
..10VZ4M-180..	..-0090..	75	35	45				1 **A18**				

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KD Coupling size
X_P Assembly dimension pump
X_M Assembly dimension motor hub
n Number
Pump Designation pump according to MPES2 type code
MOT-FC Designation motor according to MPES2 type code

Fig. 7-8: Assembly accessory and setting dimension

7.4.5 Assembly Alignment A10VZO

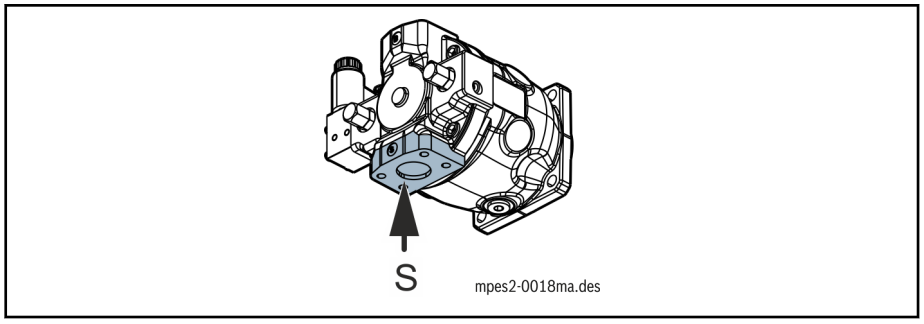
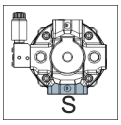
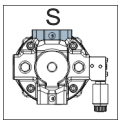
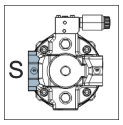
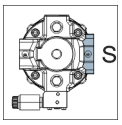


Fig. 7-9: Suction port

	Bottom	Top	Left	Right
				
A10VZO 010	✓	✓	✖	✖
A10VZO 018	✓	✓	✖	✖
A10VZO 028	✓	✓	✖	✖
A10VZO 045	✓	✓	✓	✓
A10VZO 071	✓	✓	✓	✓
A10VZO 100	✓	✓	✓	✓
A10VZO 140	✓	✓	✓	✓
A10VZO 180	✓	✓	✓	✓

Tab. 7-5: Allowed assembly variants (suction port)

7.5 Mounting Instruction Internal Gear Pump

7.5.1 Description Assembly Procedure

The assembly procedure is standardized for various motor-pump combinations. Optional components are indicated in the assembly pictures with (x). Use mounting screws (number, size, tightening torque) acc. to the tables about motor-pump units to be mounted.

Assemble the components according to the drawing and observe all assembly steps. Tolerance of the specified tightening torque (M_A) ±10%.

For screw connections use screw lock, e.g. Loctite 243® when proceeding the following working steps 1 to 5 and observe the specified tightening torques.

NOTICE **Motor damage due to beats onto the motor shaft**

Do never beat onto the shaft end and do not exceed the allowed axial and radial forces of the motor.

By heating the hubs (approx. 80 °C), it is easier to draw it on onto the shaft.

⚠ CAUTION **Burns by touch of hot hubs!**

Wear protective gloves if you assemble heated coupling elements.

Mounting

1. Assemble pump hub onto the pump shaft

   If provided, insert the distance sleeve 6.1 onto the shaft of the pump.

   Insert the pump hub 3.1 onto the shaft of the pump by considering the adjustment dimensions and fasten the hub with the clamping screw 3.5a.

2. Assemble the motor hub onto the motor shaft

   If provided, insert the distance sleeve 6.2 onto the shaft of the motor.

   Insert the motor hub 3.3 onto the shaft of the motor by considering the adjustment dimensions and fasten the hub with the clamping screw 3.4.

3. Screw on pump on bellhousing

   Fasten the pump 1 with screws 1.2 and washers 1.1 onto the bellhousing 2. The leakage hole within the bellhousing must show down in the case of horizontal assembly.

4. Screw on motor on bellhousing.

   Fasten the motor 5 with screws 5.1 onto the bellhousing 2. When joining the coupling heed the correct seat of the ring gear 3.2.

   In the case of fastening A and B acc. to the type code, the leakage hole must be at the bottom that escaping oil can flow out.

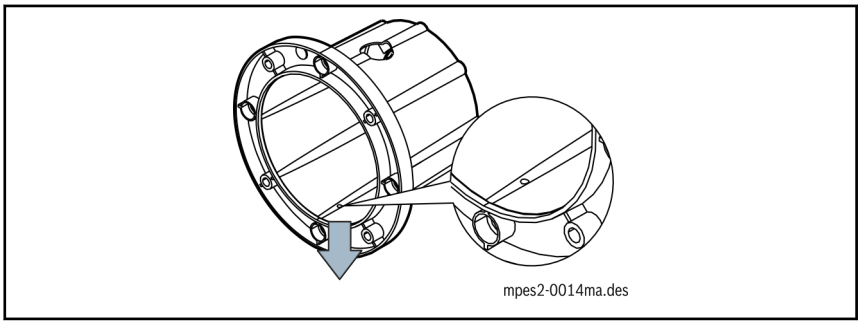
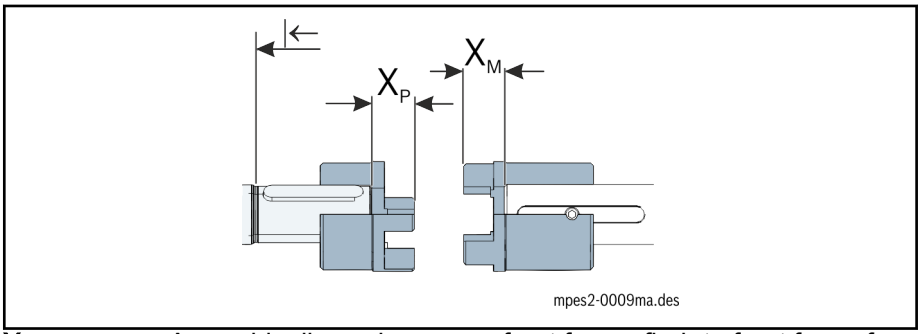


Fig. 7-10: Leakage hole

5. Screw on pump foot

   Fasten the optional pump foot 4 with the screws 4.1, washers 4.2 and hexagon nuts 4.3 on the motor-pump unit.



X_P Assembly dimension pump: front face o fhub to front face of shaft pump

X_M Assembly dimension motor hub: front face o fhub to front face of shaft motor

|← Assembly of hub as far as it will go

Fig. 7-11: Assembly dimensions

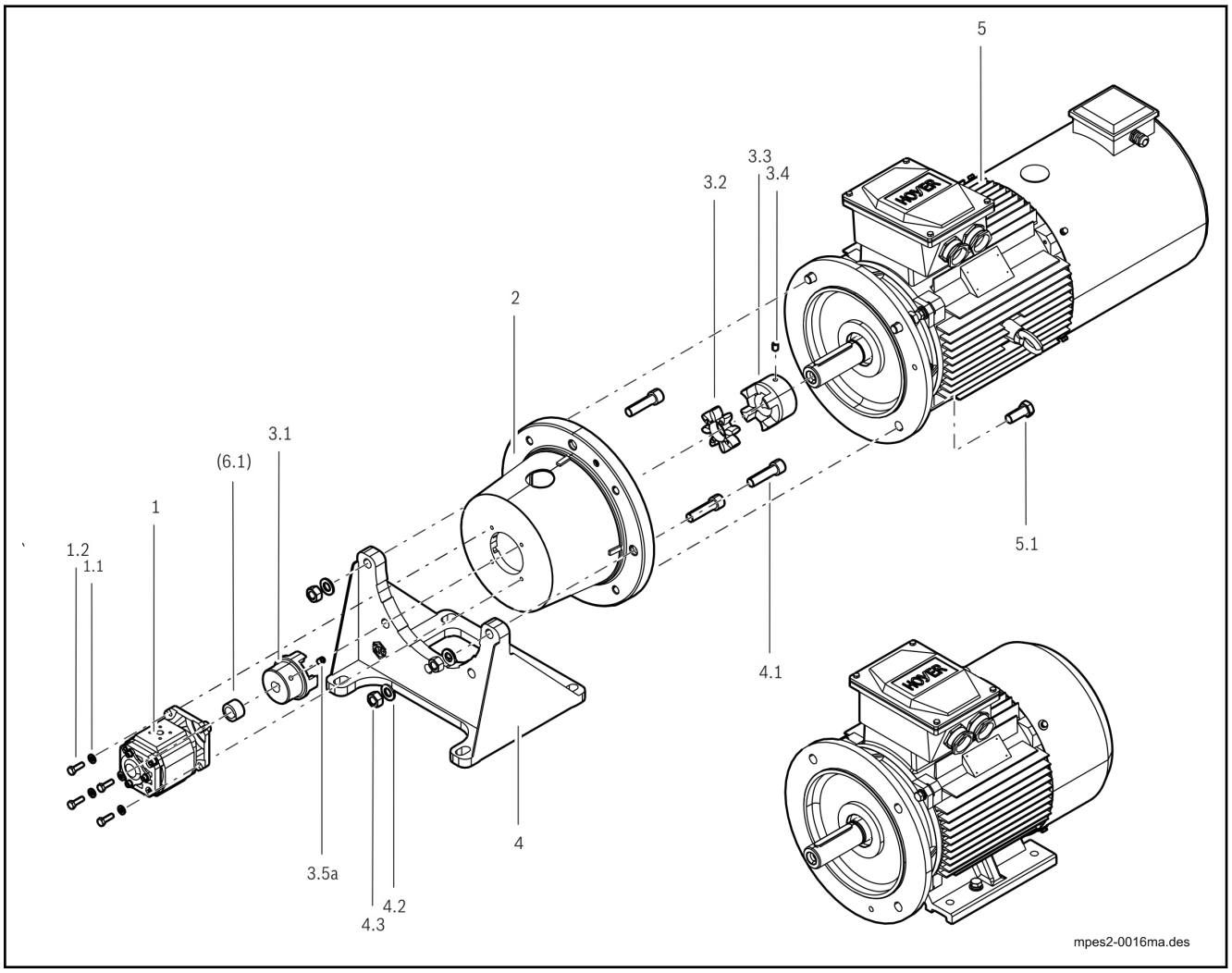
Clamping screws coupling hub

KD	Threaded pin 3.4 / 3,5a		Cylinder screw 3.5b	
	G	M_A[Nm]	G	M_A[Nm]
24	M5	2	M6	14
28, 38	M8	10	M8	35
42	M8	10	M10	69
48	M8	10	M12	120
55, 65	M10	17	M12	120
75	M10	17	M16	295

KD Coupling size

Tab. 7-6: Tightening torque clamping screws of coupling hub

7.5.2 Assembly MPES2 PGF-MOT-FC



1 Internal gear pump (PGF)
2 Bellhousing
3.1 - 3.5 Coupling elements
4 Pump foot (option)
5 Asynchronous motor
6.x Distance flat washers (partly necessary)
x.x Assembly accessory see table

Fig. 7-12: Mounting

Mounting

Assembly accessory

Distance sleeve

A03	AB33-35/ 20.1/ 32X 7

Washer

B01	Washer ISO7089-8-200HV
B02	Washer ISO7089-10-200HV
B03	Washer ISO7089-12-200HV
B04	Washer ISO7089-16-200HV

Hexagon nut

C01	ISO4032-M10-8 (M_A 54 Nm)
C02	ISO4032-M12-8 (M_A 93 Nm)
C03	ISO4032-M16-8 (M_A 230 Nm)

Hexagon bolt

D01	ISO4017-M8X25-8.8 (M_A 27.3 Nm)
D02	ISO4017-M10X25-8.8 (M_A 54 Nm)
D04	ISO4017-M12X30-8.8 (M_A 93 Nm)
D06	ISO4017-M16X40-8.8 (M_A 230 Nm)

Cylinder head screw

E01	ISO4762-M10X30-8.8
E02	ISO4762-M12X40-8.8
E03	ISO4762-M16X60-8.8

Tab. 7-7:

MPES2-..		KD	X_P	X_M	n	1.1	n	1.2	n	6.1	n	6.2	n	4.1	n	4.2	n	4.3	n	5.1
Pump	MOT-Fc		[mm]	[mm]																
..PGF2NB..	..-01,5..	24	16	14	4	D01	4	B01	1	A03	-	-	3	E01	3	B02	3	C01	4	D02
..PGF2NB..	..-02,2..	24	16	18									3	E02	3	B03	3	C02	4	D04
..PGF2NB..	..-0003..	24	16	18																
..PGF2NB..	..-0004..	24	16	18																
..PGF2NB..	..-05,5..	28	|←	18,5						-	-									
..PGF2NB..	..-07,5..	28	|←	18,5																
..PGF2NB..	..-0011..	38	|←	22									3	E03	3	B04	3	C03	4	D06

mpes2-0007xl.des

KD Coupling size
X_P Assembly dimension pump hub
X_M Assembly dimension motor hub
n Number
Pump Designation pump acc. to MPES2 type code
MOT-FC Designation motor acc. to MPES2 type code

Fig. 7-13: Assembly accessories and setting dimensions

7.5.3 Assembly alignment PGFx on MOT-FC

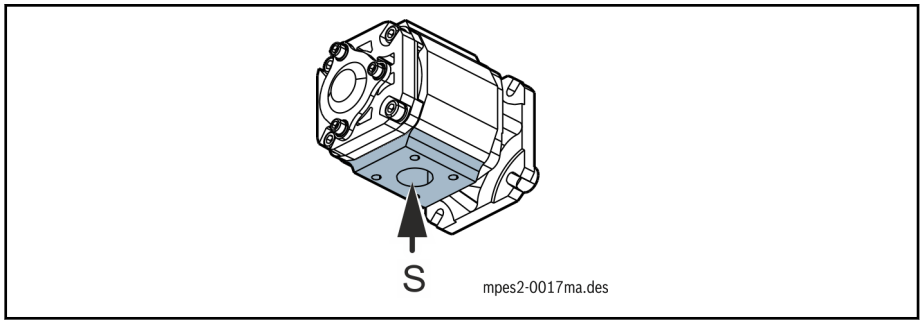
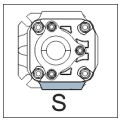
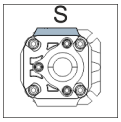
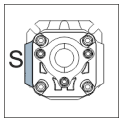
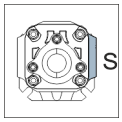


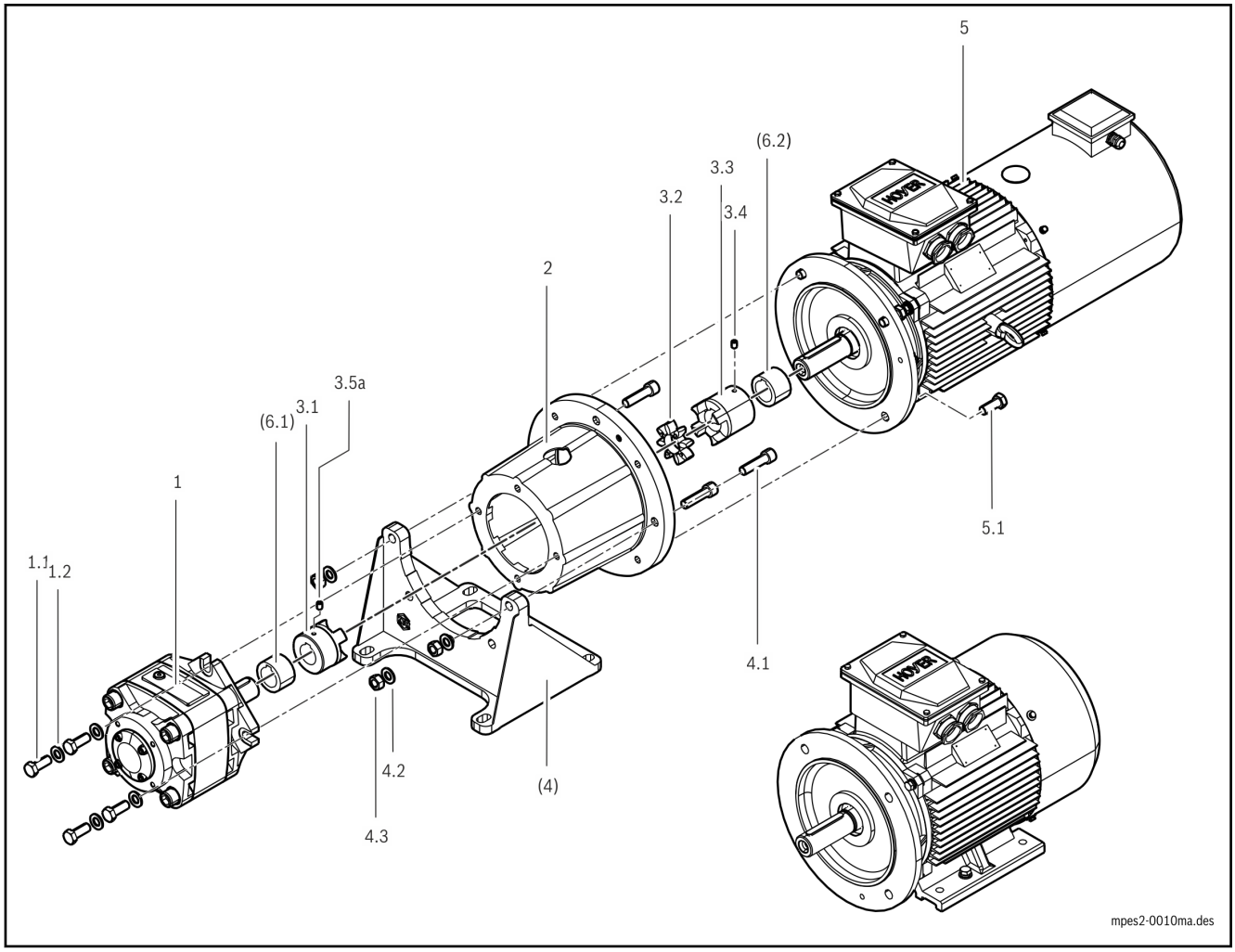
Fig. 7-14: Suction port

	Bottom	Top	Left	Right
				
PGF2	✓	✓	✓	✓

Tab. 7-8: Allowed assembly variants (suction port)

Mounting

7.5.4 Assembly MPES2 PGH-MOT-FC



1	Internal gear pump (PGH)
2	Bellhousing
3.1 - 3.5	Coupling elements
4	Pump foot (option)
5	Asynchronous motor
6.x	Distance flat washers (partly necessary)
x.x	Assembly accessory see table

Fig. 7-15: Mounting

Assembly accessory

Distance sleeve

A01	AB33-35/ 18.1/ 30X 6
A02	AB33-35/ 20.1/ 32X 11
A03	AB33-35/ 20.1/ 32X 7
A04	AB33-35/ 25.1/ 40X 10
A05	AB33-35/ 25.1/ 40X 15
A06	AB33-35/ 25.1/ 40X 25
A07	AB33-35/ 25.1/ 40X 30
A08	AB33-35/ 40.1/ 60X 7
A09	AB33-35/ 40.1/ 60X 17
A10	AB33-35/ 40.1/ 60X 25
A11	AB33-35/ 40.1/ 60X 32
A12	AB33-35/ 40.1/ 60X 38
A15	AB33-35/ 65.1/ 85X 63
A18	AB33-35/ 75.1/100X 55

Washer

B02	Washer ISO7089-10-200HV
B03	Washer ISO7089-12-200HV
B04	Washer ISO7089-16-200HV

Hexagon nut

C01	ISO4032-M10-8 (M_A 54 Nm)
C02	ISO4032-M12-8 (M_A 93 Nm)
C03	ISO4032-M16-8 (M_A 230 Nm)

Tab. 7-9:

Assembly accessory

Hexagon bolt

D02	ISO4017-M10X25-8.8 (M_A 54 Nm)
D03	ISO4017-M10X30-8.8 (M_A 54 Nm)
D04	ISO4017-M12X30-8.8 (M_A 93 Nm)
D06	ISO4017-M16X40-8.8 (M_A 230 Nm)

Cylinder head screw

E01	ISO4762-M10X30-8.8
E02	ISO4762-M12X40-8.8
E03	ISO4762-M16X60-8.8

Tab. 7-10:

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Mounting

MPES2-.. Pump	MOT-FC	KD	X_P [mm]	X_M [mm]	n 1.1	n 1.2	n 6.1	n 6.2	n 4.1	n 4.2	n 4.3	n 5.1
..PGH2NB..	..01,5..	24	16	17	2 **D03**	2 **B02**	1*) **A01**	- -	3 **E01**	3 **B02**	3 **C01**	4 **D02**
..PGH2NB..	..02,2..	24	16	17					3 **E02**	3 **B03**	3 **C02**	4 **D04**
..PGH2NB..	..0003..	24	16	17								
..PGH2NB..	..0004..	24	16	17								
..PGH2NB..	..05,5..	28	|←	20,5			- -					
..PGH3NB..	..02,2..	24	16	17	2 **D04**	2 **B03**	- -	- -	3 **E02**	3 **B03**	3 **C02**	4 **D04**
..PGH3NB..	..0003..	24	16	17			1*) **A02**					
..PGH3NB..	..0004..	24	16	17								
..PGH3NB..	..05,5..	28	17,5	20,5			1*) **A03**					
..PGH3NB..	..07,5..	28	17,5	20,5								
..PGH3NB..	..0011..	38	|←	29					3 **E03**	3 **B04**	3 **C03**	4 **D06**
..PGH4ND..	..0004..	24	16	16	4 **D03**	4 **B02**	1*) **A07**	- -	3 **E02**	3 **B03**	3 **C02**	4 **D04**
..PGH4ND..	..05,5..	28	17,5	15,5			1*) **A06**					
..PGH4ND..	..07,5..	28	17,5	15,5								
..PGH4ND..	..0011..	38	21	21			1*) **A05**		3 **E03**	3 **B04**	3 **C03**	4 **D06**
..PGH4ND..	..0015..	38	21	21								
..PGH4ND..	..18,5..	42	23	21			1*) **A04**		- -	- -	- -	- -
..PGH4ND..	..0022..	42	23	21								
..PGH4ND..	..0030..	42	23	21								
..PGH4ND..	..0037..	48	|←	24,5			- -					
..PGH5ND..	..0015..	38	21	23	4 **D06**	4 **B04**	1*) **A12**	- -	3 **E03**	3 **B04**	3 **C03**	4 **D06**
..PGH5ND..	..18,5..	42	23	23			1*) **A11**		- -	- -	- -	- -
..PGH5ND..	..0022..	42	23	23								
..PGH5ND..	..0030..	42	23	23								
..PGH5ND..	..0037..	48	24,5	26,5			1*) **A10**					
..PGH5ND..	..0045..	55	26	26			1*) **A09**					
..PGH5ND..	..0055..	65	30,5	28,5			1 **A08**	1 **A15**				
..PGH5ND..	..0075..	75	|←	35			- -	1 **A18**				
..PGH5ND..	..0090..	75	|←	35								

mpes2-0005xl.des

KD Coupling size
X_P Assembly dimension pump hub
X_M Assembly dimension motor hub
n Number
***)** only necessary for vertical flange mounting, without foot
Pump Designation pump acc. to MPES2 type code
MOT-FC Designation motor acc. to MPES2 type code

Fig. 7-16: Assembly accessories and setting dimensions

7.5.5 Assembly Alignment PGHx on MOT-FC

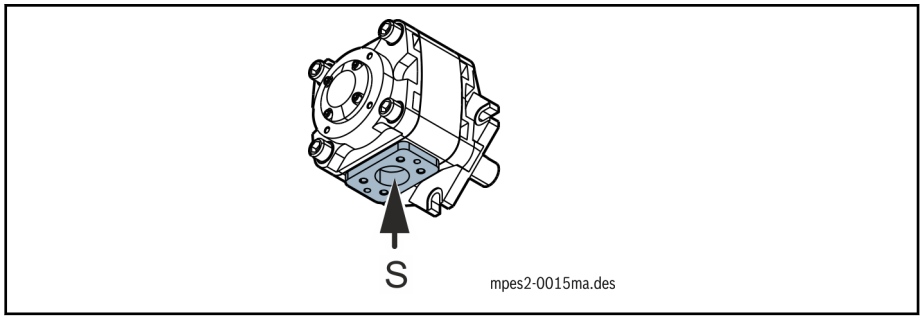
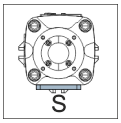
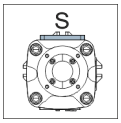
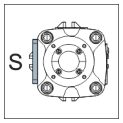
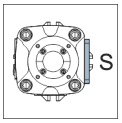


Fig. 7-17: Suction port

	Bottom	Top	Left	Right
				
PGH2	✓	✓	✖	✖
PGH3	✓	✓	✖	✖
PGH4	✓	✓	✓	✓
PGH5	✓	✓	✓	✓

Tab. 7-11: Allowed assembly variants (suction port)

7.6 Permitted Installation Positions of the Motor-Pump Unit

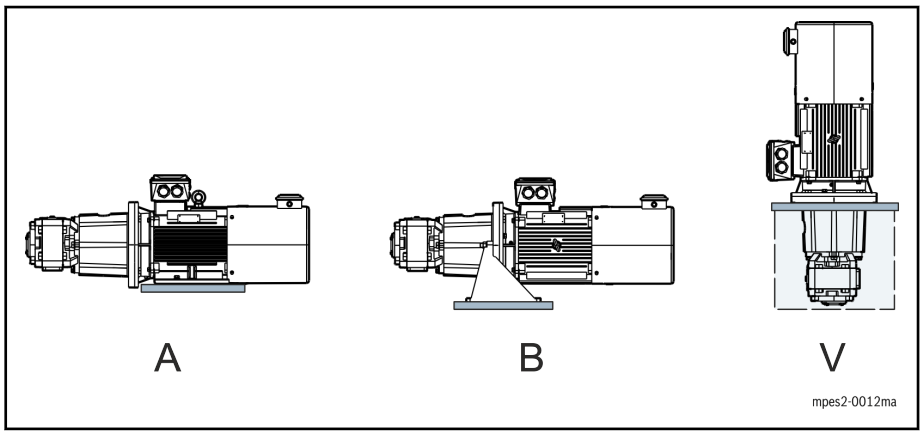


Fig. 7-18: Permitted fastening of the motor-pump unit

The assembly of the motor-pump unit can be done in the following design:

- A (foot fastening horizontally)
- B (flange fastening horizontal, foot on flange)
- V (flange fastening vertically, without foot)

NOTICE	**Motor damage due to escaping oil, if the motor is located under the pump!**

In the case of vertical installation, mount the motor-pump unit in such a way, that the motor is **above** of the pump.

Mounting

7.7 Installation MPES2

The screw connection must be adjusted to the installation situation (screw-length, property class, screw-in depth, material, ...). The dimensioning of the screw connection is in the responsibility of the customer.

MOT-FC [kW]	Installation position (A)		Installation position (B)		Installation position (V)	
	Screw / hole Ø		Screw / hole Ø		Screw / hole Ø	
01,5	-	-	4x M10	11	4x M10	11
02,2	-	-	4x M12	13	4x M12	14
0003	-	-				
0004	-	-				
05,5	-	-	4x M12	13	4x M12	14
07,5	-	-				
0011	4x M12	14,5	4x M16	18	4x M16	17
0015						
18,5			-	-		
0022			-	-		
0030	4x M16	18,5	-	-	4x M16	17
0037			-	-	8x M16	17
0045			-	-		
0055	4x M20	24	-	-	8x M16	17
0075			-	-		
0090			-	-		

Hole Ø mm (details in millimeter)

Tab. 7-12: Fastening screws for motor-pump unit

- Assemble in dry, dust free environment.
- Ensure a clean and burr-free machine-side contact surface.
- Securely screw the motor-pump unit with the machine construction.

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8 Connection

8.1 Motor-Pump-Unit Hydraulically Connected

- Remove the flange covers on suction and pressure connection.
- Immediately wipe away outgoing hydraulic fluid.
- Check the line for cleanliness.
- Ensure that the line connection contains the specified sealings.
- Lock O-rings with assembly grease against slipping , if necessary.
- Now, hydraulically connect the pump according to the specifications of the machine manufacturers.

Rexroth Sytronix Assembly and Maintenance Internal Gear Pump PGH/PGM/PGF

Material number: R911340908 (Edition 02)

Rexroth Sytronix Mounting and Commissioning Axial Piston Variable Pump A10VZO/A10VSO/A4VSO

Material number: R911341629 (Edition 02)

8.2 Connection Technique

8.2.1 General Notes

General

The following work must be done by qualified personnel according to the local regulations.

⚠ WARNING **Danger to life due to electrical voltage! Handling within the area of live parts is extremely dangerous.**

All work on the electric system may only be done by skilled electricians. Tools for electricians (VDE tools) are absolutely necessary.

Before working:

1. Isolate (even auxiliary circuits).
2. Ensure that the main switch cannot be accidentally switched on again.
3. Ensure de-energization.
4. Ground and short-circuit.
5. Cover or fencing off neighbored, live parts.

Before start working, check with possible live parts a suitable measuring device (e.g. with capacitors). Wait for their discharging time.

Power connection

Before connecting the motor, check whether the power supply and power frequency consist with the nominal data. Motors can be operated with a power supply deviation of ± 5 % and a power frequency deviation of ± 2 % (acc. to IEC60034-1). A connection overview for power and accessory connections (PTC) can be found within the terminal box. The connections must be estab-

lished such that a permanent safe electrical connection is ensured. This is also valid for power, grounding and shield connection.

Power cables

Power cables for motor connection are not in the scope of delivery of the motor. Selection and assembly of suitable cables must be done by the customer.

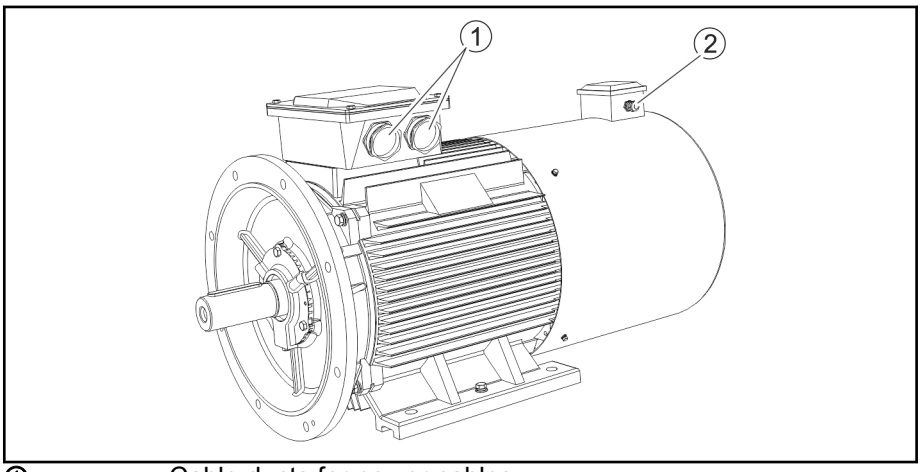
When selecting cables, please proceed very carefully and observe the requirements existing at the installation space of the cables.

Observe features, like

- resistance against coolants and lubricants from machining
- compliance of EMC directives
- fatigue limit
- non-halogen

We recommend to do crimping connections according to IEC 60352-2. Malfunctions or damage due to wrong or improper motor connection are not in the liability of Bosch Rexroth.

Connection Overview



① Cable ducts for power cables
② Terminal boxes with cable ducts for motor fan connection (only available for forced ventilated motors)

Fig. 8-1: Connection Overview

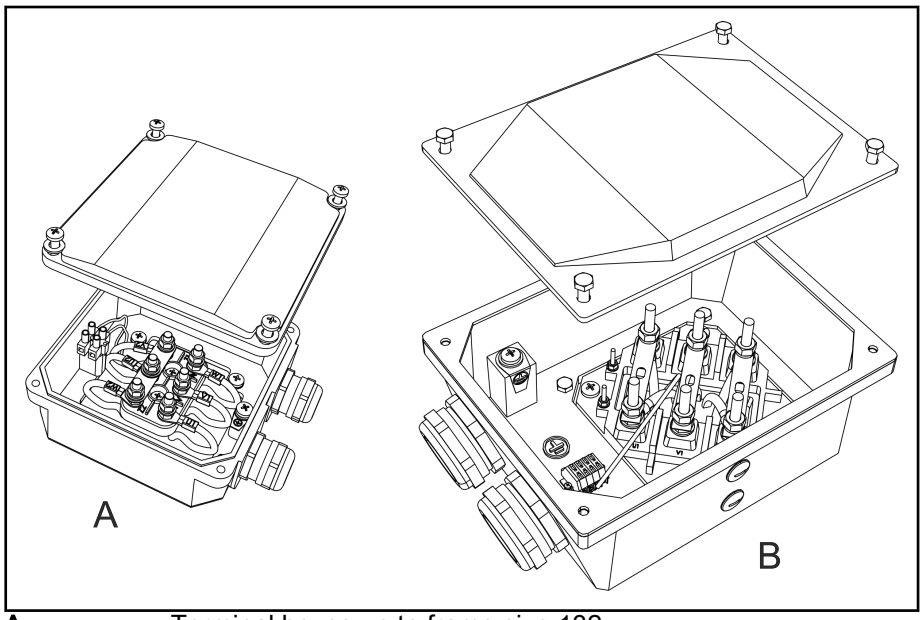
8.2.2 Power Connection

Connection Power Cables

Ensure that the terminal box is clean and dry. Seal not used cable ducts. Before re-assembly, check the position and correct seat of the terminal box sealing.

To connect the motor, use a specified power cable. This must be ordered and assembled by the customer.

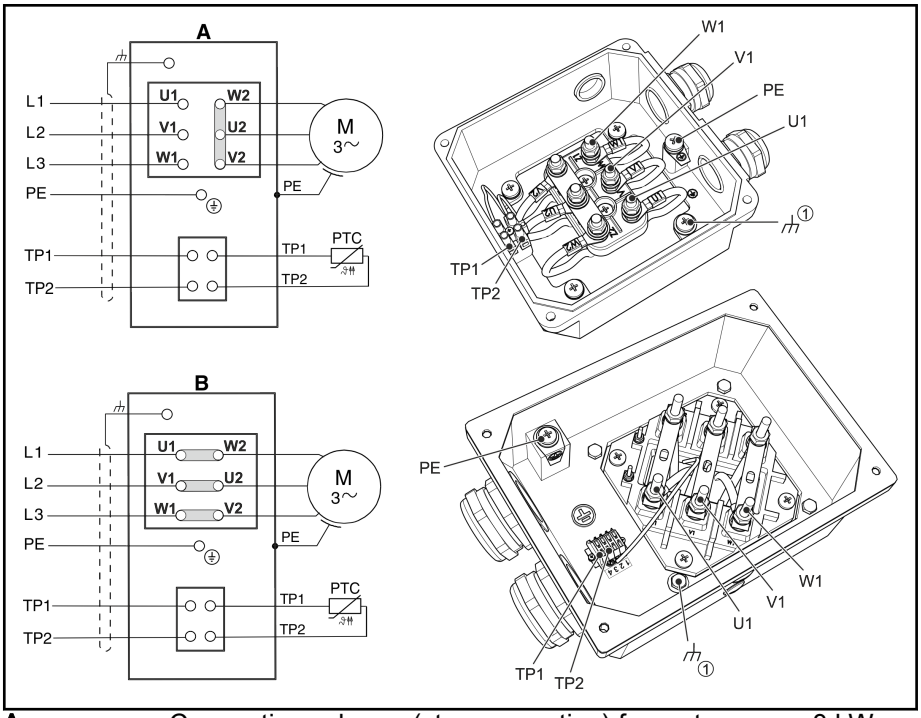
1. First, determine the correct wire lengths. Therefore, open the terminal box and remove the protective cap of the cable gland.
2. Insert the cable through the cable gland up to the furthermost terminal. Mark the cable on the entry within the terminal box.
3. Pull out the cable of the terminal box and remove the cable jacket up to this mark.
4. The exposed cable shield must be split acc. to chapter chapter "Connection Total Shield Power Cables" on page 68. All further working steps about shield assembly can be done immediately or after this procedure.
5. The now accessible wires are fastened with ring terminals on the terminal stud. Strip the wires according to the size of ring terminals. The size of ring terminal depends on the diameter of the terminal stud. For diameter of the terminal stud and tightening torques refer to data sheet of the motor under chapter 1.2 "Necessary and Supplementary Documentation" on page 15.



A Terminal boxes up to frame size 132
B Terminal boxes from frame size 160

Fig. 8-2: Preparing power connection

Connection



A	Connection scheme (star connection) for motor power 3 kW
B	Connection scheme (delta connection) for motor power 4 kW
U1 / V1 / W1	Primary winding
PE	Protective conductor
TP1 / TP2	Connection wires temperature sensor SNM150
① ⇒ Schirm	See chapter "Connection Total Shield Power Cables" on page 68

Fig. 8-3: Connection designation within terminal boxes

☞ A lable with the connection scheme of the motor is applied on the inner side of the terminal box lid.

Connection Total Shield Power Cables

When connecting the power cable, please observe to apply the total shield of the power cable within the terminal box to keep a HF-suitable connection.

Therefore, connect the shield via a ring terminal and a screw with the terminal box. A connection screw is provided within the terminal box (refer to) to connect the shield.

☞ Rexroth does not offer ready-made power cables to connect these motors. The professional assembly of the power cable must be done by the customer.

The following overview describes working steps which must be done to apply a ring terminal on the total shield of the power cable. Application of ring terminal onto power wires is not described in this example.

1. Remove the jacket of the power cable.

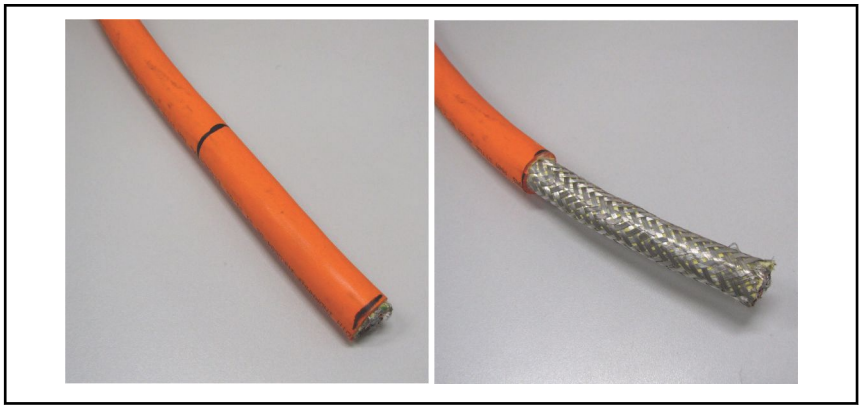


Fig. 8-4: Strip the power cable for required wire lengths.

Determine the necessary wire lengths by means of the junction within the terminal box of the motor to be connected. The unshielded cable must be kept as short as possible.

☞ Please observe that the stripped wires

- are not too long to avoid unnecessary kinks or chafes within the terminal box.
- are not too short to avoid tensile strength onto the wires after connecting within the terminal box.

2. Split the total shield of the cable braid open.

Fig. 8-5: Split the shield braid open

Split the shield braid open very carefully via the complete, stripped length.

3. Twist the total shield of the cable, cut it and solder it with the prepared cable. The cable cross section must be conform with the shield cross section. Then, strip the junction and the area of the shield connection with a heat shrink tubing.

Connection

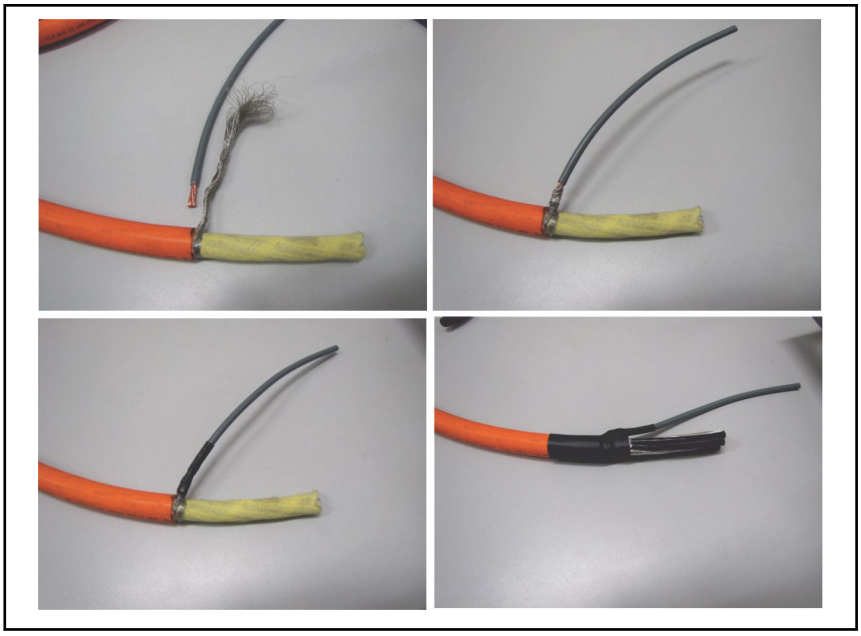


Fig. 8-6: Connection total shield with cable extension

4. Cut the soldered cable accordingly and finally assemble the correct ring terminal with a crimping tool.

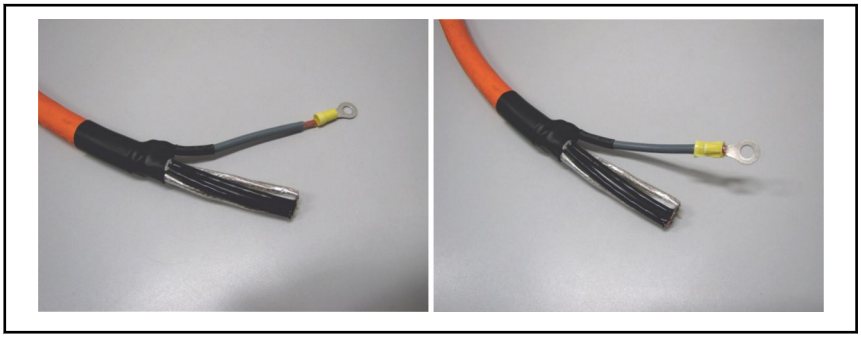


Fig. 8-7: Cut shield extension in a suitable way and assemble the ring terminal

Connect the temperature sensor

To protect the motor from thermal overload, the temperature sensor for motor protection must be connected to the drive controller. Observe the connection designation under fig. 8-3 "Connection designation within terminal boxes" on page 68 and the notes about temperature sensor in the document

Also refer to R911343624 "Rexroth IndraDyn E Standard Motors MOT-FC for Frequency Converter Operation"

motor data sheet under chapter 1.2 "Necessary and Supplementary Documentation" on page 15.

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8.2.3 Connect the Motor Fan

Cooling of forced-ventilated motors (design IC416) is done via an electrical fan which is mounted and separately connected onto the motor. It is operated with 230 V (star connection) or 400 V (delta connection). The fan is factory-adjusted designed for 400V.

The electrical connection is done by means of fan terminal box on the fan housing (see fig. 8-1 "Connection Overview" on page 66). Additionally, the connection scheme is figured within the lid of the fan terminal box and shows the connection for 230V and 400V. The interconnection is factory-adjusted designed for 400V.

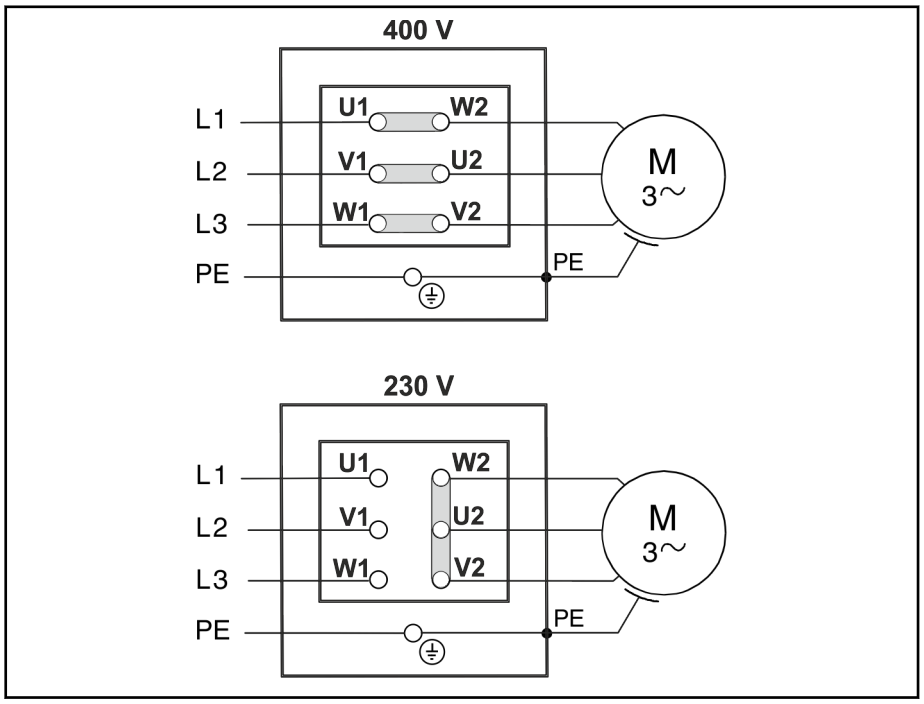

Fig. 8-8: Connection scheme motor fan

The following table contains electrical power data of the motor fan with different frame sizes.

Connection

Frame size	Power [W]	Current [A]	Voltage [V]	Frequency [Hz]	Interconnection
090	30	0.1	400	50	Y
100	45	0.15			
112	50	0.21			
132	90	0.4			
160	90	0.4			
180	180	0.65			
200	350	0.83			
225	350	0.83			
250	370	1.17			
280	550	1.57			
315	750	2.03			
355	1100	2.9			

Tab. 8-1: Electrical parameters of the motor fan

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9 Commissioning

9.1 Safety

⚠ WARNING **High electrical voltage! Danger to life, risk of injury due to electric shock.**

Live parts are dangerous.

- Do not open any covers or flange sockets during operation.
- Never connect or disconnect plug connectors under load!

⚠ WARNING **Risk of injury due to rotating motor shaft!**

- Do not remove any covers, machine parts or protection devices during operation.
- Do not enter the range of movement of the machine. Prevent persons from entering this area, e.g., by means of
  - safety fence, safety guards, protective covers
  - Optical sensors

⚠ CAUTION **Thermal danger due to hot surfaces with temperatures over 70 °C during operation**

- Do not touch hot motor surfaces.
- Install protection against contact, if necessary.
- Make sure that no temperature-sensitive components (cables, electronic components, ...) touch hot surfaces.

9.2 General

Motor-pump units can only be commissioned with other components (drive controller, control unit). For commissioning of the motor-pump unit, two steps are necessary:

1. Commissioning of the pump drive (motor control)
2. Commissioning the pump

Prior to commissioning

Prior to commissioning, ensure that the following requirements are met.

- Storage time of the components. Depending on the storage time, take measures to ensure safe operation. Run in bearings, resurface the holding brake, ...

  See also chapter 6.5 "Product Storage" on page 44.
- Ensure that all flange socket are correctly connected and protected against coming loose.
- Ensure that the motor-pump unit and all participating components of the drive are undamaged.

9.3 Commissioning of the pump drive (motor control)

For details on the commissioning order, please refer to the respective documentation of the drive controller or firmware description.

Please observe the general safety instructions on the protection against hazardous movements.

9.4 Commissioning the pump

9.4.1 General Notes about Commissioning the Pump

For commissioning the pump, necessarily observe the operating instruction of the hydraulic system.

Commissioning of the pump requires basic mechanical and hydraulical knowledge.

- The commissioning of the pump may only be done by skilled personnel (refer to "Rexroth Sytronix, Safety Notes and Instructions on Use, Motor-Pump Unit", MNR R911339831).

If the pump has not been assembled correctly, persons could be injured and the product or the system could be damaged when commissioning the pump.

- Ensure a correct assembly of the pump by qualified personnel before you take the pump into operation.

NOTICE	**Contaminated hydraulic fluid could result in wear and tear and malfunctions. In particularly foreign bodies like e.g. welding beats and metal cuttings in the suction line may damage the pump.**

- When commissioning the product, provide for absolute cleanness.
- Make sure that no contamination may penetrate when sealing the measuring connections.

NOTICE	**When commissioning the pump with or without hydraulic fluid, the pump is damaged or even damaged immediately.**

- When commissioning or re-commissioning a machine and/or system make sure that the suction and pressure lines of the pump are filled with hydraulic fluid and remain filled also during operation.

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9.4.2 Preparation Commissioning

- Ensure a free suction channel.
- Ensure that the piping has been assembled in a clean and tight form.
- Check the hydraulic scheme for direct functions/movements when pressure is set-up.
- Check the hydraulic fluid tank for cleanliness.
- Fill in the hydraulic fluid according to the specification of the system manufacturer. For this purpose, only use filters with the required minimum rentation rate.
- Check the suction line for tight assembly.
- Make sure that the direction of rotation of the motor complies with the direction of rotation of the pump.

9.4.3 Initial Commissioning

For commissioning of the internal gear pump refer to: R911340907 "Rexroth Sytronix Assembly and Maintenance Internal Gear Pump PGH/PGM/PGF"

For commissioning of the axial piston pump refer to: R911341628 "Rexroth Sytronix Mounting and Commissioning Axial Piston Variable Pump A10VZO/ A10VSO/A4VSO"

9.4.4 Re-Commissioning after Extended Standstill

- Upon re-commissioning after disconnection from supply, check the direction of rotation of the electric motor for compliance with the arrow indicating the direction of rotation on the pump housing.
- Check pump and system for leakage. Loss of oil indicates leakage below the hydraulic fluid level. An increased hydraulic fluid level in the tank indicates leakage above the hydraulic fluid level.
- When the pump is arranged above the hydraulic fluid level, the pump can drain via leakage, e.g. a worn-out shaft sealing ring. In this case, it must be bled again during re-commissioning. Have the damage repaired.
- Switch on the motor if the system is flawless.

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10 Operation

⚠ WARNING **High electrical voltage! Danger to life, risk of injury due to electric shock.**

- Do not open any covers or flange sockets during operation.
- Never connect or disconnect plug connectors under load!

Live parts are dangerous.

⚠ CAUTION **Thermal danger due to hot surfaces with temperatures over 70 °C during operation**

- Do not touch hot motor surfaces.
- Install protection against contact, if necessary.
- Make sure that no temperature-sensitive components (cables, electronic components, ...) touch hot surfaces.

During operation, keep the ambient and operation conditions and technical data specified in the project planning manual.

Operate the motor-pump unit in proper state only.

To ensure a reliable and long lifetime of the motor-pump unit, Bosch Rexroth AG recommends to check the whole plant in regularly intervals.

Checks during operation:

- Pay attention to exceptional noise.
- Pay attention to increased vibrations.
- Check the motor and fan units for cleanliness.
- Check the cooling water connections for tightness.
- Check the monitoring devices and diagnostic / error messages of the controllers.
- Check the density of hydraulic lines and connections.
- Continuously monitor the temperature of all components.
- After some operation time, check the hydraulic fluid within the tank for bubble formation or formation of suds on the surface.

During operation, observe any changes of the noise characteristics. Due to heating of the operation medium, a slight noise increase is normal. Considerable noise increase or short-time and irregular noise changes can be a sign for suction of air. If the suction aperture is too close under the surface of the hydraulic medium, can air be sucked via a swirl.

Decommission the drive when deviations from normal operation exist. For further procedure refer to chapter 13 "Troubleshooting" on page 89.

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11 Maintenance and Repair

11.1 Safety / General

Maintenance and repair of motor-pump units require basics in mechanic, hydraulic and electric.

- Maintenance and repair of motor-pump units must be carried out by skilled personnel only.

⚠ WARNING **Danger! Electric voltage! Operations in the vicinity of live parts are extremely dangerous.**

Work required on the electric system may only be carried out by skilled electricians. Tools for electricians (VDE tools) are absolutely necessary.

Prior to commencing work:

1. Isolate (even auxiliary circuits).
2. Protect the system or plant against restart.
3. Ensure de-energization.
4. Ground and short-circuit.
5. Cover or shield any adjacent live parts.

Before starting to work, check with an appropriate measuring device whether parts of the system are still under residual voltage (e.g. caused by capacitors, etc.). If yes, wait until these parts have discharged.

⚠ WARNING **Maintenance work during ongoing operation may result in personal injury and material damage!**

Do not carry out any maintenance measures, while the machine is running.

While carrying out maintenance work, secure the machine such that it cannot restart or be used by unauthorized persons.

⚠ CAUTION **Hot surfaces with temperatures over 70 °C may cause burns!**

Before beginning to work, let the motors cool down.

Use safety gloves.

Do not work at hot surfaces.

NOTICE **Penetrating dirt and liquid leads to malfunction!**

A safe function of the system can no longer be ensured.

- During all work on the hydraulic system, pay attention to extreme cleanliness.
- Do not use a high-pressure cleaner.
- Ensure a correct assembly of the motor-pump unit by qualified personnel before you take the motor-pump unit into operation.

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Maintenance and Repair

⚠ CAUTION **Danger of material and personal damage!**

Aggressive detergents can damage the sealing of the internal gear pump and let them age prematurely.

- Do not use any detergents or aggressive detergents.

⚠ WARNING **Risk of injury due to assembly under pressure!**

Damages to the pump and risk of injuries in case of maintenance and repair of the internal gear pump while the hydraulic system is pressurized.

- Depressurize and deenergize the system before starting any works at the pump.
- Before you start working, ensure a depressurized system.

Motors

Excessive dirt, dust or chips may adversely affect the functionality of the motors or even cause a failure of the motors. Clean the cooling fins of the motors at regular intervals (after one year at the latest) to reach a sufficiently high heat emission surface. If the cooling fins are partially covered with dirt, sufficient heat dissipation via the ambient air is no longer ensured.

Pumps

Inspection

Check the tightness of lines, line connections and shaft sealings. In doing so, observe the instructions of the system manufacturer.

Check warning devices

After maintenance and repair work, check if all warning and protection devices are fixed again and in proper state.

Replace wear parts

When changing wear parts, only use original spare parts.

Maintenance

Assembly, maintenance and repair of pumps must be done by Bosch Rexroth or its authorized distributors and subsidiaries. We do not provide any guarantee for self-made maintenance!

Closing openings

For the transport, close all openings with suitable cover caps/protection devices in order to prevent dirt or humidity from penetrating into the pump.

Further notes:

R911340916 "Rexroth Sytronix Assembly and Maintenance Internal Gear Pump PGH/PGM/PGF" and

R911341634 "Rexroth Sytronix Mounting and Commissioning Axial Piston Variable Pump A10VZO/A10VSO/A4VSO"

Connection cable

⚠ WARNING **Contact with live parts may cause death by electrocution!**

Change damaged connection cables and decommission the plant immediately.

Do not repair any connection lines provisionally.

- Check connection cables for damage at regular intervals and replace them, if necessary.

- Check any optional energy management chains (drag chains) for defects.
- Check the protective conductor connection for proper condition and firm seating at regular intervals and replace it, if necessary.

11.2 Maintenance

In order to provide a safe operation and long service life of the motor-pump unit, a maintenance schedule has to be prepared for the machine or system. The maintenance schedule must ensure that the operating conditions of the motor-pump unit remain within the prescibed limits during the whole service life.

You must particularly ensure compliance with the following operating parameters:

- Required fluid cleanliness,
- Operating temperature range,
- Level of the operating medium,
- Vibrations,
- Noise,
- Temperature difference pump-fluid tank,
- Foam formation in the tank,
- Tightness.

Also refer to R911343624 "Rexroth IndraDyn E Standard Motors MOT-FC for Frequency Converter Operation"

Changes in these parameters are an indication of wwear of components (for example drive motor or pump). The cause must be determined and remedied immediately.

For ensuring high operating safety of the pump in the machine/system, we recommend to check the parameters specified above continuously and automatically and to provide for the automatic shut-down in case of changes exceeding the usual fluctuations in the intended operating area.

The lifetime of the axial piston unit depends on the quality of the hydraulic fluid. We recommend to change the hydraulic fluid once per year at the minimum or after 2,000 operating hours (depending what happens earlier) or let the hydraulic fluid be analysed by the manufacturer or a laboratory on its futher usability.

As preventive maintenance of the internal gear pump, we recommend to exchange the shaft sealing ring after an operating time of maximally 5 years by an approved Bosch Rexroth service operation.

The lifetime of the axial piston unit is limited by the lifetime of the mounted bearing. The lifetime, on basis of the load cycle, can be enquired at the responsible Bosch Rexroth service.

See also chapter 11.3 "Service Repair and Spare Parts" on page 83

Plastic components of drive couplings should be exchanged regularly, after 5 years, however, at the latest. The respective manufacturer´s specifications are to be observed.

Based on these details, the system manufacturer must stipulate a maintenance interval for changing the bearings and must record this in the maintenance plan of the hydraulic system.

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Maintenance and Repair

For more information on the maintenance please refer to the system´s operating instruction.

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11.3 Service Repair and Spare Parts

Repairs on the motor-pump unit or their components may only be performed by the manufacturer or their authorized dealers and subsidiaries. We do not provide any guarantee for self-made maintenance! Authorized dealers and subsidiaries are available for performing repairs at their facilities.

Wearing parts are reliably and professionally repaired and replaced by the Bosch Rexroth Service in shopfloor-oriented quality.

We recommend to have these repairs made by Bosch Rexroth Service.

The Bosch Rexroth service helpdesk at our headquarters in Lohr, Germany and our worldwide service provide You can contact us **24/7**.

Phone:	**+49 (0) 9352 40 50 60**
Fax	**+49 (0) 9352 18 49 41**
Email:	service.svc@boschrexroth.de
Internet:	http://www.boschrexroth.com

Preparing information

For quick and efficient help, please have the following information ready:

- Detailed description of the fault and the circumstances
- Information on the rating plate of the products in question, particularly type codes and serial numbers
- Your contact data (phone number, fax number, e-mail address)

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12 Disassembly and Exchange

12.1 Changing the Motor

Also refer to R911343624 "Rexroth IndraDyn E Standard Motors MOT-FC for Frequency Converter Operation" Chapter "9.5 Disassembly"

⚠ WARNING **Lethal electric shock by live parts with more than 50 V!**

The supply unit may only be replaced by qualified personnel which have been trained to perform the work on or with electrical devices.

☞ The motor should be replaced by a motor of identical type. This is the only way to ensure that all parameterizations can remain unchanged. Moreover, repeated acceptance within the scope of the "Integrated switching technology" function is not required.

1. If necessary, note down the previous absolute value
2. Open the main switch
3. Ensure that the main switch cannot be accidentally switched on again
4. Disconnection plug connections

☞ When exchanging the motor, close open plug sides of power connections with protection caps if moistening with coolant/lubricant or soiling must be expected (allowed soiling degree according to EN 50178: 2).

5. Exchange the motor

☞ Observe the machine manufacturer's instructions when exchanging the motor mechanically.

6. Re-establish the plug connections
7. Re-establish the dimensional reference

⚠ WARNING **Risk of accidents due to unintentional axis movements!**

If servo axes are provided with an indirect position measuring system via the motor encoder, the dimensional reference is lost after motor replacement!

For this reason, the reference to the machine coordinate system must be re-established.

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12.2 Disassemble and Change the Pump

12.2.1 Tools Required

Disassembly of the pump can be done with standard tools. No special tools are needed.

12.3 Preparing Disassembly

Decommission the overall system as described in the system's operating instruction. Then prepare the disassembly of the pump as follows:

⚠ CAUTION **Slip hazard!**

Slipping may cause serious injuries. When removing shaft protection, protective plugs and flange covers, residual oil may leak at zero pressure.

Immediately absorb leaking residual oil.

- Depressurize the pressure side (P line).
- Ensure that the relevant system parts are depressurized and de-energized.

12.4 Disassembling the internal gear pump

In order to disassemble the pump, proceed as follows:

⚠ CAUTION **Slip hazard!**

Slipping may cause serious injuries. When removing shaft protection, protective plugs and flange covers, residual oil may leak at zero pressure.

Immediately absorb leaking residual oil.

NOTICE **Risk of injuries when disassembling under pressure!**

Damages to the pump and risk of injuries in case of disassembly of the pump while the hydraulic system is pressurized.

Depressurize the system before starting any works at the pump.

⚠ WARNING **Crush injuries and fractures!**

Pumps that are falling down may cause serious injuries.

- Use suitable lifting gear for lifting the pump.
- For lifting the pump, always use the enclosed eyebolt or a belt.
- Observe the prescribed position of the transport loops.

1. Check, whether the hydraulic system is pressureless.
2. Let the pump cool down, so it can be disassembled without any danger.
3. Shut off the suction port of the pump. When doing so, observe the instructions of the system's operating instruction.

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4. Place a catch pan under the pump to contain possibly outgoing hydraulic fluid.
5. Loosen the lines and catch outgoing hydraulic fluid in a catch pan.
6. Loosen the fastening screws on the pump and dismount the pump. Therefore use suitable lifting tools.
7. Completely discharge the pump.
8. Lock all openings.

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13 Troubleshooting

13.1 How to Proceed for Troubleshooting

Always act systematically and targeted, even under pressure of time. Random and imprudent disassembly and readjustment of settings might result in the inability to restore the original error cause.

First get a general idea of how your product works in conjunction with the entire system.

Try to find out whether the product has worked properly in conjunction with the entire system before the troubles occurred first.

Try to determine any changes of the entire system in which the product is integrated:

- Were there any changes to the product's operating conditions or operating range?
- Were there any changes or repair works on the entire system (machine/system, electrics, control) or on the product? If yes: Which?
- Was the product or machine used as intended?
- How did the malfunction appear?

Try to get a clear idea of the error cause. Directly ask the (machine) operator.

If you could not remedy the occurred fault, please contact the Bosch Rexroth Service.

See chapter 11.3 "Service Repair and Spare Parts" on page 83

13.2 Malfunction Table

Malfunction	Possible cause	Remedy
Pump does not deliver / suck	The pump is not bled	Bleed the pump
	O-rings defective (wrong medium, damage to the sealing, missing O-ring, wrong O-ring)	Install/replace with original O-ring
	Sealing surfaces contaminated or damaged.	Ensure cleanness and integrity of the sealing surface.
	Coupling is missing and/or parts of the coupling are missing	Amend the coupling or coupling component.
	See malfunction"Wrong direction of rotation of the drive motor"	
	See malfunction "Air inlet through the output side"	
Delivery pressure too low	See malfunctions "Inlet pressure < 0.6 bar"	
	See malfunctions "Admissible level of contamination exceeded"	
	See malfunctions "Output flow is not achieved"	

Troubleshooting

Malfunction	Possible cause	Remedy
Pump is too loud	See malfunctions "Interfaces not tight"	
	See malfunction"Wrong direction of rotation of the drive motor"	
	Ambient temperature is below -20 °C	Provide for suitable ambient temperatures
	Aspiration of air bubbles	Bleed the system
	Vortex generation in the suction area of the fluid tank	Check the filling level of the fluid tank
	See malfuntions "Viscosity <10 mm^2/s"	
	See malfuntions "Viscosity >300 mm^2/s"	
Interfaces not tight	O-rings defective (wrong medium, damage to the sealing, missing O-ring, wrong O-ring)	Use original O-ring
	Sealing surfaces contaminated or damaged.	Ensure cleanness and integrity of the sealing surface.
	Incorrect assembly (screws too long)	Assembly only by authorized, trained and instructed qualified personnel; only use original spare parts
Pressure peaks > pmax intermittend	Feedback from hydraulic system	Observe the allowed pressure peaks described in "RE 10227 (PGH.-3X) / RE 10223 (PGH.-2X) / RE 10213 (PGF)" during project planning.
		Integrate pressure control valves
The system interfaces cannot be mounted	Wrong connection flanges/screws suction port and/or pressure connection selected	Observe the dimensions of the flange described in "RE 10227 (PGH.-3X) / RE 10223 (PGH.-2X) / RE 10213 (PGF)" during project planning.
Viscosity <10 mm^2/s	Hydraulic fluid too hot	Information on hydraulic fluids in RE 90220; observe the project planning information in "RD 10227 (PGH.-3X) / RD 10223 (PGH.-2X) / RD 10213 (PGF)"; check the water content, viscosity, turbidity and smell on a regular basis
	Shelf life of the hydraulic fluid is exceeded	
	Wrong hydraulic fluid filled in	
Viscosity >300 mm^2/s	Fluid temperature too low	Information on hydraulic fluids in RE 90220; observe the project planning information in "RD 10227 (PGH.-3X) / RD 10223 (PGH.-2X) / RD 10213 (PGF)"; check the water content, viscosity, turbidity and smell on a regular basis
	Wrong hydraulic fluid filled in	
	Thickening due to mixing	

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Malfunction	Possible cause	Remedy
Volumetric or mechanical efficiency is not achieved	See malfuntions "Viscosity >300 mm^2/s"	
	See malfuntions "Viscosity <10 mm^2/s"	
	See malfunctions "Output flow is not achieved"	
	Operation projected with too low and/or too high speed	Observe the notes in the project planning manual "RE 10227 (PGH.-3X) / RE 10223 (PGH.-2X) / RE 10213 (PGF)".
	See malfunctions "Admissible level of contamination of the hydraulic fluid exceeded"	
	Mixing of different fluids	Observe the information on hydraulic fluids in RE 90220
Admissible level of contamination of the hydraulic fluid has been exceeded	Fluid aging and abrasion from system	Check the fluid contamination according to the maintenance schedule
	Insufficient filtration	Observe the notes in the project planning manual "RE 10227 (PGH.-3X) / RE 10223 (PGH.-2X) / RE 10213 (PGF)" and check the fluid contamination.
	Unexpected inlet of contamination (e.g. in case of fluid exchange)	Provide for a clean environment, filling only via filter
Wrong direction of rotation of the drive motor	Drive motor corrected incorrectly	Assembling only by authorized, trained and instructed experts
		Check the direction of rotation in case of recommissioning after mains separation
Protective motor switch is activated	Drive motor too weak	Observe the necessary drive power in "RE 10227 (PGH.-3X) / RE 10223 (PGH.-2X) / RE 10213 (PGF)".
	See malfuntion "Wrong connection of drive motor"	
	See malfuntion "Pump wear"	
Input speed too high/too low	Motor projected with too low and/or too high speed	Observe the notes in the project planning manual "RE 10227 (PGH.-3X) / RE 10223 (PGH.-2X) / RE 10213 (PGF)".
Air inlet through the output side	O-rings defective (wrong medium, damage to the sealing, missing O-ring, wrong O-ring)	Use the original combination part set, replace the seals
Fluid leakage	Tank hangs too high	Observe the project planning information in maintenance and commissioning of hydraulic components RE 07800 / RE 07900
	Fluid level too high	
	Pre-charged fluid tank (too high pressurized) and/or pre-filling pump	Observe the project planning information for pre-charged tank and/or pre-filling pump
	Defective seal	Exchange the damaged O-ring
	See malfunctions "Interfaces not tight"	

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Troubleshooting

Malfunction	Possible cause	Remedy
Inlet pressure > 0.6 bar	Faulty dimensioning of the suction line (length, cross-sections, angle)	Observe the notes in the project planning manual "RE 10227 (PGH.-3X) / RE 10223 (PGH.-2X) / RE 10213 (PGF)".
	Speed too high	Observe the maximum speed in the projekt planning
	Foreign body in the suction channel	Remove the foreign body
	Air pressure too low (also tank without pressure compensation)	Observe the absolute pressure in the project planning.
Inlet pressure >2 bar	See malfunction "Fluid leakage"	
Output flow is not achieved	Pump sucks in air	Check the level in the fluid tank and correct it, if necessary. Observe the information on the design of the lines in hydraulic trainer, volume 3 and project planning information.
	Input speed too low	Necessary drive power in "RE 10227 (PGH.-3X) / RE 10223 (PGH.-2X) / RE 10213 (PGF)" during project planning.
	See malfunctions "Admissible level of contamination of the hydraulic fluid exceeded"	
	See malfuntion "Pump wear"	
Permanent output pressure > p_N continuously	Line cross-section too little	Observe the information on the design of the lines in hydraulic trainer, volume 3 and project planning information
	Flow resistances too high	
	Admissible load exceeded	For limiting the operating pressure and for the solenoid-actuated discharging of the operating pressure, install a pump safety block. Therefore, please observe the notes in "RE 10227 (PGH.-3X) / RE 10223 (PGH.-2X) / RE 10213 (PGF)".
Wear caused by radial force on the shaft	Incorrect installation	Observe the installation information
	Tightening torque for the screws is too low	Observe the tightening torques in the installation information
	See malfuntion "Pump wear"	
Wear caused by axial thrust on the shaft	Incorrect installation	Observe the installation information of the coupling manufacturer
	See malfuntion "Pump wear"	
Pump wear	Contaminated or wrong operating medium	Filter or exchange the operating medium, perform regular controls.

Tab. 13-1: Malfunction table internal gear pump

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13.3 Malfunctions axial piston unit

Malfunction	Possible cause	Remedy
Remarkable noises	Input speed too high.	Machine or system manufacturer.
	Wrong direction of rotation.	Please observe correct direction of rotation.
	Unsufficient suction behavior, e.g. air in the suctio port, unsufficient diameter of the suction port, too high viscosity of the hydraulic fluid, too high suction height, too low suction pressure, foreign bodies in the suction port.	Machine- or system manufacturer (e.g. optimize intake relations, use suitable hydraulic fluid).
		Completely bleed the axial piston unit, fill the suction port with hydraulic fluid.
		Remove foreign bodies in the suction port.
	Improper fastening of the axial piston unit.	Check the fastening of the axial piston unit according to the specifications of the machine- or system manufacturer. Observe the tightening torques.
	Improper fastening of mounted parts, e.g. coupling or hydraulic lines.	Fasten the attachment parts according to the specifications of the coupling or fittings manufacturer.
	Pressure limitation valve of the axial piston unit	Contact Bosch Rexroth service.
	Mechanical damage of axial piston unit (e.g. damaged bearings).	Change axial piston unit and contact Bosch Rexroth service.
No or too less volume flow rate	Defective mechanical drive (e.g. defective coupling).	Machine or system manufacturer.
	Input speed too low.	Machine or system manufacturer.
	Unsufficient suction behavior, e.g. air in the suctio port, unsufficient diameter of the suction port, too high viscosity of the hydraulic fluid, too high suction height, too low suction pressure, foreign bodies in the suction port.	Machine- or system manufacturer (e.g. optimize intake relations, use suitable hydraulic fluid).
		Completely bleed the axial piston unit, fill the suction port with hydraulic fluid.
		Remove foreign bodies in the suction port.
	Hydraulic fluid not in optimum viscosity range.	Use suitable hydraulic fluids (machine- or system manufacturer).
	External control of the adjusting device defective.	Check external control unit (machine- or system manufacturer).
	To low control pressure or set pressure.	Check control pressure or set pressure and contact Bosch Rexroth service.
	Malfunction of adjusting device or of the controller of the axial piston unit.	Contact Bosch Rexroth service.
	Wear of axial piston unit.	Change axial piston unit and contact Bosch Rexroth service.
	Mechanical damage of axial piston unit.	Change axial piston unit and contact Bosch Rexroth service.

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Troubleshooting

Malfunction	Possible cause	Remedy
No or too less pressure.	Defective mechanical drive (e.g. defective coupling).	Machine or system manufacturer.
	Drive power too low.	Machine or system manufacturer.
	Unsufficient suction behavior, e.g. air in the suctio port, unsufficient diameter of the suction port, too high viscosity of the hydraulic fluid, too high suction height, too low suction pressure, foreign bodies in the suction port.	Machine- or system manufacturer (e.g. optimize intake relations, use suitable hydraulic fluid).
		Completely bleed the axial piston unit, fill the suction port with hydraulic fluid.
		Remove foreign bodies in the suction port.
	Hydraulic fluid not in optimum viscosity range.	Use suitable hydraulic fluids (machine- or system manufacturer).
	External control of the adjusting device defective.	Check external control unit (machine- or system manufacturer).
	To low control pressure or set pressure.	Check control pressure or set pressure and contact Bosch Rexroth service.
	Malfunction of adjusting device or of the controller of the axial piston unit.	Contact Bosch Rexroth service.
	Wear of axial piston unit.	Change axial piston unit and contact Bosch Rexroth service.
	Mechanical damage of axial piston unit (e.g. damaged bearings).	Change axial piston unit and contact Bosch Rexroth service.
	Drive unit defective (e.g. hydraulic motor or -cylinder).	Machine or system manufacturer.
Pressure or volume current fluctuation	Axial piston unit not or unsufficiently ventilated.	Completely ventilate axial piston unit
	Unsufficient suction behavior, e.g. air in the suctio port, unsufficient diameter of the suction port, too high viscosity of the hydraulic fluid, too high suction height, too low suction pressure, foreign bodies in the suction port.	Machine- or system manufacturer (e.g. optimize intake relations, use suitable hydraulic fluid).
		Machine- or system manufacturer (e.g. optimize intake relations, use suitable hydraulic fluid).
		Remove foreign bodies in the suction port.
Too high temperature of hydraulic fluid and of the housing	Too high inlet temperature on the axial piston unit.	Machine or system manufacturer: Check system, e.g. malfuction of the cooling unit, too less hydraulic fluid in the pan.
	Malfunction of pressure control valve (e.g. high-pressure limitation valve, pressure cutoff, pressure control).	Contact Bosch Rexroth service.
	Wear of axial piston unit.	Change axial piston unit and contact Bosch Rexroth service.
Change axial piston unit and contact Bosch Rexroth service.	Command value not firm.	Machine or system manufacturer.
	Resonances in the tank line.	Machine or system manufacturer.
	Malfunction of setting device or of the controller.	Contact Bosch Rexroth service.

Tab. 13-2: Malfunctions axial piston unit

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13.4 Troubleshooting MOT-FC

13.4.1 General

⚠ WARNING **Danger of injury due to moving elements! Danger of injury due hot surfaces!**

- Do not carry out any maintenance measures, while the machine is running.
- Switch off the control device and the machine and wait for the discharging time of the electric systems to elapse before you start with troubleshooting.
- While carrying out maintenance work, secure the machine such that it cannot restart or be used by unauthorized persons.
- Do not work on hot surfaces.

The possible caused for malfunctions on Indra Dyn E motors can be limited to the following areas:

- motor fan function and temperature behavior
- internal temperature sensor
- mechanical damage of the motor
- mechanical connection to the machine

In the following, some failure conditions with potential causes are exemplarily explained. This list does not claim to be complete.

13.4.2 Motor Fan Does Not Work Correct

Observe the notes regarding troubleshooting on the motor fan under

13.4.3 Temperature Increased on Motor Housing

State The housing temperature on the motor rises to unusual high values.

Possible cause

1. Breakdown or malfunction within ventilation or cooling system
2. Original machining cycle was changed
3. Original motor parameters were changed
4. Motor bearing worn or defective

Measures for

1. Check fan function. Cleaning on demand. In the case of breakdown contact Bosch Rexroth Service.
2. Check drive dimension for changed demands. In the case of overload do not operate any longer. Danger of damage!
3. Rebuild original parameterization. Check the drive dimension in the case of changed demands
4. Contact the machine manufacturer

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13.4.4 Motor or machine table creates vibrations

State Vibrations on the motor are audible and noticeable.

Possible cause

1. Driven machine elements are insufficiently coupled or damaged
2. Motor bearing worn or defective
   Available bearing lifetime or grease lifetime expired
3. Motor fastening loosened
4. Drive system is instable in terms of regulation

Counter measures

1. Contact the machine manufacturer
2. Contact the machine manufacturer
3. Check mechanical connections. Do not use damaged parts. Contact the machine manufacturer
4. Check parameterization of drive system.

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14 Environmental Protection and Disposal

14.1 Environmental Protection

Production Processes

The products are made with energy- and resource-optimized production processes which allow re-using and recycling the resulting waste. We regularly try to replace pollutant-loaded raw materials and supplies by more environment-friendly alternatives.

No Release of Hazardous Substances

Our products do not contain any hazardous substances which may be released in the case of appropriate use. Normally, our products will not have any negativ influences on the environment.

Significant Components

Basically, our products contain the following components:

Electronic devices
- steel
- aluminum
- copper
- synthetic materials
- electronic components and modules

Motors
- steel
- aluminum
- copper
- brass
- magnetic materials
- electronic components and modules

14.2 Disposal

Return of Products

Our products can be returned to our premises free of charge for disposal. It is a precondition, however, that the products are free of oil, grease or other dirt.

Furthermore, the products returned for disposal must not contain any undue foreign material or foreign components.

Send the products ”free domicile” to the following address:

Bosch Rexroth AG
Electric Drives and Controls
Buergermeister-Dr.-Nebel-Strasse 2
97816 Lohr am Main, Germany

Packaging

The packaging materials consist of cardboard, wood and polystyrene. These materials can be recycled anywhere without any problem.

For ecological reasons, please refrain from returning the empty packages to us.

Batteries and Accumulators

Batteries and accumulators can be labeled with this symbol.

The symbol indicating "separate collection" for all batteries and accumulators is the crossed-out wheeled bin.

The end user within the EU is legally obligated to return used batteries. Outside the validity of the EU Directive 2006/66/EC keep the stipulated directives.

Used batteries can contain hazardous substances, which can harm the environment or the people´s health when they are improper stored or disposed of.

After use, the batteries or accumulators contained in Rexroth products have to be properly disposed of according to the country-specific collection.

Recycling

Most of the products can be recycled due to their high content of metal. In order to recycle the metal in the best possible way, the products must be disassembled into individual modules.

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Environmental Protection and Disposal

Metals contained in electric and electronic modules can also be recycled by means of special separation processes.

Products made of plastics can contain flame retardants. These plastic parts are labeled according to EN ISO 1043. They have to be recycled separately or disposed of according to the valid legal requirements.

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15 Technical Data

15.1 Electrical Characteristic Values, Motor

15.1.1 IndraDyn E MOT-FC-Motor

Also refer to R911343624 "Rexroth IndraDyn E Standard Motors MOT-FC for Frequency Converter Operation".

15.2 Hydraulic Characteristic Values, Pump

For nominal pressure of the pump, refer to the the details on the type plate (chapter 5.3 "Product Identification" on page 31).

For technical data of the pump refer to the respective technical data sheet:

Pump	Data sheet
PGF	RD 10213
PGH.-2X	RD 10223
PGH.-3X	RD 10227
A10VZO	RD 91485
A4VSO	RD 92050

Tab. 15-1: Data sheet with the technical data of pumps

Technical Data

15.3 MPES2 dimensions

15.3.1 "MPES2" with "PGF2"

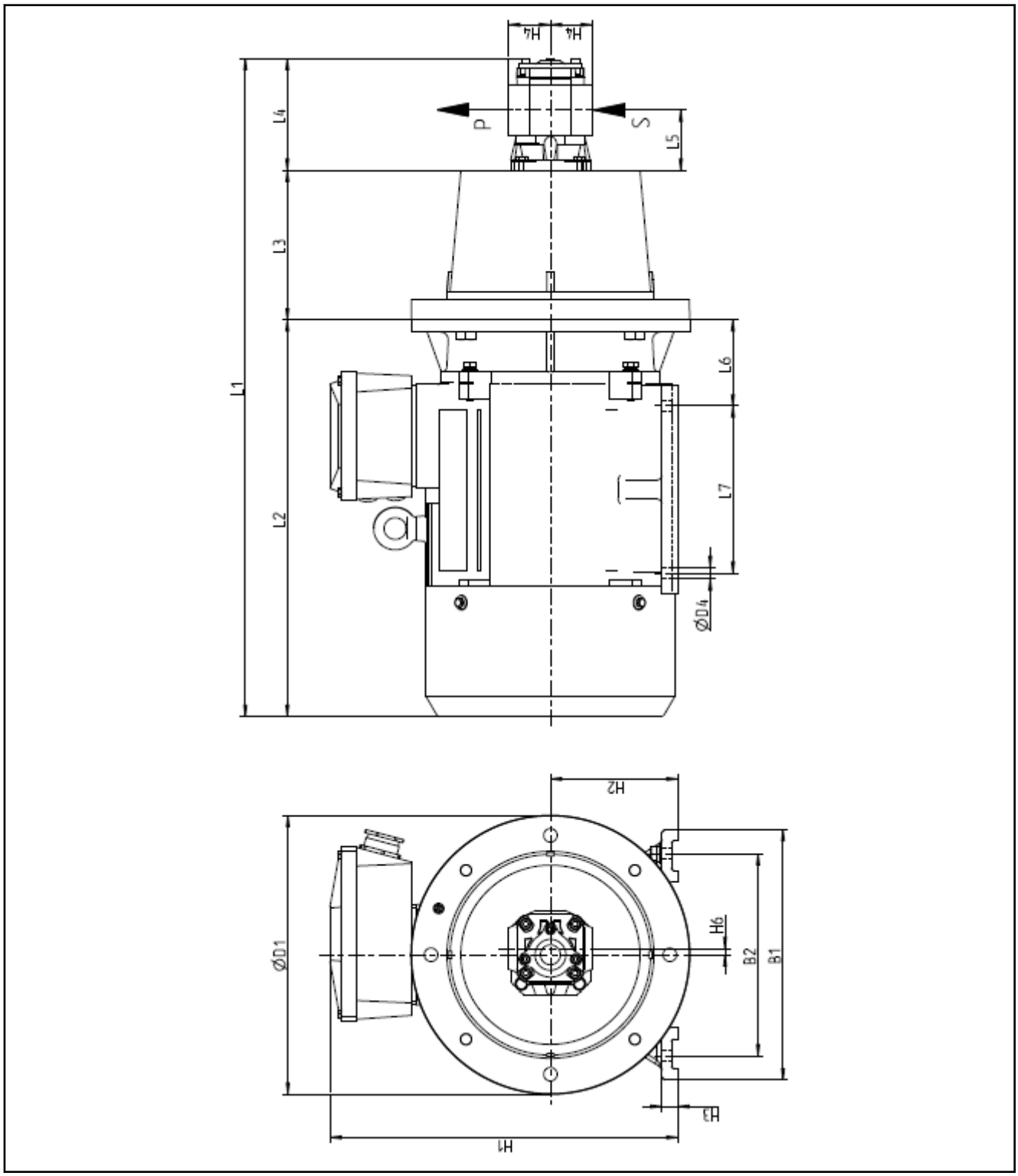

Fig. 15-1: Dimension sheet "MPES2" with "PGF2" in the fastening mode "A" (horizontal foot fastening)

		L4	L5	H4	H6
Nominal size	MPES2-PGF2NB-022NNNN-V*A-	146	78,5	52,5	7,7

Tab. 15-2: "MPES2" with "PGF2", fastening "A"

		L1	L2	H1	H2	H3	B1	L3	L6	L7	B2	D1	D4
Motor performance	0011F2S-NPFN-NN	832	498	445	160	20	314	188	108	210	254	350	14,5

Tab. 15-3: "MPES2" with "PGF2", fastening "A"

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Technical Data

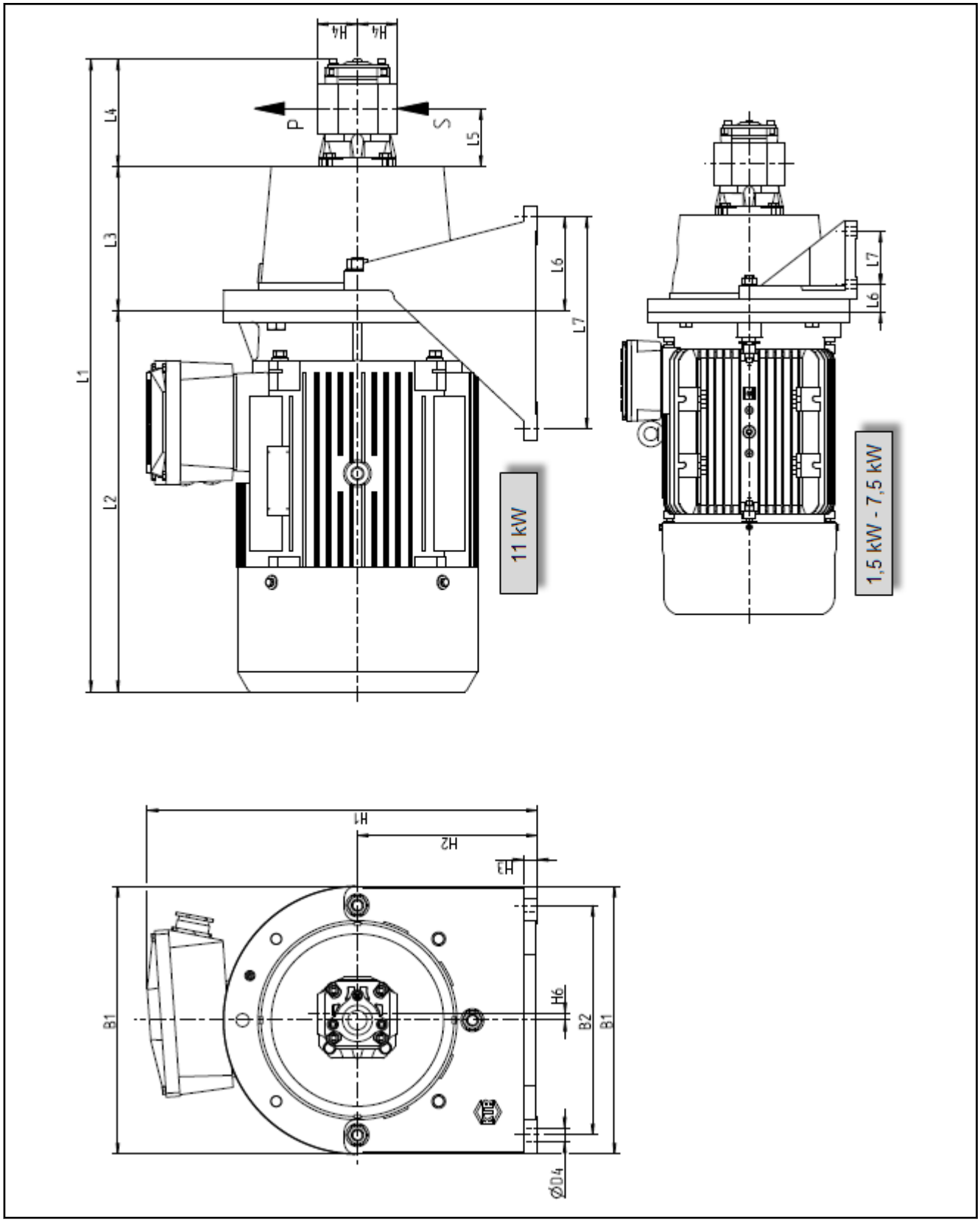

Fig. 15-2: Dimension sheet "MPES2" with "PGF2" in the fastening mode "B" (horizontal foot fastening)

		L4	L5	H4	H6
Nominal size	MPES2-PGF2NB-006NNNN-V*B-	105	63	52,5	7,7
	MPES2-PGF2NB-008NNNN-V*B-	108	64,3	52,5	7,7
	MPES2-PGF2NB-011NNNN-V*B-	114	67,5	52,5	7,7
	MPES2-PGF2NB-013NNNN-V*B-	129	70	52,5	7,7
	MPES2-PGF2NB-016NNNN-V*B-	134	72,5	52,5	7,7
	MPES2-PGF2NB-019NNNN-V*B-	140	75,5	52,5	7,7
	MPES2-PGF2NB-022NNNN-V*B-	146	78,5	52,5	7,7

Tab. 15-4: "MPES2" with "PGF2", fastening "B"

			L1 (dimension depends on the nominal size)							L2	H1	H2	H3	D1	B1	L3	L6	L7	B2	D4
			006	008	011	013	016	019	022											
Motor performance	self-ventilated	01,5B2S-NPFN-NN	527	530	536	551	556	562	568	312	245	112	12	200	210	110	4	60	180	11
		02,2B2S-NPFN-NN	570	573	579	594	599	605	611	341	179	132	15	250	250	124	40	60	220	13,2
		0003B2S-NPFN-NN	570	573	579	594	599	605	611	341	279	132	15	250	250	124	40	60	220	13,2
		0004F2S-NPFN-NN	.	577	583	598	603	609	615	345	345	132	15	250	250	124	40	60	220	13,2
		05,5F2S-NPFN-NN	.	.	645	660	665	671	677	387	347	160	18	300	290	144	40	80	260	13,2
		07,5F2S-NPFN-NN	.	.	.	.	726	732	738	448	347	160	18	300	290	144	40	80	260	13,2
		0011F2S-NPFN-NN	.	.	.	.	.	.	832	498	509	235	18	350	350	188	116	265	300	18
	forced ventilated	01,5B2A-NPFN-NN	636	639	645	.	.	.	.	421	245	112	12	200	210	110	4	60	180	11
		02,2B2A-NPFN-NN	673	676	682	697	702	.	.	444	279	132	15	250	250	124	40	60	220	13,2
		003B2A-NPFN-NN	.	676	682	697	702	708	714	444	279	132	15	250	250	124	40	60	220	13,2
		0004F2A-NPFN-NN	.	.	740	755	760	766	772	502	300	132	15	250	250	124	40	60	220	13,2
		05,5F2A-NPFN-NN	.	.	.	.	890	896	902	612	347	160	18	300	290	144	40	80	260	13,2
		07,5F2A-NPFN-NN	.	.	.	.	.	.	930	640	347	160	18	300	290	144	40	80	260	13,2

Tab. 15-5: "MPES2" with "PGF2", fastening "B"

Technical Data

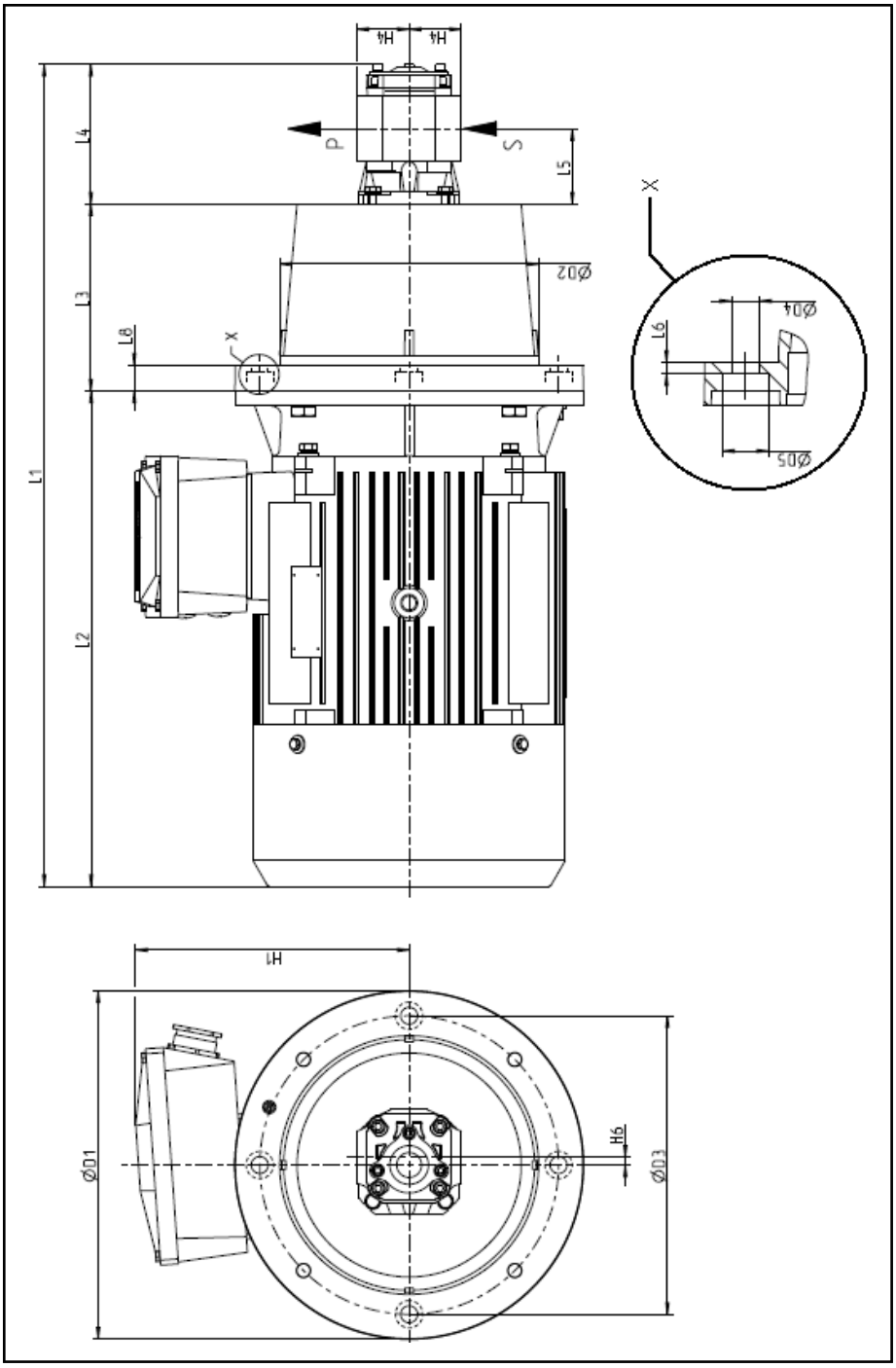

Fig. 15-3: Dimension sheet "MPES2" with "PGF2" in the fastening mode "V" (vertical flange fastening, without foot)

		L4	L5	H4	H6
Nominal size	MPES2-PGF2NB-**006**NNNN-V*B-	105	63	52,5	7,7
	MPES2-PGF2NB-**008**NNNN-V*B-	108	64,3	52,5	7,7
	MPES2-PGF2NB-**011**NNNN-V*B-	114	67,5	52,5	7,7
	MPES2-PGF2NB-**013**NNNN-V*B-	129	70	52,5	7,7
	MPES2-PGF2NB-**016**NNNN-V*B-	134	72,5	52,5	7,7
	MPES2-PGF2NB-**019**NNNN-V*B-	140	75,5	52,5	7,7
	MPES2-PGF2NB-**022**NNNN-V*B-	146	78,5	52,5	7,7

Tab. 15-6: "MPES2" with "PGF2", fastening "V"

			L1							L2	L3	H1	D1	D2	D3	D4	D5	L6	L8
			006	008	011	013	016	019	022										
Motor performance	self-ventilated	01,5B2S-NPFN-NN	527	530	536	551	556	562	568	312	110	132	200	145	165	11	20	4,5	16
		02,2B2S-NPFN-NN	570	573	579	594	599	605	611	341	124	147	250	190	215	12,9	26	5	18
		0003B2S-NPFN-NN	570	573	579	594	599	605	611	341	124	147	250	190	215	12,9	26	5	18
		0004F2S-NPFN-NN	.	577	583	598	603	609	615	345	124	168	250	190	215	12,9	26	5	18
		05,5F2S-NPFN-NN	.	.	645	660	665	671	677	387	144	187	300	234	265	13	21,6	5	20
		07,5F2S-NPFN-NN	.	.	.	.	726	732	738	448	144	187	300	234	265	13	21,6	5	20
		0011F2S-NPFN-NN	.	.	.	.	.	.	832	498	188	274	350	260	300	17	27,6	7	26
	forced ventilated	01,5B2A-NPFN-NN	636	639	645	.	.	.	.	421	110	132	200	145	165	11	20	4,5	16
		02,2B2A-NPFN-NN	673	676	682	697	702	.	.	444	124	147	250	190	215	12,9	26	5	18
		0003B2A-NPFN-NN	.	676	682	697	702	708	714	444	124	147	250	190	215	12,9	26	5	18
		0004F2A-NPFN-NN	.	.	740	755	760	766	772	502	124	168	250	190	215	12,9	26	5	18
		05,5F2A-NPFN-NN	.	.	.	.	890	896	902	612	144	187	300	234	265	13	21,6	5	20
		07,5F2A-NPFN-NN	.	.	.	.	.	.	930	640	144	187	300	234	265	13	21,6	5	20

Tab. 15-7: "MPES2" with "PGF2", fastening "V"

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Technical Data

15.3.2 "MPES2" with "PGH2"

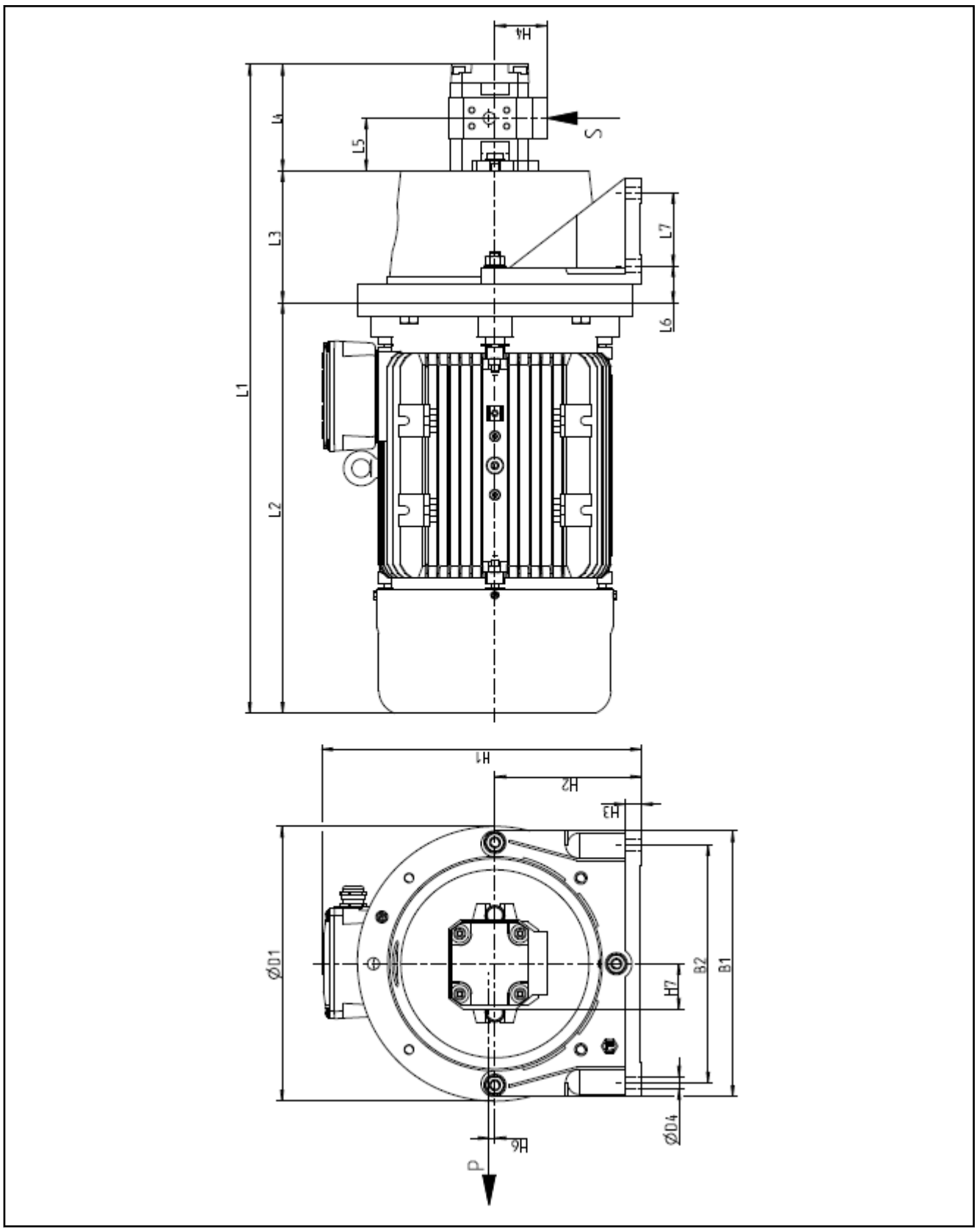

Fig. 15-4: Dimension sheet "MPES2" with "PGH2" in the fastening mode "B" (horizontal foot fastening)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH2NB-**005**NNNN-V*B-	110	54,2	57	6,2	50
	MPES2-PGH2NB-**006**NNNN-V*B-	112,5	55,5	57	6,2	50
	MPES2-PGH2NB-**008**NNNN-V*B-	116	57,3	57	6,2	50

Tab. 15-8: "MPES2" with "PGH2", fastening "B"

			L1 (dimension depends on the nominal size)			L2	H1	H2	H3	D1	B1	L3	L6	L7	B2	D4
			005	006	008											
Motor performance	self-ventilated	01,5B2S-NPFN-NN	532	.	.	312	245	112	12	200	210	110	4	60	180	11
		02,2B2S-NPFN-NN	571	573,5	577	341	279	132	15	250	250	120	40	60	220	13,2
		0003B2S-NPFN-NN	571	573,5	577	341	279	132	15	250	250	120	40	60	220	13,2
		0004F2S-NPFN-NN	575	577,5	581	345	345	132	15	250	250	120	40	60	220	13,2
		05,5F2S-NPFN-NN	.	.	647	387	347	160	18	300	290	144	40	80	260	13,2
		07,5F2S-NPFN-NN	.	.	708	448	347	160	18	300	290	144	40	80	260	13,2
	forced ventilated	01,5B2A-NPFN-NN	641	643,5	647	421	245	112	12	200	210	110	4	60	180	11
		02,2B2A-NPFN-NN	674	676,5	680	444	279	132	15	250	250	120	40	60	220	13,2
		0003B2A-NPFN-NN	.	676,5	680	444	279	132	15	250	250	120	40	60	220	13,2
		0004F2A-NPFN-NN	.	.	738	502	300	132	15	250	250	120	40	60	220	13,2

Tab. 15-9: "MPES2" with "PGH2", fastening "B"

Technical Data

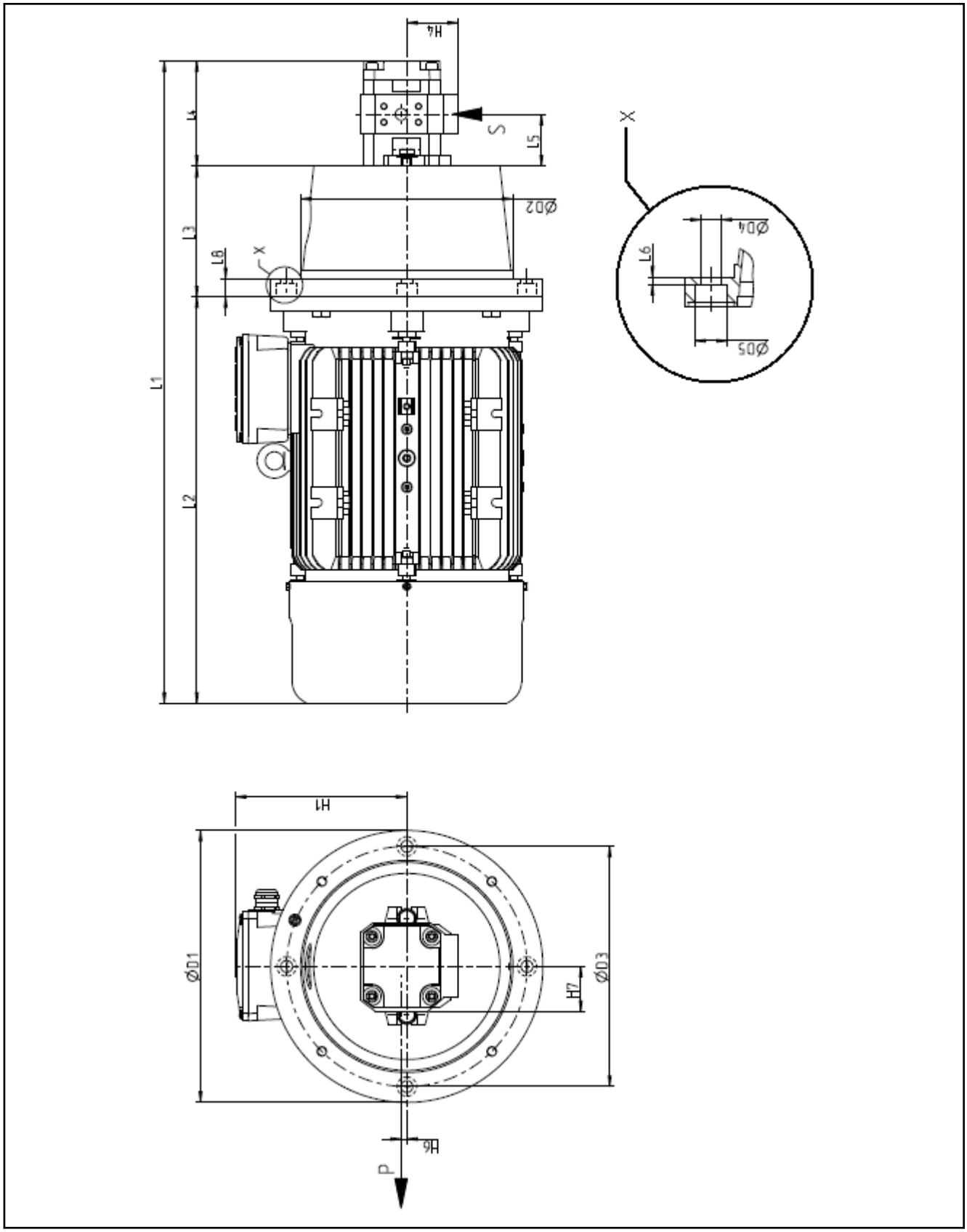

Fig. 15-5: Dimension sheet "MPES2" with "PGH2" in the fastening mode "V" (vertical flange fastening, without foot)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH2NB-**005**NNNN-V*V-	110	54,2	57	6,2	50
	MPES2-PGH2NB-**006**NNNN-V*V-	112,5	55,5	57	6,2	50
	MPES2-PGH2NB-**008**NNNN-V*V-	116	57,3	57	6,2	50

Tab. 15-10: "MPES2" with "PGH2", fastening "V"

			L1 (dimension depends on the nominal size)			L2	L3	H1	D1	D2	D3	D4	D5	L6	L8
			005	006	008										
Motor performance	self-ventilated	01,5B2S-NPFN-NN	532	.	.	312	110	132	200	145	165	11	20	4,5	16
		02,2B2S-NPFN-NN	571	573,5	577	341	120	147	250	190	215	13,5	20	4,8	19
		0003B2S-NPFN-NN	571	573,5	577	341	120	147	250	190	215	13,5	20	4,8	19
		0004F2S-NPFN-NN	575	577,5	581	345	120	168	250	190	215	13,5	20	4,8	19
		05,5F2S-NPFN-NN	.	.	647	387	144	187	300	234	265	13	21,6	5	20
		07,5F2S-NPFN-NN	.	.	708	448	144	187	300	234	265	13	21,6	5	20
	forced ventilated	01,5B2A-NPFN-NN	641	643,5	647	421	110	132	200	145	165	11	20	4,5	16
		02,2B2A-NPFN-NN	674	676,5	680	444	120	147	250	190	215	13,5	20	4,8	19
		0003B2A-NPFN-NN	.	676,5	680	444	120	147	250	190	215	13,5	20	4,8	19
		0004F2A-NPFN-NN	.	.	738	502	120	168	250	190	215	13,5	20	4,8	19

Tab. 15-11: "MPES2" with "PGH2", fastening "V"

Technical Data

15.3.3 "MPES2" with "PGH3"

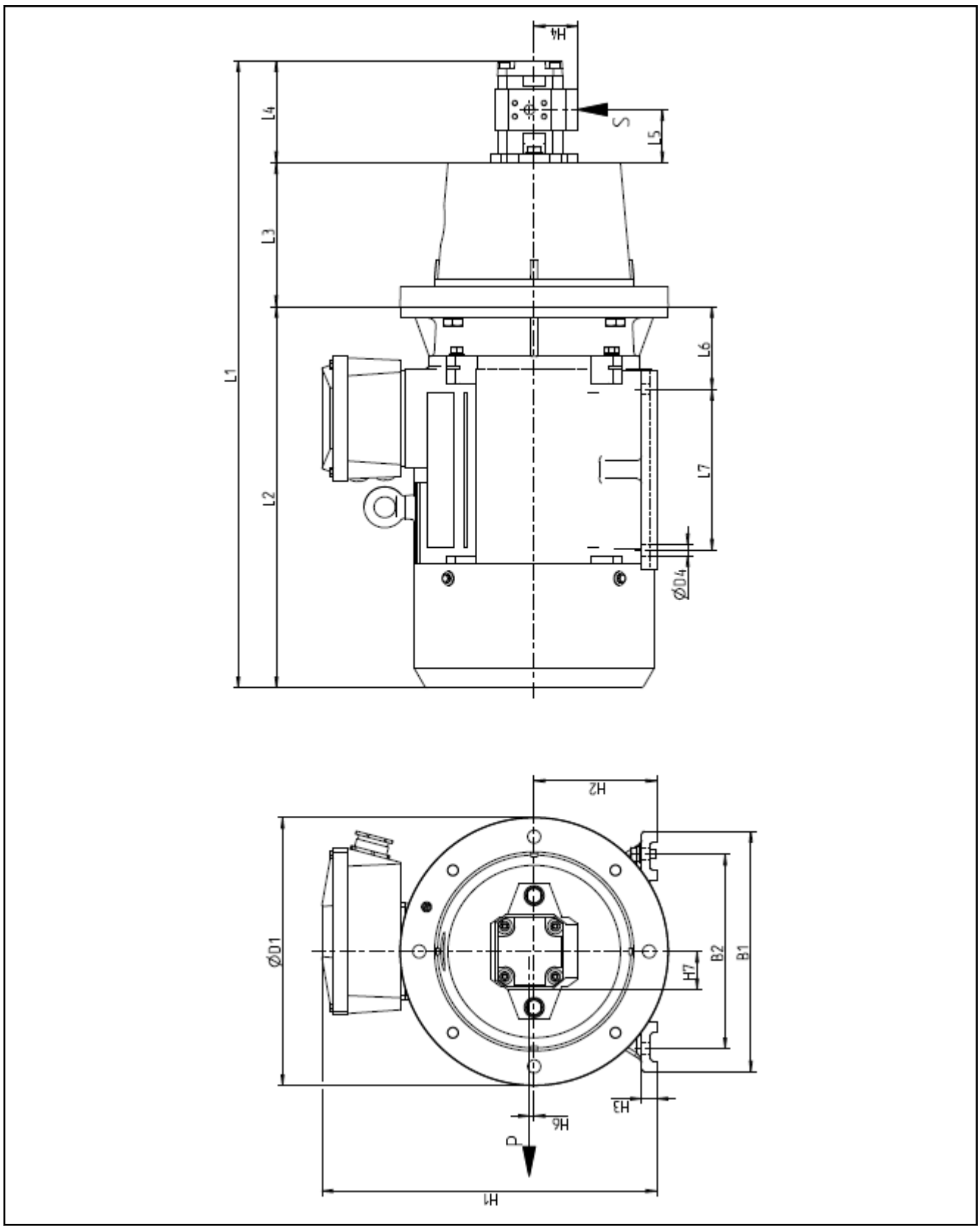

Fig. 15-6: Dimension sheet "MPES2" with "PGH3" in the fastening mode "A" (horizontal foot fastening)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH3NB-**013**NNNN-V*A-	133	69	57	6,2	50
	MPES2-PGH3NB-**016**NNNN-V*A-	138	71,5	57	6,2	50

Tab. 15-12: "MPES2" with "PGH3", fastening "A"

		L1 (dimension depends on the nominal size)		L2	H1	H2	H3	B1	L3	L6	L7	B2	D1	D4
Motor performance		013	016											
	0011F2S-NPFN-NN	819	824	498	445	160	20	314	188	108	210	254	350	14,5

Tab. 15-13: "MPES2" with "PGH3", fastening "A"

Technical Data

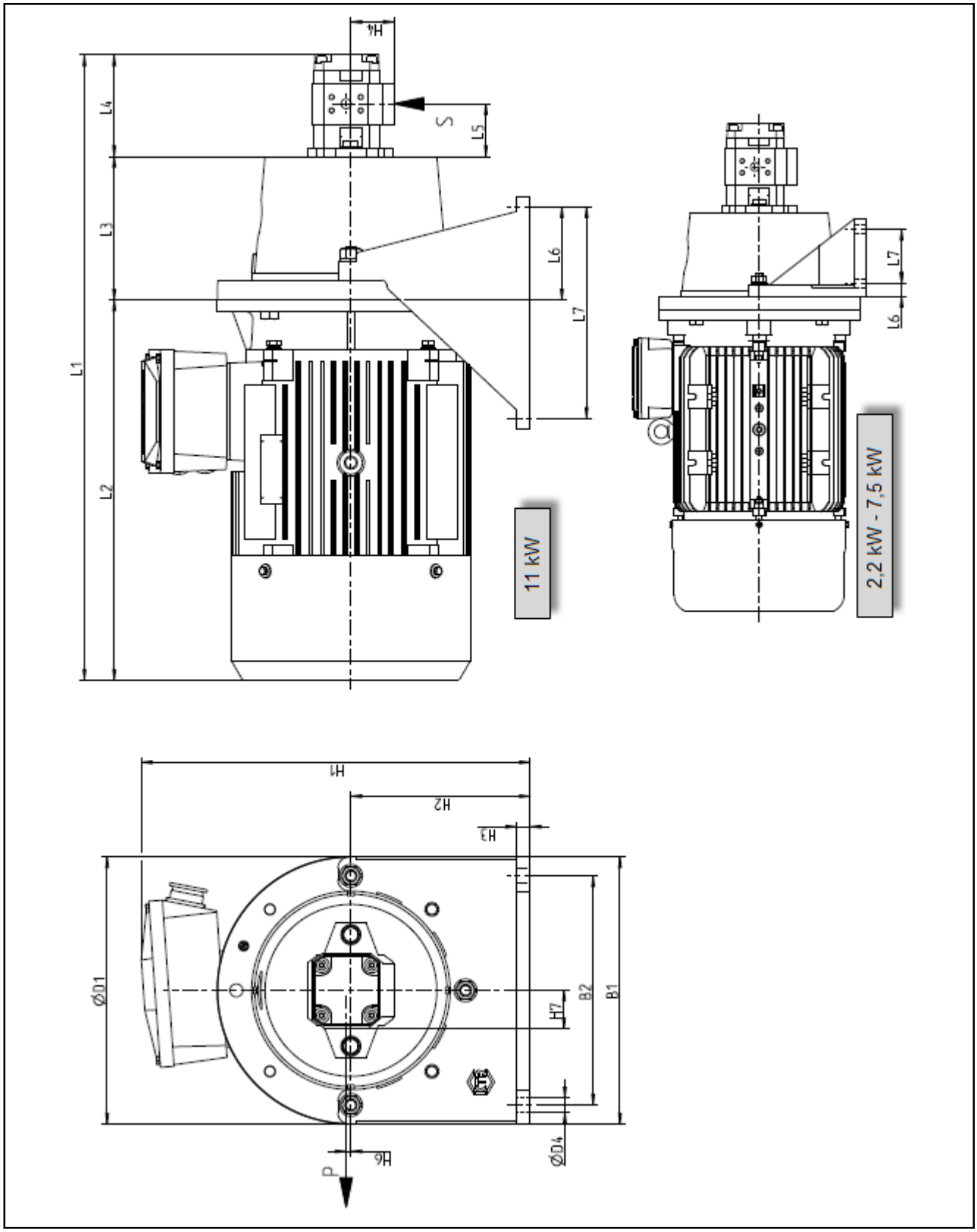

Fig. 15-7: Dimension sheet "MPES2" with "PGH3" in the fastening mode "B" (horizontal foot fastening)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH3NB-**011**NNNN-V*B-	128	66,5	57	6,2	50
	MPES2-PGH3NB-**013**NNNN-V*B-	133	69	57	6,2	50
	MPES2-PGH3NB-**016**NNNN-V*B-	138	71,5	57	6,2	50

Tab. 15-14: "MPES2" with "PGH3", fastening "B"

			L1 (dimension depends on the nominal size)			L2	H1	H2	H3	D1	B1	L3	L6	L7	B2	D4
			011	013	016											
Motor performance	self-ventilated	0003B2S-NPFN-NN	589	.	.	341	279	132	15	250	250	120	40	60	220	13,2
		0004F2S-NPFN-NN	593	598	.	345	345	132	15	250	250	120	40	60	220	13,2
		05,5F2S-NPFN-NN	659	664	669	387	347	160	18	300	290	144	40	80	260	13,2
		07,5F2S-NPFN-NN	720	725	730	448	347	160	18	300	290	144	40	80	260	13,2
		0011F2S-NPFN-NN	.	819	824	498	509	235	18	350	350	188	116	265	300	18
	forced ventilated	02,2B2A-NPFN-NN	692	.	.	444	279	132	15	250	250	120	40	60	220	13,2
		003B2A-NPFN-NN	692	697	702	444	279	132	15	250	250	120	40	60	220	13,2
		0004F2A-NPFN-NN	750	755	760	502	300	132	15	250	250	120	40	60	220	13,2
		05,5F2A-NPFN-NN	884	889	894	612	347	160	18	300	290	144	40	80	260	13,2
		07,5F2A-NPFN-NN	.	917	922	640	347	160	18	300	290	144	40	80	260	13,2

Tab. 15-15: "MPES2" with "PGH3", fastening "B"

Technical Data

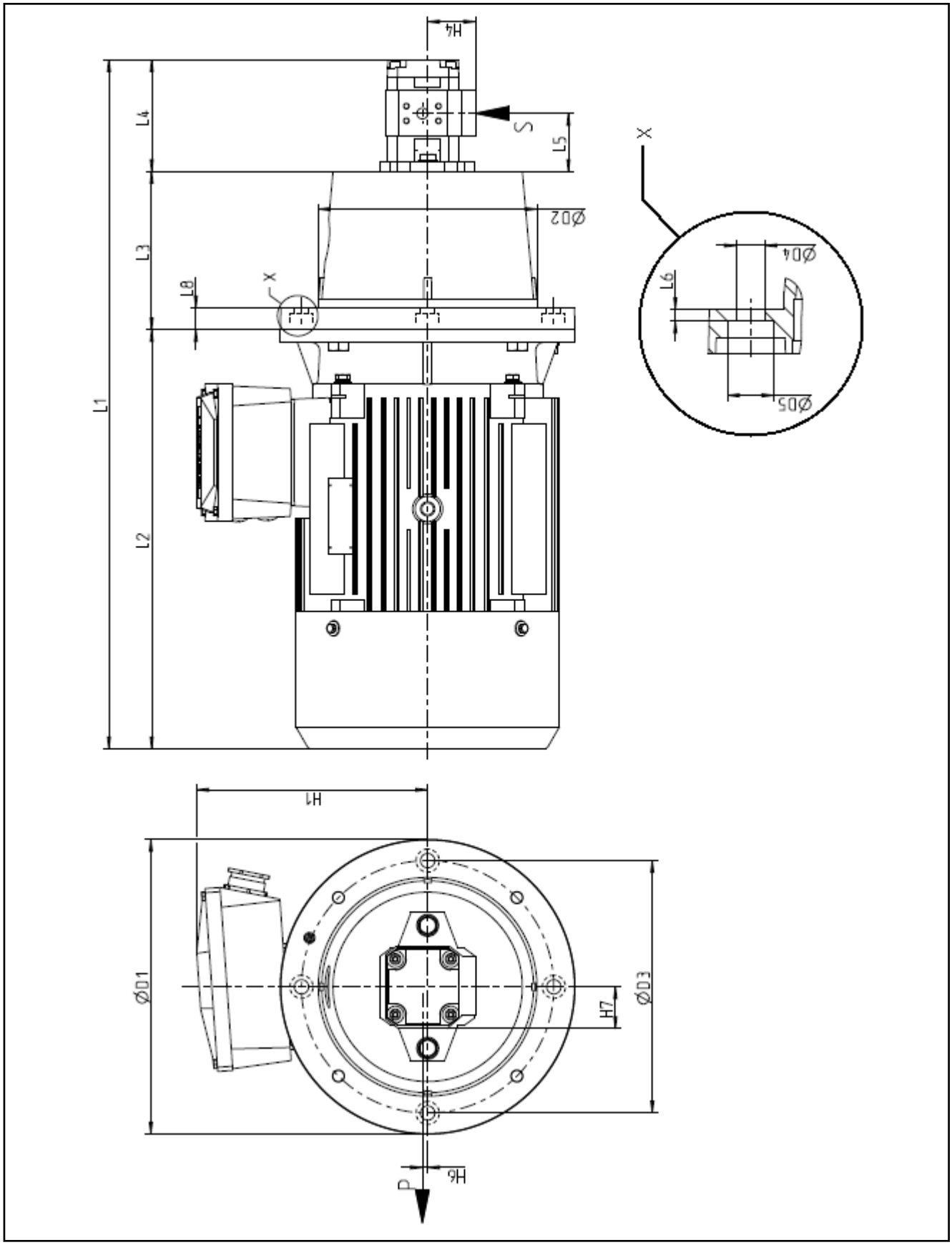

Fig. 15-8: Dimension sheet "MPES2" with "PGH3" in the fastening mode "V" (vertical flange fastening, without foot)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH3NB-**011**NNNN-V*V-	128	66,5	57	6,2	50
	MPES2-PGH3NB-**013**NNNN-V*V-	133	69	57	6,2	50
	MPES2-PGH3NB-**016**NNNN-V*V-	138	71,5	57	6,2	50

Tab. 15-16: "MPES2" with "PGH3", fastening "V"

			L1 (dimension depends on the nominal size)			L2	L3	H1	D1	D2	D3	D4	D5	L6	L8
			011	013	016										
Motor performance	self-ventilated	0003B2S-NPFN-NN	589	.	.	341	120	147	250	190	215	13,5	20	4,8	19
		0004F2S-NPFN-NN	593	598	.	345	120	168	250	190	215	13,5	20	4,8	19
		05,5F2S-NPFN-NN	659	664	669	387	144	187	300	234	265	13	21,6	5	20
		07,5F2S-NPFN-NN	720	725	730	448	144	187	300	234	265	13	21,6	5	20
		0011F2S-NPFN-NN	814	819	824	498	188	274	350	260	300	17	27,6	7	26
		0015F2S-NPFN-NN	.	.	868	542	188	274	350	260	300	17	27,6	7	26
	forced ventilated	02,2B2A-NPFN-NN	692	.	.	444	120	147	250	190	215	13,5	20	4,8	19
		0003B2A-NPFN-NN	692	697	702	444	120	147	250	190	215	13,5	20	4,8	19
		0004F2A-NPFN-NN	750	755	760	502	120	168	250	190	215	13,5	20	4,8	19
		05,5F2A-NNFN-NN	884	889	894	612	144	187	300	234	265	13	21,6	5	20
		07,5F2A-NNFN-NN	.	917	922	640	144	187	300	234	265	13	21,6	5	20

Tab. 15-17: "MPES2" with "PGH3", fastening "V"

Technical Data

15.3.4 "MPES2" with "PGH4"

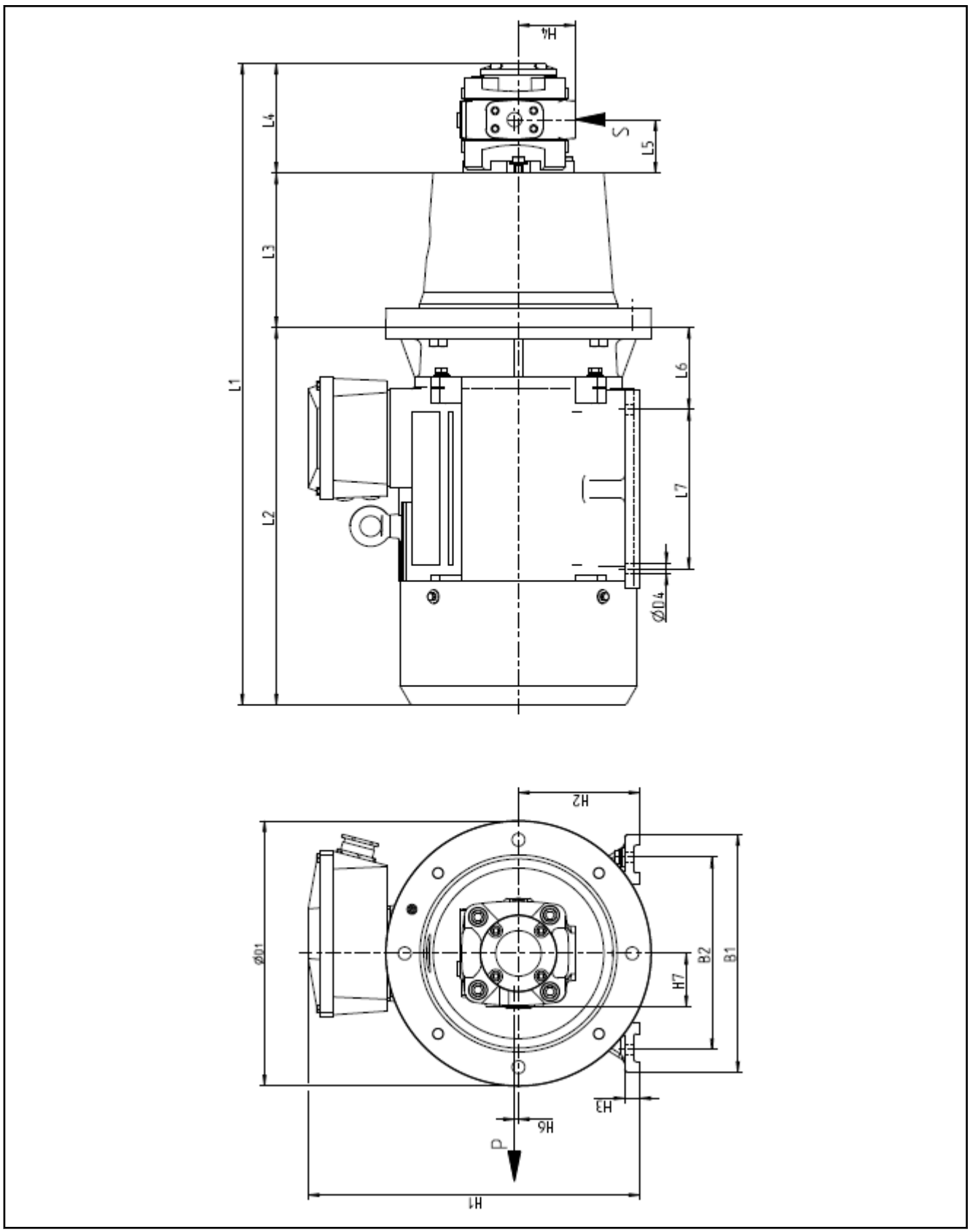

Fig. 15-9: Dimension sheet "MPES2" with "PGH4" in the fastening mode "A" (horizontal foot fastening)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH4ND-**020**NNNN-V*A-	145	70,5	74,6	5,4	70
	MPES2-PGH4ND-**025**NNNN-V*A-	150	73	74,6	5,4	70
	MPES2-PGH4ND-**032**NNNN-V*A-	157	76,5	74,6	5,4	70
	MPES2-PGH4ND-**040**NNNN-V*A-	164	80	74,6	5,4	70
	MPES2-PGH4ND-**050**NNNN-V*A-	174	85	74,6	5,4	70

Tab. 15-18: "MPES2" with "PGH4", fastening "A"

			L1 (dimension depends on the nominal size)					L2	H1	H2	H3	B1	L3	L6	L7	B2	D1	D4
			020	025	032	040	050											
Motor performance	self-ventilated	0011F2S-NPFN-NN	847	852	859	866	.	498	445	160	20	314	204	108	210	254	350	14,5
		0015F2S-NPFN-NN	891	896	903	910	920	542	445	160	20	314	204	108	254	254	350	14,5
		18,5F2S-NPFN-NN	.	932	939	946	956	578	473	180	22	349	204	121	241	279	350	14,5
		0022F2S-NPFN-NN	.	.	977	984	994	616	473	180	22	349	204	121	279	279	350	14,5
		0030F2S-NPFN-NN	.	.	.	1027	1037	659	513	200	25	388	204	133	305	318	400	18,5
		0037F2S-NPFN-NN	.	.	.	.	1075	667	561	225	28	431	234	149	286	356	450	18,5
	forced ventilated	0011F2A-NPFN-NN	1020	1025	1032	1039	1049	671	445	160	20	314	204	108	210	254	350	14,5
		0015F2A-NPFN-NN	.	1069	1076	1083	1093	715	445	160	20	314	204	108	254	254	350	14,5
		18,5F2A-NPFN-NN	.	.	1156	1163	1173	795	473	180	22	349	204	121	279	279	350	14,5
		0022F2A-NPFN-NN	.	.	1194	1201	1211	833	473	180	22	349	204	121	279	279	350	14,5
		0030F2A-NPFN-NN	.	.	.	.	1282	904	513	200	25	388	204	133	318	318	400	18,5

Tab. 15-19: "MPES2" with "PGH4", fastening "A"

Technical Data

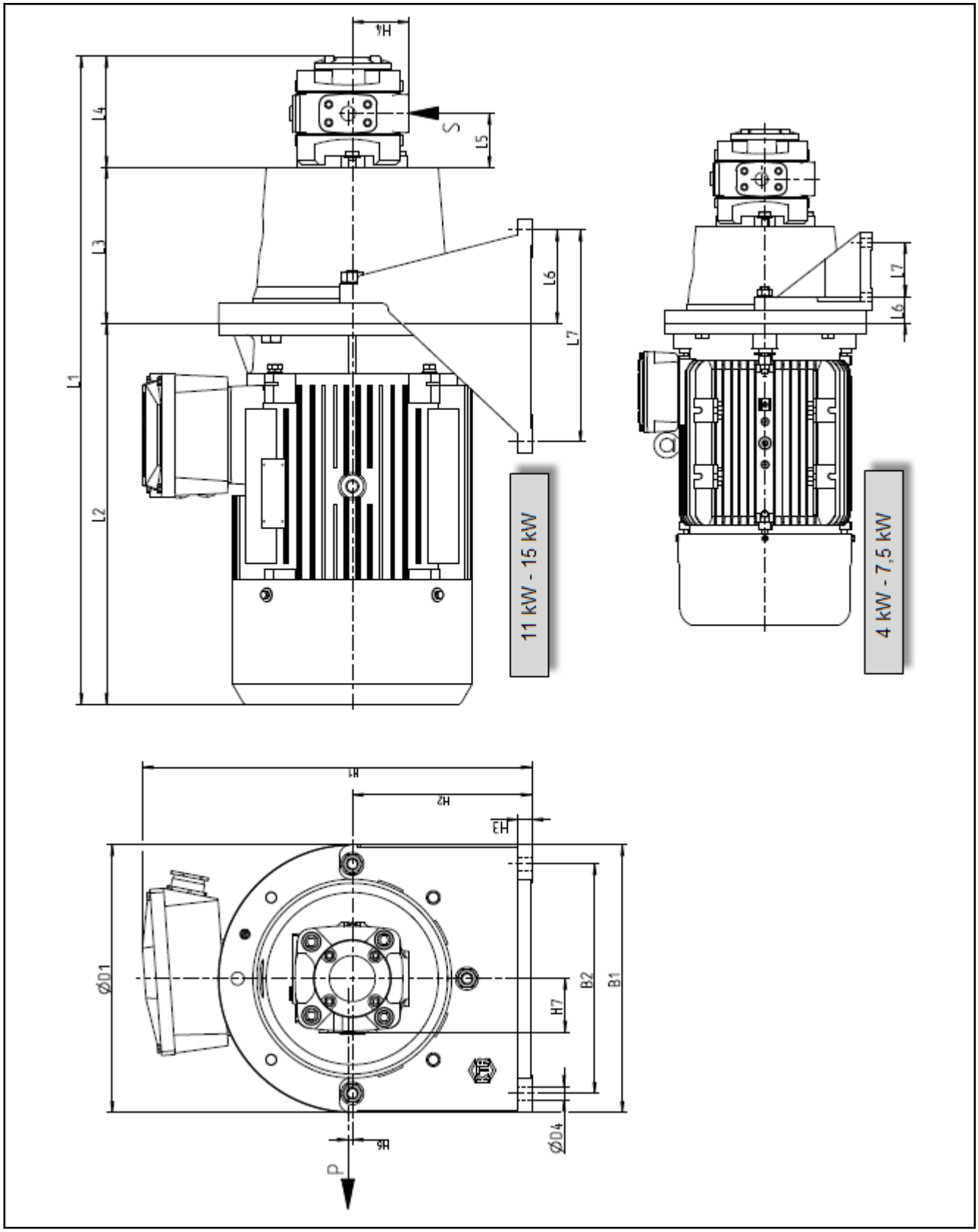

Fig. 15-10: Dimension sheet "MPES2" with "PGH4" in the fastening mode "B" (horizontal foot fastening)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH4ND-**020**NNNN-V*B-	145	70,5	74,6	5,4	70
	MPES2-PGH4ND-**025**NNNN-V*B-	150	73	74,6	5,4	70
	MPES2-PGH4ND-**032**NNNN-V*B-	157	76,5	74.6	5,4	70
	MPES2-PGH4ND-**040**NNNN-V*B-	164	80	74,6	5,4	70
	MPES2-PGH4ND-**050**NNNN-V*B-	174	85	74,6	5,4	70

Tab. 15-20: "MPES2" with "PGH4", fastening "B"

			L1 (dimension depends on the nominal size)					L2	H1	H2	H3	D1	B1	L3	L6	L7	B2	D4
			020	025	032	040	050											
Motor performance	self-ventilated	05,5F2S-NPFN-NN	700	.	.	.	.	387	347	160	18	300	290	168	40	80	260	13,2
		07,5F2S-NPFN-NN	761	766	.	.	.	448	347	160	18	300	290	168	40	80	260	13,2
		0011F2S-NPFN-NN	847	852	859	866	.	498	509	235	18	350	350	204	116	265	300	18
		0015F2S-NPFN-NN	891	896	903	910	920	542	509	235	18	350	350	204	116	265	300	18
	forced ventilated	0004F2A-NPFN-NN	795	.	.	.	.	502	300	132	15	250	250	148	40	60	220	13,2
		05,5F2A-NPFN-NN	925	930	.	.	.	612	347	160	18	300	290	168	40	80	260	13,2
		07,5F2A-NPFN-NN	953	958	965	972	.	640	347	160	18	300	290	168	40	80	260	13,2
		0011F2A-NPFN-NN	1020	1025	1032	1039	1049	671	509	235	18	350	350	204	116	265	300	18
		0015F2S-NPFN-NN	.	1069	1076	1083	1093	715	509	235	18	350	350	204	116	265	300	18

Tab. 15-21: "MPES2" with "PGH4", fastening "B"

Technical Data

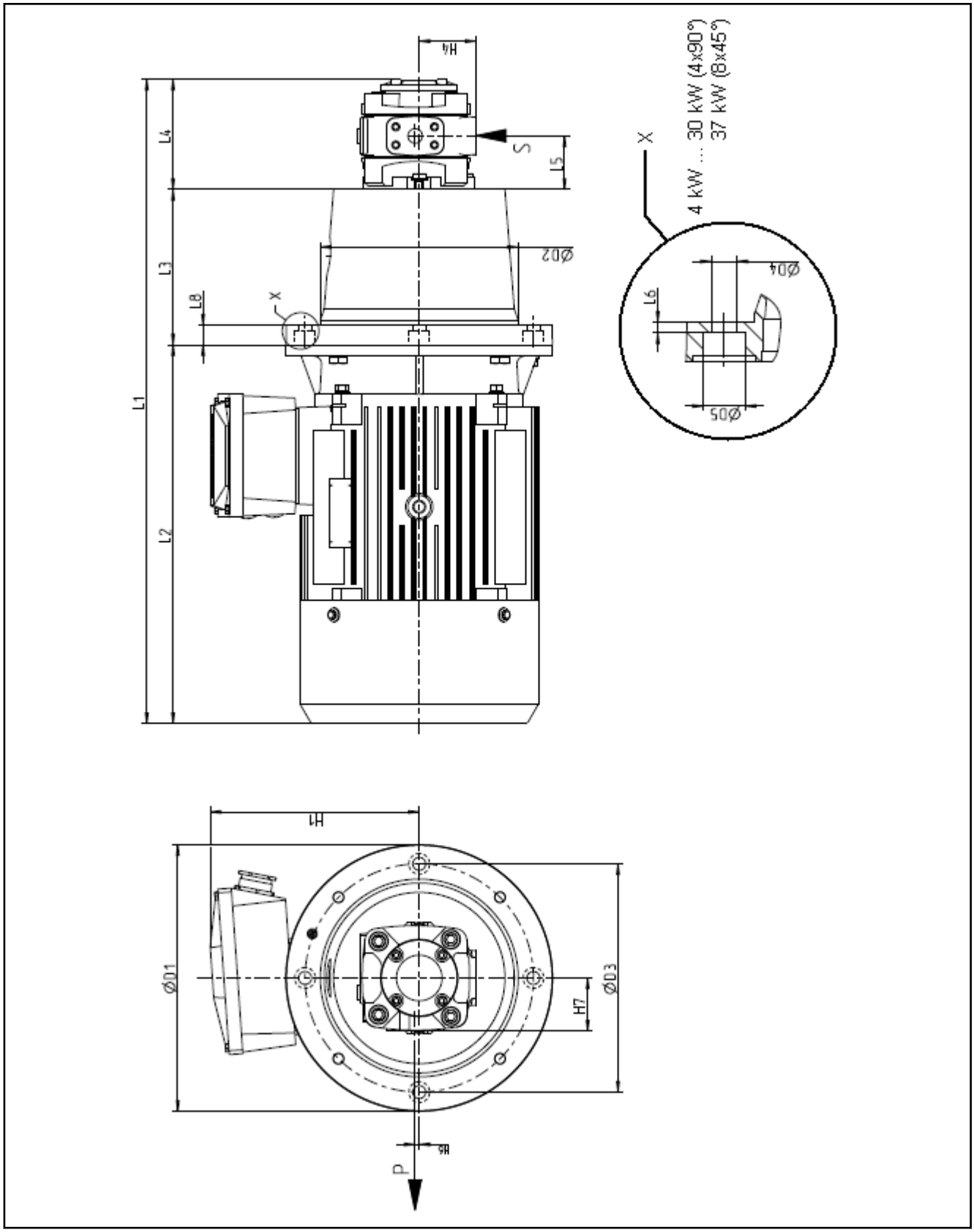

Fig. 15-11: Dimension sheet "MPES2" with "PGH4" in the fastening mode "V" (vertical flange fastening, without foot)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH4ND-**020**NNNN-V*V-	145	70,5	74,6	5,4	70
	MPES2-PGH4ND-**025**NNNN-V*V-	150	73	74,6	5,4	70
	MPES2-PGH4ND-**032**NNNN-V*V-	157	76,5	74,6	5,4	70
	MPES2-PGH4ND-**040**NNNN-V*V-	164	80	74,6	5,4	70
	MPES2-PGH4ND-**050**NNNN-V*V-	174	85	74,6	5,4	70

Tab. 15-22: "MPES2" with "PGH4", fastening "V"

			L1 (dimension depends on the nominal size)					L2	L3	H1	D1	D2	D3	D4	D5	L6	L8
			020	025	032	040	050										
Motor performance	self-ventilated	05,5F2S-NPFN-NN	700	.	.	.	.	387	168	187	300	234	265	13	21,6	5	20
		07,5F2S-NPFN-NN	761	766	.	.	.	448	168	187	300	234	265	13	21,6	5	20
		0011F2S-NPFN-NN	847	852	859	866	.	498	204	274	350	260	300	17	27,6	7	26
		0015F2S-NPFN-NN	891	896	903	910	920	542	204	274	350	260	300	17	27,6	7	26
		18,5F2S-NPFN-NN	.	932	939	946	956	578	204	297	350	260	300	17	27,6	7	26
		0022F2S-NPFN-NN	.	.	977	984	994	616	204	297	350	260	300	17	27,6	7	26
		0030F2S-NPFN-NN	.	.	.	1027	1037	659	204	313	400	300	350	17,5	32	7	26
		0037F2S-NPFN-NN	.	.	.	.	1075	667	234	336	450	350	400	17	36	7	25
	forced ventilated	0004F2A-NPFN-NN	795	.	.	.	.	502	148	168	250	190	215	12,9	26	5	18
		05,5F2A-NNFN-NN	925	930	.	.	.	612	168	187	300	234	265	13	21,6	5	20
		07,5F2A-NNFN-NN	953	958	965	972	.	640	168	187	300	234	265	13	21,6	5	20
		0011F2A-NPFN-NN	1020	1025	1032	1039	1049	671	204	274	350	260	300	17	27,6	7	26
		0015F2A-NPFN-NN	.	1069	1076	1083	1093	715	204	274	350	260	300	17	27,6	7	26
		18,5F2A-NPFN-NN	.	.	1156	1163	1173	795	204	297	350	260	300	17	27,6	7	26
		0022F2A-NPFN-NN	.	.	1194	1201	1211	833	204	297	350	260	300	17	27,6	7	26
		0030F2A-NPFN-NN	.	.	.	.	1282	904	204	313	400	300	350	17,5	32	7	26

Tab. 15-23: "MPES2" with "PGH4", fastening "V"

Technical Data

15.3.5 "MPES2" with "PGH5"

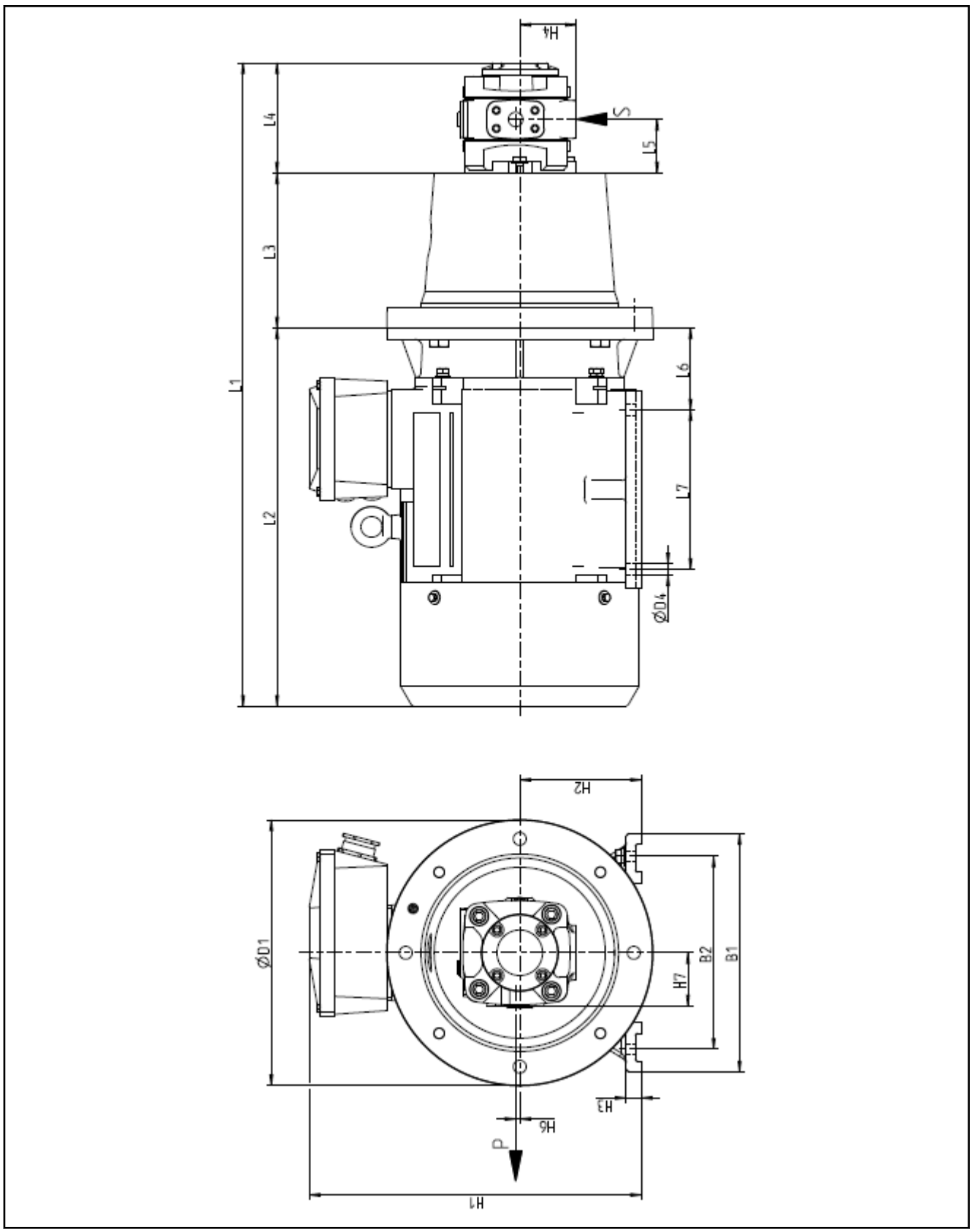

Fig. 15-12: Dimension sheet "MPES2" with "PGH5" in the fastening mode "A" (horizontal foot fastening)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH5ND-**063**NNNN-V*A-	210	105,5	105,3	7,7	99
	MPES2-PGH5ND-**080**NNNN-V*A-	218	109,5	105,3	7,7	99
	MPES2-PGH5ND-**100**NNNN-V*A-	227	114	105,3	7,7	99
	MPES2-PGH5ND-**125**NNNN-V*A-	239	120	105,3	7,7	99
	MPES2-PGH5ND-**160**NNNN-V*A-	257	129	105,3	7,7	99
	MPES2-PGH5ND-**200**NNNN-V*A-	275	138	105,3	7,7	99
	MPES2-PGH5ND-**250**NNNN-V*A-	299	150	105,3	7,7	99

Tab. 15-24: "MPES2" with "PGH5", fastening "A"

			L1 (dimension depends on the nominal size)							L2	H1	H2	H3	B1	L3	L6	L7	B2	D1	D4
			063	080	100	125	160	200	250											
Motor performance	self-ventilated	18,5F2S-NPFN-NN	1016	.	.	.	.	.	.	578	473	180	22	349	228	121	241	279	350	14,5
		0022F2S-NPFN-NN	1054	1062	.	.	.	.	.	616	473	180	22	349	228	121	279	279	350	14,5
		0030F2S-NPFN-NN	1097	1105	1114	.	.	.	.	659	513	200	25	388	228	133	305	318	400	18,5
		0037F2S-NPFN-NN	1139	1147	1156	1168	.	.	.	667	561	225	28	431	262	149	286	356	450	18,5
		0045F2S-NPFN-NN	1164	1172	1181	1193	.	.	.	692	561	225	28	431	262	149	311	356	450	18,5
		0055F2S-NPFN-NN	1245	1253	1262	1274	1292	1310	.	770	624	250	30	484	265	168	349	406	550	24
		0075F2S-NPFN-NN	.	.	1307	1319	1337	1355	1379	815	683	280	35	542	265	190	368	457	550	24
		0090F2S-NPFN-NN	.	.	.	.	1388	1406	1430	866	683	280	35	542	265	190	419	457	550	24
	forced ventilated	0015F2A-NPFN-NN	1153	1161	.	.	.	.	.	715	445	160	20	314	228	108	254	254	350	14,5
		18,5F2A-NPFN-NN	1233	1241	1250	.	.	.	.	795	473	180	22	349	228	121	279	279	350	14,5
		0022F2A-NPFN-NN	1271	1279	1288	.	.	.	.	833	473	180	22	349	228	121	279	279	350	14,5
		0030F2A-NPFN-NN	1342	1350	1359	1371	1389	.	.	904	513	200	25	388	228	133	318	318	400	18,5
		0037F2A-NPFN-NN	1382	1390	1399	1411	1429	.	.	910	561	225	28	431	262	149	286	356	450	18,5
		0045F2A-NPFN-NN	.	1415	1424	1436	1445	1472	.	935	561	225	28	431	262	149	311	356	450	18,5
		0055F2A-NPFN-NN	.	.	1500	1512	1530	1548	1572	1008	624	250	30	484	265	168	349	406	550	24
		0075F2A-NPFN-NN	.	.	.	1613	1631	1649	1673	1109	683	280	35	542	265	190	368	457	550	24

Tab. 15-25: "MPES2" with "PGH5", fastening "A"

Technical Data

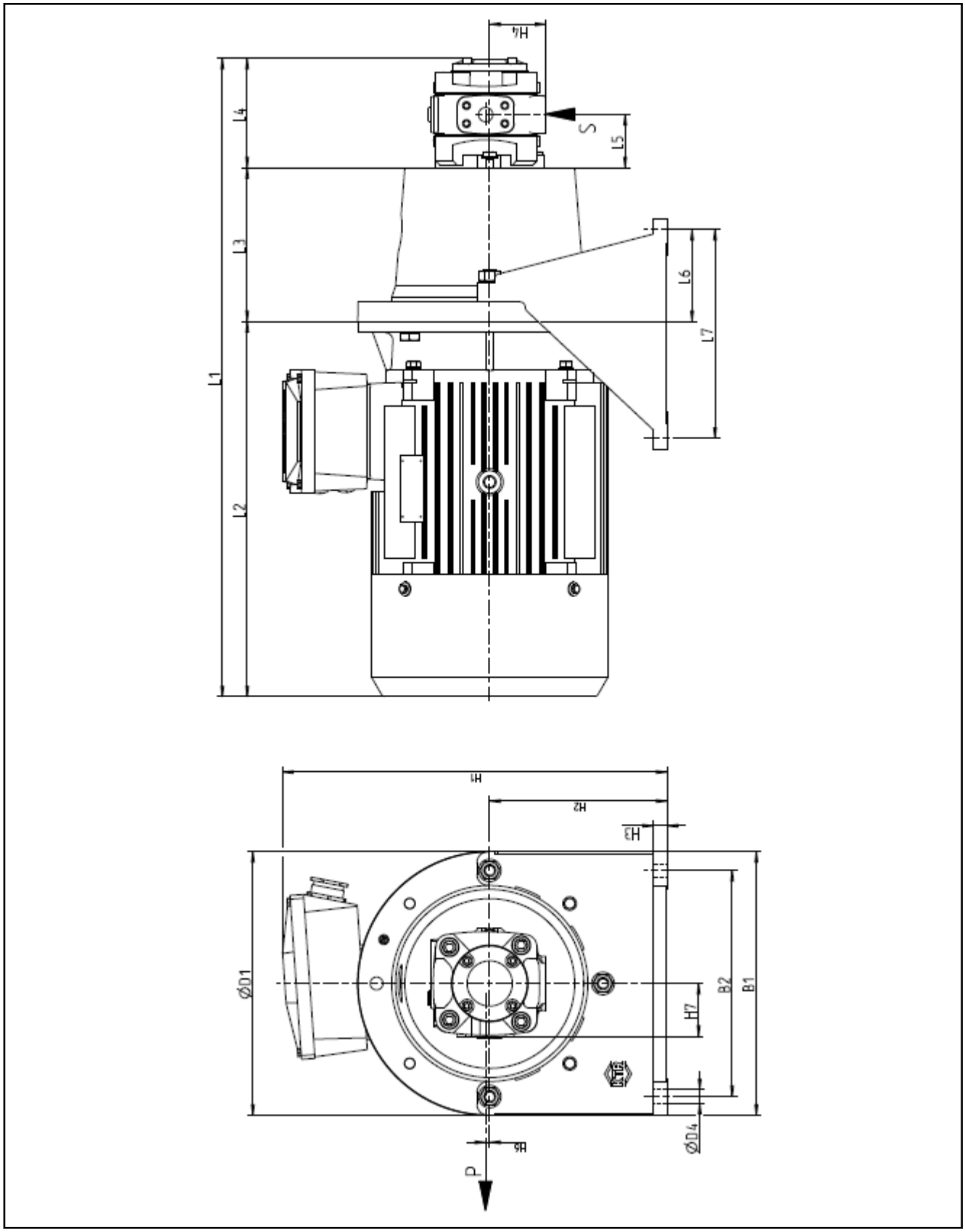

Fig. 15-13: Dimension sheet "MPES2" with "PGH5" in the fastening mode "B" (horizontal foot fastening)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH5ND-**063**NNNN-V*B-	210	106	105,3	7,7	99
	MPES2-PGH5ND-**080**NNNN-V*B-	218	109,5	105,3	7,7	99

Tab. 15-26: "MPES2" with "PGH5", fastening "B"

		L1 (dimension depends on the nominal size)		L2	H1	H2	H3	D1	B1	L3	L6	L7	B2	D4
		063	080											
Motor performance	0015F2A-NPFN-NN	1153	1161	715	509	235	18	350	350	228	116	265	300	18

Tab. 15-27: "MPES2" with "PGH5", fastening "B"

LSA Control S.L. www.lsa-control.com comercial@lsa-control.com (+34) 960 62 43 01

Technical Data

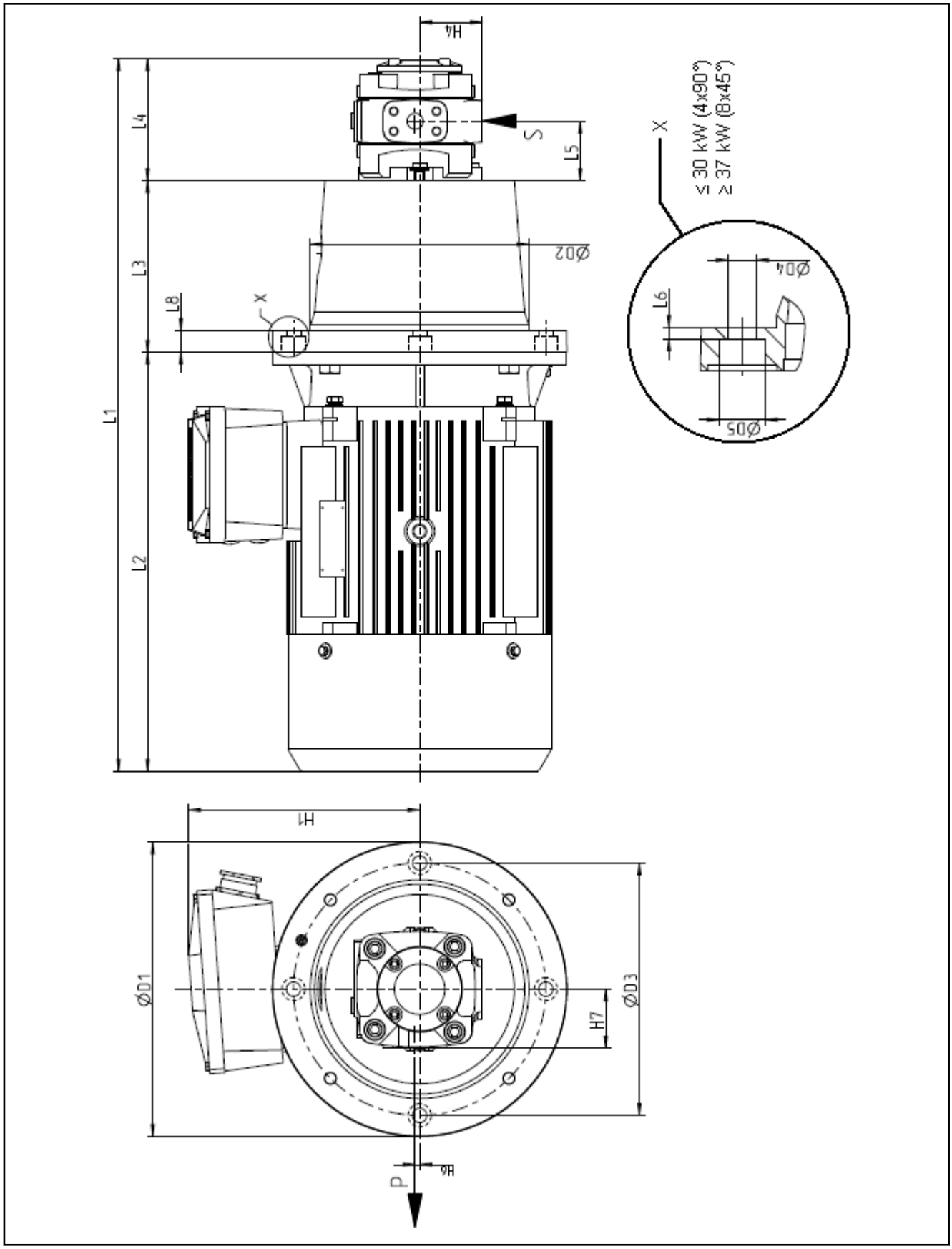

Fig. 15-14: Dimension sheet "MPES2" with "PGH5" in the fastening mode "V" (vertical flange fastening, without foot)

		L4	L5	H4	H6	H7
Nominal size	MPES2-PGH5ND-**063**NNNN-V*V-	210	106	105,3	7,7	99,0
	MPES2-PGH5ND-**080**NNNN-V*V-	218	109,5	105,3	7,7	99,0
	MPES2-PGH5ND-**100**NNNN-V*V-	227	114	105,3	7,7	99,0
	MPES2-PGH5ND-**125**NNNN-V*V-	239	120	105,3	7,7	99,0
	MPES2-PGH5ND-**160**NNNN-V*V-	257	129	105,3	7,7	99,0
	MPES2-PGH5ND-**200**NNNN-V*V-	275	138	105,3	7,7	99,0
	MPES2-PGH5ND-**250**NNNN-V*V-	299	150	105,3	7,7	99,0

Tab. 15-28: "MPES2" with "PGH5", fastening "V"

			L1 (dimension depends on the nominal size)							L2	L3	H1	D1	D2	D3	D4	D5	L6	L8
			063	080	100	125	160	200	250										
Motor performance	self-ventilated	0004F2S-NPFN-NN	675	.	.	.	.	.	.	345	120	168	250	190	215	13,5	20	4,8	19
		05,5F2S-NPFN-NN	741	749	758	.	.	.	.	387	144	187	300	234	265	13	21,6	5	20
		07,5F2S-NPFN-NN	802	810	819	831	.	.	.	448	144	187	300	234	265	13	21,6	5	20
		0011F2S-NPFN-NN	936	944	953	965	983	1001	.	498	228	274	350	260	300	17,5	27,6	7	26
		0015F2S-NPFN-NN	980	988	997	1009	1027	1045	1045	542	228	274	350	260	300	17,5	27,6	7	26
		18,5F2S-NPFN-NN	1016	.	.	.	.	.	.	578	228	297	350	260	300	17,5	27,6	7	26
		0022F2S-NPFN-NN	1054	1062	.	.	.	.	.	616	228	297	350	260	300	17,5	27,6	7	26
		0030F2S-NPFN-NN	1097	1105	1114	.	.	.	.	659	228	313	400	300	350	17,5	32	7	26
		0037F2S-NPFN-NN	1139	1147	1156	1168	.	.	.	667	262	336	450	350	400	17,5	32	7	26
		0045F2S-NPFN-NN	1164	1172	1181	1193	1211	.	.	692	262	336	450	350	400	17,5	32	7	26
		0055F2S-NPFN-NN	.	.	1262	1274	1292	1310	.	770	265	374	550	450	500	17	32	8	26
		0075F2S-NPFN-NN	.	.	.	1329	1347	1365	1389	815	275	403	550	450	500	17	34	9	26
		0090F2S-NPFN-NN	.	.	.	1380	1398	1416	1440	866	275	403	550	450	500	17	34	9	26
	forced ventilated	0015F2A-NPFN-NN	1153	1161	.	.	.	.	.	715	228	274	350	260	300	17,5	27,6	7	26
		18,5F2A-NPFN-NN	1233	1241	1250	1262	1280	1298	1322	795	228	297	350	260	300	17,5	27,6	7	26
		0022F2A-NPFN-NN	1271	1279	1288	1300	1318	1336	1360	833	228	297	350	260	300	17,5	27,6	7	26
		0030F2A-NPFN-NN	1342	1350	1359	1371	1389	1407	1431	904	228	313	400	300	350	17,5	32	7	26
		0037F2A-NPFN-NN	1382	1390	1399	1411	1429	1447	1471	910	262	336	450	350	400	17,5	32	7	26
		0045F2A-NPFN-NN	1407	1415	1424	1436	1454	1472	1496	935	262	336	450	350	400	17,5	32	7	26
		0055F2A-NPFN-NN	.	1491	1500	1512	1530	1548	1572	1008	265	374	550	450	500	17	32	8	26
		0075F2A-NPFN-NN	.	.	1611	1623	1641	1659	1683	1109	275	403	550	450	500	17	34	9	26
		0090F2A-NPFN-NN	.	.	.	.	.	.	.	1160	275	403	550	450	500	17	34	9	26

Tab. 15-29: "MPES2" with "PGH5", fastening "V"

Technical Data

15.3.6 "MPES2" with "A10VZO"

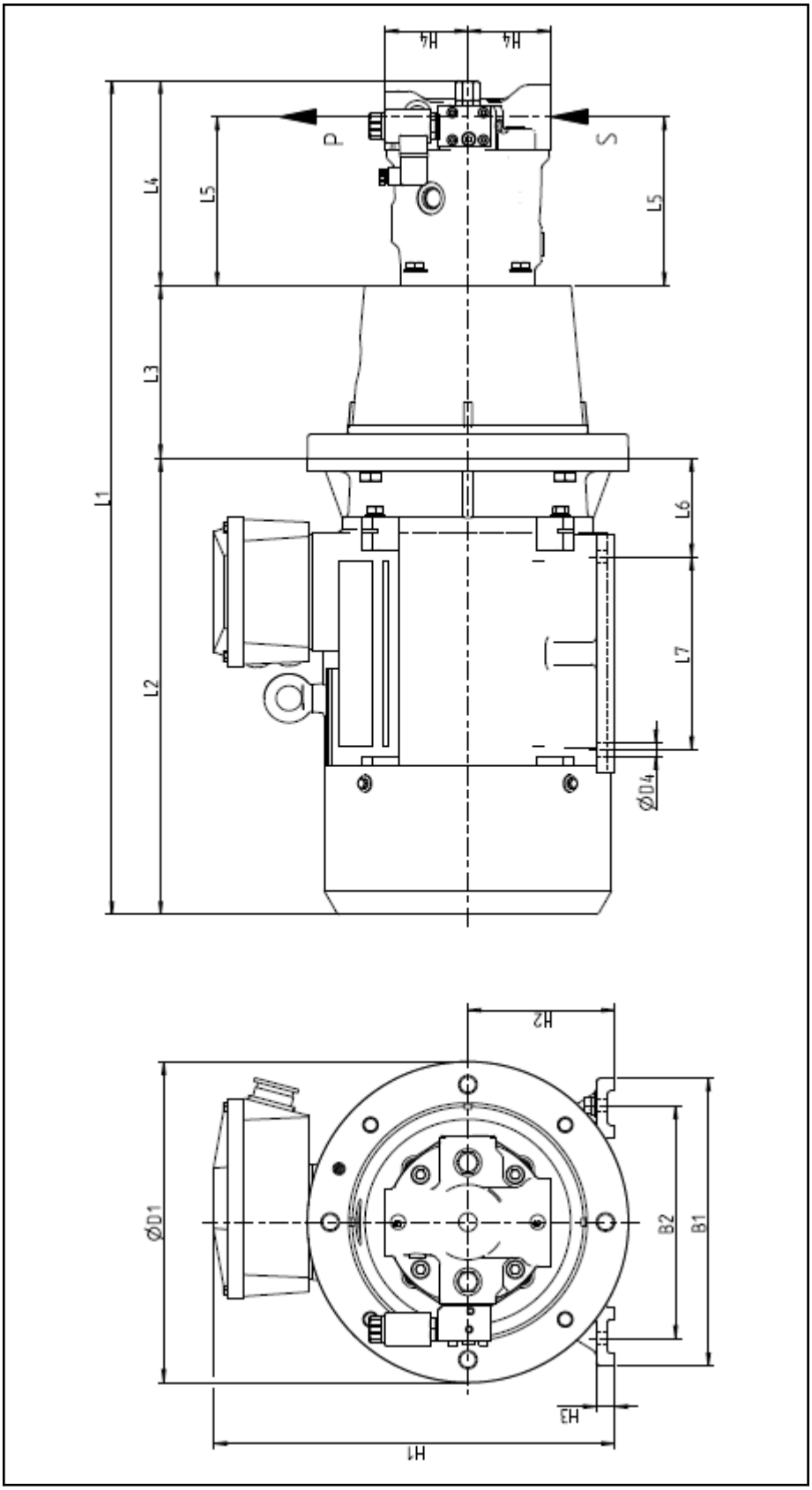

Fig. 15-15: Dimension sheet "MPES2" with "A10VZO" in the fastening mode "A" (horizontal foot fastening)

		L4	L5	H4
Nominal size	MPES2-10VZ4M-**028**NNNN-V*A-	206	164	80
	MPES2-10VZ4M-**045**NNNN-V*A-	224	184	90
	MPES2-10VZ4M-**071**NNNN-V*A-	257	217	104
	MPES2-10VZ4M-**100**NNNN-V*A-	314	260	100
	MPES2-10VZ4M-**140**NNNN-V*A-	338	317	110
	MPES2-10VZ4M-**180**NNNN-V*A-	387	285	110

Tab. 15-30: "MPES2" with "A10VZO", fastening "A"

		L1 (dimension depends on the nominal size)						L2	H1	H2	H3	B1	L3	L6	L7	B2	D1	D4
		028	045	071	100	140	180											
Motor performance	0011F2S-NPFN-NN	892	910	.	.	.	.	498	445	160	20	314	188	108	210	254	350	14,5
	0015F2S-NPFN-NN	936	954	987	.	.	.	542	445	160	20	314	188	108	254	254	350	14,5
	18,5F2S-NPFN-NN	.	1006	1039	1096	.	.	578	473	180	22	349	204	121	241	279	350	14,5
	0022F2S-NPFN-NN	.	1044	1077	1134	.	.	616	473	180	22	349	204	121	279	279	350	14,5
	0030F2S-NPFN-NN	.	.	1120	.	.	.	659	513	200	25	388	204	133	305	318	400	18,5
	0030F2S-NPFN-NN	.	.	.	1201	1225	.	659	513	200	25	388	228	133	305	318	400	18,5
	0037F2S-NPFN-NN	.	.	1158	.	.	.	667	561	225	28	431	234	149	286	356	450	18,5
	0037F2S-NPFN-NN	.	.	.	1215	.	.	667	561	225	28	431	234	149	286	356	450	18,5
	0037F2S-NPFN-NN	.	.	.	.	1258	1307	667	561	225	28	431	253	149	286	356	450	18,5
	0045F2S-NPFN-NN	.	.	.	1259	1283	1332	692	561	225	28	431	253	149	311	356	450	18,5
	0055F2S-NPFN-NN	.	.	.	1332	1356	1405	770	624	250	30	484	248	168	349	406	550	24
	0075F2S-NPFN-NN	.	.	.	.	1418	1467	815	683	280	35	542	265	190	368	457	550	24
	0090F2S-NPFN-NN	.	.	.	.	.	1518	866	683	280	35	542	265	190	419	457	550	24

Tab. 15-31: "MPES2" with "A10VZO", fastening "A"

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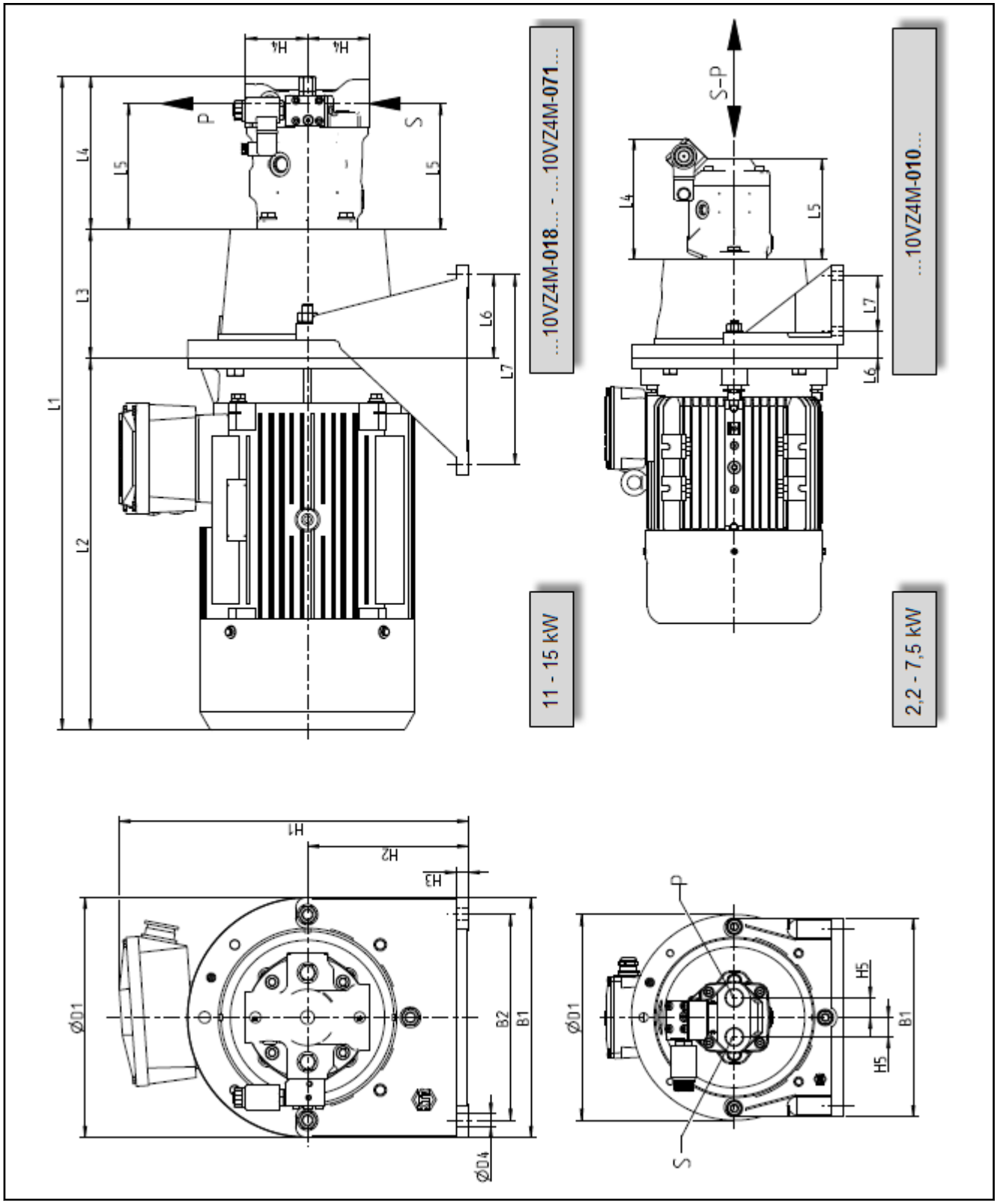

Fig. 15-16: Dimension sheet "MPES2" with "A10VZO" in fastening mode "B" [horizontal foot fastening for motors from 2.2 up to 15 kW]

		L4	L5	H4	H5
Nominal size	MPES2-10VZ4M-**010**NNNN-V*B-	180	148	0	28,6
	MPES2-10VZ4M-**018**NNNN-V*B-	196	145	63	.
	MPES2-10VZ4M-**028**NNNN-V*B-	206	164	80	.
	MPES2-10VZ4M-**045**NNNN-V*B-	224	184	90	.
	MPES2-10VZ4M-**071**NNNN-V*B-	257	217	104	.

Tab. 15-32: "MPES2" with "A10VZO", fastening "B"

		L1 (dimension depends on the nominal size)					L2	H1	H2	H3	D1	B1	L3	L6	L7	B2	D4
		010	018	028	045	071											
Motor performance	02.2B2S-NPFN-NN	641	.	.	.	.	341	279	132	15	250	250	120	40	60	220	13,2
	0003F2S-NPFN-NN	641	.	.	.	.	341	279	132	15	250	250	120	40	60	220	13,2
	0004F2S-NPFN-NN	645	661	.	.	.	345	300	132	15	250	250	120	40	60	220	13,2
	05,5F2S-NPFN-NN	711	727	737	.	.	387	347	160	18	300	290	144	40	80	260	13,2
	07,5F2S-NPFN-NN	.	788	798	.	.	448	347	160	18	300	290	144	40	80	260	13,2
	0011F2S-NPFN-NN	.	.	892	910	.	498	509	235	18	350	350	188	116	265	300	18
	0015F2S-NPFN-NN	.	.	936	954	987	542	509	235	18	350	350	188	116	265	300	18

Tab. 15-33: "MPES2" with "A10VZO", fastening "B"

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Technical Data

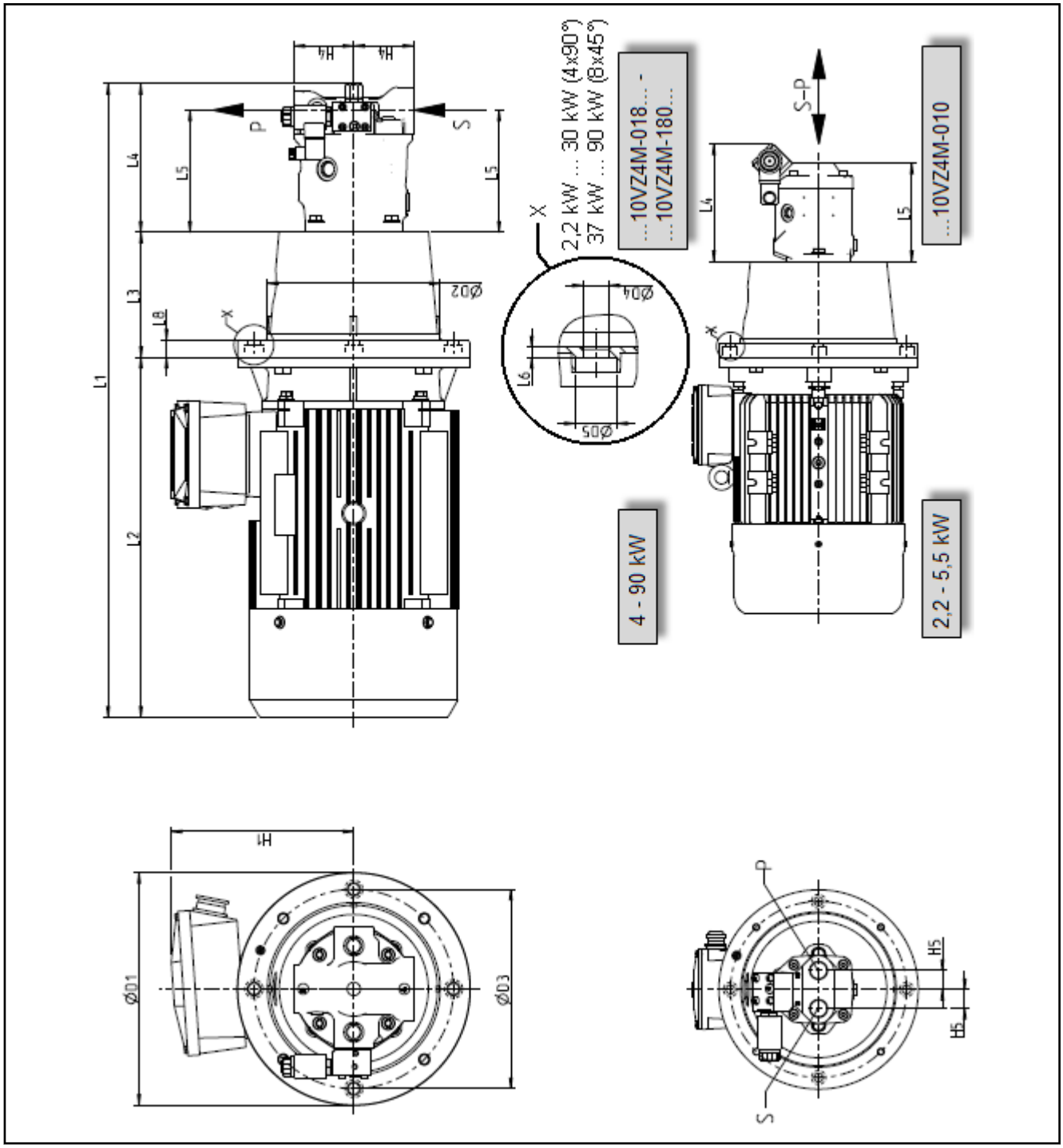

Fig. 15-17: Dimension sheet "MPES2" with "A10VZO" in the fastening mode "V" (vertical flange fastening, without foot)

		L4	L5	H4	H5
Nominal size	MPES2-10VZ4M-**010**NNNN-V*V-	180	148	0	28,6
	MPES2-10VZ4M-**018**NNNN-V*V-	196	145	63	.
	MPES2-10VZ4M-**028**NNNN-V*V-	206	164	80	.
	MPES2-10VZ4M-**045**NNNN-V*V-	224	184	90	.
	MPES2-10VZ4M-**071**NNNN-V*V-	257	217	104	.
	MPES2-10VZ4M-**100**NNNN-V*V-	314	260	100	.
	MPES2-10VZ4M-**140**NNNN-V*V-	338	317	110	.
	MPES2-10VZ4M-**180**NNNN-V*V-	387	285	110	.

Tab. 15-34: "MPES2" with "A10VZO", fastening "V"

		L1 (dimension depends on the nominal size)								L2	L3	H1	D1	D2	D3	D4	D5	L6	L8
		010	018	028	045	071	100	140	180										
Motor performance	02,2B2S-NPFN-NN	641	.	.	.	.	.	.	.	341	120	147	250	190	215	13,5	20	4,8	19
	0003B2S-NPFN-NN	641	.	.	.	.	.	.	.	341	120	147	250	190	215	13,5	20	4,8	19
	0004F2S-NPFN-NN	645	661	.	.	.	.	.	.	345	120	168	250	190	215	13,5	20	4,8	19
	05,5F2S-NPFN-NN	711	727	737	.	.	.	.	.	387	144	187	300	234	265	13	21,6	5	20
	07,5F2S-NPFN-NN	.	788	798	.	.	.	.	.	448	144	187	300	234	265	13	21,6	5	20
	0011F2S-NPFN-NN	.	.	892	910	.	.	.	.	498	188	274	350	260	300	17	27,6	7	26
	0015F2S-NPFN-NN	.	.	936	954	987	.	.	.	542	188	274	350	260	300	17	27,6	7	26
	18,5F2S-NPFN-NN	.	.	.	1006	1039	1096	.	.	578	204	297	350	260	300	17	27,6	7	26
	0022F2S-NPFN-NN	.	.	.	1044	1077	1134	.	.	616	204	297	350	260	300	17	27,6	7	26
	0030F2S-NPFN-NN	.	.	.	.	1120	.	.	.	659	204	313	400	300	350	17,5	32	7	26
	0030F2S-NPFN-NN	.	.	.	.	.	1201	1225	.	659	228	313	400	300	350	17,5	32	7	26
	0037F2S-NPFN-NN	.	.	.	.	1158	.	.	.	667	234	336	450	350	400	18	44	5	25
	0037F2S-NPFN-NN	.	.	.	.	.	1215	.	.	667	234	336	450	350	400	17	38	7	25
	0037F2S-NPFN-NN	.	.	.	.	.	.	1258	1307	667	253	336	450	350	400	17	34	2,5	25
	0045F2S-NPFN-NN	.	.	.	.	.	1259	1283	1332	692	253	336	450	350	400	17	34	2,5	25
	0055F2S-NPFN-NN	.	.	.	.	.	1332	1356	1405	770	248	374	550	450	500	17,5	30	8,5	26
	0075F2S-NPFN-NN	.	.	.	.	.	.	1418	1467	815	265	403	550	450	500	17	32	8	26
	0090F2S-NPFN-NN	.	.	.	.	.	.	.	1518	866	265	403	550	450	500	17	32	8	26

Tab. 15-35: "MPES2" with "A10VZO", fastening "V"

Technical Data

15.3.7 "MPES2" with "A4VSO"

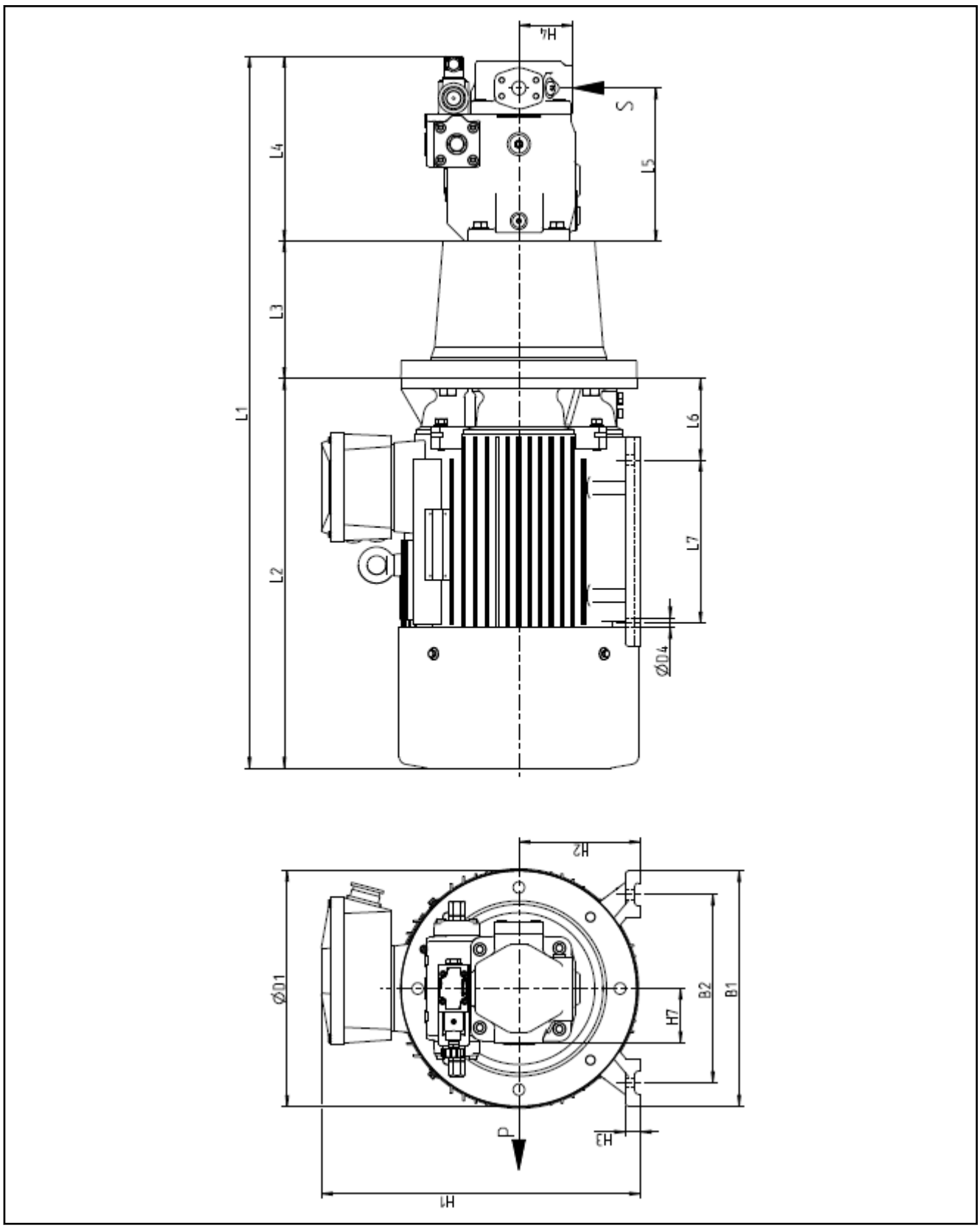

Fig. 15-18: Dimension sheet "MPES2" with "A4VSO" in the fastening mode "A" (horizontal foot fastening)

		L4	L5	H4	H7
Nominal size	MPES2-04VS4S-**040**NNNN-V*A-	274	227	80	80
	MPES2-04VS4S-**071**NNNN-V*A-	301	254	92,5	92,5
	MPES2-04VS4S-**125**NNNN-V*A-	370	310	112,5	112,5
	MPES2-04VS4S-**180**NNNN-V*A-	370	318	116	120

Tab. 15-36: "MPES2" with "A4VSO", fastening "A"

		L1 (dimension depends on the nominal size)				L2	H1	H2	H3	B1	L3	L6	L7	B2	D1	D4
		040	071	125	180											
Motor performance	18,5F2S-NPFN-NN	1056	.	.	.	578	473	180	22	349	204	121	241	279	350	14,5
	0022F2S-NPFN-NN	1094	.	.	.	616	473	180	22	349	204	121	279	279	350	14,5
	0030F2S-NPFN-NN	1137	1164	.	.	659	513	200	25	388	204	133	305	318	400	18,5
	0037F2S-NPFN-NN	.	1202	.	.	667	561	225	28	431	234	149	286	356	450	18,5
	0045F2S-NPFN-NN	.	1255	.	.	692	561	225	28	431	262	149	311	356	450	18,5
	0055F2S-NPFN-NN	.	1336	1405	.	770	624	250	30	484	265	168	349	406	550	24
	0075F2S-NPFN-NN	.	.	1450	1450	815	683	280	35	542	265	190	368	457	550	24
	0090F2S-NPFN-NN	.	.	1501	1501	866	683	280	35	542	265	190	419	457	550	24

Tab. 15-37: "MPES2" with "A4VSO", fastening "A"

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Technical Data

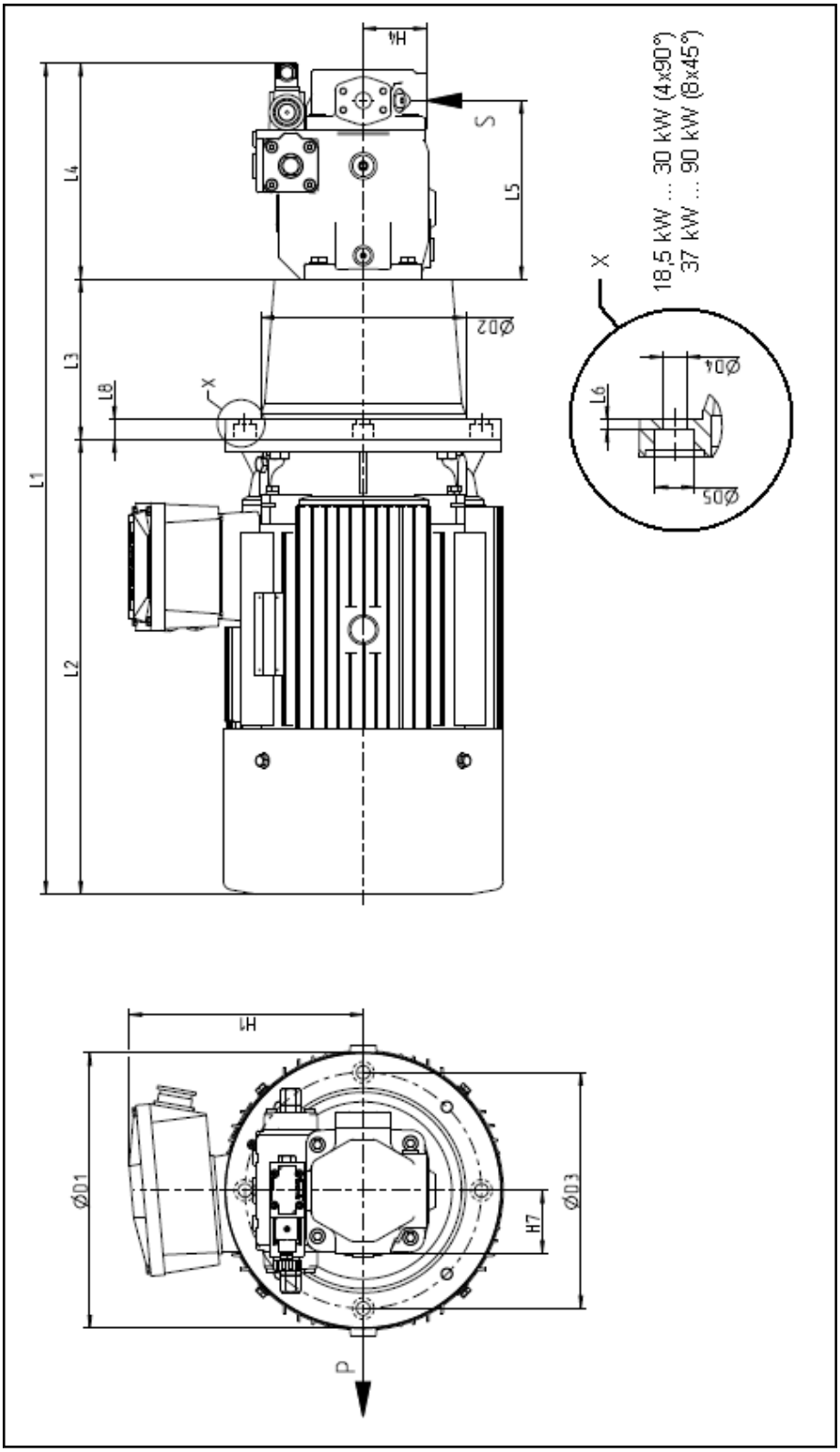

Fig. 15-19: Dimension sheet "MPES2" with "A4VSO" in the fastening mode "V" (vertical flange fastening, without foot)

		L4	L5	H4	H7
Nominal size	MPES2-04VS4S-**040**NNNN-V*V-	274	227	80	80
	MPES2-04VS4S-**071**NNNN-V*V-	301	254	92,5	92,5
	MPES2-04VS4S-**125**NNNN-V*V-	370	310	112,5	112,5
	MPES2-04VS4S-**180**NNNN-V*V-	370	318	116	120

Tab. 15-38: "MPES2" with "A4VSO", fastening "V"

		L1 (dimension depends on the nominal size)				L2	L3	H1	D1	D2	D3	D4	D5	L6	L8
		040	071	125	180										
Motor performance	18,5F2S-NPFN-NN	1056	.	.	.	578	204	297	350	260	300	17	27	7	26
	0022F2S-NPFN-NN	1094	.	.	.	616	204	297	350	260	300	17	27	7	26
	0030F2S-NPFN-NN	1137	960	.	.	659	204	313	400	300	350	17,5	32	7	26
	0037F2S-NPFN-NN	.	1202	.	.	667	234	336	450	350	400	17	38	7	25
	0045F2S-NPFN-NN	.	1255	.	.	692	262	336	450	350	400	17,5	32	7	26
	0055F2S-NPFN-NN	.	1336		.	770	265	374	550	450	500	17	32	8	26
	0075F2S-NPFN-NN	.	.	1450	1450	815	265	403	550	450	500	17	32	8	26
	0090F2S-NPFN-NN	.	.	1501	1501	866	265	403	550	450	500	17	32	8	26

Tab. 15-39: "MPES2" with "A4VSO", fastening "V"

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16 Appendix

16.1 Declaration of conformity

Rexroth
Bosch Group

EG-Konformitätserklärung

Dok.-Nr.: **TC-30331-001**
Datum: **2013-08-20**

☐ nach Maschinenrichtlinie 2006/42/EG
☒ nach Niederspannungsrichtlinie 2006/95/EG
☐ nach EMV-Richtlinie 2004/108/EG
☐ nach Druckgeräte-Richtlinie 97/23/EG
☐ nach ATEX-Richtlinie 94/9/EG
☐ nach RoHS-Richtlinie 2011/65/EU
☐

Hiermit erklärt der Hersteller,

Bosch Rexroth AG
Bürgermeister-Dr.-Nebel-Straße 2
97816 Lohr am Main / Germany

dass die nachstehenden Produkte

Bezeichnung: Motor-Pumpen-Einheit
Typ: MPA01, MPAS1, MPES2
Ab Herstelldatum: 2013-08-20

in Übereinstimmung mit der oben genannten EU-Richtlinie entwickelt, konstruiert und gefertigt wurden.

Angewandte harmonisierte Normen:

Norm	Titel	Ausgabe
EN 60034-1 *(IEC 60034-1)*	Drehende elektrische Maschinen – Teil 1: Bemessung und Betriebsverhalten	2010 + Cor.:2010 *(2010, modifiziert)*
EN 60034-5 *(IEC 60034-5)*	Drehende elektrische Maschinen – Teil 5: Schutzarten aufgrund der Gesamtkonstruktion von drehenden elektrischen Maschinen (IP-Code) – Einteilung	2001 + A1:2007 *(2000 + Corrigendum 2001 + A1:2006)*

Weitere Erläuterungen:

Dieses Produkt ist eine Einbaukomponente, die aufgrund ihrer Einbaueigenschaften nicht von vornherein den Vorschriften für Endgeräte, Maschinen oder Anlagen entsprechen kann. Es darf daher nur zu Einbauzwecken verwendet werden.

Die Bewertung der elektrischen und mechanischen Sicherheit, der Umwelteinflüsse (Fremdkörper, Feuchtigkeit) muss im eingebauten Zustand am Endprodukt erfolgen.

Im eingebauten Zustand können sich die EMV-Eigenschaften dieses Produktes ändern.

Deshalb ist für das Endprodukt (Endgerät, Maschine, Anlagen) eine Überprüfung der EMV-Eigenschaften durch den Endproduktthersteller zweckmäßig.

Lohr am Main (Ort), den 2013-08-20 (Datum)

ppa. Joachim Hennig, Werkleitung LoP2

i.V. Eberhard Schemm, Entwicklungsbereichsleiter Antriebe

Änderungen im Inhalt der EG-Konformitätserklärung sind vorbehalten. Derzeit gültige Ausgabe auf Anfrage.

Seite 1

Fig. 16-1: CE declaration of conformity (original)

Appendix

Rexroth
Bosch Group

EC declaration of conformity

(Translation of the original EC declaration of conformity)

Doc. No.: **TC-30331-001**

Date: **2013-08-20**

- ☐ in accordance with Machinery Directive 2006/42/EC
- ☒ in accordance with Low Voltage Directive 2006/95/EC
- ☐ in accordance with EMC Directive 2004/108/EC
- ☐ in accordance with Pressure Equipment Directive 97/23/EC
- ☐ in accordance with ATEX Directive 94/9/EC
- ☐

The manufacturer

Bosch Rexroth AG
Bürgermeister-Dr.-Nebel-Straße 2
97816 Lohr am Main / Germany

hereby declares that the products below

Name:	Motor pump unit
Type:	MPA01, MPAS1, MPES2
From the date of manufacture:	2013-08-20

were developed, designed and manufactured in compliance with the above-mentioned EU directive.

Harmonized Standards applied:

Standard	Title	Edition
EN 60034-1 *(IEC 60034-1)*	Drehende elektrische Maschinen – Teil 1: Bemessung und Betriebsverhalten	2010 + Cor.:2010 *(2010, modified)*
EN 60034-5 *(IEC 60034-5)*	Drehende elektrische Maschinen – Teil 5: Schutzarten aufgrund der Gesamtkonstruktion von drehenden elektrischen Maschinen (IP-Code) – Einteilung	2001 + A1:2007 *(2000 + Corrigendum 2001 + A1:2006)*

Further explanations:

This product is a built-in unit which, owing to its installation characteristics, is not able to comply with the regulations for complete apparatus, machines or installations from the outset. For this reason, it may only be used for built-in purposes.

The product may only be assessed with regard to its electrical and mechanical safety as well as to environmental effects (foreign bodies, moisture) after it has been installed in the product intended for the final user.

After the product has been installed, its EMC properties may change. Hence the product intended for the final user (complete apparatus, machines or installations) should be inspected with regard to its EMC properties by the manufacturer of the product intended for the final user.

Place/date/signature as indicated in the original declaration.

We reserve the right to make changes to the content of the EC Declaration of Conformity. Current issue on request.

Page 1

Fig. 16-2: Declaration of conformity

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Notes

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DOK-SYTROX-MPES2******-IT01-EN-P

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