Electric Drives and Controls | Hydraulics | Linear Motion and Assembly Technologies | Pneumatics | Service

Rexroth
Bosch Group

Rexroth Sytronix SvP 70xx Motor-Pump Unit MPA01

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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).

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.

E Español	P Português	I Italiano
⚠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.

S Svenska	DK Dansk	NL Nederlands
⚠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.

LT Lietuviškai	EST Eesti	GR Ελληνικά
⚠ 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).

LT Lietuviškai	EST Eesti	GR Ελληνικά
⚠ 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。

Table of Contents

Table of Contents

Table of Contents

Page

1 About this Documentation

1.1 Validity of this Documentation

This documentation is valid for the following motor-pump units chapter "Type Codes" on page 29.

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 SYTROX-SAFETY*MP**-SARS-EN-P
Rexroth IndraDyn Motors Safety Notes and Instructions on Use	R911338599 MOTOR*-IDYN*SAFETY-SARS-EN-P
Rexroth Sytronix Mounting and Start-up Internal Gear Pump PGH/PGM/PGF	R911340908 SYTROX-PG**-******-ASRS-EN-P
Rexroth Fan Unit LEM-AB192T-xx-NPNN	R911340921 DOK-MOTOR*-LEMAB192TNP-ASRS-EN-P
Rexroth IndraDyn S Electrical Connection MSK101 Terminal Box	R911340001 DOK-MOTOR*-MSK101*F*NP-ASRS-EN-P
Rexroth Sytronix SvP7000 Motor-Pump Unit MPA01 (with MSK Air Cooling)	R911399499 DOK-SYTROX-MPA01*M11A*-ASRS-EN-P
Rexroth Sytronix SvP7000 Motor-Pump Unit MPA01 (with MSK Liquid Cooling)	R911339838 DOK-SYTROX-MPA01*M11L*-ASRS-EN-P
Hydraulic Fluids Bases on Mineral Oils and Related Hydrocarbons	RE90220
Hydraulic Fluids on a Mineral Oil Basis for Axial Piston Units	RE90220-01
Environmentally Acceptable Hydraulic Fluids	RE90221
Environmentally acceptable hydraulic fluids HEPG, HEES, HEPR for axial piston units	RE90221-01

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	Meaning
	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
	Warning against overhead load
	Electrostatic sensitive devices
	Prohibition for persons with cardiac pacemaker

Symbol	Meaning
	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	Meaning
WEF	Wire end ferrule
ESD	Electro-static discharge
HCS	Bosch Rexroth drive controller
KTY	Silicon temperature sensor with slight curved characteristic curve for measure of temperatures from -50 °C up to +150 °C.
LEM	Fan units for MSK motors
MPA	**M**otor-**P**ump unit **A**dvanced
MSK	Bosch Rexroth synchronous permanent magnet motor
PE	Abbreviation for protective switch (protective earth)
PGH	Internal gear pump, constant displacer volume
RT	Ring terminal
SvP	Servovariable pump system

Tab.1-2: Meaning of abbreviations

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 SvP system is exclusively designed to be mounted into a machine or be joined with other components to one machine or an aggregate. It is only allowed to operate the SvP system, if it is mounted into the machine, for which it is designed.

The SvP system may be operated as follows:

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

☞ Within the SvP 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 chapter 2 "Safety Notes".

2.3 Inappropriate Use

Each other use, wihich is not described as appropriate use is non-appropriate use and therefore not permitted.

For damage during non-appropriate use, Bosch Rexroth does not assume any liability. The risks of non-appropriate use is in the sole responsibility of the user.

2.4 Qualification of the Personnel

The operations described in this documentation make basic knowledge of mechanic, hydraulic and electric and knowledge about corresponding terms necessary. For transport and handling of the product, additional knowledge at

handling with lifting devices and corresponding 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 professional is, who is able to estimate delegated work due to his professional education, knowledge and experiance and knows the relevant regulations. He must be able to realize possible danger and takes suitable safety measures. A professional must keep the relevant technical regulations.

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.
- Heed 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 Notes

⚠ 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.

⚠ 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, letz the motor-pump-unit cool down für a sufficiently long time.
- Observe the protective measures of the plant manufacturer.

⚠ 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 Duties of the User

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.

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 strike at function-relevant surfaces (e.g. fastening surfaces) and mounting parts (e.g. connections).
- **Mixing of hydraulic fluids**

  Every kind of mixing of hydraulic fluids of different manufacturers or different types of the same manufacturer is not permitted.

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

- During assembly pay attention to cleanliness to prevent foreign bodies, e.g. beads of sweat or cuttings attain the hydraulic line and therewith lead to 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.
- When filling, filter the hydraulic fluid with a suitable filter system 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.
- Any use of a high-pressure cleaner is improper.

Operation with to little 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 left hydraulic fluid.
- Place a catch tank 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.

4 Scope of Delivery

Motor-Pump Unit

A MPA01 motor-pump unit consists of a MSK synchronous motor with fan unit, an internal gear pump PGH, flange and an optional pump foot.

Special designs can deviate from your ordering data.

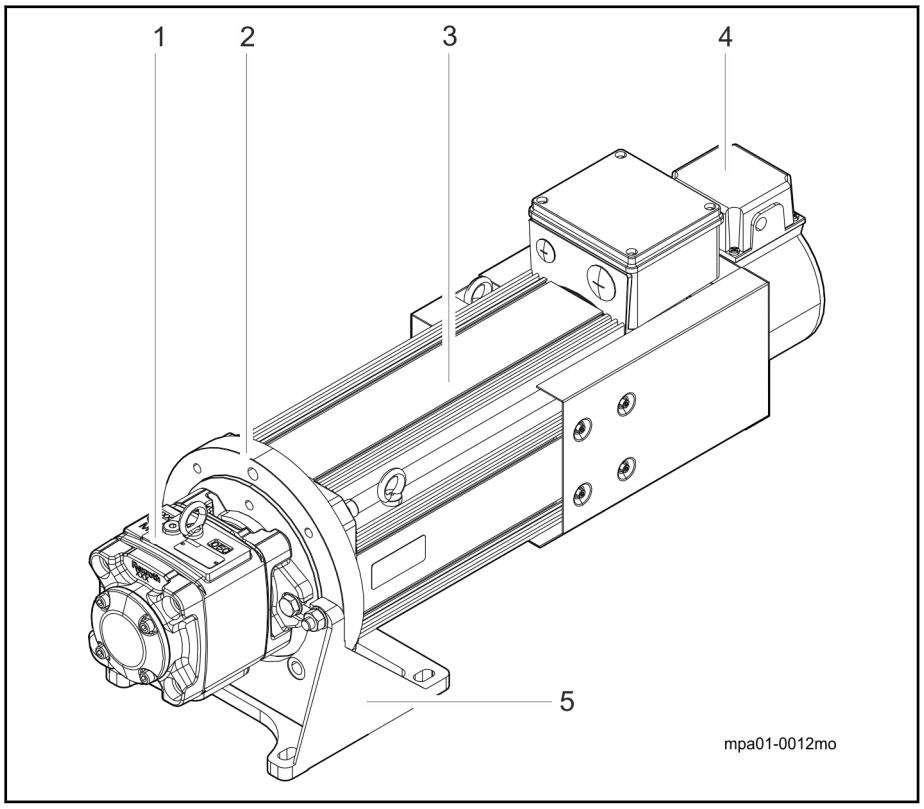
On delivery, immediately verify whether the delivered goods are those specified on the delivery note. The forwarder must be promptly informed of any damage on the packaging and goods, which is detected on delivery. It is forbidden to use damaged products.

5 About this Product

5.1 Product Description

Motor-pump units MPA01 consist of a direct-coupled internal gear pump PGH.-3x and a permanent magnet MSK synchronous motor. Drive controllers, software and accessories create motor-pump units MPA, efficient and powerful variable-speed pump drives Sytronix.

Motor-pump units can be delivered as kit or completely assembled unit. chapter "Type Codes" on page 29 (See type code).



1	Internal gear pump PGH
2	Flange
3	Servomotor MSK
4	Fan unit LEM
5	Pump foot (option)

Fig.5-1: MPA01 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.

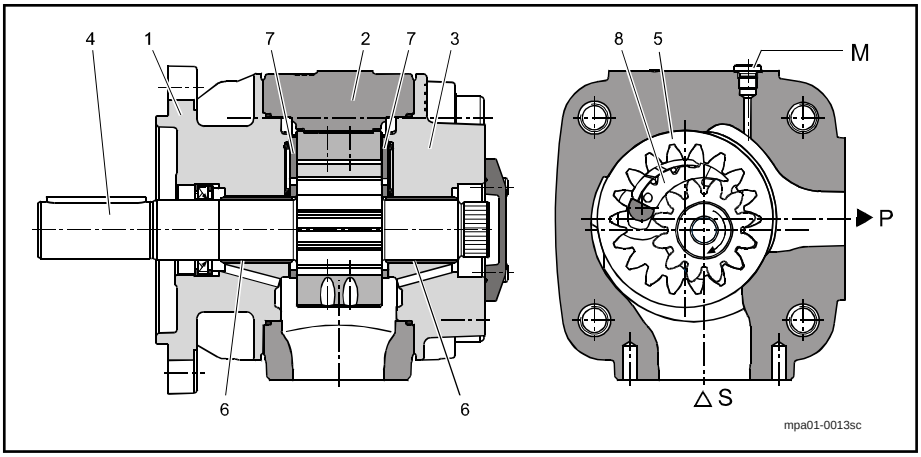


Fig.5-2: Setup internal gear pump

PGH.-3X hydro pumps are gap-compensated internal gear pumps with fixed displacement. They basically consist of: Mounting flange (1), housing (2), cover with throughdrive (3), pinion shaft (4), internal gear (5), plain bearings (6), axial washers (7) and radial compensation (8). They dispose of a suction port (S) and a pressure connection (P) as well as a measurement port (M) that is connected to the pressure channel.

5.2.2 Flange

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

Depending from the size of the motor-pump unit, different flanges are available.

5.2.3 Servomotor MSK

For motor-pump units, MSK motors with annular toothed hollow shaft are used. These motors make a direct coupling of motor and pump possible. An intermediate gear is not necessary.

5.2.4 Fan Unit LEM

The fan units LEM are used for increased performance of the servo motors.

5.2.5 Pump Foot

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

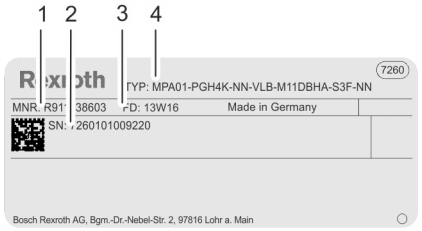
Depending from the size of the motor-pump unit, different pump feet are available.

5.3 Product Identification

5.3.1 Motor-Pump Unit MPA01

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 MPA01



1	Part number
2	Serial number
3	Production date
4	Type designation

Fig.5-3: Type plate motor-pump unit

Type Codes

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

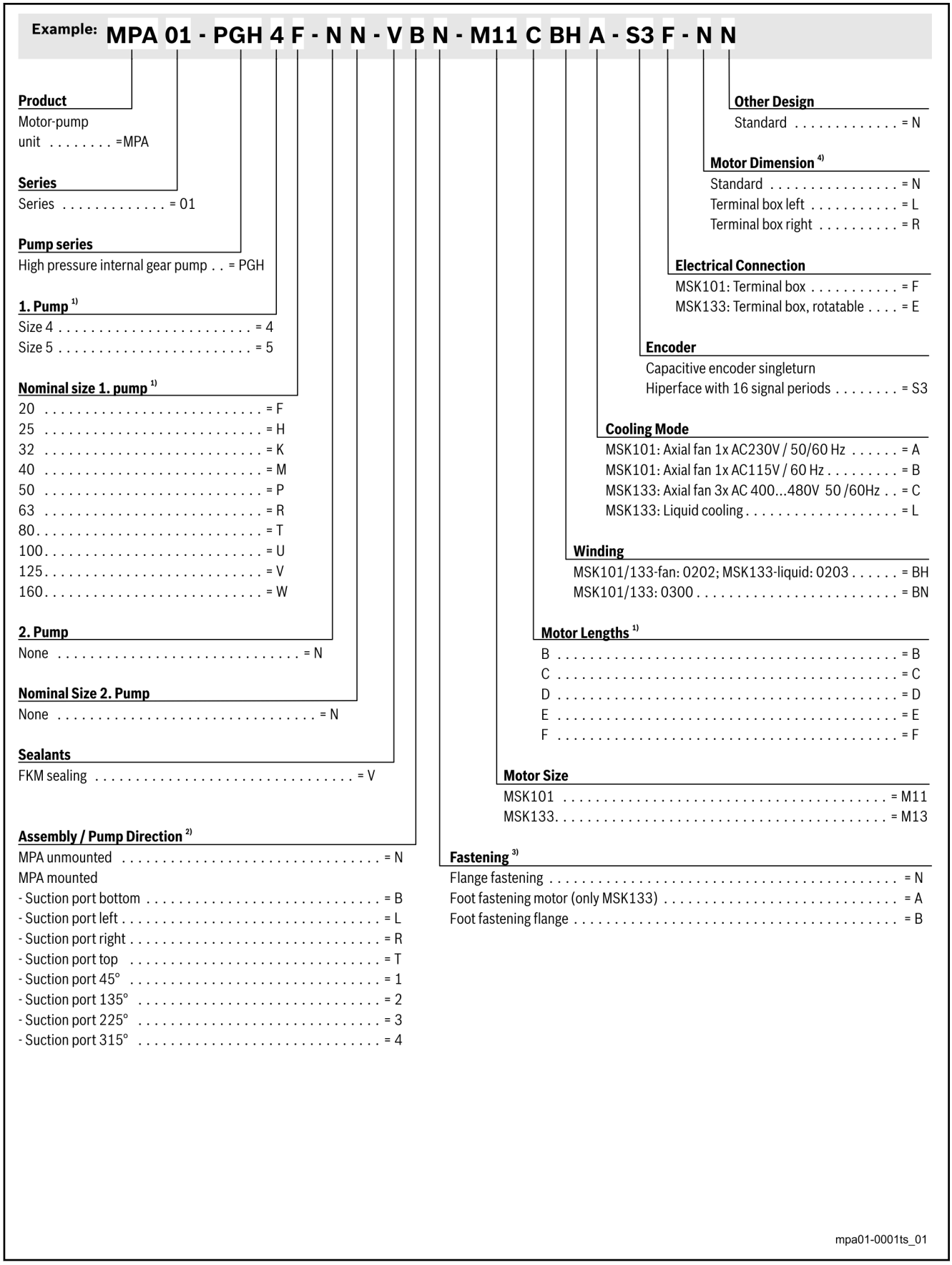


Fig.5-4: Ordering data / type code MPA01 (1)

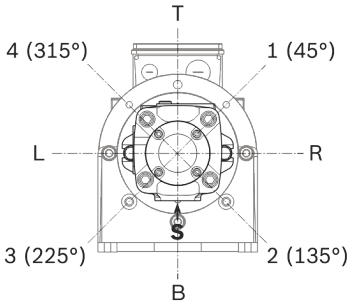
Example: **MPA 01 - PGH 4 F - N N - V B N - M11 C BH A - S3 F - N N**

1) Available Motor-Pump Units

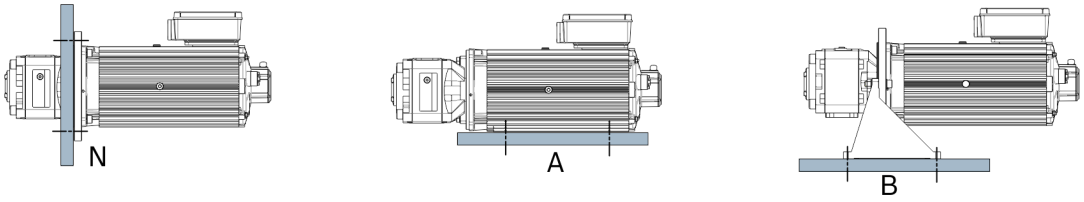
Motor size	Cooling mode	Frame length	Winding	Electrical Connection	Pump Size PGH: 4 F	4 H	4 K	4 M	4 P	4 R	5 R	5 T	5 U	5 V	5 W
M11	A or B	C	BH or BN	F	●	●	●	●	●	●	-	-	-	-	-
		D			●	●	●	●	●	●	-	-	-	-	-
		E			●	●	●	●	●	●	-	-	-	-	-
		F			●	●	●	●	●	●	-	-	-	-	-
M13	C or L	B	BH	E	-	-	-	-	-	-	●	●	●	●	●
		C			-	-	-	-	-	-	●	●	●	●	●
		D			-	-	-	-	-	-	●	●	●	●	●
		E			-	-	-	-	-	-	●	●	●	●	●

● standard - not available

2) Pump Dimension



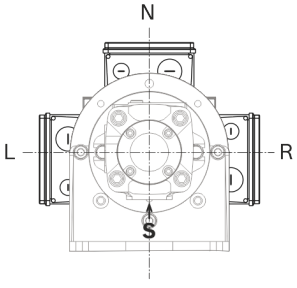
3) Fastening



4) Motor Dimension

Motor size	Fastening	Motor Dimension N	L	R
M11	N	●	●	●
	A	-	-	-
	B	●	●	●
M13	N	●	●	●
	A	●	-	-
	B	●	●	●

● standard - not available



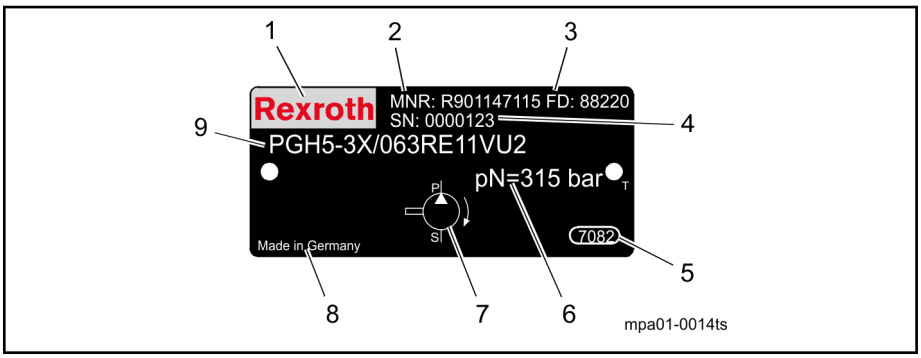
mpa01-0001ts_02

Fig.5-5: Ordering data / type code MPA01 (2)

5.3.2 Components PGH

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:



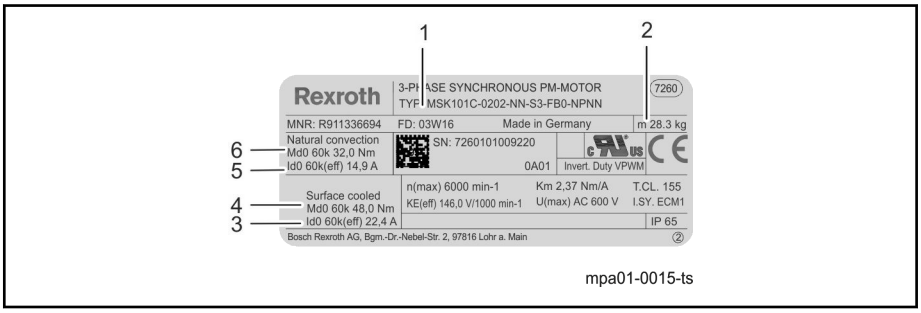
1	Manufacturer
2	Part number
3	Production date
4	Serial number
5	Division/factory number
6	Rated pressure
7	Symbol acc. to ISO 1219
8	Designation of origin
9	Type designation

Fig.5-6: Type plate internal gear pump

5.3.3 Components MSK

Type Plate

The MSK motors can be identified via its type plate. The following example shows a type plate of a MSK101:



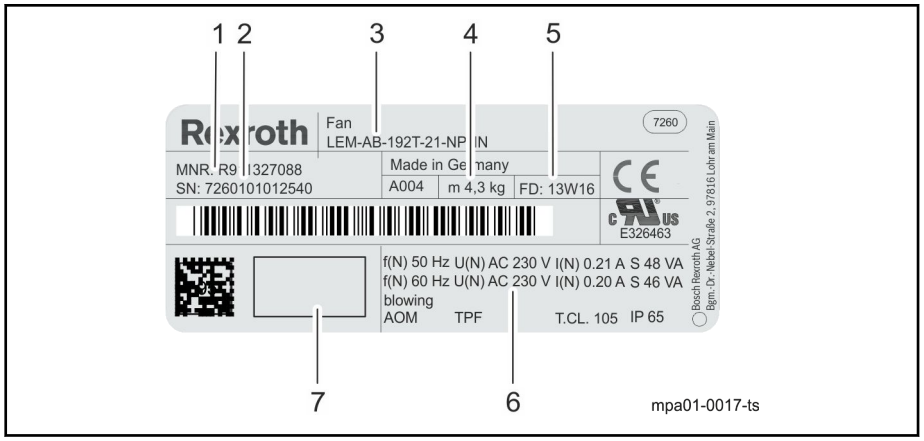
1	Type designation
2	Mass motor without holding brake
3	Continuous current at standstill (surface cooled)
4	Continuous torque at standstill (surface cooled)
5	Continuous current at standstill
6	Continuous torque at standstill

Fig.5-7: Identification MSK

5.3.4 LEM Components

Type Plate

The fan unit can be identified via its type plate. The following example shows a type plate of a LEM fan unit:



1	Part number
2	Serial number
3	Type designation
4	Mass
5	Production date
6	Technical Data
7	Graphic of electrical connection

Fig.5-8: Identification LEM

6 Transport and Storage

6.1 Safety

⚠ CAUTION **Risk of injuries, material damage during transport via falling, tumbling or uncontrolled position relocation of components of SvP systems.**

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

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.

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

Please observe the following classification limitations:

- Transport temperature range -20 ... +80 °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.

☞ 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.

6.3 Weight of Motor-Pump Units

Frame size	PGH4						PGH5				
Nominal size	20	25	32	40	50	63	63	80	100	125	160
Weight kg	13.5	14	14.5	15	16	18	39	40.5	42.5	45	49

Tab.6-1: Weight internal gear pumps

Frame size	MSK101 + (LEM)				MSK133-SA / MSK133-FN			
Nominal size	C	D	E	F	B	C	D	E
Weight kg	28.3 (4.3)	40.0 (4.3)	53.5 (4.3)	59.8 (4.3)	91.6	111.0	127.0	146.0

Tab.6-2: Weight MSK motors

	Adapter flange		Pump foot	
Frame size	MSK101	MSK133	MSK101	MSK133
Weight kg	2.8	9.3	6.1	18.6

Tab.6-3: Weight motor components

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. At delivery, the motor-pump unit is provided with lifting points on the pump and on the electro motor, see the following table:

Component	Ring screws DIN580
MSK101	2x M8
MSK133	2× M12
PGH4-3X/	1x M8
PGH5-3X/	1x M10

Tab.6-4: Lifting points

☞ For further information about carrying capacity of the ring screws refer to the DIN580/092010 standard.

- 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.

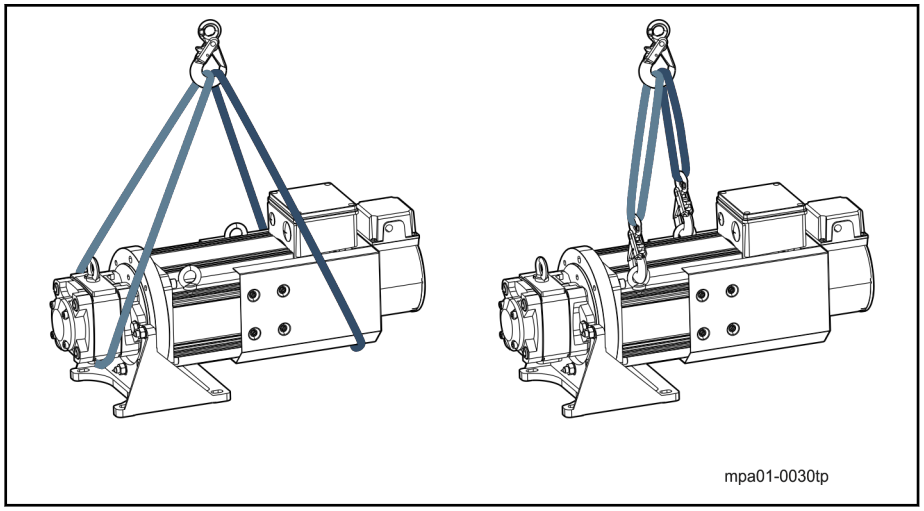


Fig.6-1: Lift MPA01 (1)

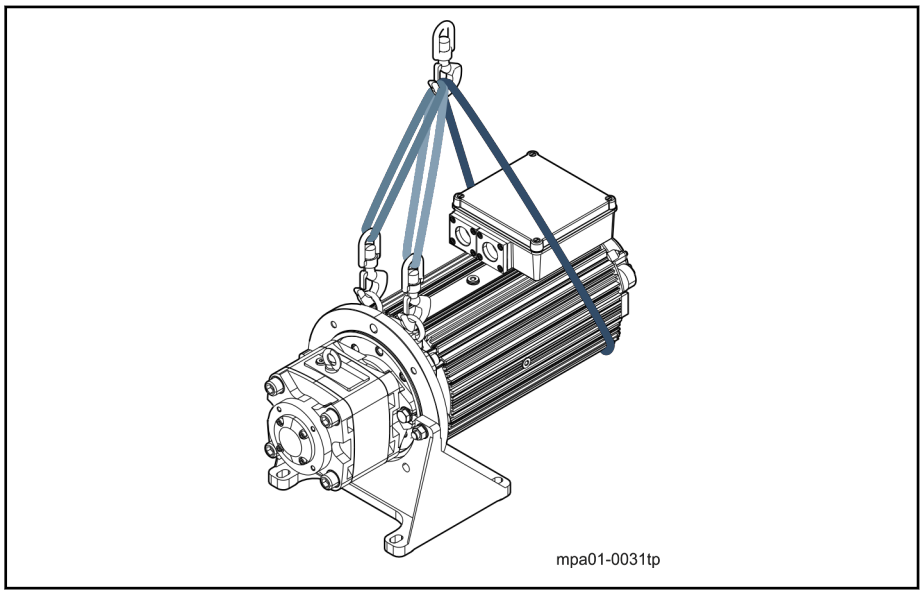


Fig.6-2: Lift MPA01 (2)

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 60721-3-2.

Please observe the following classification limitations:

- Storage temperature -20 ... +60 °C
- Relative air humidity 5 … 95 %
- Absolute air humidity 1 … 29 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 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	> 12	> 60	
•	•	•	Control all parts to be free of damage.
	•	•	Check all electrical contacts to be free from corrosion.
	•	•	Let the motor run in without load for one hour at 800 ... 1,000 Upm. In the case of a mounted pump, ensure that the pump does not run dry.
	•	•	Measure the insulation resistance. Dry the winding at a value of < 1kOhm per volt rated voltage.
		•	Exchange bearings.
		•	Exchange encoders.

Tab.6-5: 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.6-6: Measure before commissioning cables and connectors that have been stored over a prolonged period of time

PGH

Bearing time / months			Measures for commissioning
> 9	> 24	> 60	
•	•	•	Let the internal gear pump in its delivery state (moistened with mineral oil)
	•	•	Fill the internal gear pump with mineral oil
		•	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. In the case of a storage time > 24 months, change the shaft sealing ring. After the maximum storage time we recommend a preventive check of the internal gear pump with change of the sealings by the responsible Rexroth service!

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

7 Assembly

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.

Assembly

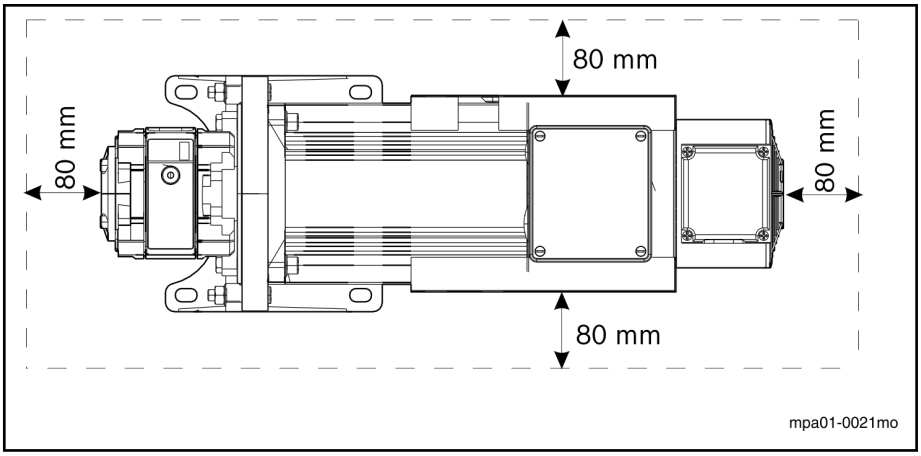


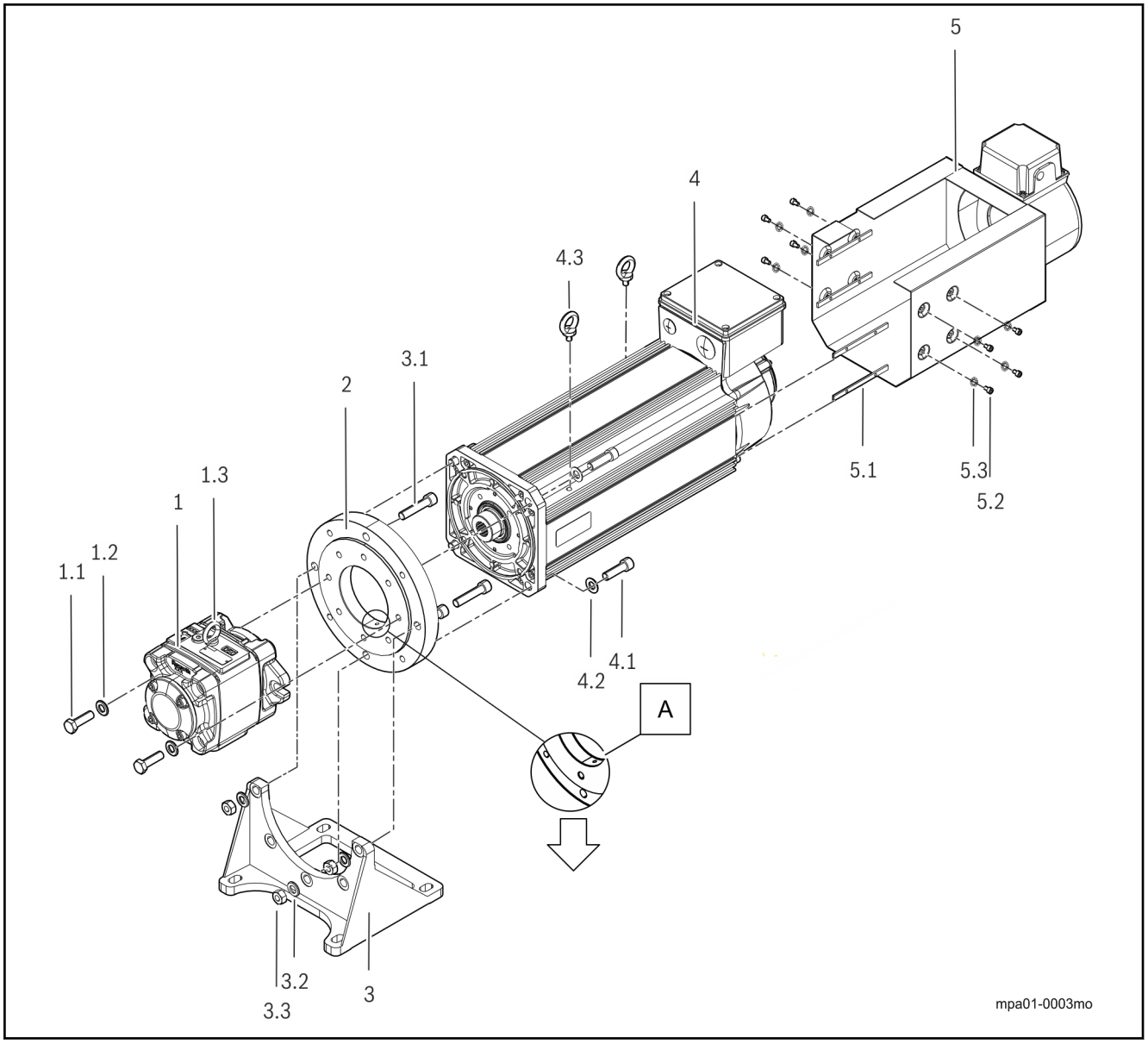
Fig.7-1: Mounting distance (motor cooling)

7.4 Assembly of Single Components

7.4.1 Mount MPA01 Consisting of PGH4 and MSK101 (Air Cooling)

Assembly

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



1	Internal gear pump PGH4
1.1	ISO4017-M12X40-8.8 (tightening torque 87 Nm)
1.2	ISO7089-12-200HV
1.3	DIN580-M8
2	Adapter flange
3	Pump foot
3.1	ISO4762-M12X50-8.8 (tightening torque 87 Nm)
3.2	ISO4032-M12-8
3.3	ISO7089-12-200HV
4	Synchronous motor MSK101
4.1	ISO4762-M12X45-10.9
4.2	ISO7092-12-200HV
4.3	DIN580-M8
5	Fan unit LEM192
5.1	Ridge
5.2	ISO4762-M5X8.8
5.3	Locking washer DNL5.
A	Leakage hole

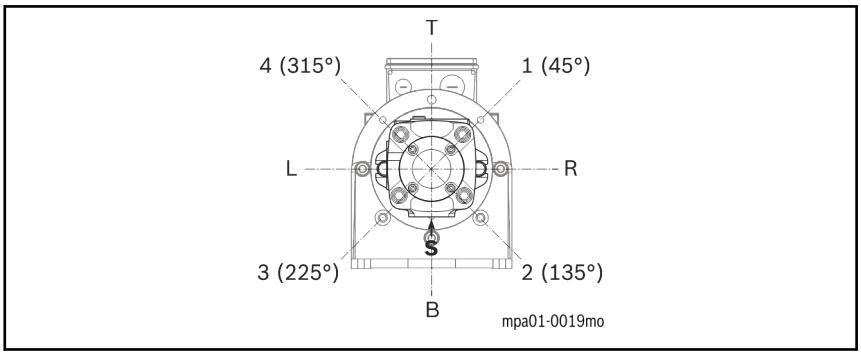
Fig.7-2: Assemble the motor-pump unit MPA01 composed of components

Assembly

For screw connections use screw lock, e.g. Loctite 243 when proceeding the following working steps 1 to 3.

1. Screw on pump on adapter flange.

   Screw the pump 1 in the required orientation (T, 1 (45°), R, 2 (135°), B, 3 (225°), L or 4 (315°) with the screws 1.1 and washers 1.2 on the adapter flange 2 (tightening torque 87 Nm).



S Suction port (figured option = B)

Fig.7-3: Pump assembly mounting direction

In assembled state, the leakage hole (A) must be at the bottom that escaping oil can flow out.

2. Mount pump foot

   This mounting step is not necessary in design without pump foot 3.

   Fasten the optional pump foot 3 with the screws 3.1, washers 3.2 and nut 3.3 on the adapter flange (tightening torque 87 Nm).

3. Mount the motor

   Use sufficiently measured lifting tools.

NOTICE	**Damage by improper assembly operation!**

Carefully join the motor shaft and pump shaft, aligning without being jammed. Strikes onto motor or pump can cause damage and are therefore not allowed.

Insert the motor (4) in the required orientation (N, R or L) and the pump group (1), (2), (3) in vertical position. Screw the motor (4) with the screws (4,1) and washers (4.2) on the adapter flange (tightening torque 87 Nm).

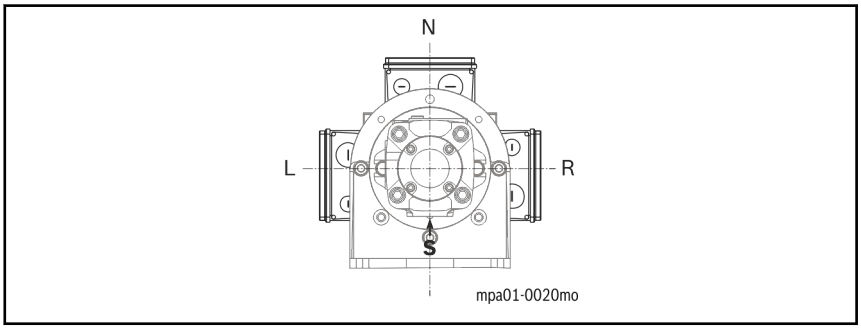


Fig.7-4: Motor assembly direction

4. Mount fan unit

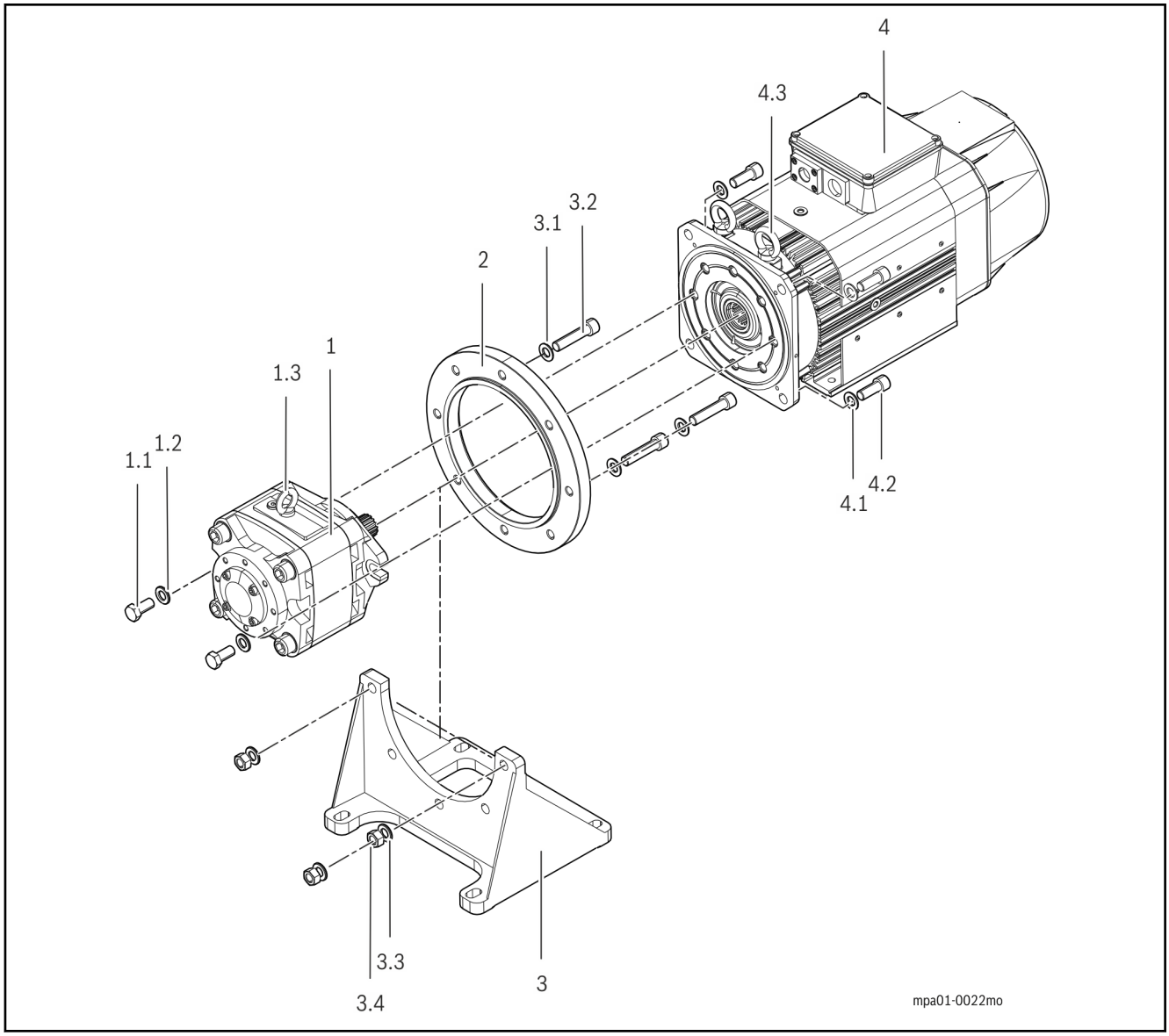
   Insert T-nut (5.1) into the motor housing and fix the fan unit (5) with 8 screws (5.2) and washers (5.3). Tightening torque 4.0 Nm.

7.4.2 Mount MPA01 Consisting of PGH5 and MSK133 (Air/Liquid Cooling)

Assembly

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

Assembly



1	Internal gear pump PGH5
1.1	ISO4017-M16X40-8.8 (tightening torque 210 Nm)
1.2	ISO7090-16-200HV
1.3	DIN580-M10
2	Adapter flange
3	Pump foot
3.1, 3.3	ISO7090-16-200HV
3.2	ISO4762-M16X70-8.8 (tightening torque 210 Nm)
3.4	ISO4032-M16-8
4	Synchronous motor MSK133
4.1	ISO7090-16-200HV
4.2	ISO4762-M16X40-8.8 (tightening torque 210 Nm)
4.3	DIN580-M12

Fig.7-5: Assemble the motor-pump unit MPA01 composed of components

The figure shows the assembly of motors in design "SA" (air cooling). The assembly of motors in design "FN" (liquid cooling) is identically.

1. Mount the adapter flange

   This mounting step is not necessary in design without adapter flange (2).

Screw the adapter flange (2) onto the motor (4) via hexagon socket screw (4.2) and flat washers (4.1). Tightening torque 210 Nm, secure screw connection with Loctite 243®.

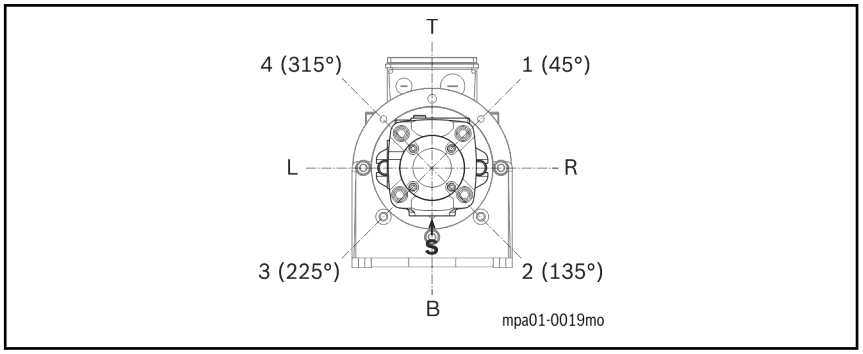
2. Screw the motor with the pump

   Use sufficiently measured lifting tools.

NOTICE	**Damage by improper assembly operation!**

Carefully join the motor shaft and pump shaft, aligning without being jammed. Strikes onto motor or pump can cause damage and are therefore not allowed.

Screw the pump (1)with screws (1.1) and flat washers (1.2) in the required orientation (T, 1 (45°), R, 2 (135°), B, 3 (225°), L or 4 (315°) with the motor (4). Tightening torque 210 Nm, secure screw connection with Loctite 243®.



S Suction port (figured option = B)

Fig.7-6: Pump assembly mounting direction

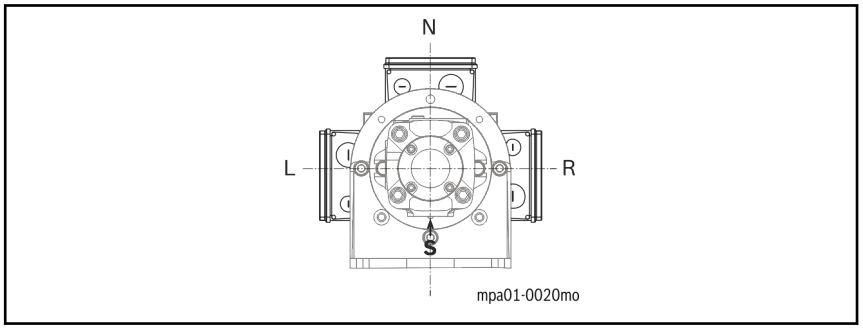


Fig.7-7: Motor assembly direction

3. Mount pump foot

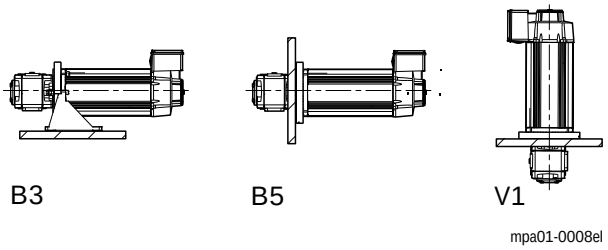
   This mounting step is not necessary in design without pump foot (3).

   Screw the pump foot (3) with the screws (3.2), flat washers (3.1, 3.3), nuts (3.4) and the adapter flange (2). Tightening torque 210 Nm, secure screw connection with Loctite 243®.

Assembly

7.5 Installation

7.5.1 Permitted Installation Positions of the Motor-Pump Unit



The assembly of motor-pump units can be made in foot or flange mounting. Allowed installation positions according to EN 60037-7 are **IM B3**, **IM B5** and **IM V1**. Vertical installation IM V3 (motor under the pump) is not permitted.

7.5.2 Installation MPA01-PGH4-MSK101 Air Cooling

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.

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

Fastening	Hole ø [mm]	Bolt size-ISO-grade	Washer
Foot	14	M12	Yes
Flange	13,5	M12	-

Tab.7-1: MPA accessory for fastening

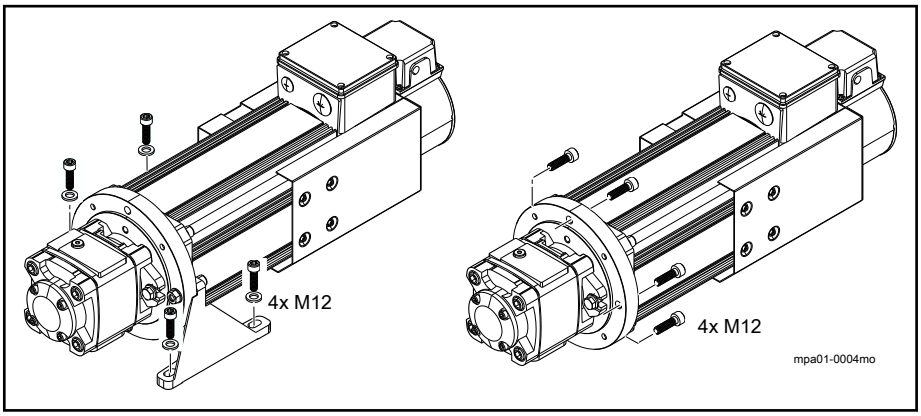


Fig.7-8: Assemble motor-pump unit MPA01 into the construction.

7.5.3 Installation MPA01-PGH5-MSK133 Air / Liquid Cooling

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.

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

Choose the fastening variant N, A or B acc. to the machine configuration.

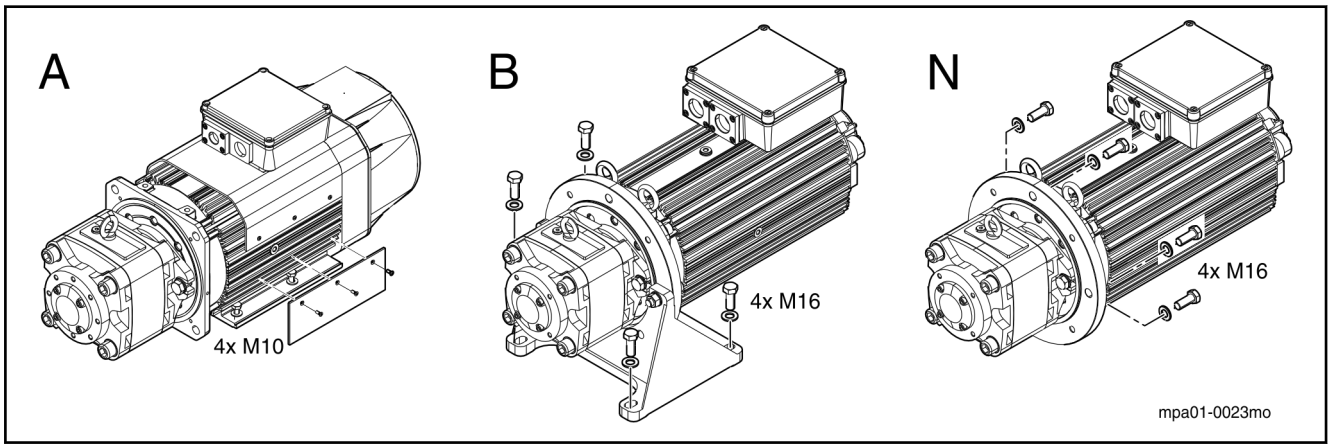


Fig.7-9: Assemble motor-pump-unit MPA01 into the construction.

Fastening	Hole ø [mm]	Screw	Washer
Foot fastening motor (A)	12	M10	Yes
Foot fastening flange (B)	18	M16	Yes
Flange fastening (N)	18	M16	Yes

Tab.7-2: MPA01 fastening accessorie

The figure "A" shows the assembly of motors in design "SA" (air cooling). The figures "B," show the assembly of motors in design "FN" (liquid cooling).

Foot fastening motor (A)

The motor must be fastened with screws (4xM10) by the customer. For connection dimensions refer to the dimension sheet.

For motors with fans, detach the lower air baffles to reach the lifting points (4x M10).

Therefore, loosen the 3 fastening screws M5x12 (crosstip) from the lower air baffles.

Then mount the air buffles on the motor again. Tightening torque of the fastening screws for the air buffles is 6.1 Nm.

Foot fastening flange B

The motor must be fastened with screws (4xM16) by the customer. For connection dimensions refer to the dimension sheet.

Flange fastening N

The motor must be fastened with screws (4xM16) by the customer. For connection dimensions refer to the dimension sheet.

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.

8.2 Ready-made Connection Cables for MPA01

Power cables

MPA-Type	HCS- / HMS-Type				
	HMS01.1N-W0036	HCS02.1.E-W0054 HCS02.1E-W0070 HCS03.1E-W0070 HMS01.1N-W0054 HMS01.1N-W0070	HCS03.1E-W0100 HCS03.1E-W0150 HMS01.1N-W0110 HMS01.1N-W0150 HMS01.1N-W0210 HMS01.1N-W0300	HCS03.1E-W0210	HCS04.2E-W0350
MPA01-PGH4_-NN-___-M11CBHA-S3F-_N	RKL0075	RKL0067	-	-	-
MPA01-PGH4_-NN-___-M11CBHB-S3F-_N					
MPA01-PGH4_-NN-___-M11CBNA-S3F-_N	RKL0076	RKL0068	RKL0077	-	-
MPA01-PGH4_-NN-___-M11CBNB-S3F-_N					
MPA01-PGH4_-NN-___-M11DBHA-S3F-_N	-	RKL0069	RKL0070	-	-
MPA01-PGH4_-NN-___-M11DBHB-S3F-_N					
MPA01-PGH4_-NN-___-M11DBHL-S3A-_N	-	RKL4324	RKL4329	-	-
MPA01-PGH4_-NN-___-M11DBNA-S3F-_N	-	RKL0071	RKL0072	-	-
MPA01-PGH4_-NN-___-M11DBNB-S3F-_N					
MPA01-PGH4_-NN-___-M11EBHA-S3F-_N	-	RKL0071	RKL0072	-	-
MPA01-PGH4_-NN-___-M11EBHB-S3F-_N					
MPA01-PGH4_-NN-___-M11EBNA-S3F-_N	-	-	RKL0073	RKL0078	
MPA01-PGH4_-NN-___-M11EBNB-S3F-_N					
MPA01-PGH4_-NN-___-M11FBHA-S3F-_N	-	RKL0079	RKL0073	-	-
MPA01-PGH4_-NN-___-M11FBHB-S3F-_N					
MPA01-PGH4_-NN-___-M11FBNA-S3F-_N	-	-	RKL0073	RKL0078	-
MPA01-PGH4_-NN-___-M11FBNB-S3F-_N					
MPA01-PGH5_-NN-___-M13BBHC-S3E-_N	-	-	RKL4775	RKL4787	-
MPA01-PGH5_-NN-___-M13BBHL-S3E-_N					
MPA01-PGH5_-NN-___-M13CBHC-S3E-_N	-	-	RKL4727	RKL4728	-
MPA01-PGH5_-NN-___-M13CBHL-S3E-_N					
MPA01-PGH5_-NN-___-M13DBHC-S3E-_N	-	-	RKL4729	RKL4730	RKL0064
MPA01-PGH5_-NN-___-M13DBHL-S3E-_N	-	-	2x RKL4727	2x RKL4728	-
MPA01-PGH5_-NN-___-M13EBHC-S3E-_N	-	-	RKL4729	RKL4730	RKL0064
MPA01-PGH5_-NN-___-M13EBHL-S3E-_N	-	-	2x RKL4727	2x RKL4728	-

Tab.8-1: Ready-made power cables

Connection

Encoder Cables

MPA-Type	HCS- / HMS-Type				
	HMS01.1N-W0036	HCS02.1.E-W0054 HCS02.1E-W0070 HCS03.1E-W0070 HMS01.1N-W0054 HMS01.1N-W0070	HCS03.1E-W0100 HCS03.1E-W0150 HMS01.1N-W0110 HMS01.1N-W0150 HMS01.1N-W0210 HMS01.1N-W0300	HCS03.1E-W0210	HCS04.2E-W0350
MPA01-PGH__-NN-___-M11____-S3F-_N	RKG0047				
MPA01-PGH__-NN-___-M11____-S3A-_N	RKG4200				
MPA01-PGH__-NN-___-M13____-S3E-_N					

Tab.8-2: Ready-made encoder cables

The order designation of ready-made cables consist of cable number and length (e.g. **RKL0071/010.0** for a cable length of 10.0 m).

8.3 Connect Motor-Pump Unit Electrically (Frame size M11)

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

While the rotor is rotating, motors with permanent magnet excitation create a voltage > 60 V at the motor connections.

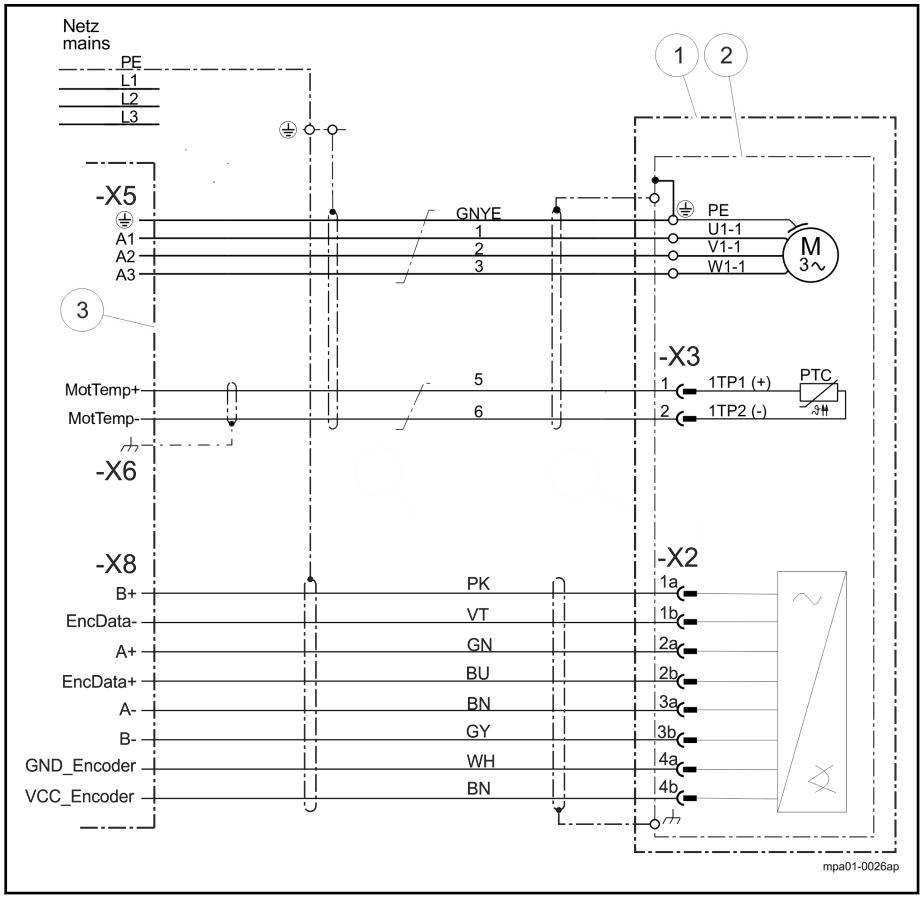
All work must be carried out at motor standstill.

An operation of motors is only allowed with respective converters. Direct connection on the three-phase current is not allowed and can lead to damage of the motor.

NOTICE **Never touch the connection points of electrostatic sensitive devices!**

Installed components (e.g., KTY84, encoder) may contain electrostatic sensitive devices (ESD).

Observe ESD safety measures.



1	MSK motor
2	Terminal box
3	Protective conductor, additonal (option ATEX)
4	Connection point grounding conductor
5	Controller

Fig.8-1: Interconnection diagram

Connection

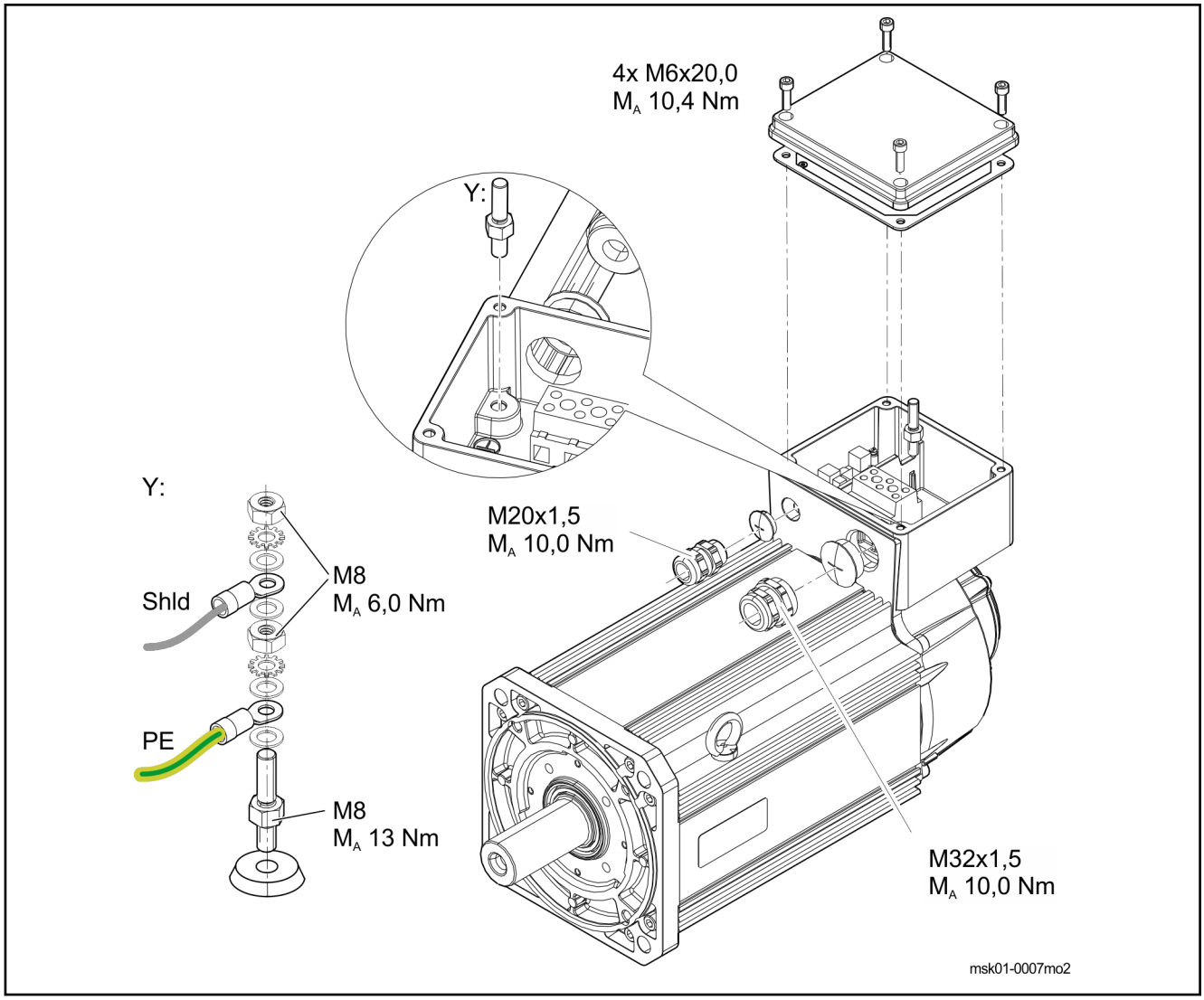


Fig.8-2: Mounting instruction (electrical connection)

Terminal box

- The connections must be established such that a permanent safe electrical connection is ensured.
- Built a safe protective earth connection.
- Use the related cable ends for terminal boxes (no protruding wire ends).
- Only use terminal boxes which are free from dirt, foreign bodies and humidity.
- Lock the not needed cable introductory holes and the box itself waterproof and against dust.
- Tolerance of specified tightening torque ±10%, if no others are specified.

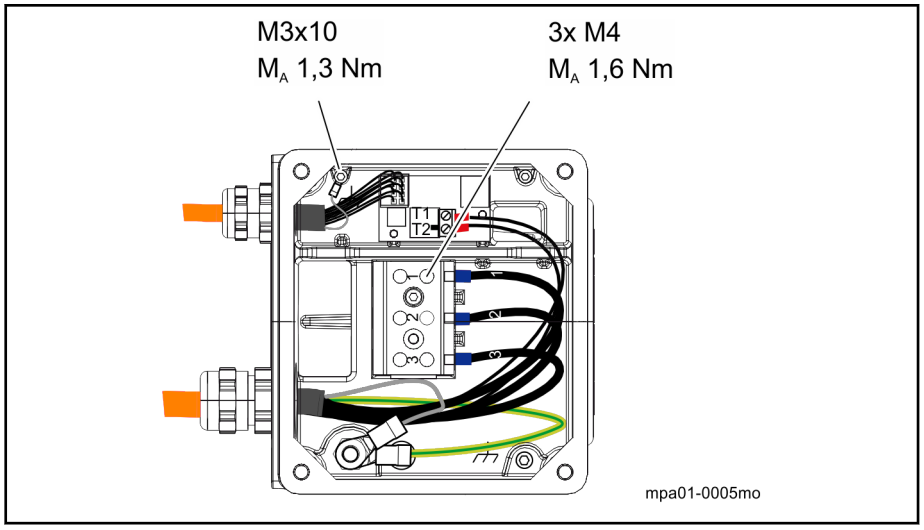


Fig.8-3: Connecting the power and encoder cables

Designation	Connection mm²	Stripping length mm	Tightening torque Nm
Clamp power U1, V1, W1	0.5 … 16.0	12	1.5 … 1.8
Clamp temperature sensor	0.25 … 2.5	7	0.5 … 0.6
Stud for PE and shield	M8	-	13.0
Ring terminal for PE	M8	6 … 8	6.0
Ring terminal for shield power	M8	6 … 8	6.0
Ring terminal for shield encoder	M3	6 … 8	1.3

Tab.8-3: Connection screws terminal box

Connect the power cable

- Insert the ready-made power cable into the terminal box and tighten the cable gland with the specified torque.
- Do protective conductor and shield connection and tighten them with the specified torque. Observe correct design of combined grounding connector and shield connector according to fig. 8-2 "Mounting instruction (electrical connection)" on page 54.
- Connect power wires and tighten with the specified torque.
- Plug the cable ties for temperature and engage.

Connect the encoder cable

- Insert the ready-made encoder cable into the terminal box and tighten the cable gland with the specified torque.
- Do shield connection and tighten with the specified torque.
- Plug the encoder and engage.

8.4 Connect Motor-Pump Unit Electrically (Frame Size M13)

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

While the rotor is rotating, motors with permanent magnet excitation create a voltage > 60 V at the motor connections.

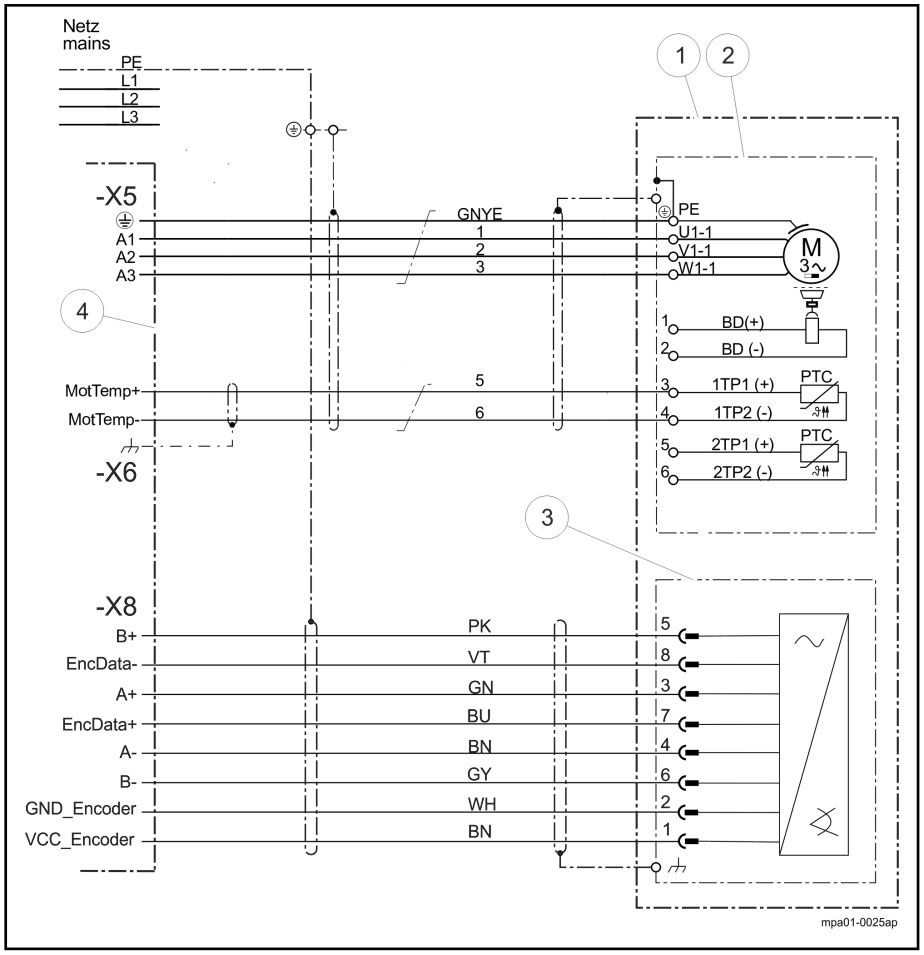
All work must be carried out at motor standstill.

An operation of motors is only allowed with respective converters. Direct connection on the three-phase current is not allowed and can lead to damage of the motor.

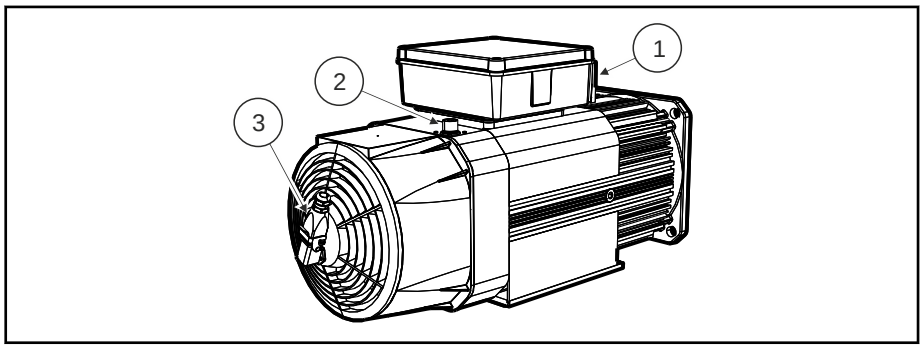
NOTICE **Never touch the connection points of electrostatic sensitive devices!**

Installed components (e.g., KTY84, encoder) may contain electrostatic sensitive devices (ESD).

Observe ESD safety measures.

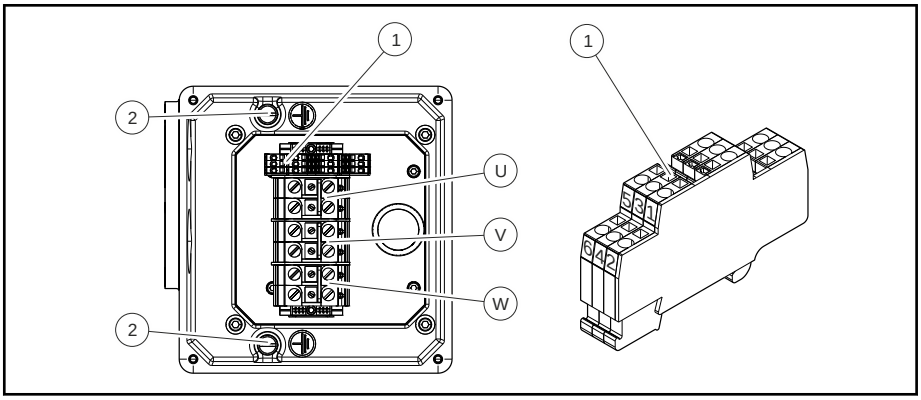


1 Motor
2 Terminal box (power connection)
3 Circular connector (encoder connection)
4 Controller
Fig.8-4: MSK133 connection plan



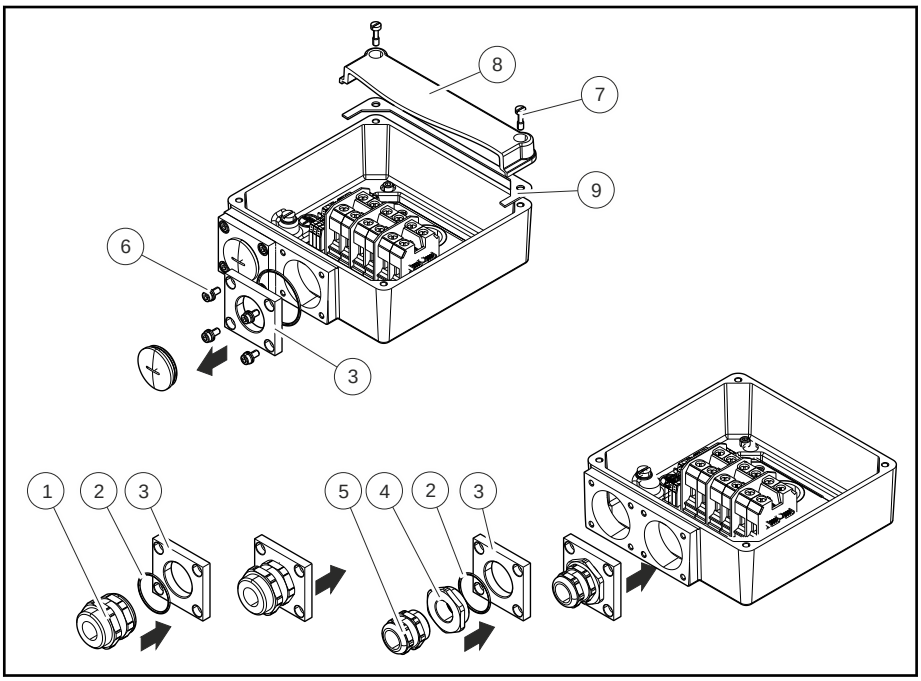
1 Terminal box power connection
2 Encoder connection connector
3 Fan connection connector
Fig.8-5: MSK133 connection junctions

Connection



①	Terminal strip (brake, temperature sensor)
②	Ground terminal connection
ⓊⓋⓌ	Power connection

Fig.8-6: Junctions



①⑤	Screwed connection
②	O-ring
③	Adapter plate to receptacle screwed connection, reduction and extension
④	Reduction (optional for cable cross sections 1.5 and 2.5 mm²), extension (optional for RLK1200 / 16 mm²)
⑥	Adapter plate mounting screws
⑦	Cover screws
⑧	Cover
⑧	Seal of terminal box cover

Fig.8-7: Assembly RKL1200, RKL1300

Terminal box

- The connections must be established such that a permanent safe electrical connection is ensured.
- Built a safe protective earth connection.
- Use the related cable ends for terminal boxes (no protruding wire ends).
- Only use terminal boxes which are free from dirt, foreign bodies and humidity.

- Lock the not needed cable introductory holes and the box itself waterproof and against dust.
- Tolerance of specified tightening torque ±10%, if no others are specified.

Power cable connection at terminal box

The following steps must be taken to connect the power cable to the terminal box:

1. Open the cover of the terminal box.

   Unscrew and remove the mounting screws (4 pcs.).
2. Remove the protection cover of cable gland.
3. Detach the adapter plate ③ from the terminal box.
4. Firmly secure the adapter plate to the metric cable gland on the power cable. Use a reduction piece for power wire cross-sections of 1.5 mm² and 2.5 mm².

   Before attaching the power cable to the adapter plate, check the O-ring for proper condition and correct position.
5. Place the power cable through the opening into the terminal box up to the adapter plate. Attach the adapter plate to the terminal box.

   Tightening torque of the screws ⑥: 9 Nm.

   Before attaching the adapter plate ⑥ to the terminal box, check the O-ring ⑤ inserted in the adapter plate for proper condition and correct position.
6. Connect the wires according to the standard or double cabling connection diagram.

   Observe the following tightening torques:

Designation	Type	Connection mm²	Size / type	Tightening torque Nm
Clamp power U1, V1, W1	WEF	1.5 … 16 (RLK1200) 1.5 … 35 (RLK1300)	M6	2.5
Clamp 1 ... 6 temperature sensor / holding brake (option)	WEF	0.2 … 2.5	Tension spring clamp	-
Ring terminal for PE and shield	RT		M8	3.8
WEF = wire end ferrule RT = ring terminal end				

Tab.8-4: Connection screws terminal box

7. Close and attach the terminal box lid.

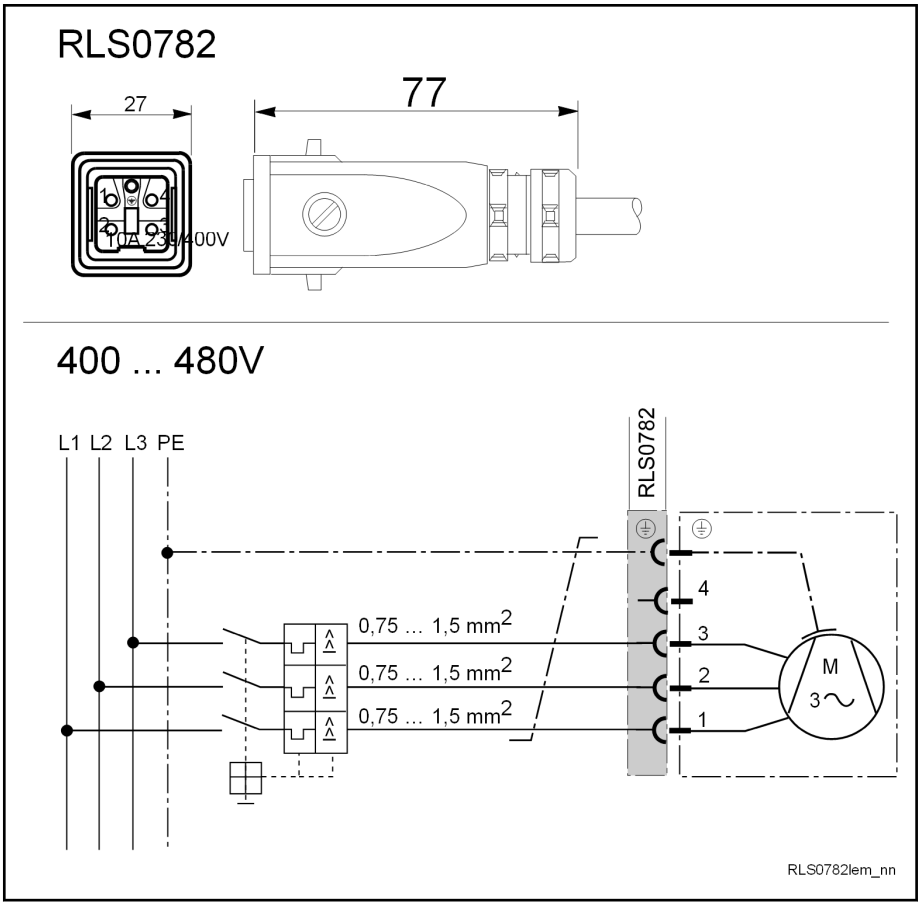
   Apply Loctite 243 (liquid screwlock) to the thread of the mounting screws for the lid ① and then attach the lid with all of the mounting screws.

   Screw tightening torque: 6.5 Nm.

   Before attaching the cover to the terminal box, check the glued-in seal ② on the terminal box cover for proper condition and correct position.

Connection

Fan connection 3-phase



RLS0782 Clamping area cable gland 7 ... 10 mm
Fig.8-8: Fan connection 3-phase with protection switch

The activation of the fan units is done via the adjustable motor protection device.

The activate principle of the motor protection switch is based on the fact that the motor current-carrying bimetal trip heats up faster than the motor winding and it separates this from the mains before critical temperature values are reached.

The motor protection switches are adjusted to the rated current of the fan unit. Heed when selecting the motor protection switch that the adjustable range must agree with the rated current of the fan unit.

9 Liquid Cooling MSK133

9.1 Water Cooling of Motors

9.1.1 Selection of Cooling System

The heat of the transformed motor power loss P_V is dissipated using the cooling water. Liquid cooled motors may only be load with the specified nominal torque, if an external heat exchanger unit is connected and the necessary cooling inlet temperature is ensured.

☞
- Heat exchanger units are not in the scope of delivery of Bosch Rexroth and must be dimensioned and prepared by the customer. See also chapter 9.1.3 "Manufacturers of Heat Exchanger Units" on page 62.

Dimensioning

An effective power loss dissipation is precondition to reach the specified motor data. The height of the power loss in the motor is significantely defined by the utilization capacity of the motor. The motor performance depends from as good as or as fast as the power loss can be dissipated.

Therefore, dimension the performance of the heat exchanger unit or cooling system in such a way, that arising power loss of the motors can be removed at any time. This is valid for the total sum of each power loss, if several motors are operated on one cooling system, The necessary coolant pressure must be generated even at maximum volume current.

☞ The necessary cooling and pump performance is calculated by the sum of the connection motors, the specified minimum flow and the pressure drop.

Please observe the project planning manual "Liquid Cooling of Rexroth Drive Components", MNR R911266417.

Cooling circuit

Generally, 2 different cooling circuits are used to cool the motors.

- closed cooling circuit (no penetration of oxygen possible)
- half-open cooling circuit (only through the pressure compensation container can oxygen penetrade into the cooling system)

☞ Open cooling circuits with intensive oxygen contact are not allowed. Bosch Rexroth recommends to design the cooling circuits as closed system, to minimize the system-wide bacterial growth.

The occuring electro-chemical processes within the cooling system must be minimized via selection of the materials. Avoid mixed installations, e.g. combinations of different materials, like copper, brass, iron, zinc and halogenated plastics (e.g. tubes and sealings made of PVC)

Liquid Cooling MSK133

9.1.2 Potential Equalization of the Cooling System

Connect all components within the cooling system (e.g. motor, heat exchanger, pipe system, pump, pressure compensation container, etc.) with a potential equalization. Do the potential equalization with a copper busbar or copper wire with an appropriate conductor cross-section.

Coolant ducts may never have contact with live parts. Observe an insulating spacing > 13 mm! All cables must be mechanically fixed and checked on their tightness in regular intervals.

9.1.3 Manufacturers of Heat Exchanger Units

The following table shows several manufacturers of cooling aggregates. This list does not make a claim of being complete and is simply a small number of cooling aggregate manufacturers. Of course, other products of other manufacturers can be used.

☞ In general, Bosch Rexroth does not assume any guarantee for foreign products.

The performance test for the used coolants and the design of the liquid coolant system are generally the responsibility of the machine manufacturer.

Rittal GmbH & Co. KG	http://www.rittal.com
KKT Kraus Kälte- und Klimatechnik GmbH	http://www.kkt-chillers.com
Glen Dimplex Deutschland GmbH	http://www.riedel-cooling.com
BKW Kälte-Wärme-Versorgungstechnik GmbH	http://www.bkw-kuema.de
Hyfra Industriekühlanlagen GmbH	http://www.hyfra.de

Tab.9-1: Manufacturers of heat exchanger units

9.1.4 Coolants

The performance of the cooling system must be rated by the machine or coolant system manufacturer such that all requirements regarding flow, pressure, cleanliness, temperature gradient, etc. are maintained in every operating state.

The cooling medium must be provided by the customer. Water must be used as cooling medium. Water which is to be used as cooling water must comply with certain criteria and treated accordingly if necessary (see Fig. 9-2, Quality of the cooling water). Coolant additives must be admixed into the coolant for corrosion protection and chemical stabilization. The selected coolant additives must comply with the materials in the cooling system (e.g. copper, brass, stainless steel, etc.) and may not contain any environmentally hazardous substances.

A cooling with floating water from the supply network is not recommended. Normal water can be heavily calcified and cause sediments or corrosion within the cooling system. For any alues regarding composition of floating water, please refer to your local water supplier. Your manufacturer for coolant additives is on hand for further notes about necessary quality of the coolant water or additional water.

☞ Should other coolant mediums than water be used, a performance reduction of the motor can be necessary to dissipate the created power loss within the cooling medium. In this case, please contact your Bosch Rexroth sales partner.

NOTICE **Impairment or failure of motor, machine or cooling system!**

- For this reason, liquid cooled motors may only be operated as long as coolant supply is ensured.
- Observe the manufacturer's instructions when designing and operating cooling aggregates.
- Do not use coolants or cutting materials from machining processes for cooling.
- If the coolants, additives or cooling lubricants used are too aggressive, the motors may be damaged to an irreparable degree.

Quality of the cooling water

Requirements on the cooling water, especially with regard to the material compatibility must be adjusted with the manufacturer of coolant aggregates and the manufacturer of the coolant additives. Basically, the minimum requirements on the cooling water are shown in the following.

	Cooling water quality for motors with internal cooling circuit made of ...		
	Copper/brass	Aluminum pressure casting / steel	Stainless steel
pH-value (at 20 °C)	6 ... 9		
Total hardness	1.2 ... 1.8 mmol/l		1.2 ... 2.5 mmol/l
Concentration of chloride	< 40 ppm		< 150 ppm
Concentration of sulfate	< 50 ppm		< 200 ppm
Concentration of nitrate	< 50 ppm		
Part of dissolved materials	< 350 ppm		
Particle size of contaminations	≤ 100 µm		
Conductivity	< 50 µS/cm	< 500 µS/cm	< 2,000 µS/cm

Tab.9-2: Quality of the cooling water

Cleaning the coolant circuit

Inspect and clean (purge) the cooling system at regular intervals as specified in the machine and cooling system manufacturer's maintenance schedule.

Note that the utilization of unsuitable cleaning agents may cause irreversible damage to the motor cooling system. This type of damages does not lie within the responsibility of Bosch Rexroth.

NOTICE **Risk of damage to the motor cooling system by unsuitable cleaning agents! Loss of warranty!**

The only liquids or materials allowed to be used for cleaning and motor cooling are those which do not corrode the motor cooling system or do not react aggressively to the materials used in our motors.

⇒ Observe the information by the manufacturers of the cleaning agent and the cooling system.

9.1.5 Coolant Additives

The following table shows several manufacturers of cooling aggregates (Fig. 9-3, Manufacturers of chemical additives) This list does not make a claim of being complete and shows only a small number of manufacturers. Of course, other products of other manufacturers can be used.

- Bosch Rexroth is not in a position to give general statements or carry out investigations regarding applicability of process-related coolants, additives, or operating conditions and basically does not assume any guarantee for foreign products.
- The performance test for the used coolants and the design of the liquid coolant system are generally the responsibility of the machine manufacturer. The selected coolant additives must be compatible with the materials within the cooling system.
- Observe the environmental protection and waste disposal instructions at the place of installation when selecting the coolant additives.

Nalco Deutschland GmbH	http://www.nalco.com
FUCHS PETROLUB AG	http://www.fuchs-oil.com
Clariant Produkte (Deutschland) GmbH	http://www.antifrogen.de
hebro chemie GmbH	http://www.hebro-chemie.de
TYFOROP Chemie GmbH	http://www.tyfo.de
Schweizer-Chemie GmbH	http://www.schweitzer-chemie.de

Tab.9-3: Manufacturers of chemical additives

The proper chemical treatment is precondition to prevent corrosion, to maintain thermal transmission, and to minimize the growth of bacteria in all parts of the system.

In the following, the products of Nalco are exemplarily listed. Nalco makes different additives in form of "ready-to-use cooling water" and "water treatment kits" available, depending on the size of the cooling system.

The use of the following chemicals is designed for closed cooling systems and the following metallurgy.

- Stainless steel, aluminum, copper and non-ferrous metals

The packaging size and the ingredients of the water treatment kit are completely adapted to the corresponding system volume and the user may fill them into the coolant reservoir without observing further mixing ratios.

Ready-to-use cooling water (company NALCO)

System volume in liters	Ordering designation	Additives NALCO...
0.5 ... 50	Nalco CCL100.11R	CCL100

Tab.9-4: Ready-to-use cooling water (company NALCO)

Cooling water NALCO CCL100

Nalco CCL100 is a ready-to-use, preserved cooling water for the use in closed cooling water systems. It is supplied directly to the closed systems and contains all reagents in the propter treatment concentration.

Nalco CCL100 contains a corrosion inhibitor protecting iron, copper, copper alloys and aluminum against corrosion. Nalco CCL100 is free of nitrite and minimizes the micro-biological growth.

Water treatment kits (company NALCO)

System volume in liters	Ordering designation	Additives NALCO...
50 ... 99	480-BR100-100.88	TRAC100 7330 73199
100 ... 199	480-BR100-200.88	
200 ... 349	480-BR100-350.88	
350 ... 500	480-BR100-500.88	

Tab.9-5: Water treatment kits (company NALCO)

Coolant Additive NALCO TRAC100

Nalco TRAC100 is a liquid corrosion and film inhibitor for the use in closed cooling systems. Optionally with TRASAR technology: it monitors, shows and dosages the product automatically to its target concentration and continuously protects the system. NALCO TRAC100 is a complete inhibitor protection iron metal, copper alloys and aluminum against corrosion. NALCO TRAC100 is free of nitrite and minimizes the requirements for micro-biological control.

Coolant additive NALCO 7330

Nalco 7330 is a non-oxidizing broad band biocide and suiteable for application in closed cooling circuit systems.

Coolant additive NALCO 73199

Nalco 73199 is an organic corrosion inhibitor supporting a fast own protection layer and covering protection layer for non-ferrous metals.

The above additives are part of the preventive water treatment program by Nalco. It comprises not only the chemicals but also test methods, service and equipment. All these are made available to the user of the products.

For additional information and order placement, please contact Fa. Nalco.

Liquid Cooling MSK133

9.2 Coolant Connection

Coolant connection

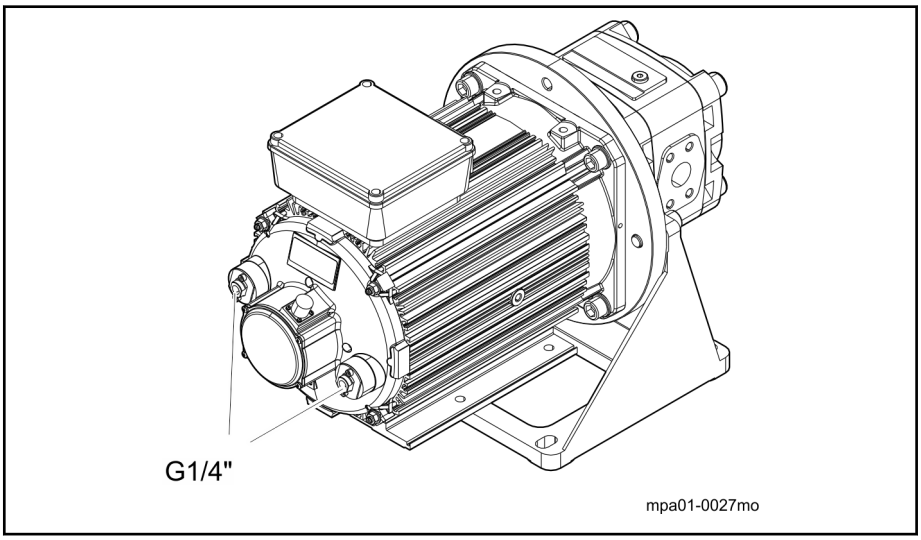


Fig.9-1: MSK133 coolant connection

The arrangement of intake (IN) and outtake (OUT) can done arbitrary and does not have any influence on the power data of the motor.

The connecting threads on the motor are covered with factory-attached protective caps. These protective plugs may only be removed immediately before screwing in the coolant lines or the quick coupling to prevent dirt from entering into the cooling system.

The following table shows the loads allowed for the motor-sided connection threads.

Motor	Connection thread	Max. allowed screw-in depth [mm]	Max. allowed tightening range [Nm]
MSK133	G1/4"	14	18 ... 20

Tab.9-6: Coolant port thread, allowed tightening torques and screw-in depths

NOTICE **The coolant port threads on the motor may be destroyed by incorrect tightening torques!**

The allowed motor connection tightening torque may not be exceeded! If the tightening torque or screw-in depth is exceeded, the motor may be damaged irreversibly.

The motor-sided coolant ports are provided for coolant port connections with axial seal.

Bosch Rexroth therefore recommends to use screw connections which already contain an O-ring for sealing the screw connection in axial direction.

For example, seals consisting of hemp, teflon tape or cone-shaped screw connections are not considered to be suitable because this type of seal may stress the connection thread on the motor to an unreasonably high extent and/or damage it permanently.

Liquid Cooling MSK133

The machine manufacturer is responsible for ensuring that the coolant port is tight and for verifying and accepting this tightness after the motor has been installed.

Moreover, the maintenance schedule of the machine should provide for a regular check of the proper state of the cooling port.

10 Commissioning

10.1 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.

10.2 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 chapter 6.6 "Storage Times" on page 38.
- 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.

10.3 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.

10.4 Commissioning the Pump

10.4.1 General Notes about Commissioning the Pump

For commissioning the internal gear pump PGH/PGM, the operating instruction of the hydraulic system must necessarily be observed.

Commissioning of the internal gear pump requires basic mechanical and hydraulical knowledge.

- The commissioning of the internal gear pump may only be done by skilled personnel (refer to "Rexroth Sytronix, Safety Notes and Instructions on Use, MPA01 Motor-Pump Unit", MNR R911339831).

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

- Ensure a correct assembly of the internal gear pump by qualified personnel before you take the internal gear 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 internal gear 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 internal gear pump with or without hydraulic fluid, the internal gear pump is damaged or even damaged immediately.

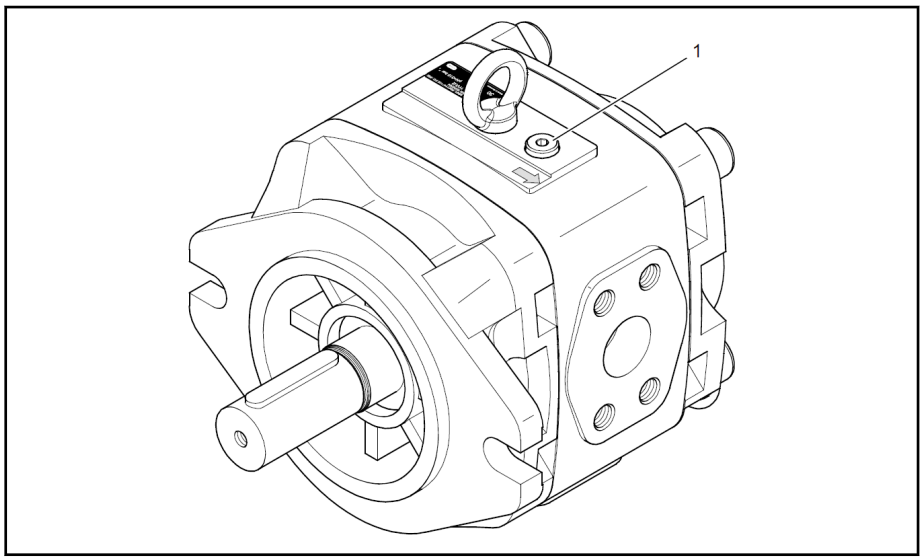
- When commissioning or re-commissioning a machine and/or system make sure that the suction and pressure lines of the internal gear pump are filled with hydraulic fluid and remain filled also during operation.

10.4.2 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.

10.4.3 First Commissioning



1 Bleed part internal gear pump (M)

Fig.10-1: Bleed part PGx

Proceed as follows to commission the internal gear pump PGH/PGM:

⚠ 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.

⚠ WARNING **Risk of intoxication and injury due to the leaking hydraulic medium! Contact with hydraulic fluids causes health hazards (e.g. eye injuries, skin lesions, intoxication in case of inhaling).**

- Before each commissioning, always check the lines for wear and/or damage.
- Wear protective gloves, protective goggles and suitable working clothes.
- Immediately consult a doctor if there is nevertheless contact between the hydraulic fluid and your eyes or your skin.

- Pre-fill the pump with filtered fluid. Depending on the installation position, filling can be performed via the suction, pressure or measurement port. For information regarding a suitable connection, please refer to the operating instruction of the system.
- Bleed the pump. For information on how to bleed the internal gear pump, please refer to the operating instruction of the system. If no switchable or automatic bleeding is provided, you must bleed the pump manually.

Manual bleeding of the pump

As standard, the bleed and measurement port of the internal gear pump is closed by means of G1/4 screw plug.

⚠ WARNING **Risk of injuries due to wrong locking screw!**

- For closing the bleed and measurement port, only use the supplied screw plug G1/4.
- Screws with another thread or another size do not have a tight seat and can therefore loosen at high pressure during operation and heavily harm persons in their environment.

1. Open the bleed and measurement port by removing the screw plug or switch to depressurized circulation according to the system´s operating instruction.
2. For bleeding the pump, switch the motor on shortly and immediately off again (jog-mode). Repeat this procedure until the fluid leaks free from bubbles and complete bleeding is ensured.
3. Cover the manually opened bleed port by screwing in the G 1/4 screw-plug. Tightening torque T = 30 Nm, tolerance +/- 10%.

Now, the internal gear pump is bled.

- Ensure that the system is depressurized.
- Switch on the drive motor and start-up the pump shortly until it reaches the maximum speed.
- Build up pressure slowly. In doing so, observe the instructions of the system manufacturer.
- When commissioning the system make sure that under high pressure, no fluid leaks.
- When commissioning the system make sure that no bubbles and/or foams are generated in the hydraulic fluid.
- Switch the motor off again.

10.4.4 Re-commissioning after 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.

11 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 16 "Troubleshooting" on page 85.

12 Maintenance and Repair

12.1 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!**

Let the motor cool down, before maintenance.

Use safety gloves.

Do not work on 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.

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 internal gear pump.

For more details refer to R911340908 "Rexroth Sytronix Assembly and Maintenance Internal Gear Pump PGH/PGM/PGF"

For more details refer to R911341629 "Rexroth Sytronix Assembly and Maintenance Axial Piston Variable Pump A10VZO/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.

12.2 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.

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.

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

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

12.3 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.

The service lives of motor components, such as seals and bearings, may vary depending on the operating conditions, such as operation mode, speed, vibration and shock load, and frequent reverse mode.

We recommend to change the bearing after 30,000 operating hours. Shorter replacement intervals may be necessary; cf. checks during operation .

We recommend regular visual inspections on shaft sealing rings. Depending on operating conditions, signs of wear may appear after 5,000 operating hours. If necessary, replace the shaft sealing rings.

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)

13 Disassembly and Exchange

13.1 Changing the Motor

⚠ 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.

13.2 Disassemble and Change the Pump

13.2.1 Tools Required

Disassembly of the internal gear pump PGH.-3X can be done via standard tools.

You need:

- A set of Allen keys für the housing screws.
- Pull-off equipment for the fitting key at the cylindrical shaft end.
- A screwdriver, flat, for prying off the end cover and the housing.

- An oil tray and cloths for absorbing the residual oil.

13.3 Preparing Disassembly

Decommission the overall system as described in the system's operating instruction.

Then prepare the disassembly of the internal gear 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.

13.4 Disassembling the Internal Gear Pump

In order to disassemble the internal gear 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 internal gear 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. Lock the pump's suction port. When doing so, observe the instructions of the system's operating instruction.
2. Disconnect the piping on the pressure side.
3. Loosen the fastening screws at the pump.

   The pump is disassembled.

14 Environmental Protection and Disposal

The disposal of the components can be done in the normal recycling process under consideration of the respective valid national regulations.

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

Significant components

Basically, the components consist of the following components:

- Steel, aluminum, cupper, brass
- Plastics, insulating and composite material
- Electronic components
- Permanent magnets

Plastic parts of the products may 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 applicable legal provisions.

⚠ WARNING **Danger due to permanent magnets!**

▸ Health hazard for persons with heart pacemakers, metallic implants and hearing aids in direct environment of permanent magnets.

▸ Crushing hazard of fingers and hand due to heavy attractive forces of the magnets.

▸ Risk of destruction of sensitive parts such as watches, credit cards, ...

The permanent magnets on the rotor must be demagnetized before disposal to avoid injuries or damage.

Demagnetize magnets

The demagnetization of the magnets on the rotor is reached via a special thermal handling. The handling duration is influenced by the frame size of the rotor. The rotor must remain for 30 minutes in the oven, starting at the time, the magnetic surface has reached 300 °C. If the magnets are surrounded by a bandage, we recommend to remove them before heating-up the rotor in an oven to unfold the magnets.

In the case of successful demagnetization, the magnets can be separated from the rotor sleeves after cooling of the rotor without any effort.

Packaging

Out packaging materials do not contain any problematic materials and can be recycled without any problems. The following are suitable as packaging materials: wood, cardboard and polystyrene.

Hydraulic Fluid

Dispose of the hydraulic fluid according to the respectively valid safety data sheets for this hydraulic fluids.

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.

Environmental Protection and Disposal

End users in the EU are legally bound to return used batteries. Outside the validity of the EU Directive 2006/66/EC, the particularly applicable regulations must be followed.

Used batteries can contain hazardous substances which can harm the environment or people's health when improperly stored or disposed of.

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

Disposal by the manufacturer

Our products can be returned to us for disposal. Please observe that no adherences like oil, grease or other foreign materials or components are contained.

The motor components must be delivered in a suitable packaging (use origin package if applicable). Observe the dangerous goods relations (IATA) in the case of an air transport of the rotor.

Deliver 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

15 Extension and Conversion

Motor-pump unit

Internal gear pumps can be combined into multiple pumps using original Bosch Rexroth combination parts. In doing so, consider the system's operating instruction. For information regarding the assembling of the combination parts, please refer to the installation instruction of the respective combination part. Pump combinations may only be installed by authorized experts.

Any conversion of the internal gear pump is not allowed.

16 Troubleshooting

16.1 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. chapter 12.3 "Service Repair and Spare Parts" on page 78

16.2 Malfunction Table PGH

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"	
	See malfunction "Back pump is blocked"	
	See malfunctions "Back elements exceed maximum torque"	
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
	Combination part is not suitable	Observe the project planning information in RE 10227
Pressure peaks over >350 bar from system	Feedback from hydraulic system	During project planning, observe the admissible pressure peak in RE 10227
		Integrate pressure control valves
The system interfaces cannot be mounted	Wrong connection flanges/screws suction port and/or pressure connection selected	Observe the flange dimensioning in RE 10227
Viscosity <10 mm^2/s	Hydraulic fluid too hot	Information on hydraulic fluids in RE 90220; observe the project planning information in RE 10227; 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 RE 10227; check the water content, viscosity, turbidity and smell on a regular basis
	Wrong hydraulic fluid filled in	
	Thickening due to mixing	

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 project planning information in RE 10227
	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 project planning information in RE 10227 and check according to maintenance schedule
	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 information on the required drive power in RE 10227
	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 project planning information in RE 10227
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"	

Troubleshooting

Malfunction	Possible cause	Remedy
Inlet pressure <0.6 bar	Faulty dimensioning of the suction line (length, cross-sections, angle)	Observe the project planning information in RE 10227
	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	During project planning, observe the admissible pressure peak in RE 10227
	See malfunctions "Admissible level of contamination of the hydraulic fluid exceeded"	
	See malfuntion "Pump wear"	
Permanent output pressure >315bar	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. In doing so, observe the information in RE 10227
Wear caused by radial force on the shaft	Incorrect installation	Observe the installation information
	Unsuitable parts	Use only an original combination part set
	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
	Unsuitable parts	Use only an original combination part set
	See malfuntion "Pump wear"	
Pump wear	Contaminated or wrong operating medium	Filter or exchange the operating medium, perform regular controls.

Tab.16-1: Measures to be taken in case of PGH pump malfunctions

16.3 Malfunctions MSK

Malfunction	Possible cause	Remedy
The motor does not run	Drive enable is missing	Activate the drive enable
	Controller fault	Troubleshooting according to the documentation of the controller
	Supply voltage is missing	Check the supply voltage
	Brake is not released	Check the brake activation
Vibrations	Coupling elements or attachments are poorly balanced	Re-balance
	Adjustment of shaft end attachments (coupling, gearbox, ...) is insufficient	Re-align the attachments
	Mounting screws are loose	Lock the screw connections as specified
Running noise	Foreign bodies within the motor	Stop operation of the motor -> repair by manufacturer
	Bearing is damaged	Stop operation of the motor -> repair by manufacturer
High motor temperature Motor temperature monitoring unit responds	Operation outside of characteristic data	Reduce the load, check the sizing if necessary
	Heat dissipation is impaired	Clean the motor Clean the grille of the fan unit and check the function of the fan Check the coolant circuit of liquid cooling systems
Wrong or incorrect temperature displayed	Temperature sensor not connected	Connect the temperature sensor
	Temperature sensor is defective	Stop operation of the motor -> repair by manufacturer Connect the backup temperature sensor, if any is available.

Tab.16-2: Measures to be taken in case of MSK motor failures

17 Technical Data

17.1 Electrical Characteristic Values Motor

17.1.1 MSK101C

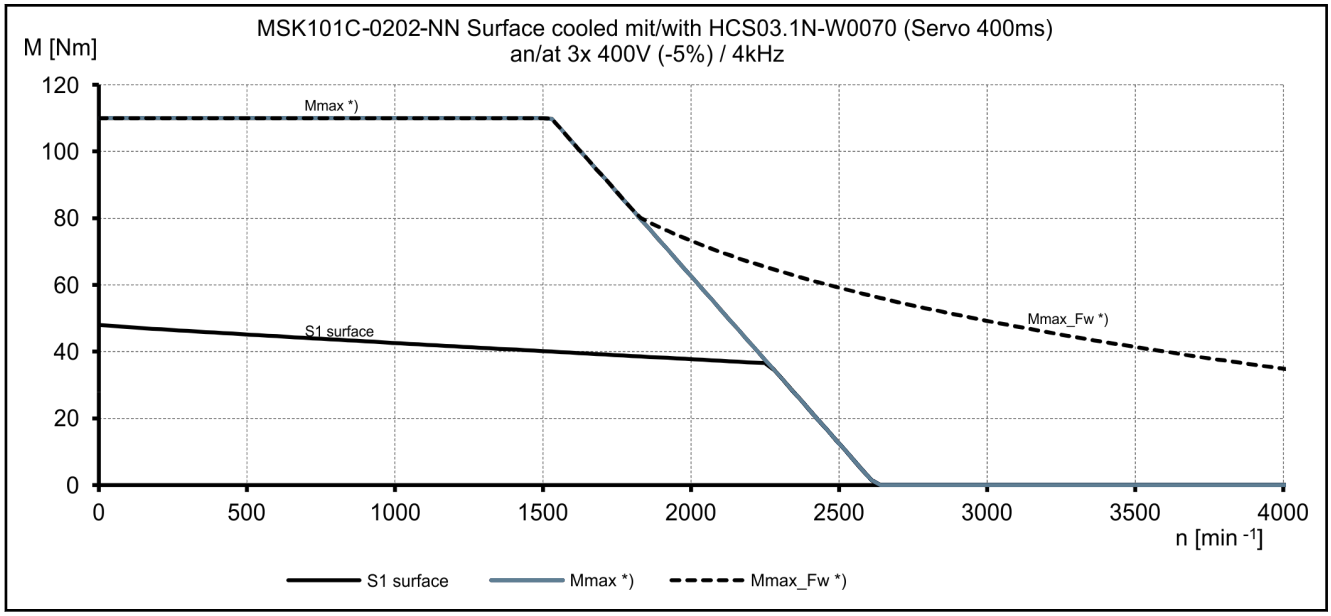
Data Sheet

Designation	Symbol	Unit	MSK101C-0202-NN	MSK101C-0300-NN
Continuous torque at standstill, surface	M_{0_S}	Nm	48.0	
Continuous current at standstill, surface	$I_{0\_S(rms)}$	A	22.4	28.1
Maximum torque	M_{max}	Nm	110.0	
Maximum current	$I_{max(rms)}$	A	67.1	84.2
Torque constant at 20 °C	K_{M_N}	Nm/A	2.37	1.88
Voltage constant at 20 °C[1)]	K_{EMK_1000}	V/1000 min^{-1}	146.0	115.7
Winding resistance at 20 °C	R_{12}	Ohm	0.68	0.45
Winding inductivity	L_{12}	mH	9.7	6.0
Discharge capacity of the component	C_{dis}	nF	6.2	
Number of pole pairs	o	-	4	
Moment of inertia of the rotor	J_{rot}	$kg*m^2$	0.00650	
Thermal time constant	T_{th_nom}	min	13.0	38.0
Maximum velocity	n_{max}	min^{-1}	4000	4500
Sound pressure level	L_P	dB[A]	< 75	
Mass	m_{mot}	kg	28.3	
Surrounding air temperature during operation	T_{amb}	°C	0 ... 40	
Protection class acc. to EN 60034	-	-	IP65	
Insulation class according to EN 60034-1	T.CL.	-	155	
				Latest amendment: 2012-08-30

1) Manufacturing tolerance ±5 %

Tab.17-1: MSK - Technical data

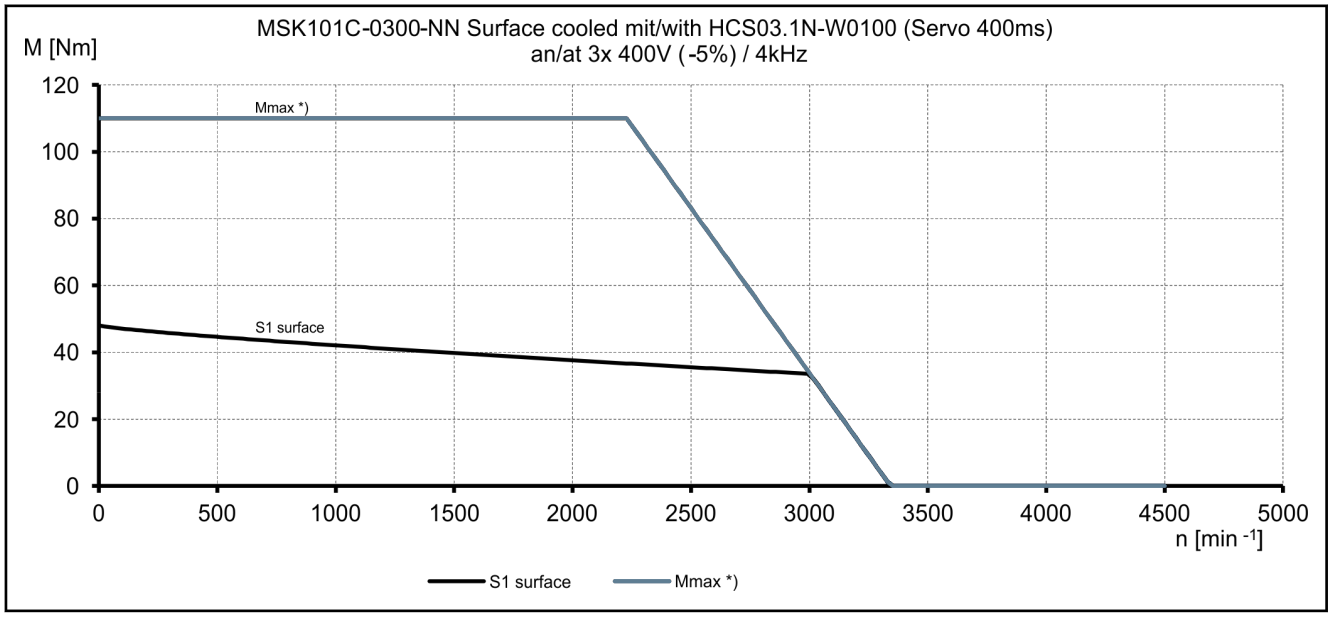
Technical Data



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with field weakening; characteristic curve valid for controller HCS03.1E-W0070

Fig.17-1: Speed-torque characteristic curves



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V

Fig.17-2: Speed-torque characteristic curves

17.1.2 MSK101D

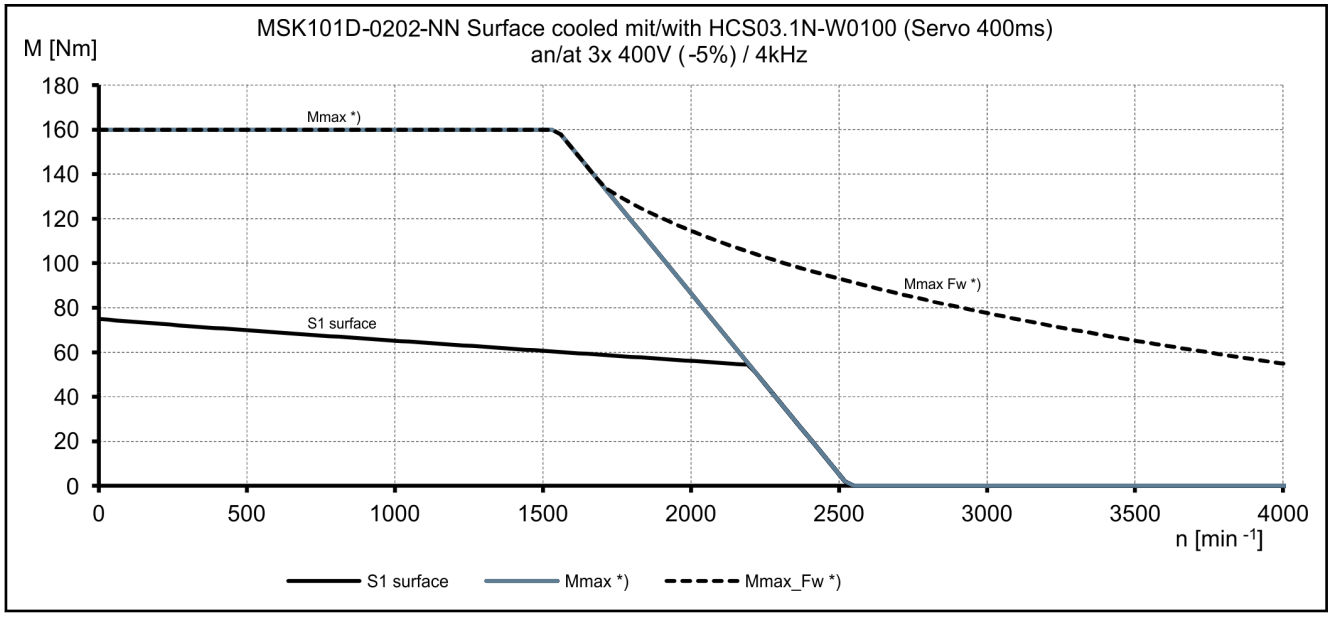
Data Sheet

Designation	Symbol	Unit	MSK101D-0202-NN	MSK101D-0300-NN
Continuous torque at standstill, surface	M_{0_S}	Nm	75.0	
Continuous current at standstill, surface	$I_{0\_S(rms)}$	A	33.3	45.9
Maximum torque	M_{max}	Nm	160.0	
Maximum current	$I_{max(rms)}$	A	99.9	137.7
Torque constant at 20 °C	K_{M_N}	Nm/A	2.48	1.80
Voltage constant at 20 °C[1)]	K_{EMK_1000}	V/1000 min^{-1}	152.0	113.0
Winding resistance at 20 °C	R_{12}	Ohm	0.35	0.19
Winding inductivity	L_{12}	mH	6.0	3.2
Discharge capacity of the component	C_{dis}	nF	13.2	9.1
Number of pole pairs	o	-	4	
Moment of inertia of the rotor	J_{rot}	$kg*m^2$	0.00932	
Thermal time constant	T_{th_nom}	min	18.0	100.0
Maximum velocity	n_{max}	min^{-1}	4000	4600
Sound pressure level	L_P	dB[A]	< 75	
Mass	m_{mot}	kg	40	
Surrounding air temperature during operation	T_{amb}	°C	0 ... 40	
Protection class acc. to EN 60034	-	-	IP65	
Insulation class according to EN 60034-1	T.CL.	-	155	
Latest amendment: 2013-03-01				

1) Manufacturing tolerance ±5 %

Tab.17-2: MSK - Technical data

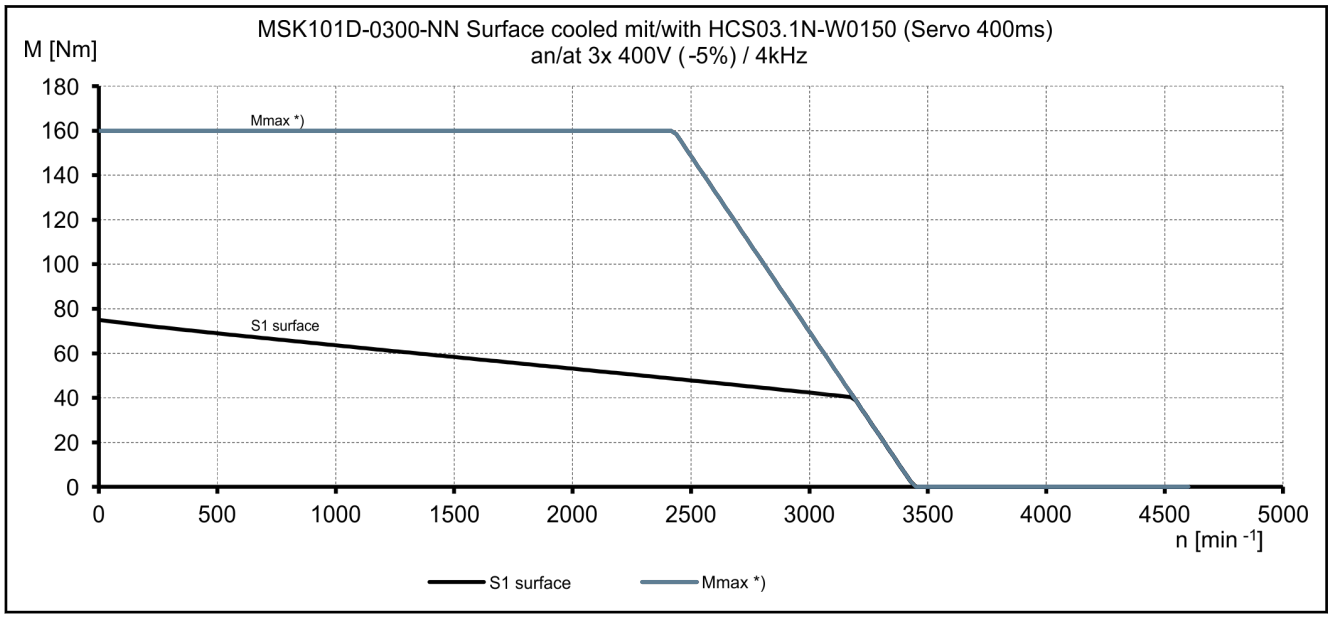
Technical Data



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with field weakening; characteristic curve valid for controller HCS03.1E-W0100

Fig.17-3: Speed-torque characteristic curves



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V

Fig.17-4: Speed-torque characteristic curves

17.1.3 MSK101E

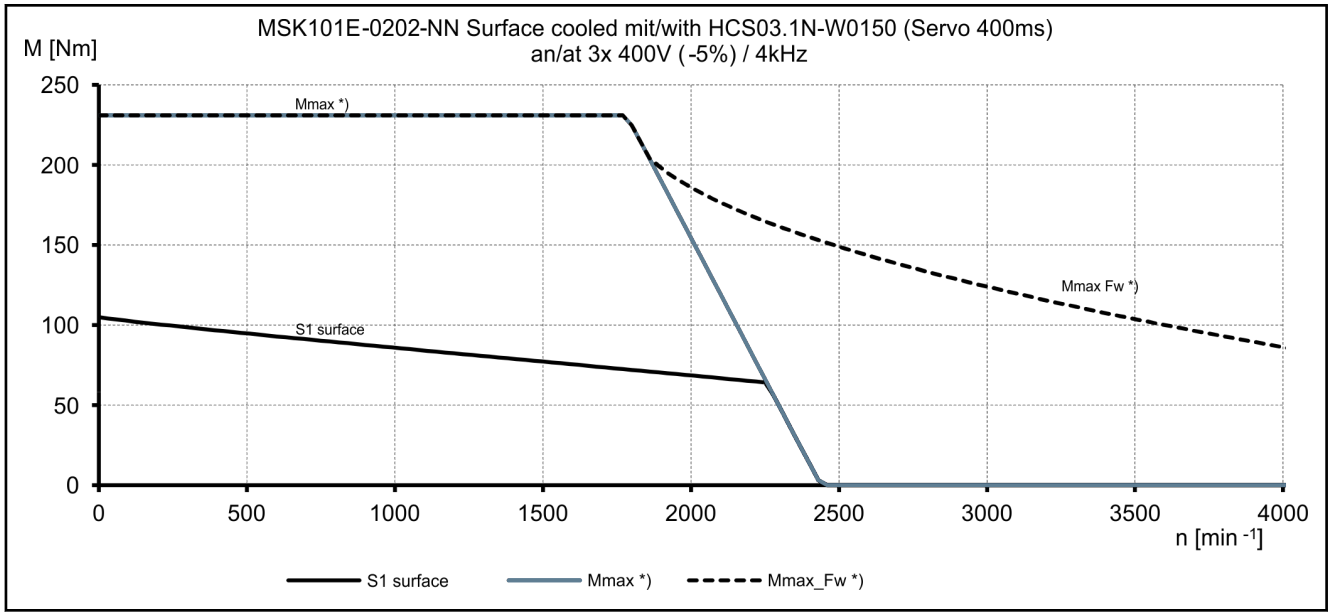
Data Sheet

Designation	Symbol	Unit	MSK101E-0202-NN	MSK101E-0300-NN
Continuous torque at standstill, surface	M_{0_S}	Nm	105.0	
Continuous current at standstill, surface	$I_{0\_S(rms)}$	A	48.2	62.4
Maximum torque	M_{max}	Nm	231.0	
Maximum current	$I_{max(rms)}$	A	144.5	187.4
Torque constant at 20 °C	K_{M_N}	Nm/A	2.40	1.85
Voltage constant at 20 °C[1)]	K_{EMK_1000}	V/1000 min^{-1}	148.0	113.8
Winding resistance at 20 °C	R_{12}	Ohm	0.18	0.11
Winding inductivity	L_{12}	mH	3.3	1.96
Discharge capacity of the component	C_{dis}	nF	15.2	16.7
Number of pole pairs	o	-	4	
Moment of inertia of the rotor	J_{rot}	$kg*m^2$	0.01380	
Thermal time constant	T_{th_nom}	min	24.0	100.0
Maximum velocity	n_{max}	min^{-1}	4000	4600
Sound pressure level	L_P	dB[A]	< 75	
Mass	m_{mot}	kg	53.5	
Surrounding air temperature during operation	T_{amb}	°C	0 ... 40	
Protection class acc. to EN 60034	-	-	IP65	
Insulation class according to EN 60034-1	T.CL.	-	155	
				Latest amendment: 2012-06-25

1) Manufacturing tolerance ±5 %

Tab.17-3: MSK - Technical data

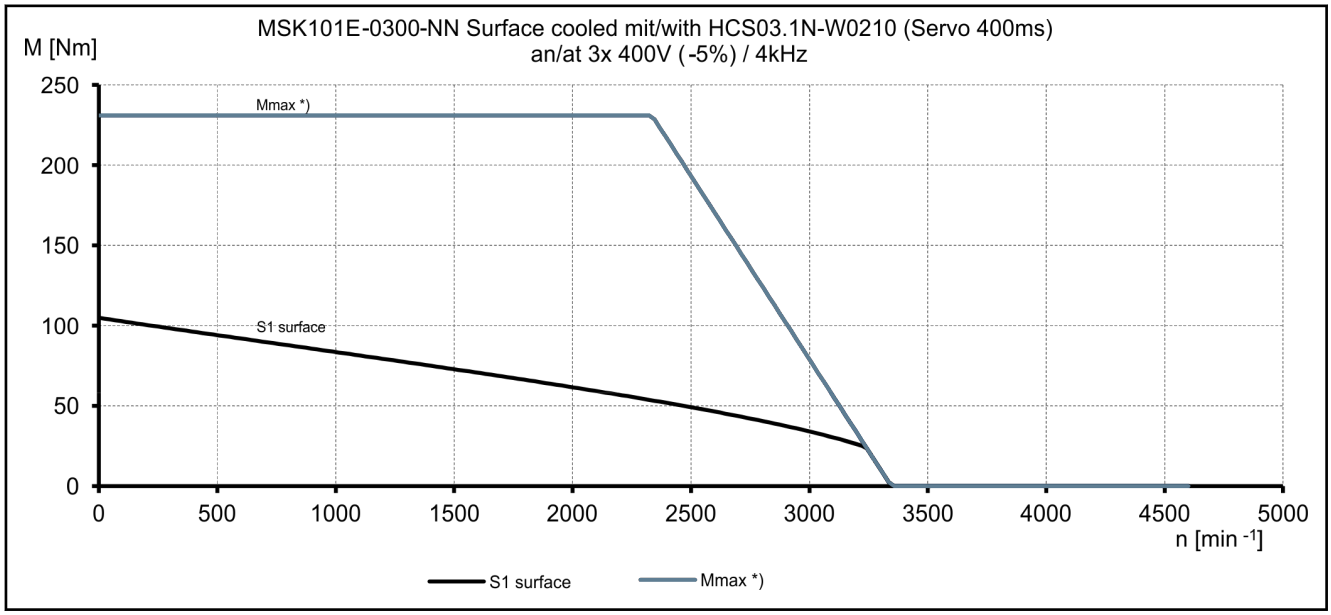
Technical Data



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with field weakening; characteristic curve valid for controller HCS03.1E-W0150

Fig.17-5: Speed-torque characteristic curves



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V

Fig.17-6: Speed-torque characteristic curves

17.1.4 MSK101F

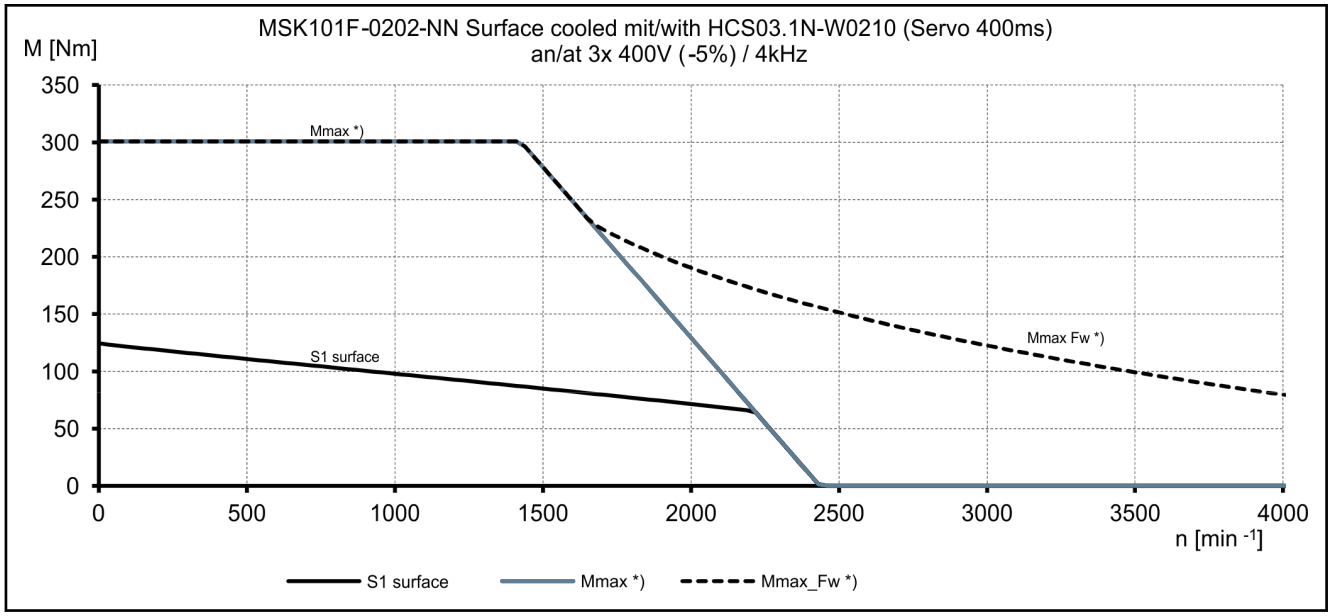
Data Sheet

Designation	Symbol	Unit	MSK101F-0202-NN	MSK101F-0300-NN
Continuous torque at standstill, surface	M_{0_S}	Nm	124.5	
Continuous current at standstill, surface	$I_{0\_S(rms)}$	A	54.8	71.4
Maximum torque	M_{max}	Nm	300.8	310.0
Maximum current	$I_{max(rms)}$	A	164.3	214.0
Torque constant at 20 °C	K_{M_N}	Nm/A	2.56	1.92
Voltage constant at 20 °C[1)]	K_{EMK_1000}	V/1000 min^{-1}	158.0	118.0
Winding resistance at 20 °C	R_{12}	Ohm	0.17	0.094
Winding inductivity	L_{12}	mH	3.3	1.88
Discharge capacity of the component	C_{dis}	nF	17.4	18.9
Number of pole pairs	o	-	4	
Moment of inertia of the rotor	J_{rot}	$kg*m^2$	0.01640	
Thermal time constant	T_{th_nom}	min	30.0	69.0
Maximum velocity	n_{max}	min^{-1}	4000	4400
Sound pressure level	L_P	dB[A]	< 75	
Mass	m_{mot}	kg	59.8	
Surrounding air temperature during operation	T_{amb}	°C	0 ... 40	
Protection class acc. to EN 60034	-	-	IP65	
Insulation class according to EN 60034-1	T.CL.	-	155	
				Latest amendment: 2012-12-12

1) Manufacturing tolerance ±5 %

Tab.17-4: MSK - Technical data

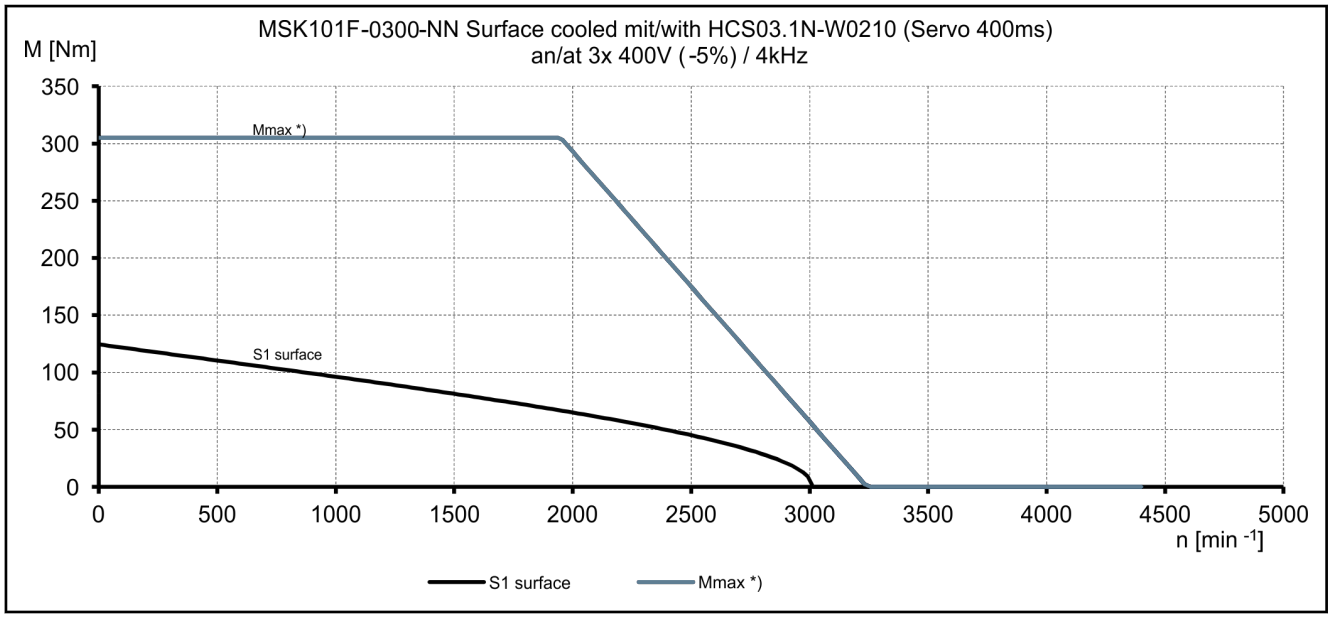
Technical Data



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with field weakening; characteristic curve valid for controller HCS03.1E-W0210

Fig.17-7: Speed-torque characteristic curves



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V

Fig.17-8: Speed-torque characteristic curves

17.1.5 MSK133B Technical Data

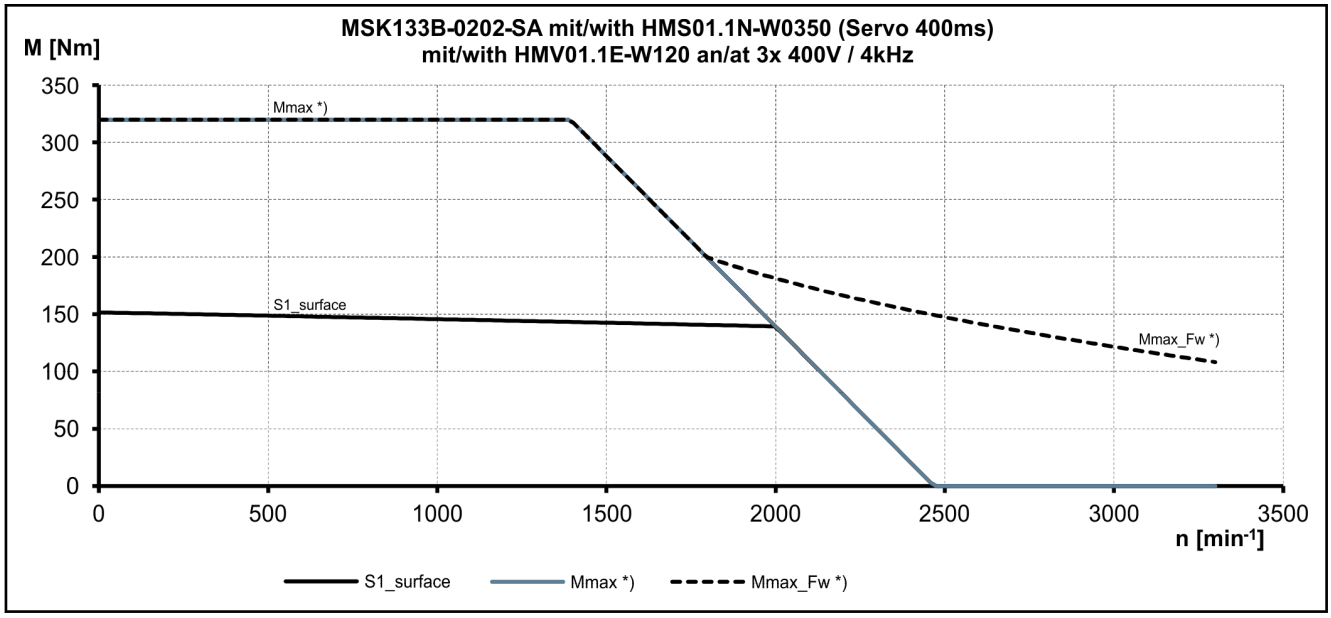
Data Sheet

Designation	Symbol	Unit	MSK133B-0202-SA	MSK133B-0203-FN
Continuous torque at standstill, surface	M_{0_S}	Nm	152.0	---
Continuous current at standstill, surface	$I_{0\_S(rms)}$	A	63.0	---
Standstill continuous torque liquid	M_{0_L}	Nm	---	162.0
Continuous standstill current liquid	$I_{0\_L(rms)}$	A	---	69.4
Maximum torque	M_{max}	Nm	320.0	300.0
Maximum current	$I_{max(rms)}$	A	160.0	
Torque constant at 20 °C	K_{M_N}	Nm/A	2.34	
Voltage constant at 20 °C[1)]	K_{EMK_1000}	V/1000 min^{-1}	155.2	
Winding resistance at 20 °C	R_{12}	Ohm	0.153	
Winding inductivity	L_{12}	mH	10.5	9.5
Discharge capacity of the component	C_{dis}	nF	14.4	10.7
Number of pole pairs	o	-	3	
Moment of inertia of the rotor	J_{rot}	$kg*m^2$	0.04760	
Thermal time constant	T_{th_nom}	min	16.6	8.0
Maximum velocity	n_{max}	min^{-1}	3300	
Sound pressure level	L_P	dB[A]	smaller than 78	
Mass	m	kg	91.6	
Surrounding air temperature during operation	T_{amb}	°C	0 ... 40	
Protection class acc. to EN 60034	-	-	IP65	
Insulation class according to EN 60034-1	T.CL.	-	155	
Data liquid cooling				
Power loss to be dissipated	P_V	kW	---	2.10
Coolant inlet temperature	T_{in}	°C	---	10...40
Allowed coolant temperature rise at P_V	ΔT_{max}	K	---	8
Necessary coolant flow at P_V	Q_{min}	l/min	---	4.0
Pressure loss at Q_{min}	Δp	bar	---	smaller than 0.6
Maximum allowed inlet pressure	p_{max}	bar	---	6.0
Volume of coolant duct	V_{cool}	u	---	0.15
Material coolant duct			Stainless steel	
				Latest amendment: 2013-11-20

1) Manufacturing tolerance ±5 %

Tab.17-5: MSK - Technical data

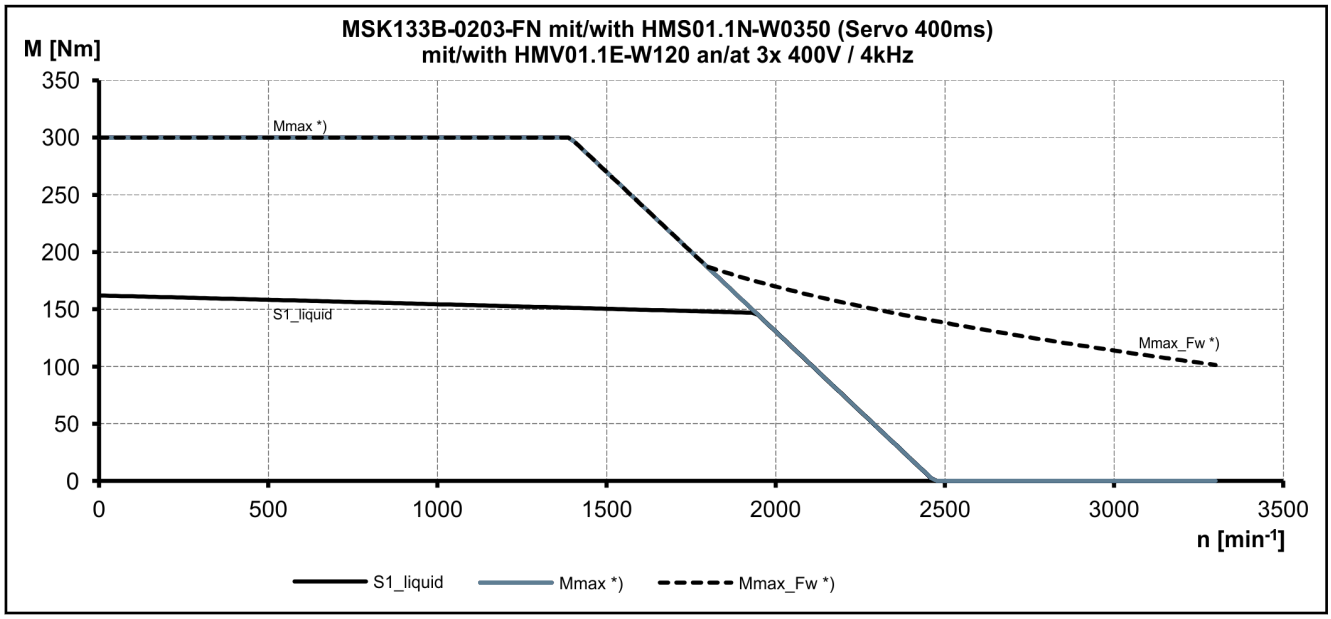
Technical Data



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V with control reluctance characteristic curve (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with control reluctance characteristic curve and field weakening; characteristic curve valid for controller HCS04.2E-W0500

Fig.17-9: Speed-torque characteristic curves



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V with control reluctance characteristic curve (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with control reluctance characteristic curve and field weakening; characteristic curve valid for controller HCS04.2E-W0500

Fig.17-10: Speed-torque characteristic curves

17.1.6 MSK133C Technical Data

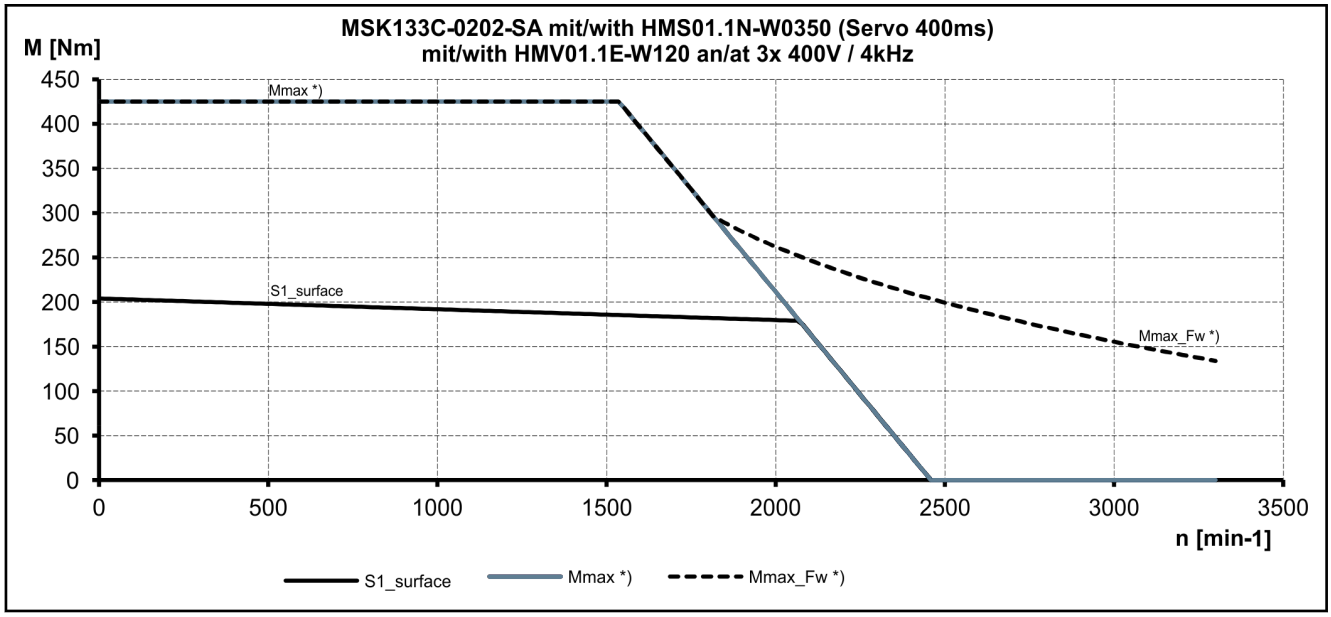
Data Sheet

Designation	Symbol	Unit	MSK133C-0202-SA	MSK133C-0203-FN
Continuous torque at standstill, surface	M_{0_S}	Nm	204.0	---
Continuous current at standstill, surface	$I_{0\_S(rms)}$	A	81.0	---
Standstill continuous torque liquid	M_{0_L}	Nm	---	232.5
Continuous standstill current liquid	$I_{0\_L(rms)}$	A	---	93.0
Maximum torque	M_{max}	Nm	425.0	400.0
Maximum current	$I_{max(rms)}$	A	205.0	
Torque constant at 20 °C	K_{M_N}	Nm/A	2.47	
Voltage constant at 20 °C[1)]	K_{EMK_1000}	V/1000 min^{-1}	157.6	
Winding resistance at 20 °C	R_{12}	Ohm	0.103	
Winding inductivity	L_{12}	mH	7.8	7
Discharge capacity of the component	C_{dis}	nF	15.2	
Number of pole pairs	o	-	3	
Moment of inertia of the rotor	J_{rot}	$kg*m^2$	0.06800	
Thermal time constant	T_{th_nom}	min	16.6	8.0
Maximum velocity	n_{max}	min^{-1}	3300	
Sound pressure level	L_P	dB[A]	smaller than 78	
Mass	m	kg	111.0	
Surrounding air temperature during operation	T_{amb}	°C	0 ... 40	
Protection class acc. to EN 60034	-	-	IP65	
Insulation class according to EN 60034-1	T.CL.	-	155	
Data liquid cooling				
Power loss to be dissipated	P_V	kW	---	2.70
Coolant inlet temperature	T_{in}	°C	---	10...40
Allowed coolant temperature rise at P_V	ΔT_{max}	K	---	8
Necessary coolant flow at P_V	Q_{min}	l/min	---	5.0
Pressure loss at Q_{min}	Δp	bar	---	smaller than 0.75
Maximum allowed inlet pressure	p_{max}	bar	---	6.0
Volume of coolant duct	V_{cool}	u	---	0.18
Material coolant duct			Stainless steel	
				Latest amendment: 2013-11-11

1) Manufacturing tolerance ±5 %

Tab.17-6: MSK - Technical data

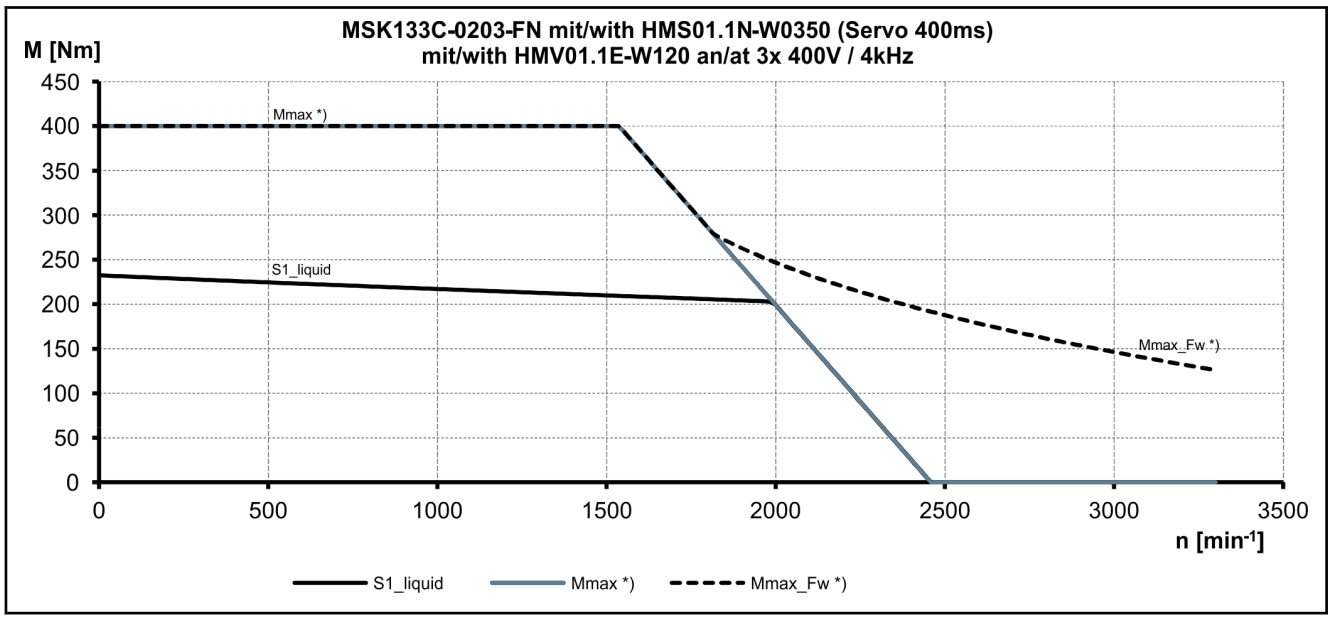
Technical Data



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V with control reluctance characteristic curve (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with control reluctance characteristic curve and field weakening; characteristic curve valid for controller HCS04.2E-W0500

Fig.17-11: Speed-torque characteristic curves



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V with control reluctance characteristic curve (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with control reluctance characteristic curve and field weakening; characteristic curve valid for controller HCS04.2E-W0500

Fig.17-12: Speed-torque characteristic curves

17.1.7 MSK133D Technical Data

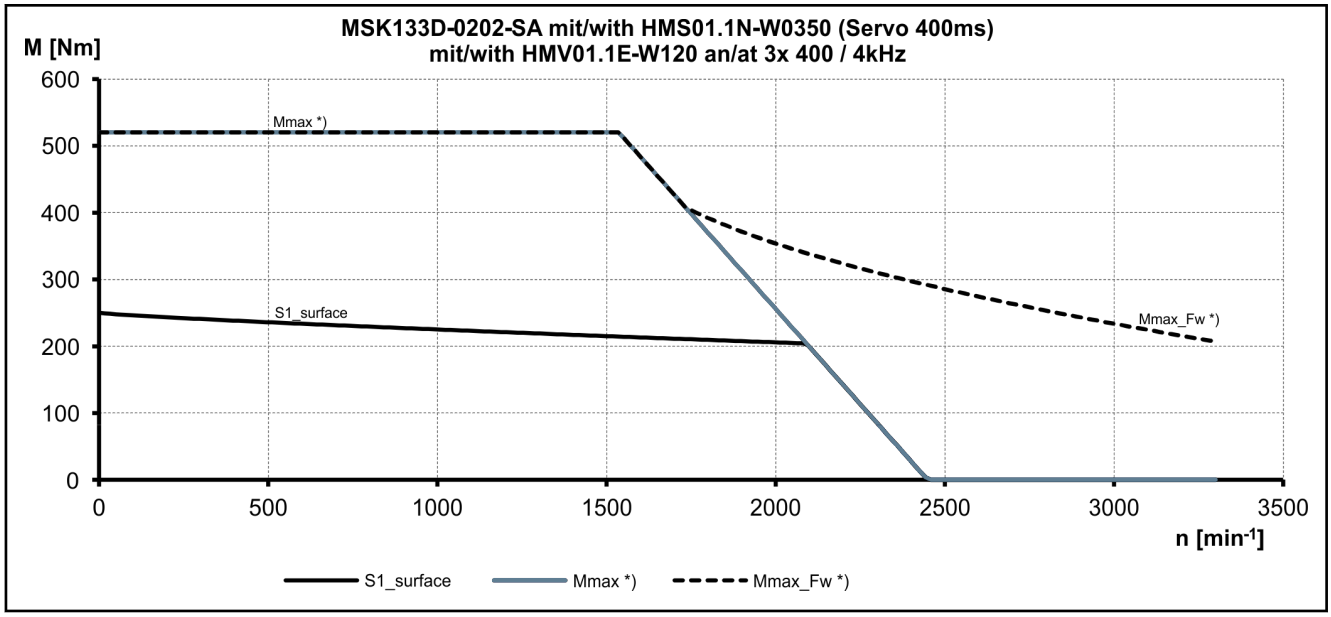
Data Sheet

Designation	Symbol	Unit	MSK133D-0202-SA	MSK133D-0203-FN
Continuous torque at standstill, surface	M_{0_S}	Nm	250.0	---
Continuous current at standstill, surface	$I_{0\_S(rms)}$	A	100.0	---
Standstill continuous torque liquid	M_{0_L}	Nm	---	290.0
Continuous standstill current liquid	$I_{0\_L(rms)}$	A	---	122.2
Maximum torque	M_{max}	Nm	520.0	500.0
Maximum current	$I_{max(rms)}$	A	265.0	
Torque constant at 20 °C	K_{M_N}	Nm/A	2.45	
Voltage constant at 20 °C[1)]	K_{EMK_1000}	V/1000 min^{-1}	155.8	
Winding resistance at 20 °C	R_{12}	Ohm	0.075	
Winding inductivity	L_{12}	mH	6.1	6
Discharge capacity of the component	C_{dis}	nF	16.4	18.4
Number of pole pairs	o	-	3	
Moment of inertia of the rotor	J_{rot}	$kg*m^2$	0.07800	
Thermal time constant	T_{th_nom}	min	18.2	8.0
Maximum velocity	n_{max}	min^{-1}	3300	
Sound pressure level	L_P	dB[A]	smaller than 78	
Mass	m	kg	127.0	
Surrounding air temperature during operation	T_{amb}	°C	0 ... 40	
Protection class acc. to EN 60034	-	-	IP65	
Insulation class according to EN 60034-1	T.CL.	-	155	
Data liquid cooling				
Power loss to be dissipated	P_V	kW	---	3.10
Coolant inlet temperature	T_{in}	°C	---	10...40
Allowed coolant temperature rise at P_V	ΔT_{max}	K	---	8
Necessary coolant flow at P_V	Q_{min}	l/min	---	6.0
Pressure loss at Q_{min}	Δp	bar	---	smaller than 0.9
Maximum allowed inlet pressure	p_{max}	bar	---	6.0
Volume of coolant duct	V_{cool}	u	---	0.21
Material coolant duct			Stainless steel	
				Latest amendment: 2013-11-25

1) Manufacturing tolerance ±5 %

Tab.17-7: MSK - Technical data

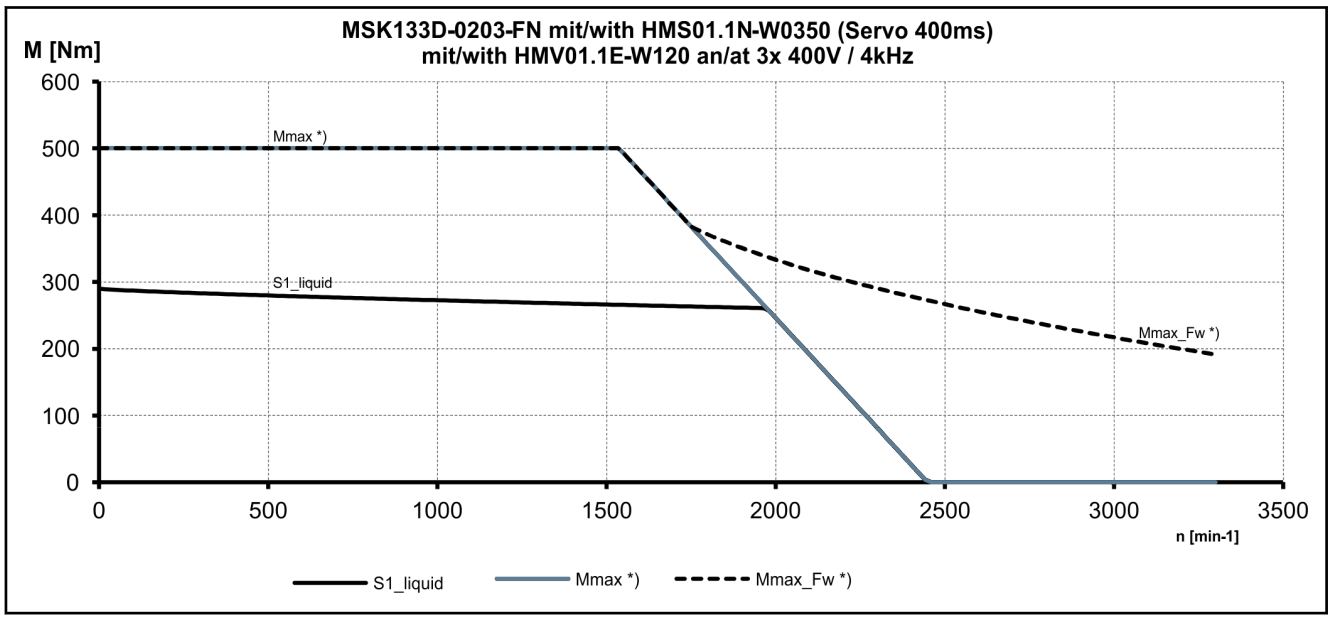
Technical Data



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V with control reluctance characteristic curve (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with control reluctance characteristic curve and field weakening; characteristic curve valid for controller HCS04.2E-W0500

Fig.17-13: Speed-torque characteristic curves



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V with control reluctance characteristic curve (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with control reluctance characteristic curve and field weakening; characteristic curve valid for controller HCS04.2E-W0500

Fig.17-14: Speed-torque characteristic curves

17.1.8 MSK133E Technical Data

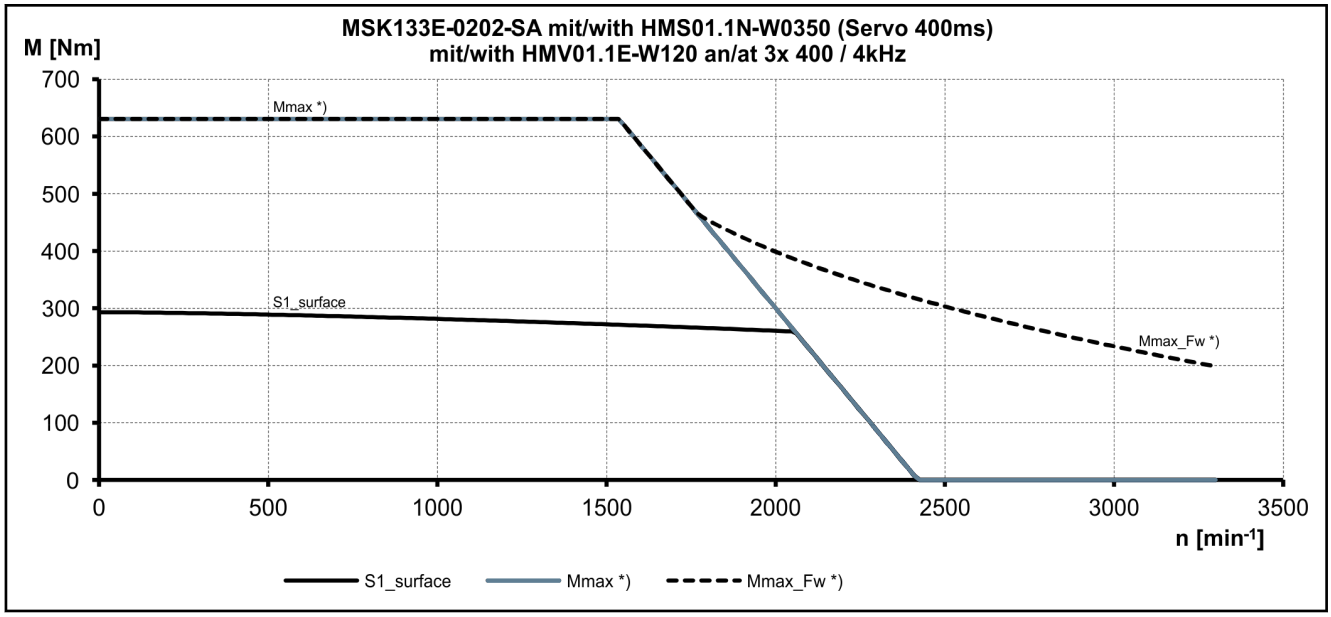
Data Sheet

Designation	Symbol	Unit	MSK133E-0202-SA	MSK133E-0203-FN
Continuous torque at standstill, surface	M_{0_S}	Nm	293.0	---
Continuous current at standstill, surface	$I_{0\_S(rms)}$	A	115.0	---
Standstill continuous torque liquid	M_{0_L}	Nm	---	342.0
Continuous standstill current liquid	$I_{0\_L(rms)}$	A	---	135.5
Maximum torque	M_{max}	Nm	630.7	583.0
Maximum current	$I_{max(rms)}$	A	305.0	
Torque constant at 20 °C	K_{M_N}	Nm/A	2.48	
Voltage constant at 20 °C[1)]	K_{EMK_1000}	V/1000 min^{-1}	159.8	
Winding resistance at 20 °C	R_{12}	Ohm	0.06	
Winding inductivity	L_{12}	mH	5.3	4.8
Discharge capacity of the component	C_{dis}	nF	24.3	22.6
Number of pole pairs	o	-	3	
Moment of inertia of the rotor	J_{rot}	kg*m^2	0.09000	
Thermal time constant	T_{th_nom}	min	16.0	8.0
Maximum velocity	n_{max}	min^{-1}	3300	
Sound pressure level	L_P	dB[A]	smaller than 78	
Mass	m	kg	146.0	
Surrounding air temperature during operation	T_{amb}	°C	0 ... 40	
Protection class acc. to EN 60034	-	-	IP65	
Insulation class according to EN 60034-1	T.CL.	-	155	
Data liquid cooling				
Power loss to be dissipated	P_V	kW	---	3.20
Coolant inlet temperature	T_{in}	°C	---	10...40
Allowed coolant temperature rise at P_V	ΔT_{max}	K	---	8
Necessary coolant flow at P_V	Q_{min}	l/min	---	6.0
Pressure loss at Q_{min}	Δp	bar	---	smaller than 1.0
Maximum allowed inlet pressure	p_{max}	bar	---	6.0
Volume of coolant duct	V_{cool}	u	---	0.24
Material coolant duct			Stainless steel	
				Latest amendment: 2013-11-11

1) Manufacturing tolerance ±5 %

Tab.17-8: MSK - Technical data

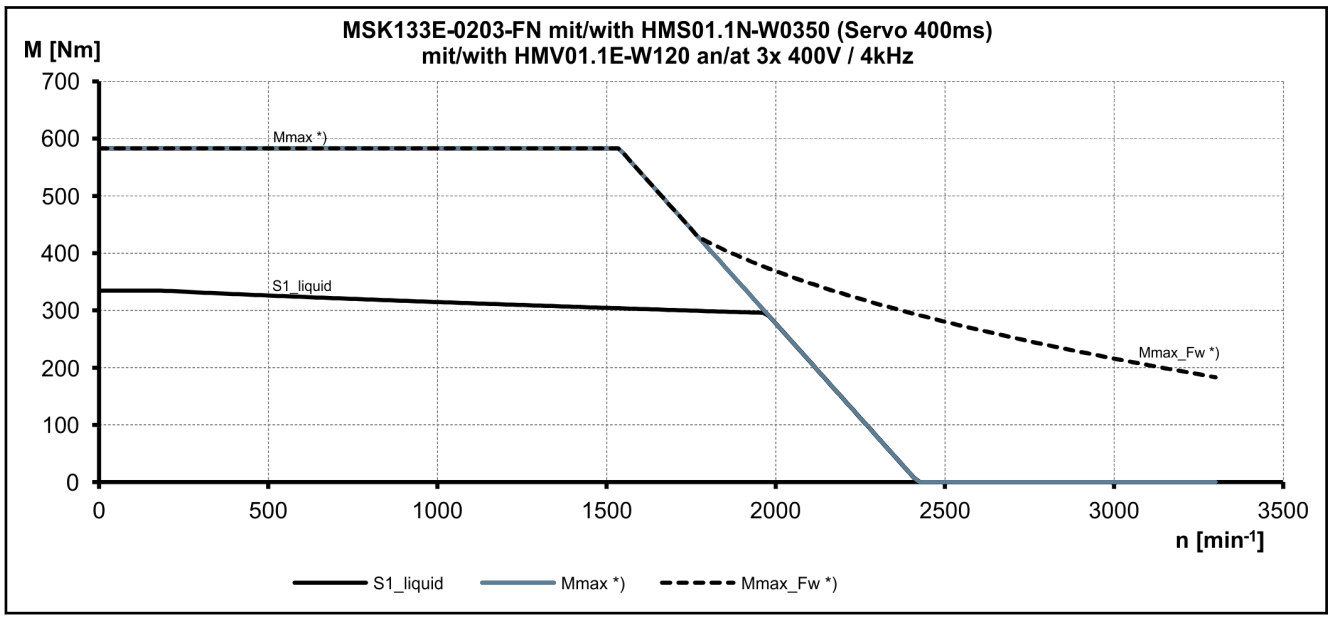
Technical Data



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V with control reluctance characteristic curve (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with control reluctance characteristic curve and field weakening; characteristic curve valid for controller HCS04.2E-W0500

Fig.17-15: Speed-torque characteristic curves



Mmax *) M_{max} IndraDrive, uncontrolled feed, 3 × AC 400 V with control reluctance characteristic curve (without field weakening)

Mmax_Fw *) M_{max} IndraDrive, uncontrolled feed 3 x AC 400 V with control reluctance characteristic curve and field weakening; characteristic curve valid for controller HCS04.2E-W0500

Fig.17-16: Speed-torque characteristic curves

17.2 Hydraulic Characteristic Values Pump

For details abaout the technical data of your internal gear pump PGH.-3x, please refer to the technical data sheet "Interal gear pump, fixed displacement" RE 10227. For the rated pressure of the internal gear pump, please refer to the information on the nameplate, see chapter "Type Plate" on page 32.

Technical Data

17.3 Specifications MPA01 (Motor Size MSK101)

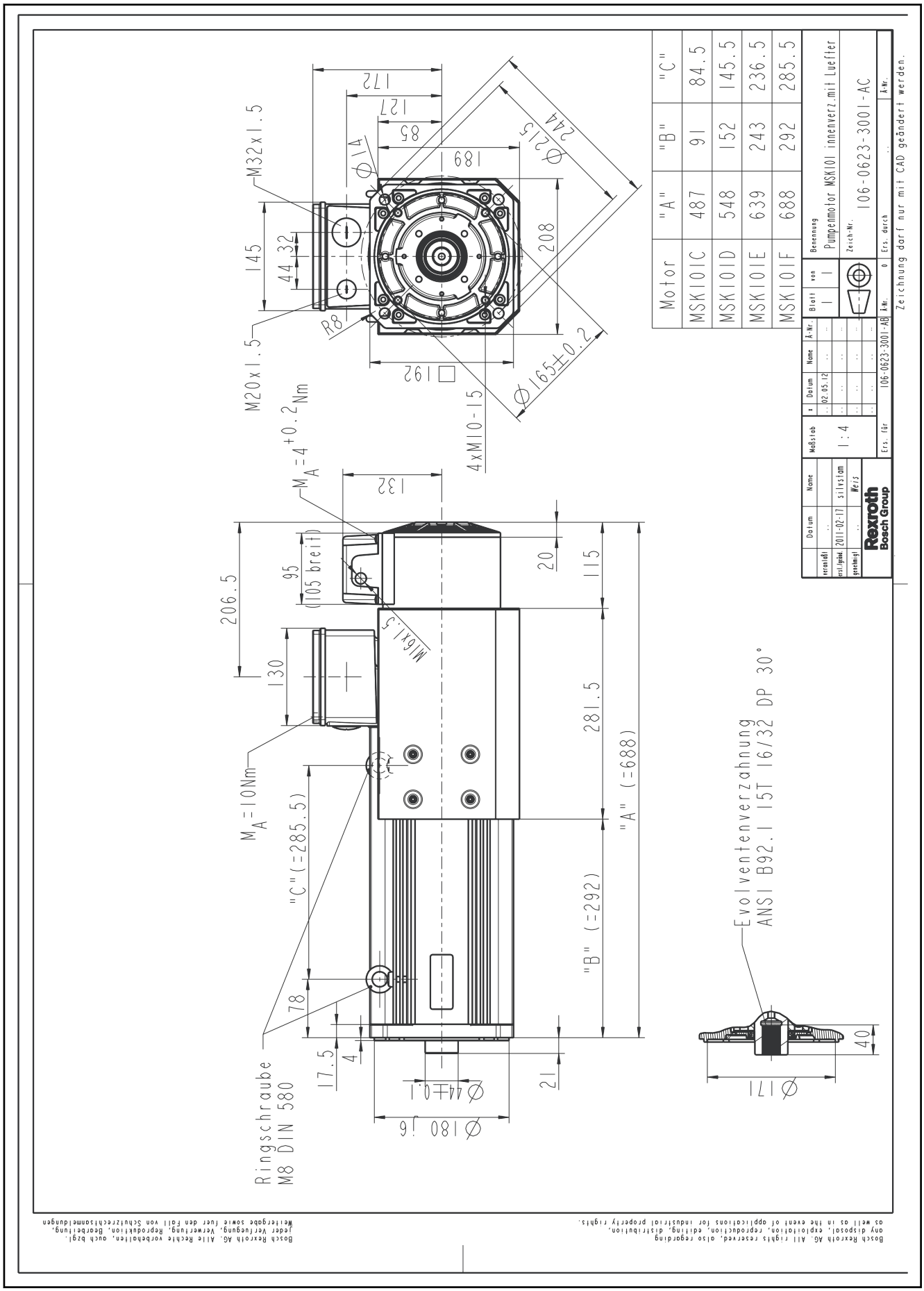
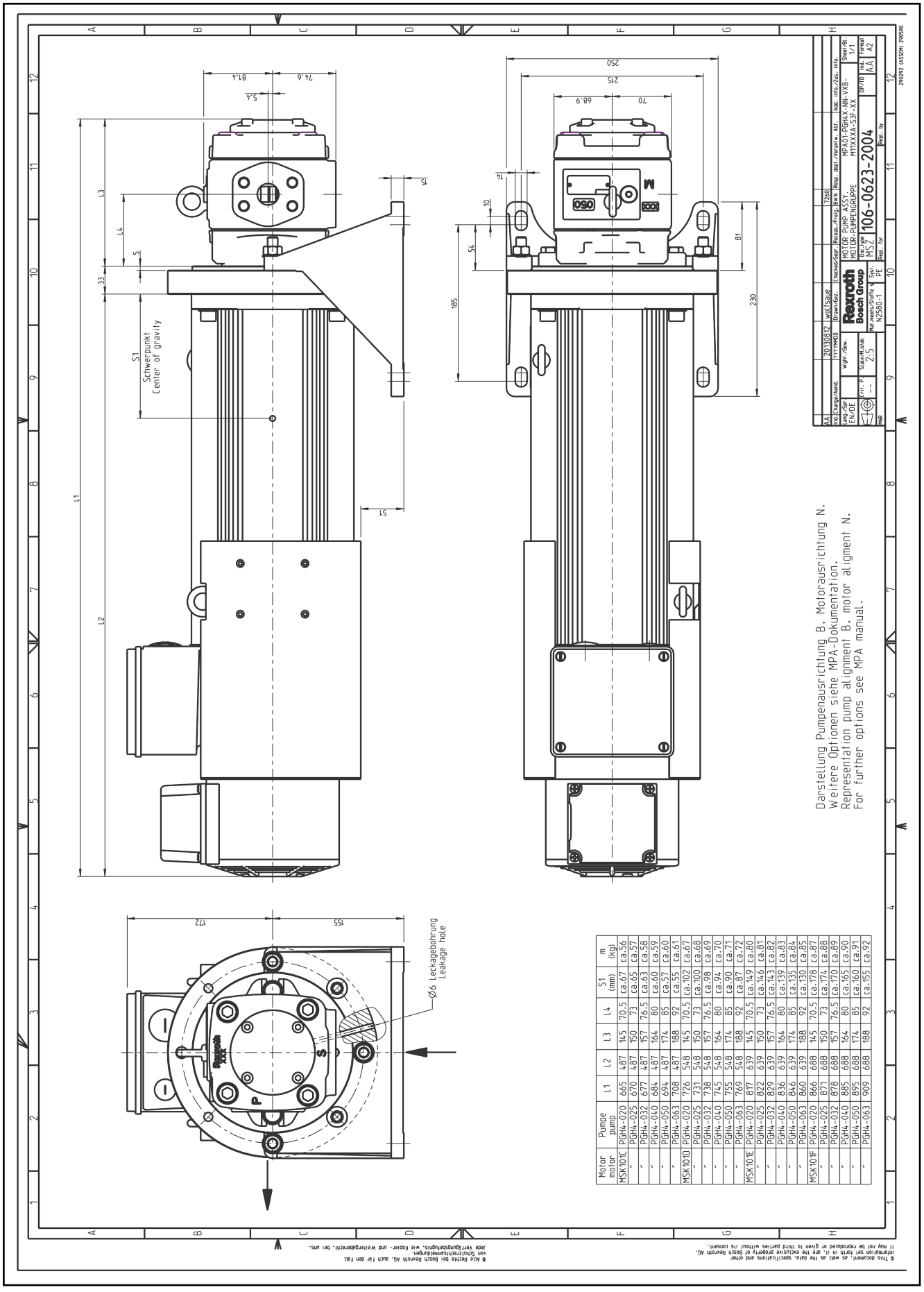


Fig.17-17: MSK101_-____-NN + LEM

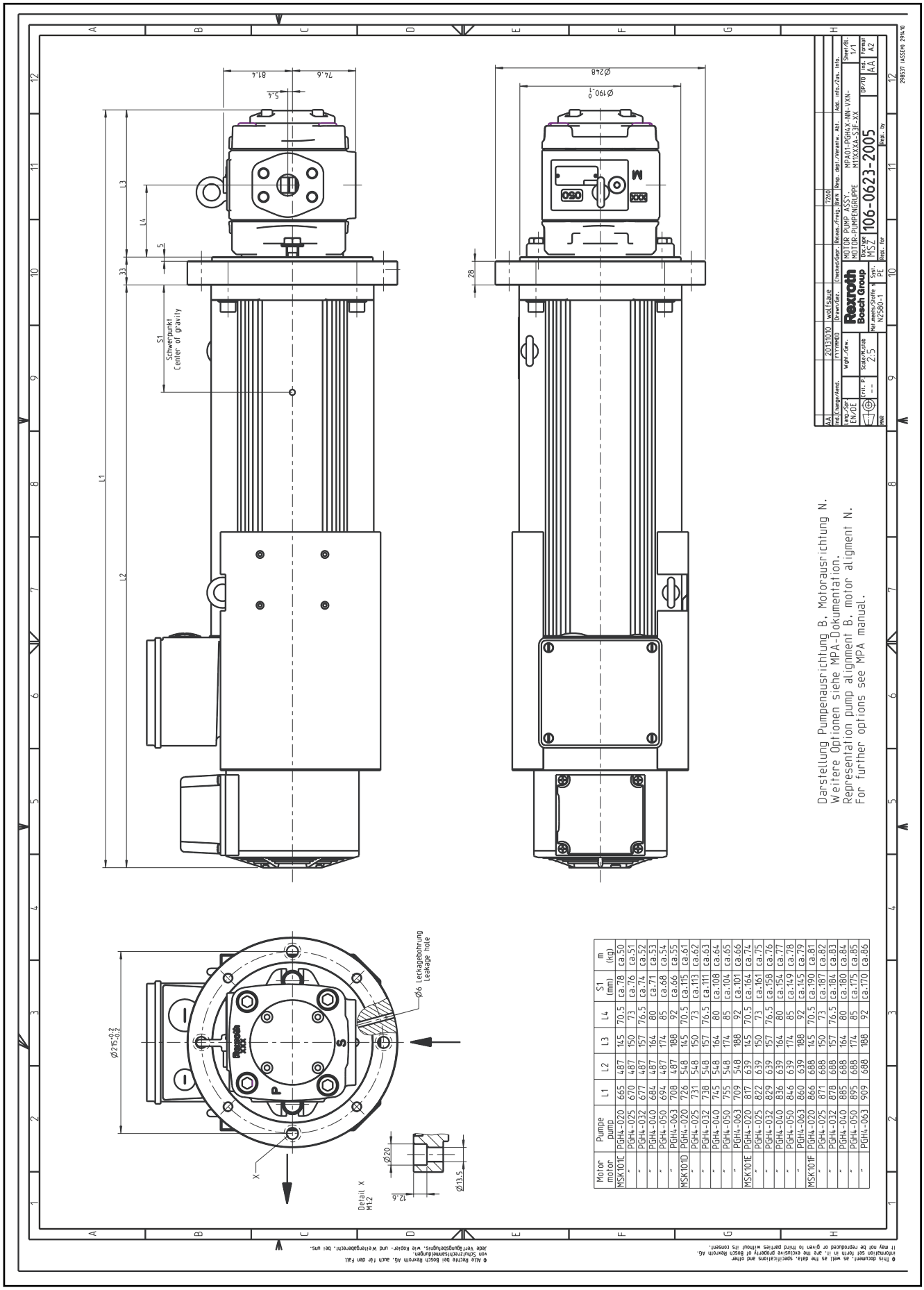
Technical Data



Motor motor	Pumpe pump	L1	L2	L3	L4	S1 (mm)	m (kg)
MSK101C	PGH4-020	665	487	145	70.5	ca.67	ca.56
"	PGH4-025	670	487	150	73	ca.65	ca.57
"	PGH4-032	677	487	157	76.5	ca.63	ca.58
"	PGH4-040	684	487	164	80	ca.60	ca.59
"	PGH4-050	694	487	174	85	ca.57	ca.60
"	PGH4-063	708	487	188	92	ca.55	ca.61
MSK101D	PGH4-020	726	548	145	70.5	ca.102	ca.67
"	PGH4-025	731	548	150	73	ca.100	ca.68
"	PGH4-032	738	548	157	76.5	ca.98	ca.69
"	PGH4-040	745	548	164	80	ca.94	ca.70
"	PGH4-050	755	548	174	85	ca.90	ca.71
"	PGH4-063	769	548	188	92	ca.87	ca.72
MSK101E	PGH4-020	817	639	145	70.5	ca.149	ca.80
"	PGH4-025	822	639	150	73	ca.146	ca.81
"	PGH4-032	829	639	157	76.5	ca.143	ca.82
"	PGH4-040	836	639	164	80	ca.139	ca.83
"	PGH4-050	846	639	174	85	ca.135	ca.84
"	PGH4-063	860	639	188	92	ca.130	ca.85
MSK101F	PGH4-020	866	688	145	70.5	ca.178	ca.87
"	PGH4-025	871	688	150	73	ca.174	ca.88
"	PGH4-032	878	688	157	76.5	ca.170	ca.89
"	PGH4-040	885	688	164	80	ca.165	ca.90
"	PGH4-050	895	688	174	85	ca.160	ca.91
"	PGH4-063	909	688	188	92	ca.155	ca.92

Fig. 17-18: MPA01-PGH4x-NN-VxB-M11xxxA-S3F-NN (foot fastening flange)

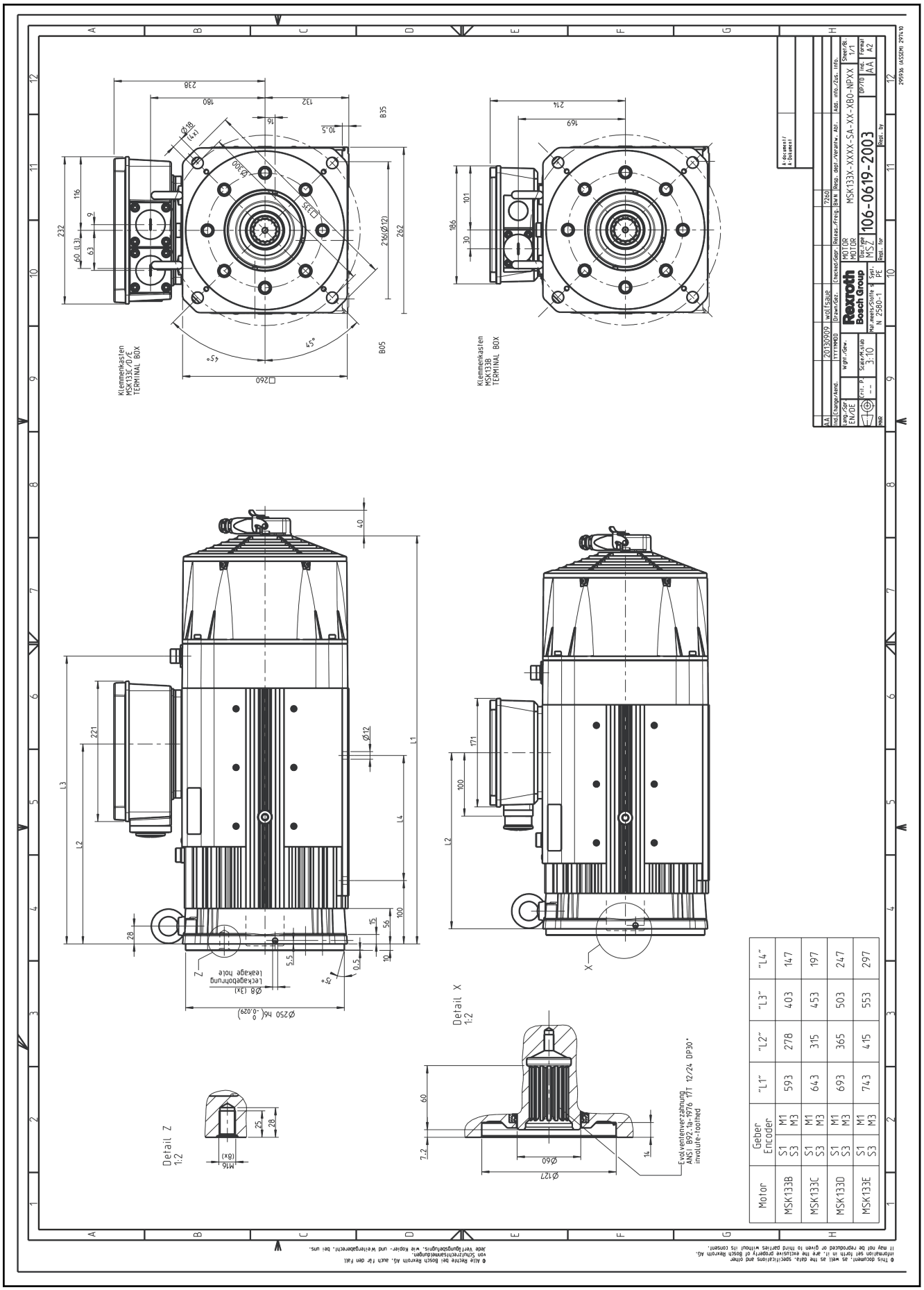
Technical Data



Motor motor	Pumpe pump	L1	L2	L3	L4	S1 (mm)	m (kg)
MSK101E	PGH4-020	665	487	145	70.5	ca.78	ca.50
"	PGH4-025	670	487	150	73	ca.76	ca.51
"	PGH4-032	677	487	157	76.5	ca.74	ca.52
"	PGH4-040	684	487	164	80	ca.71	ca.53
"	PGH4-050	694	487	174	85	ca.68	ca.54
"	PGH4-063	708	487	188	92	ca.66	ca.55
MSK101D	PGH4-020	726	548	145	70.5	ca.115	ca.61
"	PGH4-025	731	548	150	73	ca.113	ca.62
"	PGH4-032	738	548	157	76.5	ca.111	ca.63
"	PGH4-040	745	548	164	80	ca.108	ca.64
"	PGH4-050	755	548	174	85	ca.104	ca.65
"	PGH4-063	709	548	188	92	ca.101	ca.66
MSK101E	PGH4-020	817	639	145	70.5	ca.164	ca.74
"	PGH4-025	822	639	150	73	ca.161	ca.75
"	PGH4-032	829	639	157	76.5	ca.158	ca.76
"	PGH4-040	836	639	164	80	ca.154	ca.77
"	PGH4-050	846	639	174	85	ca.149	ca.78
"	PGH4-063	860	639	188	92	ca.145	ca.79
MSK101F	PGH4-020	866	688	145	70.5	ca.190	ca.81
"	PGH4-025	871	688	150	73	ca.187	ca.82
"	PGH4-032	878	688	157	76.5	ca.184	ca.83
"	PGH4-040	885	688	164	80	ca.180	ca.84
"	PGH4-050	895	688	174	85	ca.175	ca.85
"	PGH4-063	909	688	188	92	ca.170	ca.86

Fig.17-19: MPA01-PGH4x-NN-VxN-M11xxxA-S3F-NN (foot fastening flange)

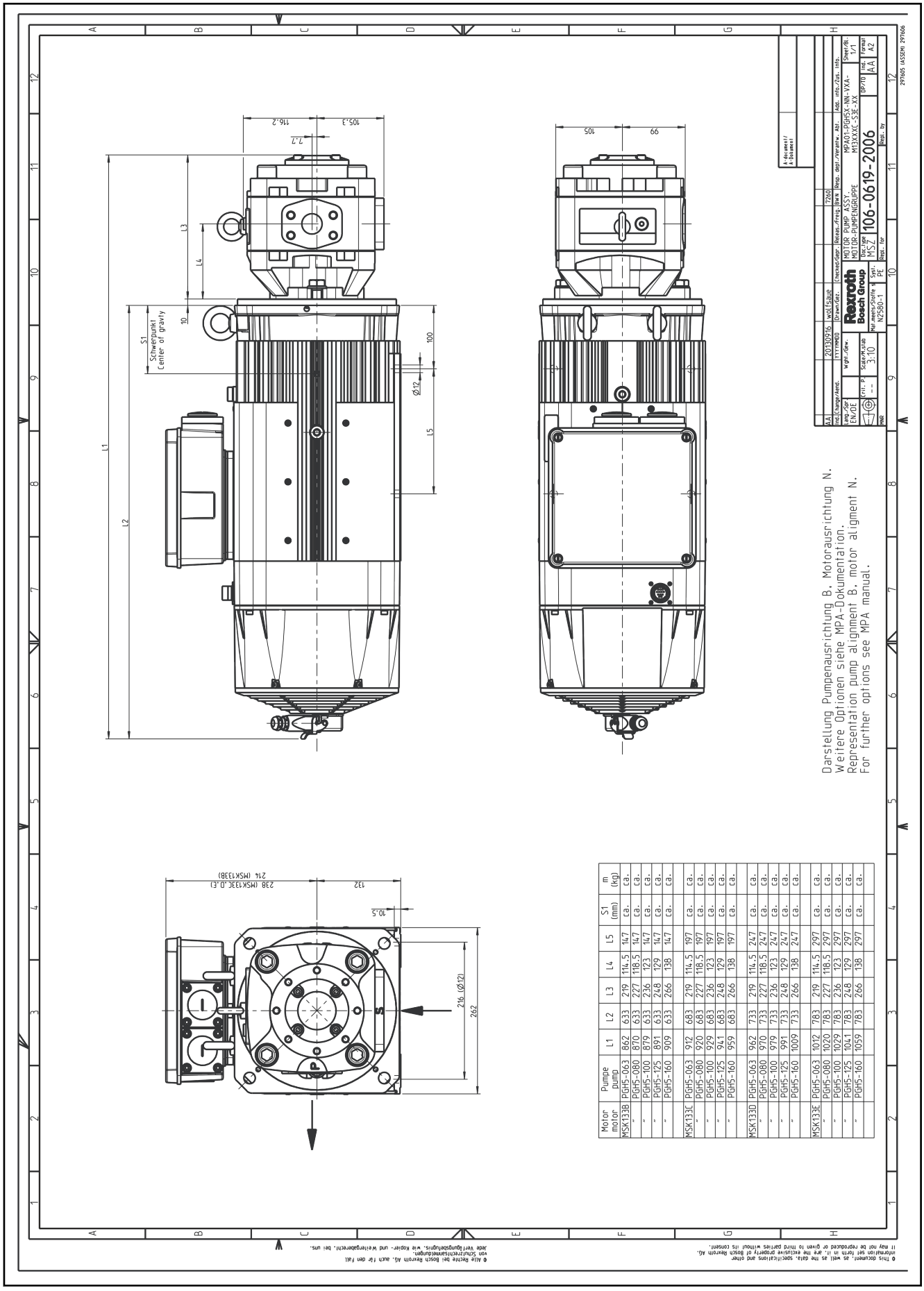
17.4 Specifications MPA01 (Motor Size MSK133)



Motor	Geber Encoder		"L1"	"L2"	"L3"	"L4"
MSK133B	S1 S3	M1 M3	593	278	403	147
MSK133C	S1 S3	M1 M3	643	315	453	197
MSK133D	S1 S3	M1 M3	693	365	503	247
MSK133E	S1 S3	M1 M3	743	415	553	297

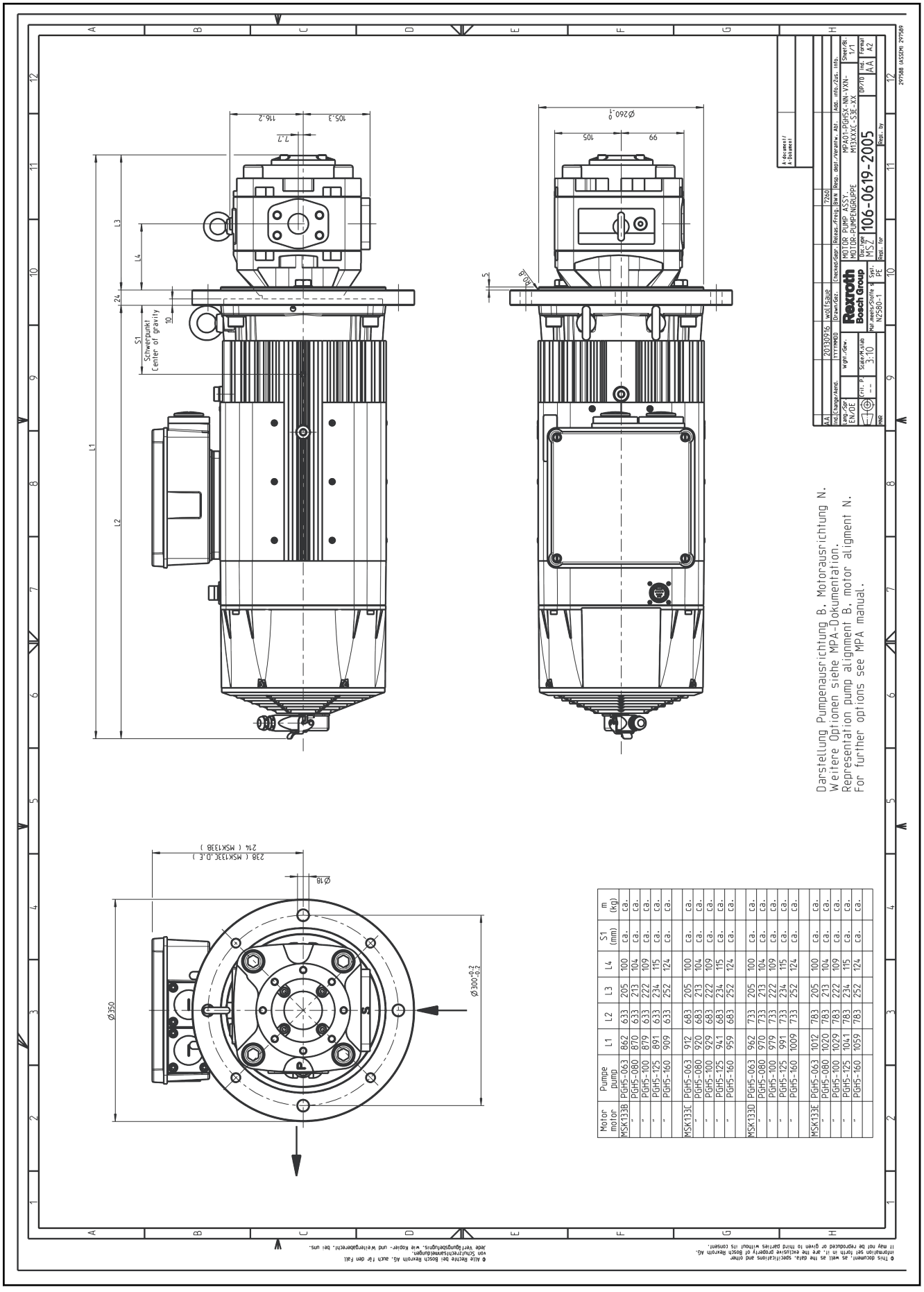
Fig.17-20: MSK133_-____-SA

Technical Data



Motor motor	Pumpe pump	L1	L2	L3	L4	L5	S1 (mm)	m (kg)
MSK133B	PGH5-063	862	633	219	114.5	147	ca.	ca.
"	PGH5-080	870	633	227	118.5	147	ca.	ca.
"	PGH5-100	879	633	236	123	147	ca.	ca.
"	PGH5-125	891	633	248	129	147	ca.	ca.
"	PGH5-160	909	633	266	138	147	ca.	ca.
MSK133E	PGH5-063	912	683	219	114.5	197	ca.	ca.
"	PGH5-080	920	683	227	118.5	197	ca.	ca.
"	PGH5-100	929	683	236	123	197	ca.	ca.
"	PGH5-125	941	683	248	129	197	ca.	ca.
"	PGH5-160	959	683	266	138	197	ca.	ca.
MSK133D	PGH5-063	962	733	219	114.5	247	ca.	ca.
"	PGH5-080	970	733	227	118.5	247	ca.	ca.
"	PGH5-100	979	733	236	123	247	ca.	ca.
"	PGH5-125	991	733	248	129	247	ca.	ca.
"	PGH5-160	1009	733	266	138	247	ca.	ca.
MSK133E	PGH5-063	1012	783	219	114.5	297	ca.	ca.
"	PGH5-080	1020	783	227	118.5	297	ca.	ca.
"	PGH5-100	1029	783	236	123	297	ca.	ca.
"	PGH5-125	1041	783	248	129	297	ca.	ca.
"	PGH5-160	1059	783	266	138	297	ca.	ca.

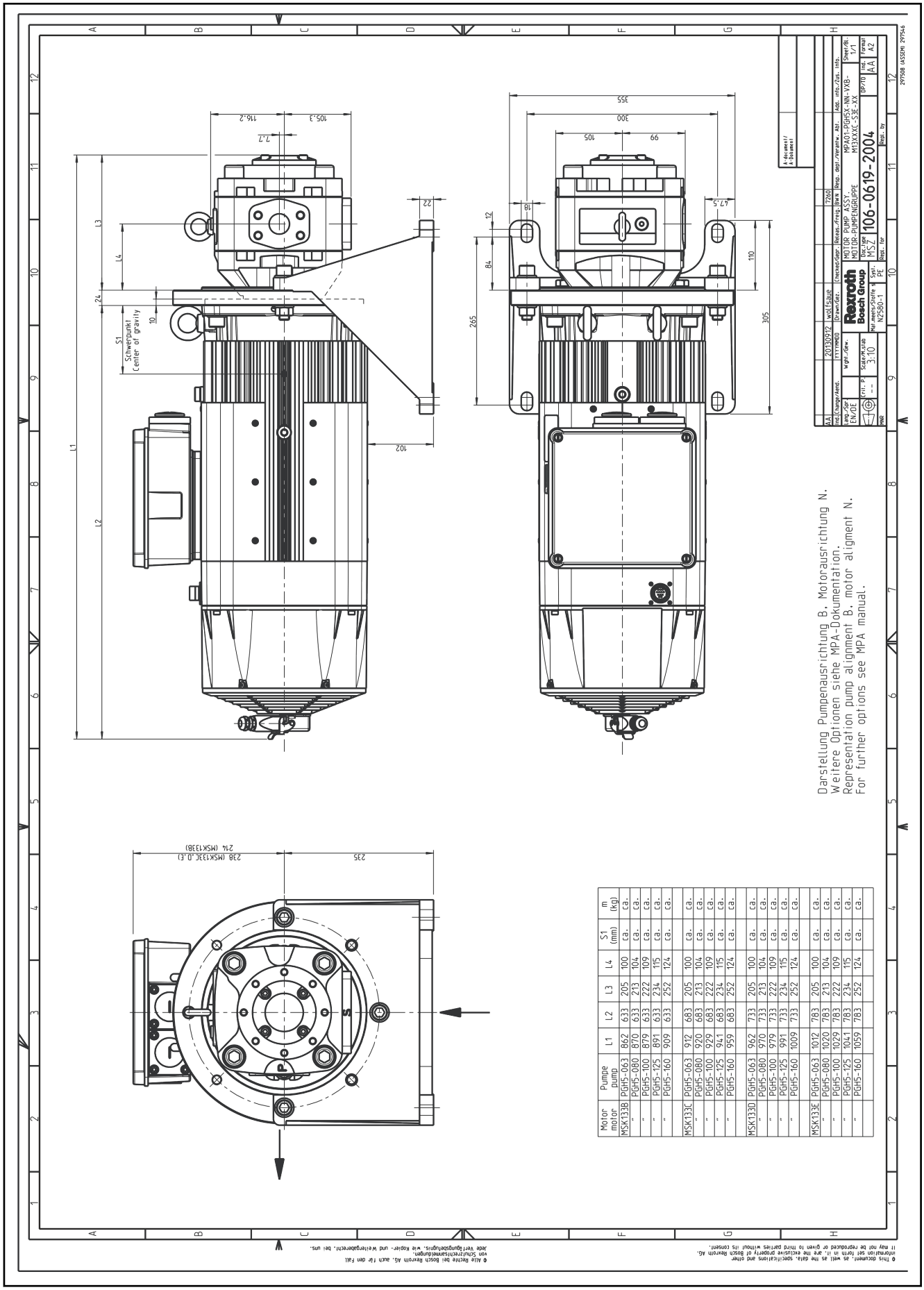
Fig.17-21: MPA01-PGH5x-NN-VxA-M13xxxC-S3E-NN (foot fastening motor)



Motor motor	Pumpe pump	L1	L2	L3	L4	S1 (mm)	m (kg)
MSK133B	PGH5-063	862	633	205	100	ca.	ca.
"	PGH5-080	870	633	213	104	ca.	ca.
"	PGH5-100	879	633	222	109	ca.	ca.
"	PGH5-125	891	633	234	115	ca.	ca.
"	PGH5-160	909	633	252	124	ca.	ca.
MSK133C	PGH5-063	912	683	205	100	ca.	ca.
"	PGH5-080	920	683	213	104	ca.	ca.
"	PGH5-100	929	683	222	109	ca.	ca.
"	PGH5-125	941	683	234	115	ca.	ca.
"	PGH5-160	959	683	252	124	ca.	ca.
MSK133D	PGH5-063	962	733	205	100	ca.	ca.
"	PGH5-080	970	733	213	104	ca.	ca.
"	PGH5-100	979	733	222	109	ca.	ca.
"	PGH5-125	991	733	234	115	ca.	ca.
"	PGH5-160	1009	733	252	124	ca.	ca.
MSK133E	PGH5-063	1012	783	205	100	ca.	ca.
"	PGH5-080	1020	783	213	104	ca.	ca.
"	PGH5-100	1029	783	222	109	ca.	ca.
"	PGH5-125	1041	783	234	115	ca.	ca.
"	PGH5-160	1059	783	252	124	ca.	ca.

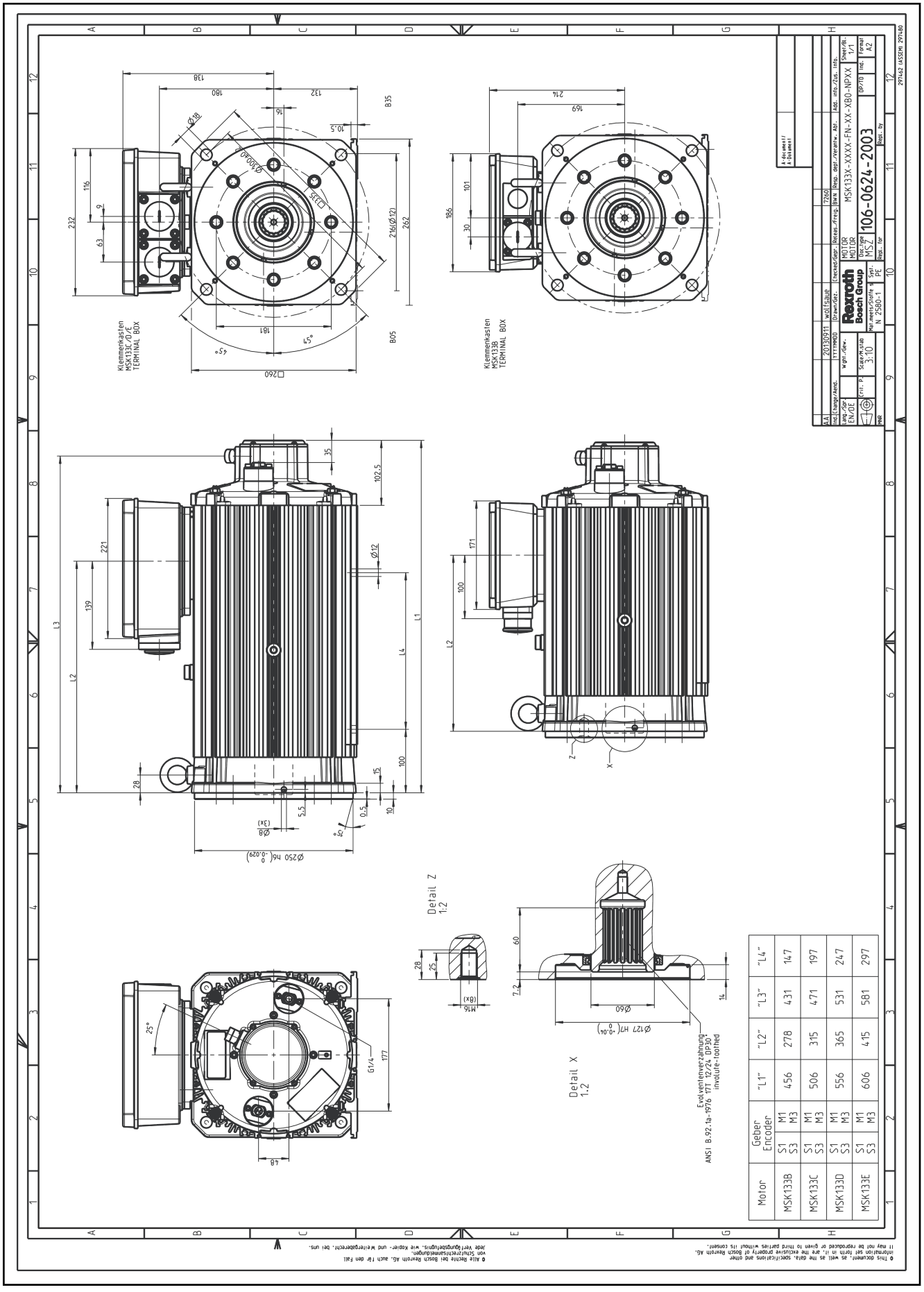
Fig. 17-22: MPA01-PGH5x-NN-VxB-M13xxxC-S3E-NN (foot fastening flange)

Technical Data



Motor motor	Pumpe pump	L1	L2	L3	L4	S1 (mm)	m (kg)
MSK133B	PGH5-063	862	633	205	100	ca.	ca.
"	PGH5-080	870	633	213	104	ca.	ca.
"	PGH5-100	879	633	222	109	ca.	ca.
"	PGH5-125	891	633	234	115	ca.	ca.
"	PGH5-160	909	633	252	124	ca.	ca.
MSK133C	PGH5-063	912	683	205	100	ca.	ca.
"	PGH5-080	920	683	213	104	ca.	ca.
"	PGH5-100	929	683	222	109	ca.	ca.
"	PGH5-125	941	683	234	115	ca.	ca.
"	PGH5-160	959	683	252	124	ca.	ca.
MSK133D	PGH5-063	962	733	205	100	ca.	ca.
"	PGH5-080	970	733	213	104	ca.	ca.
"	PGH5-100	979	733	222	109	ca.	ca.
"	PGH5-125	991	733	234	115	ca.	ca.
"	PGH5-160	1009	733	252	124	ca.	ca.
MSK133E	PGH5-063	1012	783	205	100	ca.	ca.
"	PGH5-080	1020	783	213	104	ca.	ca.
"	PGH5-100	1029	783	222	109	ca.	ca.
"	PGH5-125	1041	783	234	115	ca.	ca.
"	PGH5-160	1059	783	252	124	ca.	ca.

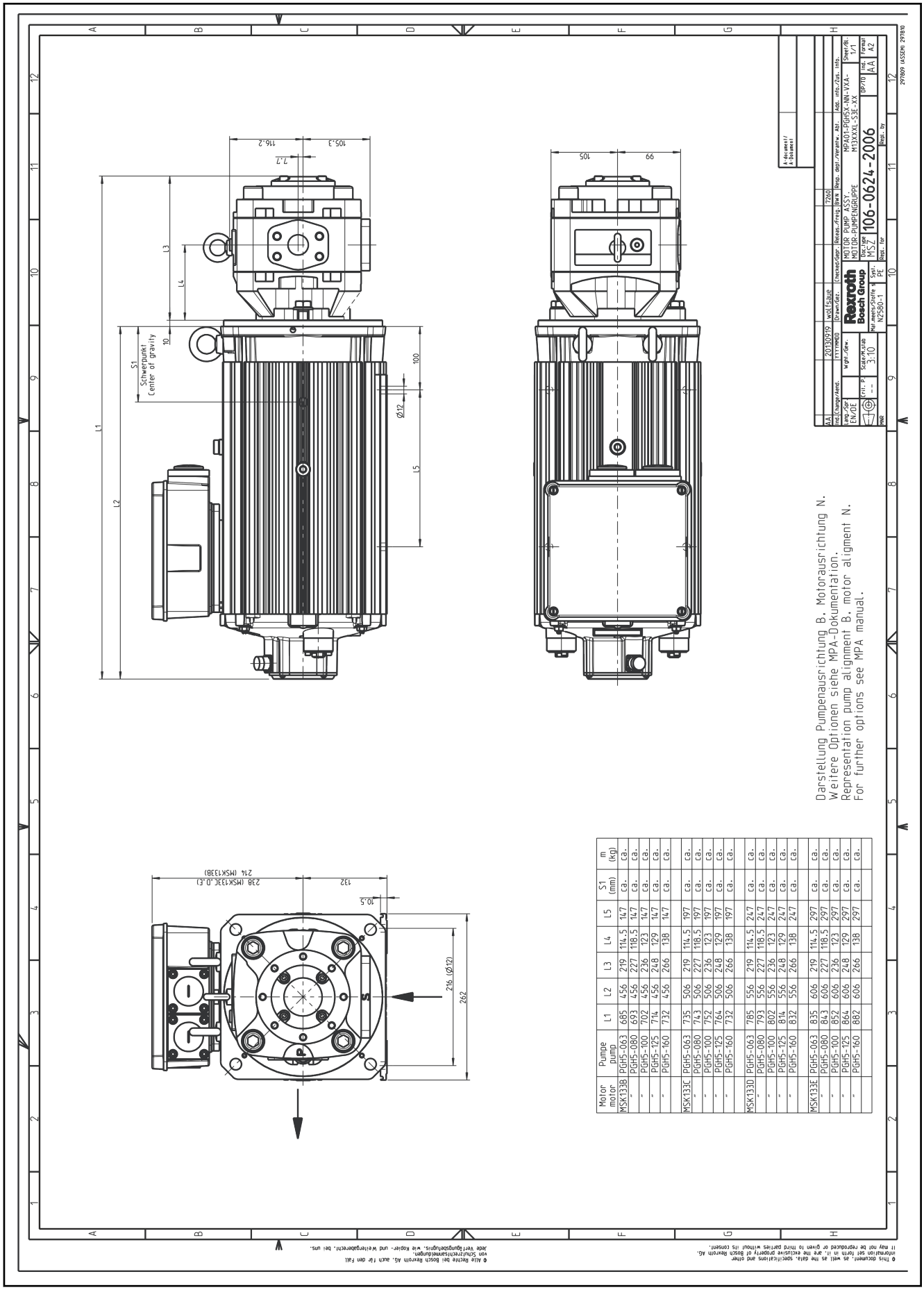
Fig.17-23: MPA01-PGH5x-NN-VxN-M13xxxC-S3E-NN(flange fastening)



Motor	Geber Encoder		"L1"	"L2"	"L3"	"L4"
MSK133B	S1 S3	M1 M3	456	278	431	147
MSK133C	S1 S3	M1 M3	506	315	471	197
MSK133D	S1 S3	M1 M3	556	365	531	247
MSK133E	S1 S3	M1 M3	606	415	581	297

Fig. 17-24: MSK133_-____-FN

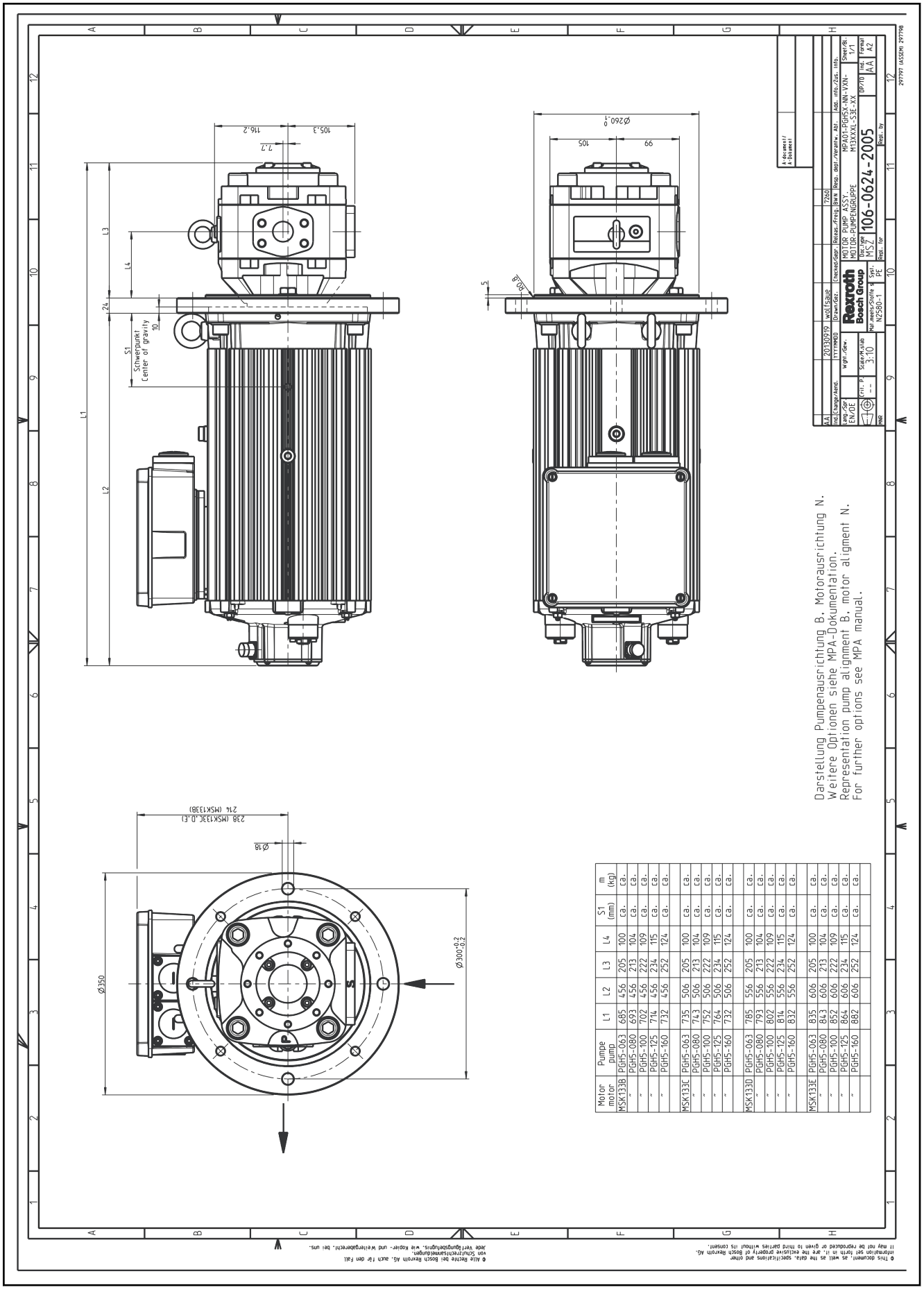
Technical Data



Motor motor	Pumpe pump	L1	L2	L3	L4	L5	S1 (mm)	m (kg)
MSK133B	PGH5-063	685	456	219	114.5	147	ca.	ca.
"	PGH5-080	693	456	227	118.5	147	ca.	ca.
"	PGH5-100	702	456	236	123	147	ca.	ca.
"	PGH5-125	714	456	248	129	147	ca.	ca.
"	PGH5-160	732	456	266	138	147	ca.	ca.
MSK133C	PGH5-063	735	506	219	114.5	197	ca.	ca.
"	PGH5-080	743	506	227	118.5	197	ca.	ca.
"	PGH5-100	752	506	236	123	197	ca.	ca.
"	PGH5-125	764	506	248	129	197	ca.	ca.
"	PGH5-160	732	506	266	138	197	ca.	ca.
MSK133D	PGH5-063	785	556	219	114.5	247	ca.	ca.
"	PGH5-080	793	556	227	118.5	247	ca.	ca.
"	PGH5-100	802	556	236	123	247	ca.	ca.
"	PGH5-125	814	556	248	129	247	ca.	ca.
"	PGH5-160	832	556	266	138	247	ca.	ca.
MSK133E	PGH5-063	835	606	219	114.5	297	ca.	ca.
"	PGH5-080	843	606	227	118.5	297	ca.	ca.
"	PGH5-100	852	606	236	123	297	ca.	ca.
"	PGH5-125	864	606	248	129	297	ca.	ca.
"	PGH5-160	882	606	266	138	297	ca.	ca.

Fig.17-25: MPA01-PGH5x-NN-VxA-M13xxxL-S3E-NN (foot fastening motor)

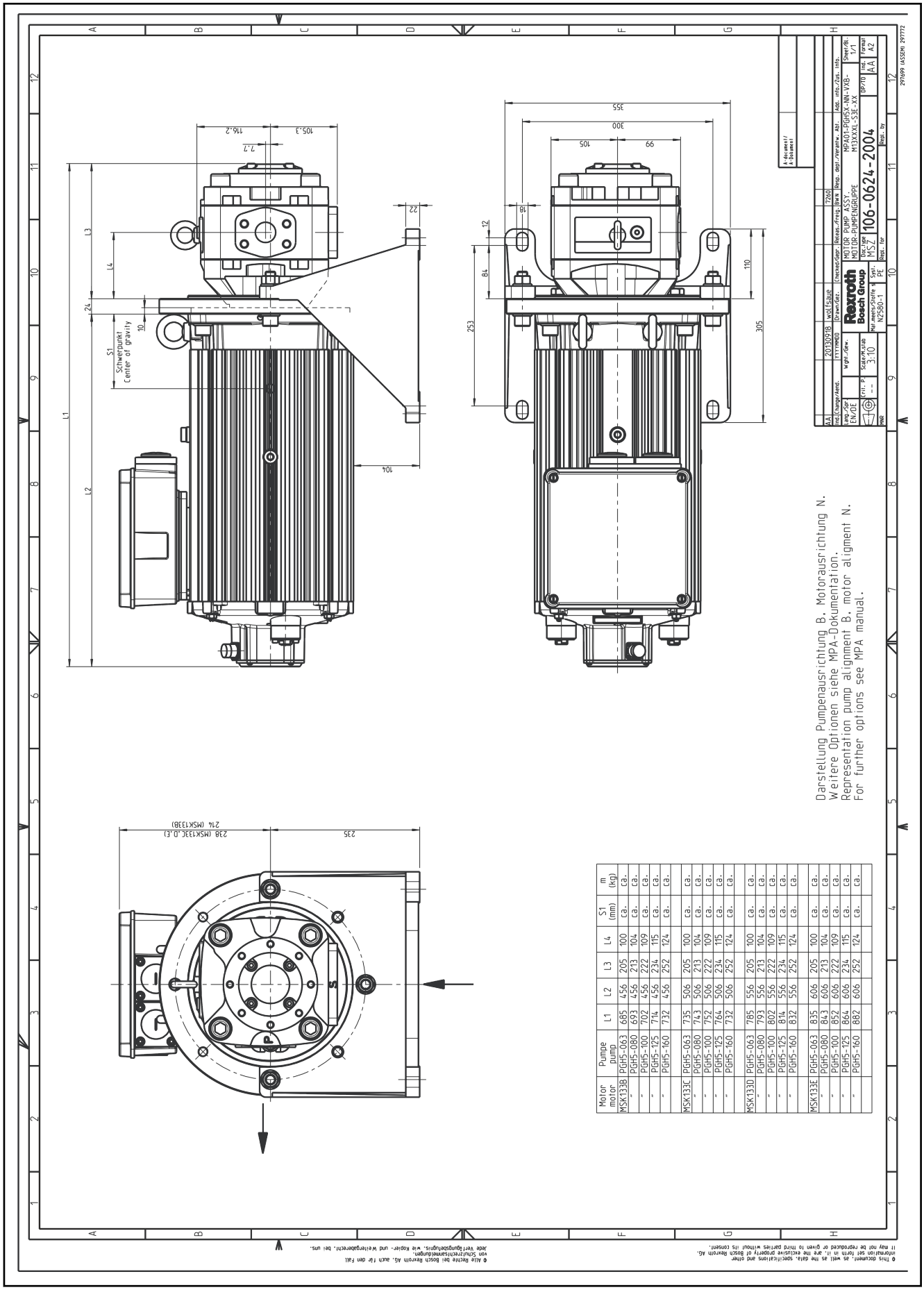
Technical Data



Motor motor	Pumpe pump	L1	L2	L3	L4	S1 (mm)	m (kg)
MSK133B	PGH5-063	685	456	205	100	ca.	ca.
"	PGH5-080	693	456	213	104	ca.	ca.
"	PGH5-100	702	456	222	109	ca.	ca.
"	PGH5-125	714	456	234	115	ca.	ca.
"	PGH5-160	732	456	252	124	ca.	ca.
MSK133C	PGH5-063	735	506	205	100	ca.	ca.
"	PGH5-080	743	506	213	104	ca.	ca.
"	PGH5-100	752	506	222	109	ca.	ca.
"	PGH5-125	764	506	234	115	ca.	ca.
"	PGH5-160	732	506	252	124	ca.	ca.
MSK133D	PGH5-063	785	556	205	100	ca.	ca.
"	PGH5-080	793	556	213	104	ca.	ca.
"	PGH5-100	802	556	222	109	ca.	ca.
"	PGH5-125	814	556	234	115	ca.	ca.
"	PGH5-160	832	556	252	124	ca.	ca.
MSK133E	PGH5-063	835	606	205	100	ca.	ca.
"	PGH5-080	843	606	213	104	ca.	ca.
"	PGH5-100	852	606	222	109	ca.	ca.
"	PGH5-125	864	606	234	115	ca.	ca.
"	PGH5-160	882	606	252	124	ca.	ca.

Fig.17-26: MPA01-PGH5x-NN-VxB-M13xxxL-S3E-NN (foot fastening flange)

Technical Data



Motor motor	Pumpe pump	L1	L2	L3	L4	S1 (mm)	m (kg)
MSK133B	PGH5-063	685	456	205	100	ca.	ca.
"	PGH5-080	693	456	213	104	ca.	ca.
"	PGH5-100	702	456	222	109	ca.	ca.
"	PGH5-125	714	456	234	115	ca.	ca.
"	PGH5-160	732	456	252	124	ca.	ca.
MSK133C	PGH5-063	735	506	205	100	ca.	ca.
"	PGH5-080	743	506	213	104	ca.	ca.
"	PGH5-100	752	506	222	109	ca.	ca.
"	PGH5-125	764	506	234	115	ca.	ca.
"	PGH5-160	732	506	252	124	ca.	ca.
MSK133D	PGH5-063	785	556	205	100	ca.	ca.
"	PGH5-080	793	556	213	104	ca.	ca.
"	PGH5-100	802	556	222	109	ca.	ca.
"	PGH5-125	814	556	234	115	ca.	ca.
"	PGH5-160	832	556	252	124	ca.	ca.
MSK133E	PGH5-063	835	606	205	100	ca.	ca.
"	PGH5-080	843	606	213	104	ca.	ca.
"	PGH5-100	852	606	222	109	ca.	ca.
"	PGH5-125	864	606	234	115	ca.	ca.
"	PGH5-160	882	606	252	124	ca.	ca.

Fig.17-27: MPA01-PGH5x-NN-VxN-M13xxxL-S3E-NN (flange fastening)

18 Appendix

18.1 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. 18-1: 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.18-2: Declaration of conformity

Index

Index

S

T

W

Notes

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