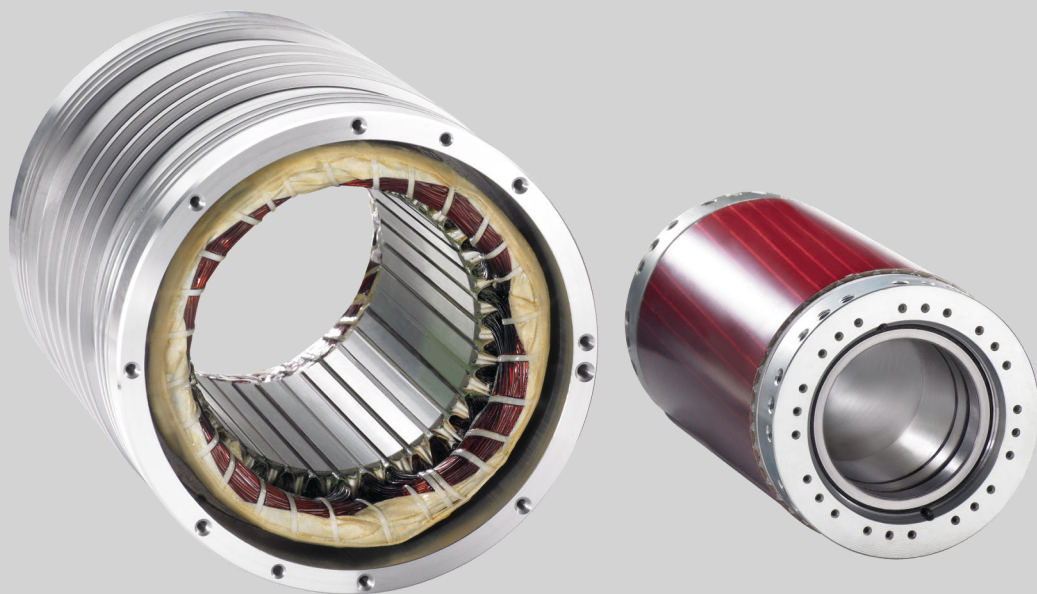


1MB

Asynchronous Spindle Motors

Operating Instructions
R911337309

Edition 03



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| <p>▲WARNING Lebensgefahr bei Nichtbeachtung der nachstehenden Sicherheitshinweise!</p> <p>Nehmen Sie die Produkte erst dann in Betrieb, nachdem Sie die mit dem Produkt gelieferten Unterlagen und Sicherheitshinweise vollständig durchgelesen, verstanden und beachtet haben.</p> <p>Sollten Ihnen keine Unterlagen in Ihrer Landessprache vorliegen, wenden Sie sich an Ihren zuständigen Rexroth-Vertriebspartner.</p> <p>Nur qualifiziertes Personal darf an Antriebskomponenten arbeiten.</p> <p>Nähere Erläuterungen zu den Sicherheitshinweisen entnehmen Sie Kapitel 1 dieser Dokumentation.</p> | <p>▲WARNING Danger to life in case of non-compliance with the below-mentioned safety instructions!</p> <p>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.</p> <p>If no documents in your language were supplied, please consult your Rexroth sales partner.</p> <p>Only qualified persons may work with drive components.</p> <p>For detailed explanations on the safety instructions, see chapter 1 of this documentation.</p> | <p>▲AVERTISSEMENT Danger de mort en cas de non-respect des consignes de sécurité figurant ci-après !</p> <p>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.</p> <p>Si vous ne disposez pas de la documentation dans votre langue, merci de consulter votre partenaire Rexroth.</p> <p>Seul un personnel qualifié est autorisé à travailler sur les composants d'entraînement.</p> <p>Vous trouverez des explications plus détaillées relatives aux consignes de sécurité au chapitre 1 de la présente documentation.</p> |
| <p>▲WARNING Hohe elektrische Spannung! Lebensgefahr durch elektrischen Schlag!</p> <p>Betreiben Sie Antriebskomponenten nur mit fest installiertem Schutzleiter.</p> <p>Schalten Sie vor Zugriff auf Antriebskomponenten die Spannungsversorgung aus.</p> <p>Beachten Sie die Entladezeiten von Kondensatoren.</p> | <p>▲WARNING High electrical voltage! Danger to life by electric shock!</p> <p>Only operate drive components with a permanently installed equipment grounding conductor.</p> <p>Disconnect the power supply before accessing drive components.</p> <p>Observe the discharge times of the capacitors.</p> | <p>▲AVERTISSEMENT Tensions électriques élevées ! Danger de mort par électrocution !</p> <p>N'exploitez les composants d'entraînement que si un conducteur de protection est installé de manière permanente.</p> <p>Avant d'intervenir sur les composants d'entraînement, coupez toujours la tension d'alimentation.</p> <p>Tenez compte des délais de décharge de condensateurs.</p> |
| <p>▲WARNING Gefahrbringende Bewegungen! Lebensgefahr!</p> <p>Halten Sie sich nicht im Bewegungsbereich von Maschinen und Maschinenteilen auf.</p> <p>Verhindern Sie den unbeabsichtigten Zutritt für Personen.</p> <p>Bringen Sie vor dem Zugriff oder Zutritt in den Gefahrenbereich die Antriebe sicher zum Stillstand.</p> | <p>▲WARNING Dangerous movements! Danger to life!</p> <p>Keep free and clear of the ranges of motion of machines and moving machine parts.</p> <p>Prevent personnel from accidentally entering the range of motion of machines.</p> <p>Make sure that the drives are brought to safe standstill before accessing or entering the danger zone.</p> | <p>▲AVERTISSEMENT Mouvements entraînant une situation dangereuse ! Danger de mort !</p> <p>Ne séjournez pas dans la zone de mouvement de machines et de composants de machines.</p> <p>Évitez tout accès accidentel de personnes.</p> <p>Avant toute intervention ou tout accès dans la zone de danger, assurez-vous de l'arrêt préalable de tous les entraînements.</p> |
| <p>▲WARNING Elektromagnetische / magnetische Felder! Gesundheitsgefahr für Personen mit Herzschrittmachern, metallischen Implantaten oder Hörgeräten!</p> <p>Zutritt zu Bereichen, in denen Antriebskomponenten montiert und betrieben werden, ist für oben genannten Personen untersagt bzw. nur nach Rücksprache mit einem Arzt erlaubt.</p> | <p>▲WARNING Electromagnetic / magnetic fields! Health hazard for persons with heart pacemakers, metal implants or hearing aids!</p> <p>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.</p> | <p>▲AVERTISSEMENT Champs électromagnétiques / magnétiques ! Risque pour la santé des porteurs de stimulateurs cardiaques, d'implants métalliques et d'appareils auditifs !</p> <p>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.</p> |
| <p>▲VORSICHT Heiße Oberflächen (> 60 °C)! Verbrennungsgefahr!</p> <p>Vermeiden Sie das Berühren von metallischen Oberflächen (z. B. Kühlkörpern). Abkühlzeit der Antriebskomponenten einhalten (mind. 15 Minuten).</p> | <p>▲CAUTION Hot surfaces (> 60 °C [140 °F])! Risk of burns!</p> <p>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).</p> | <p>▲ATTENTION Surfaces chaudes (> 60 °C)! Risque de brûlure !</p> <p>Évitez de toucher des surfaces métalliques (p. ex. dissipateurs thermiques). Respectez le délai de refroidissement des composants d'entraînement (au moins 15 minutes).</p> |

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




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




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| <p>⚠ ADVERTENCIA ¡Campos electromagnéticos/magnéticos! ¡Peligro para la salud de las personas con marcapasos, implantes metálicos o audífonos!</p> <p>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.</p> | <p>⚠ ATENÇÃO Campos eletromagnéticos / magnéticos! Perigo de saúde para pessoas com marcapassos, implantes metálicos ou aparelhos auditivos!</p> <p>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.</p> | <p>⚠ AVVERTENZA Campi elettromagnetici / magnetici! Pericolo per la salute delle persone portatrici di pacemaker, protesi metalliche o apparecchi acustici!</p> <p>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.</p> |
| <p>⚠ ATENCIÓN ¡Superficies calientes (> 60 °C)! ¡Peligro de quemaduras!</p> <p>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).</p> | <p>⚠ CUIDADO Superfícies quentes (> 60 °C)! Perigo de queimaduras!</p> <p>Evite tocar superfícies metálicas (p. ex. radiadores). Respeite o tempo de arrefecimento dos componentes de acionamento (mín. 15 minutos).</p> | <p>⚠ ATTENZIONE Superfici bollenti (> 60 °C)! Pericolo di ustioni!</p> <p>Evitare il contatto con superfici metalliche (ad es. dissipatori di calore). Rispettare i tempi di raffreddamento dei componenti di comando (almeno 15 minuti).</p> |
| <p>⚠ ATENCIÓN ¡Manipulación inadecuada en el transporte y montaje! ¡Peligro de lesiones!</p> <p>Utilice dispositivos de montaje y de transporte adecuados.</p> <p>Utilice herramientas adecuadas y equipo de protección personal.</p> | <p>⚠ CUIDADO Manejo incorreto no transporte e montagem! Perigo de ferimentos!</p> <p>Utilize dispositivos de montagem e de transporte adequados.</p> <p>Utilize ferramentas e equipamento de proteção individual adequados.</p> | <p>⚠ ATTENZIONE Manipolazione inappropriata durante il trasporto e il montaggio! Pericolo di lesioni!</p> <p>Utilizzare dispositivi di montaggio e trasporto adatti.</p> <p>Utilizzare attrezzi adatti ed equipaggiamento di protezione personale.</p> |
| <p>⚠ ATENCIÓN ¡Manejo inadecuado de las pilas! ¡Peligro de lesiones!</p> <p>No trate de reactivar o cargar pilas descargadas (peligro de explosión y cauterización).</p> <p>No desarme ni dañe las pilas. No tire las pilas al fuego.</p> | <p>⚠ CUIDADO Manejo incorreto de baterias! Perigo de ferimentos!</p> <p>Não tente reativar nem carregar baterias vazias (perigo de explosão e de queimaduras com ácido).</p> <p>Não desmonte nem danifique as baterias. Não deite as baterias no fogo.</p> | <p>⚠ ATTENZIONE Utilizzo inappropriato delle batterie! Pericolo di lesioni!</p> <p>Non tentare di riattivare o ricaricare batterie scariche (pericolo di esplosione e corrosione).</p> <p>Non scomporre o danneggiare le batterie. Non gettare le batterie nel fuoco.</p> |

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

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

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

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

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

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

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

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

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

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

| CN 中文 |
|---|
| <p>⚠ 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！</p> <p>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。</p> <p>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。</p> <p>只允许有资格人员对驱动器部件进行操作。</p> <p>安全说明的详细解释在本文档的第一章。</p> |
| <p>⚠ 警告 高压！电击导致生命危险！</p> <p>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。</p> <p>在接触驱动器部件前先将驱动器部件断电。</p> <p>确保电容放电时间。</p> |
| <p>⚠ 警告 危险运动！生命危险！</p> <p>保证设备的运动区域内和移动部件周围无障碍物。</p> <p>防止人员意外进入设备运动区域内。</p> <p>在接近或进入危险区域之前，确保传动设备安全停止。</p> |
| <p>⚠ 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！</p> <p>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。</p> |
| <p>⚠ 小心 热表面（大于 60 度）！灼伤风险！</p> <p>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）。</p> |
| <p>⚠ 小心 安装和运输不当导致受伤危险！当心受伤！</p> <p>使用适当的运输和安装设备。</p> <p>使用适合的工具及用适当的防护设备。</p> |
| <p>⚠ 小心 电池操作不当！受伤风险！</p> <p>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）。</p> <p>请勿拆解或损坏电池。请勿将电池投入明火中。</p> |

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1 About this documentation

1.1 Validity of the documentation

This instruction has to be complied with by assemblers, operator, service engineers and facility operators. It contains notes about handling the motor components rotor and stator of a 1MB Asynchronous spindle motor from delivery up to disassembly and disposal.

Before operating motors, read this operating instruction to ensure a safe and smooth functionality and a long motor lifetime.





1.2 Editions of this documentation

| Edition | Release date | Notes |
|---------|--------------|--|
| 01 | 07/2012 | First edition |
| 02 | 04/2021 | Revision and amendment |
| 03 | 07/2022 | Amendment; EAC label removed, UKCA label added |

Tab. 1-1: Record of revisions

1.3 Additional documentation

This operating instruction is only valid with the following Rexroth documentation:

| | Title | Document type | Document number |
|---|---|----------------------------|----------------------------------|
|  | 1MB Kit Spindle Motors | Project Planning Manual | DOK-MOTOR*-1MB*****-PR□□-□□-P |
|  | Connection cables IndraDrive and IndraDyn | Selection data | DOK-CONNec-CABLE*INDRV-AU□□-□□-P |
|  | Connection System, Assembly and Tools ... | Assembly Instruc- tions | DOK-CONNec-CAB*INSTR02-MA□□-□□-P |
|  | Electromagnetic Compatibility (EMC) in Drive and Control Systems | Project Planning Manual | DOK-GENERL-EMC*****-PR□□-□□-P |

Tab. 1-2: Additional documentation

1.4 Presentation of information

Safety instructions The safety notes in this documentation describe signal words (danger, warning, caution, note) and a signal symbol (acc. to ANSI Z535.6-2006).

The signal word is intended to draw your attention to the safety instructions and describes the seriousness of the danger. The warning triangle with exclamation mark indicates the danger for persons.

⚠ DANGER

Non-compliance with this safety instructions **will** result in death or severe personal injury.

⚠ WARNING

Non-compliance with this safety instructions **can** result in death or severe personal injury.









⚠ CAUTION

Non-compliance with this safety instructions can result in moderate or minor personal injury.

NOTICE

Non-compliance with this safety instructions can result in material damage.

Symbols

| Symbol | Significance |
|---|--|
|  | Reference to supplementary documentation |
|  | This note gives important information, which must be observed. |
|  | Single, independent handling step |
| 1. 2. 3. | Numbered instruction: 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. |

Tab. 1-3: *Meaning of symbols*

2 Safety instructions

2.1 About this product

Observe the general safety notes in this chapter and the safety instructions in this documentation. Therewith, you avoid personal danger, damage and errors.



This operating instruction must be stored and transferred in case of sale during the complete product lifetime.

2.2 Intended use

Prerequisites for proper and safe use of the motors are proper transport, appropriate storage, proper assembly and connection, careful maintenance, operation and overhaul.

The motors have been designed for installation in industrial machinery. The motors are according to the following standards and directives.

Standards

| | |
|----------------|---------------------------------|
| DIN EN 60034-1 | Rating and performance behavior |
| DIN EN 60034-5 | Degree of protection |

Directives

| | |
|--------------------------------|--------------------------|
| 2006/95/EG (Appendix III B) | EC Low voltage directive |
|--------------------------------|--------------------------|

The machine manufacturer must evaluate the electric and mechanic safety as well as environmental influences in the assembled state of the machine according to the Machine Directive 2006/42/EC and DIN EN 60204-1 (safety of machines).

The electric installation must comply with the protection requirements of the EMC Directive 2004/108/EC. The plant manufacturer is responsible for appropriate installation (for example: physical separation of signal and power cables, using shielded cables, ...). The EMC instructions of the converter manufacturer must be observed.

Start-up is prohibited as long as the conformity with these directives is declared.

2.3 Unintended use

Any use of the motors outside of the specified fields of application or under operating conditions and technical data other than those specified in this documentation is considered to be "inappropriate use".

Unless explicitly provided for this purpose, the motors may not be used in explosion-hazardous areas (ATEX).

Trademark right third parties

Observe the trademark rights of third parties during assembly and use of single components delivered from Bosch Rexroth. For any infringement of the right, the customer is liable for the accruing damage.

2.4 Qualification of personnel

This operating instruction is intended for persons, who are familiar with transportation, installation, assembly, start-up and operation of components of electric drive and control systems and therewith associated danger and they must have appropriate qualifications.

All persons, working on, with or near an electric facility, must know the safety requirements, safety instructions and operating instructions (DIN EN 50110-1).

2.5 General safety instructions

Do not install or operate motors or components of an electric drive and control system, as long as you have not read and understood all relevant documents.

Please observe the respectively valid national, local and plant-specific regulations, the safety notes in the documentation and the warning signs on the components.

Improper use of the components and non-observance of the described safety notes can lead to damage, bodily injury, electric shock or in extreme case lead to death.

In the case of damage due to non-observance of the safety notes, Bosch Rexroth assumes no liability.

2.6 Product- and technology-dependent safety instructions

2.6.1 Protection from electric voltage

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

Before working:

1. Enable.
2. Secure against reactivation.
3. Ensure de-energization.
4. Ground and short-circuit.
5. Cover or shield any adjacent live parts.

After completing the job, cancel the measures in reverse order.

Dangerous voltage occurs during operation! Danger to life, risk of injury by electric shock!

- Before start-up, connect the protective conductors on all electric components according to the connection plan.

- Operation, even for short measuring purposes is only allowed with fixed connected protective conductor on the specified points of the components.

2.6.2 Protection from mechanical danger

Dangerous movements! Danger to life, risk of injury, heavy injury or material damage.

- Do not stay within the motion zone of the machine. Avoid unauthorized access into the danger zone.
- Additionally secure vertical axes to prevent them from sinking or descending after having shutdown the motor, for instance as follows:
 - Mechanically lock the vertical axis,
 - providing an external braking / catching / clamping device, or
 - ensure sufficient weight compensation of the axes.

Rotating parts! Danger to life, risk of injury, heavy injury or material damage.

- Secure key and/or transmission elements against ejection.
- Install covers on dangerous rotating machine parts before start-up.

2.6.3 Protection against magnetic and electromagnetic fields

Magnetic and electromagnetic fields are created in the direct environment of live conductors or permanent magnets of electro motors and are a serious danger for persons. The machine operator must sufficiently protect personnel working in these areas from possibly occurring damage by suitable measures (e.g. warning notes, protective clothes, designation of the danger zone).

Observe the country-specific regulations. For Germany, please observe the specifications of the occupational insurance association BGV B11 and BGR B11 regarding "electromagnetic fields".

Strong magnetic and electromagnetic fields pose a health hazard for persons with heart pacemakers, metallic implants and hearing aids in the direct environment of motor components!

- Persons with heart pacemakers and metallic implants are not allowed to approach or handle these motor components.

2.6.4 Protection against burns

Risk of burns due to hot motor surfaces!

- Avoid contact with hot motor surfaces. **Temperatures may rise to over 70°C.**
- Allow the motor components to cool down long enough before touching them.
- Temperature-sensitive components may not come into contact with the motor surface. Ensure appropriate mounting distance of connection cables and other components.

2.6.5 Protection from component damage due to electrostatic danger

Products of Rexroth can contain components which underlie an electrostatic danger. These components, especially temperature sensors in the motor winding, can be easily destroyed due to improper handling by electrostatic discharge (ESD = electrostatic discharge).

Avoid, e.g. direct contact of open wires or contacts without being electrostatically discharged or grounded.



Do suitable ESD protective measures before you handle imperiled components (e.g. ESD protective clothes, wristlets, conductive floor, grounded cabinets and working surfaces).

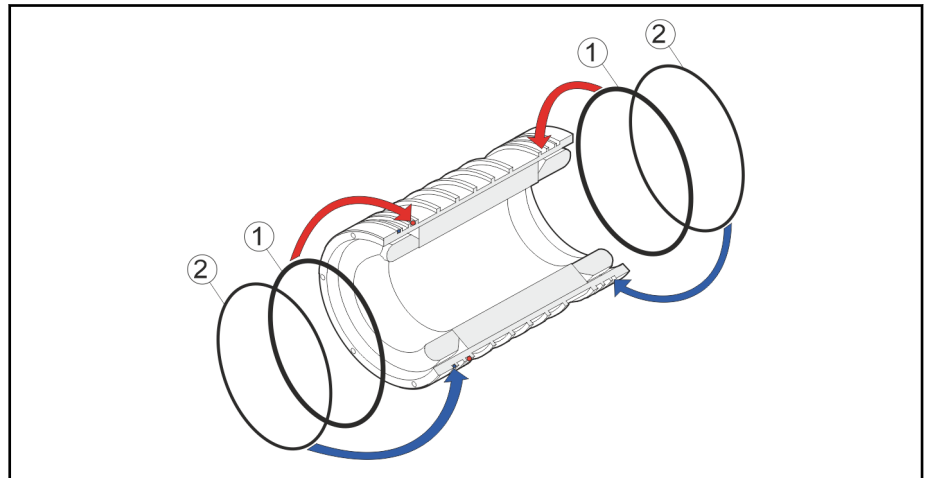
3 Scope of delivery

The total scope of delivery is listed on the delivery note or waybill. However, its content can be partitioned in several packages. Each package can be identified by a forwarding label.

Scope of delivery of 1MS stator

The scope of delivery of a stator contains:

- Stator in its origin package
- Type plate (2x)
- O-rings for stator sealing If o-rings are damaged, during stator assembly, for example, they can be reordered.
- Accompanying document with information about handling
- Accompanying document with product-specific safety notes



- ① O-ring sealing cooling jacket
- ② O-ring sealing leakage groove

Fig. 3-1: O-rings on 1MS



For stators without cooling jacket, o-rings are not enclosed.

Scope of delivery of 1MR rotor

The scope of delivery of a rotor contains:

- Rotor in its origin package
- Type plate (2x)
- Threaded pins for rotor balancing (number and type acc. to rotor type)
- 1 pc. O-ring to seal the step interference fit
- 1 pc. Threaded pins to seal the hydraulic oil ports
- Threaded pins for rotor balancing
- Accompanying document with information about handling
- Accompanying document with product-specific safety notes

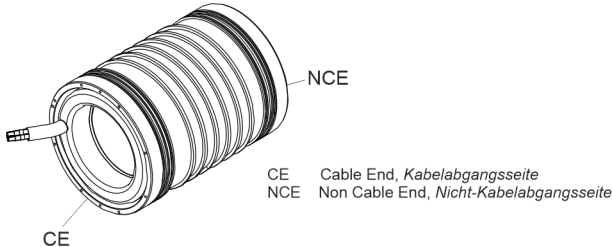


On delivery, immediately verify whether the delivered goods are those specified on the delivery note. The carrier must be informed immediately, in the case of any damaged package and goods.

4 About this product

4.1 Product description

4.1.1 Technical features

| | |
|--|--|
| Product | Three phase asynchronous motor |
| Manufacturer | Bosch Rexroth AG Buergermeister-Dr.-Nebel-Straße 2 97816 Lohr am Main, Germany |
| Type | 1MS 105, -140, -160, -163, -200, -240, -241, -242, -243, -270, -310, -312, -313, -375, -376, -480, -530 1MR 105, -140, -160, -163, -200, -240, -241, -242, -243, -270, -310, -312, -313, -375, -376, -480, -530 |
| Listed acc. to UL standard | UL 1004, Fifth Edition |
| UL-Files | E 341734 |
| Ambient temperature during operation | 0 ... 40 °C |
| Motor design | Open (kit motor) |
| Degree of protection (DIN EN 60034-5) | IP00 |
| Installation altitude | 0 ... 1000 m |
| Thermal class (EN 60034-1) | 155 (F) |
| Electrical connection | Wires with open ends (3x power 4x KTY, 4x NTC, 4x bimetal) (Special motors with double wires, 6x power) |
| Mechanical protection | Protective varnish on winding of 1MS Rust-protection varnish on rotor sheet metal package of 1MR |
| Sound pressure level | < 75 dB(A) |
| Insulation class (DIN EN 60034-1) | 155 (F) |
| Motor ends |  <p>CE Cable End, Kabelabgangsseite NCE Non Cable End, Nicht-Kabelabgangsseite</p> |



In the case of special design, details named in the operating instructions can deviate. In this case, order the supplementary documentation.

4.2 Product identification

4.2.1 Type codes 1MS stator

| | | | | | | | | | | | |
|--|---|---|--|--|--|--|--|--|--|--|--|
| Product | | | | | | | | | | | |
| 1 | M | S | | | | | | | | | |
| 1 M S = Stator of a 1MB kit motor | | | | | | | | | | | |
| Frame size | | | | | | | | | | | |
| 1 | M | S | | | | | | | | | |
| = See project planning manual | | | | | | | | | | | |
| Frame length | | | | | | | | | | | |
| 1 | M | S | | | | | | | | | |
| = See project planning manual | | | | | | | | | | | |
| Winding | | | | | | | | | | | |
| 1 | M | S | | | | | | | | | |
| = See project planning manual | | | | | | | | | | | |
| Stator design | | | | | | | | | | | |
| 1 | M | S | | | | | | | | | |
| A = With aluminum cooling jacket | | | | | | | | | | | |
| N = Without cooling jacket | | | | | | | | | | | |
| Electrical connection | | | | | | | | | | | |
| 1 | M | S | | | | | | | | | |
| 1 = 1.5 m long cable, lead out at stator side with bigger outer diameter | | | | | | | | | | | |
| 2 = 1.5 m long cable, lead out at stator side with smaller outer diameter | | | | | | | | | | | |
| Special design | | | | | | | | | | | |
| 1 | M | S | | | | | | | | | |
| = This field is cancelled for standard stators | | | | | | | | | | | |
| S 0 1 0 = With NTC and PTC thermistor for foreign drive controllers | | | | | | | | | | | |
| S 0 1 1 = S010 with 3.5 m connection cable | | | | | | | | | | | |
| S 0 2 0 = With thicker cooling jacket | | | | | | | | | | | |
| S 0 2 5 = Graduated center diameter on cooling jacket | | | | | | | | | | | |
| S 0 4 0 = Winding head with special form | | | | | | | | | | | |
| S 0 4 5 = Assembled with connector coupling | | | | | | | | | | | |
| S 0 4 6 = Prepared for connector coupling, connector coupling enclosed loosely | | | | | | | | | | | |

Fig. 4-1: 1MS Type codes

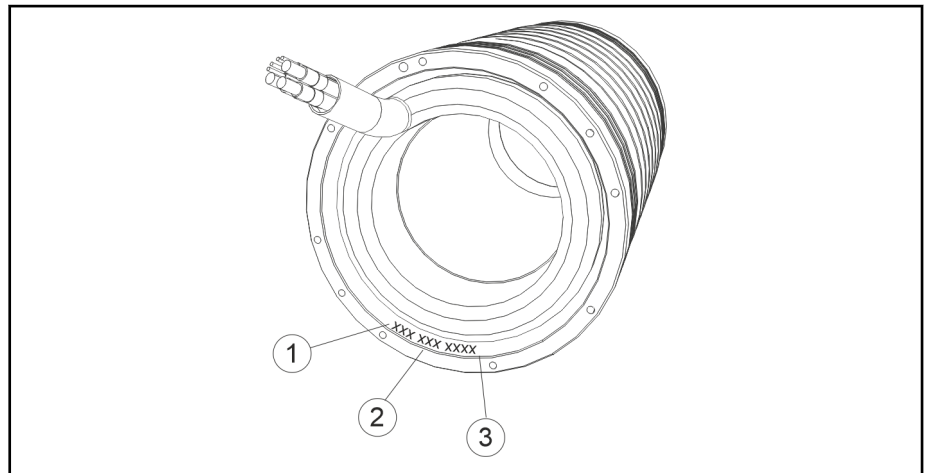


In the case of special design, details named in the operating instructions can deviate. In this case, order the supplementary documentation.

4.2.2 Identification 1MS stator

The stator is marked on the face with the larger outside diameter. The data of this marking are identical with the data of the associated stator nameplate and consist of

- Type identification
- Serial number
- Manufacturing month and year



- ① Type identification
 ② Serial number
 ③ Manufacturing month and year

Fig. 4-2: Stator designation

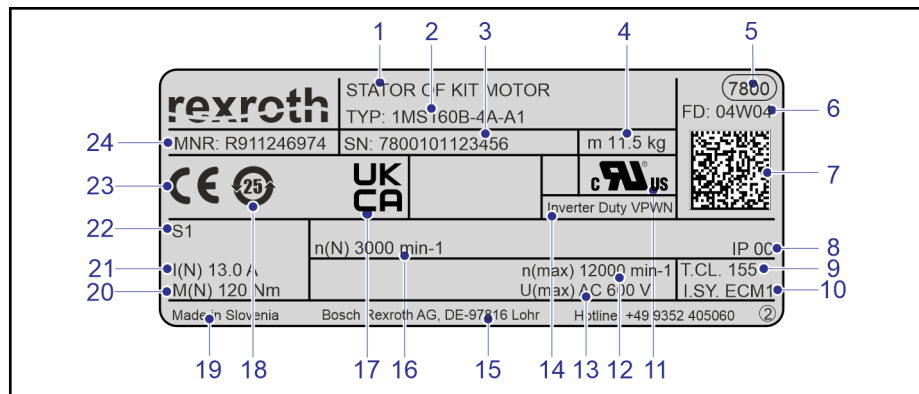


The designation of the stator without cooling jacket is done at the front-end of the laminated core.

Type plate stator

Two type plates with the exact type designation and technical data are enclosed for each stator. Attach the type plate to an easily visible position at the machine. In this way, you can read the motor data at any time without having to work in areas that are difficult to access and where the motor may be attached.

About this product



- 1 Type of machine
- 2 Type identification
- 3 Serial number
- 4 Mass
- 5 Factory (SAP)
- 6 Date of manufacture
- 7 Bar code
- 8 Degree of protection by housing
- 9 Thermal class
- 10 Insulation system
- 11 UL sign
- 12 Highest allowed velocity (mechanical)
- 13 Maximum input voltage
- 14 UL text 1
- 15 Company address
- 16 Rated speed
- 17 UK Conformity Assessed (UKCA)
- 18 China-RoHs 2 label
- 19 Designation of origin
- 20 Rated torque in operation mode S1
- 21 Rated current in star connection in operation mode S1
- 22 Operation mode S1
- 23 CE mark of conformity
- 24 Material number

Fig. 4-3: *Type plate stator (example)*

4.2.3 Type codes 1MR rotor

| | |
|-----------------------------|---|
| Product | 1MR _ _ _ _ - _ _ _ _ |
| | 1MR = Rotor of a 1MB kit motor |
| Frame size | 1MR _ _ _ _ - _ _ _ _ |
| | = See project planning manual |
| Frame length | 1MR _ _ _ _ - _ _ _ _ |
| | = See project planning manual |
| Rotor design | 1MR _ _ _ _ - _ _ _ _ |
| | A = S tep interference fit, readily usable |
| | B = Without rotor sleeve |
| | C = Step interference fit, with oversize |
| | S = With shrink disc |
| Rotor inner diameter | 1MR _ _ _ _ - _ _ _ _ |
| | = See project planning manual |
| Special design | 1MR _ _ _ _ - _ _ _ _ / _ _ _ _ |
| | = This field is cancelled for standard rotors |
| | S001 = Without rotor sleeve, without balancing ring, max. speed limited |
| | S020 = Rotor design without O-ring, with balancing bolts |
| | S022 = Thread groove in rotor thread for rotor cooling |
| | S026 = Frontal threaded holes |
| | S032 = Slotted rotor sleeve for radial clamping with rotor inner diameter 65 mm (only available for 1MR160F-B065) |

Fig. 4-4: 1MR Type codes



In the case of special design, details named in the operating instructions can deviate. In this case, order the supplementary documentation.

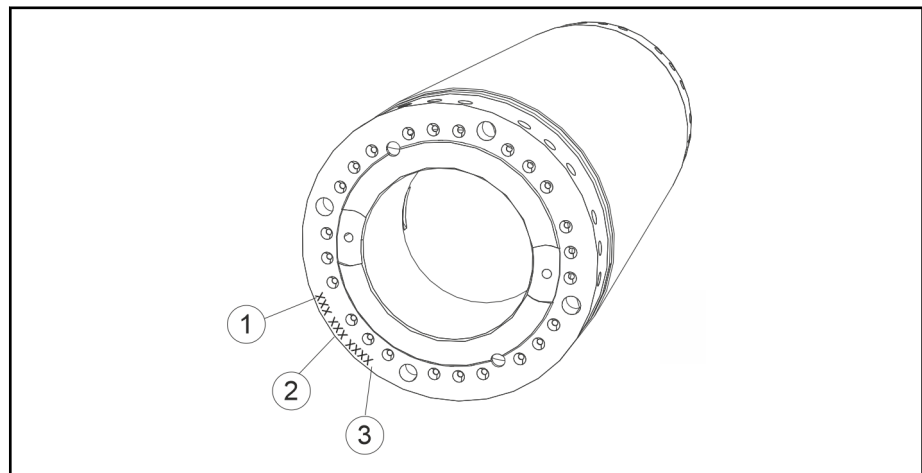
4.2.4 Identification 1MR rotor

As with the stator, the rotor is also marked on one of the two end faces. The following marking is done:

- Type identification
- Serial number
- Manufacturing month and year



The designation of rotors without sleeve is done at the front-end of the laminated core.

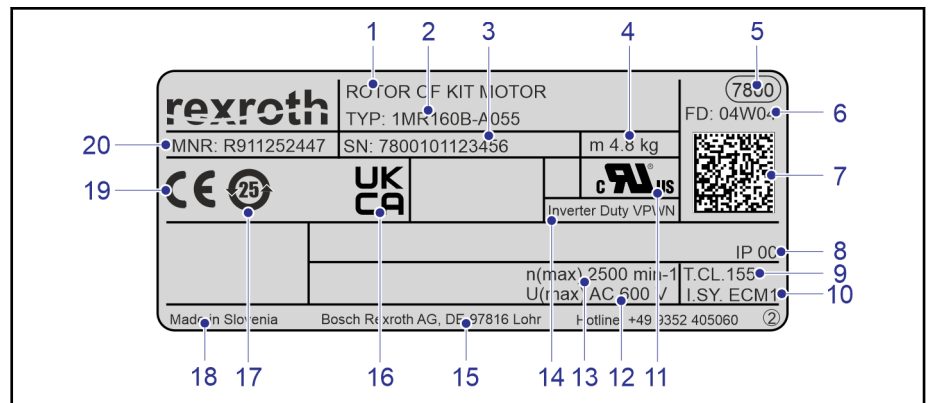


- ① Type identification
- ② Serial number
- ③ Manufacturing month and year

Fig. 4-5: Rotor designation

Type plate rotor

Two type plates with the exact type designation and technical data are enclosed for each rotor. Attach the type plate to an easily visible position at the machine. In this way, you can read the motor data at any time without having to work in areas that are difficult to access and where the motor may be attached.



- | | |
|----|---------------------------------------|
| 1 | Type of machine |
| 2 | Type identification |
| 3 | Serial number |
| 4 | Mass |
| 5 | Factory (SAP) |
| 6 | Date of manufacture |
| 7 | Bar code |
| 8 | Degree of protection by housing |
| 9 | Thermal class (insulation class) |
| 10 | Insulation system |
| 11 | UL sign |
| 12 | Maximum input voltage |
| 13 | Highest allowed velocity (mechanical) |
| 14 | UL text 1 |
| 15 | Company address |
| 16 | UK Conformity Assessed (UKCA) |
| 17 | China-RoHs 2 label |
| 18 | Designation of origin |
| 19 | CE mark of conformity |
| 20 | Material number |

Fig. 4-6: Type plate rotor (example)

5 Transport and storage

5.1 Transport instructions

Transport our products only in their original package. Also refer to the specific ambient factors to protect the products from transport damage.

Based on DIN EN 60721-3-2, the tables below specify classifications and limit values which are allowed for our products while they are transported by land, sea or air. Refer to the detailed description of the classifications to take all of the factors which are specified in the particular class into account.

Allowed classes of environmental conditions during transport acc. to DIN EN 60721-3-2

| Classification type | Allowed class |
|---|---------------|
| Classification of climatic environmental conditions | 2K11 |
| Classification of biological environmental conditions | 2B1 |
| Classification of chemically active materials | 2C1 |
| Classification of mechanically active materials | 2S5 |
| Classification of mechanical environmental conditions | 2M4 |

Tab. 5-1: Allowed classes of environmental conditions during transport

For a better overview, some essential environmental influencing variables of the previously mentioned classifications are listed. Unless otherwise specified, the specified values are the values of the particular class. However, Bosch Rexroth reserves the right to adjust these values at any time based on future experiences or different ambient factors.

Allowed transport conditions

| Environmental factors | Symbol | Unit | Value |
|-----------------------|-----------|------------------|-------------|
| Temperature | T_T | °C | -25 ... +70 |
| Relative air humidity | φ | % | 5 ... 75 |
| Absolute air humidity | ρ_w | g/m ³ | 1 ... 29 |

Tab. 5-2: Allowed transport conditions



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

To lift the motor out of the transport crate or to install it in the machine, use the transport or lifting eyebolts at the motor.

The lifting eyebolts at least meet the requirements of DIN 580. Before each transport, ensure that the lifting eyebolts have been screwed down fully to the contact surface and that your selected lifting equipment and lifting method does not overstress the lifting eyebolts.



Please comply with DIN 580 on the transport of motors using the attached lifting eyebolts. Non-observance of the information in this standard can cause overstress to the lifting eyebolts and result in personal injury and/or product damage.

NOTICE

Never touch the connection points of electrostatic sensitive devices!



Mounted components (e.g. KTY84, encoder) can contain parts susceptible to electrical discharge (ESD).

- ▶ Observe the ESD safety measures.

⚠ WARNING

Risk of injury and material damage due to improper handling during transport!



- ▶ Only use hoisting gear suited for the weight of the motors.
- ▶ Never walk under hanging loads.
- ▶ Use suitable protective equipment and protective clothing during transport, and wear safety shoes.
- ▶ Do not lift or move the motor at the cable strand.
- ▶ Remove any existing transport locks prior to commissioning and keep them.

Lift and transport

During transport be careful not to damage the fit on the inside of the rotor. Damage in this area may make it impossible to disassemble the rotor from the spindle if necessary.

⚠ CAUTION

Strong magnetic forces may cause damage!

The rotor may only be lifted and transported with loop lifting slings made of plastic or with a special hook covered with plastic.

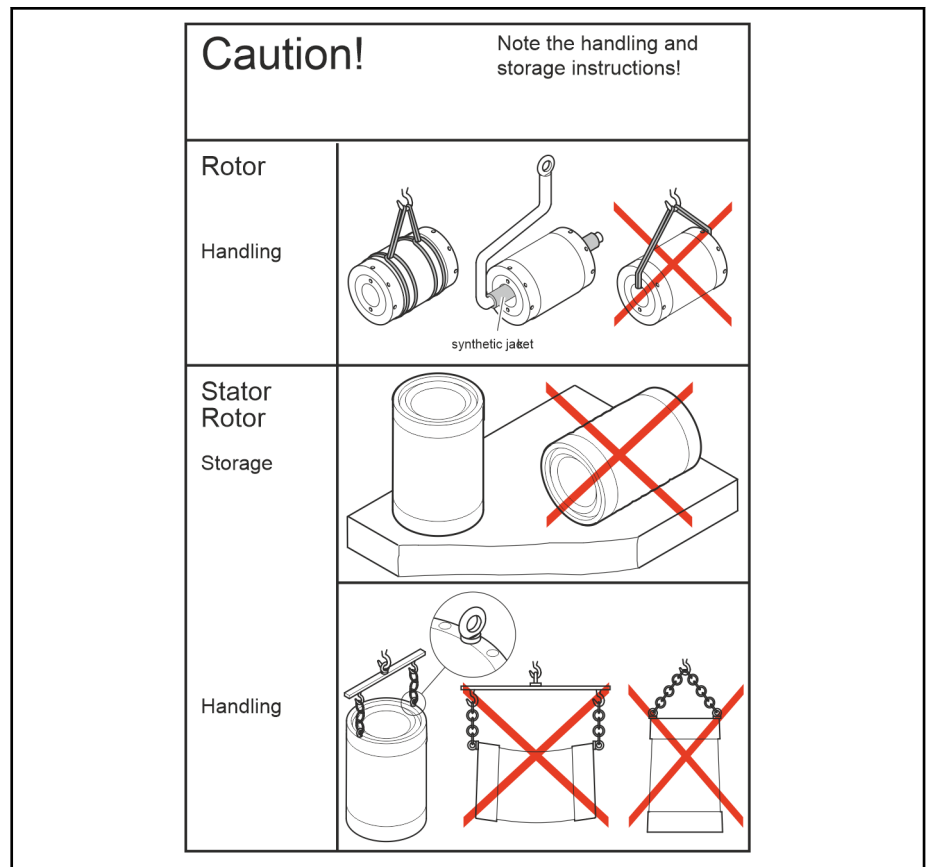


Fig. 5-1: Transport of 1MS and 1MR



- Use lifting eye bolts during transport in opposite holes only. Use only suitable lifting gear.
- Place the rotor and stator on a clean and level surface. If possible, both assemblies should be stored in vertical position and secured against falling over. If horizontal storage cannot be avoided for some frame sizes of rotors or stators, the components have to be secured against rolling.
- Damage to the fitting at the stator flanges has to be prevented to ensure that installation is not impeded.

5.2 Storage instructions

5.2.1 Storage conditions

Generally, Bosch Rexroth recommends storing all components until they are actually installed in the machine as follows:

- in their original packaging
- at a dry and dust-free location
- at room temperature
- free from vibrations and oscillations
- protected against light or direct sunlight

Upon delivery, protective sleeves and covers can be attached to Bosch Rexroth motors. They have to remain on the motor for transport and storage. Do not remove these parts until shortly before assembly.

Based on EN 60721-3-1, the tables below specify classifications and limit values which are allowed for our products while they are stored. Refer to the detailed description of the classifications to take all of the factors which are specified in the particular classification into account.

Allowed classes of ambient conditions during storage acc. to EN 60721-3-1

| Classification type | Class |
|---|-------|
| Classification of climatic environmental conditions | 1K21 |
| Classification of biological environmental conditions | 1B1 |
| Classification of chemically active materials | 1C1 |
| Classification of mechanically active materials | 1S10 |
| Classification of mechanical environmental conditions | 1M11 |

Tab. 5-3: Allowed classes of environmental conditions during storage

For a better overview, some essential environmental influencing variables of the previously mentioned classifications are listed. Unless otherwise specified, the specified values are the values of the particular class. However, Bosch Rexroth reserves the right to adjust these values at any time based on future experiences or changed environmental factors.

Allowed classes of ambient conditions during storage acc. to EN 60721-3-1

| Environmental factor | Symbol | Unit | Value |
|------------------------|-----------|------------------|---------------|
| Air temperature | T_L | °C | -25 ... +55 |
| Relative air humidity | φ | % | 5 ... 75 |
| Absolute air humidity | ρ_w | g/m ³ | 1 ... 29 |
| Condensation | - | - | Not permitted |
| Direct solar radiation | - | - | Not permitted |

Tab. 5-4: Allowed storage conditions

5.2.2 Storage times

Additional measures have to be taken upon commissioning to ensure smooth functioning – irrespective of the storage time which may be longer than the warranty period of our products. However, this does not entail any additional warranty claims.

Motors

| Storage time/months | | | Measures for commissioning |
|---------------------|------|------|--|
| > 1 | > 12 | > 60 | |
| ■ | ■ | ■ | Visual inspection of all parts to be damage-free |
| | ■ | ■ | Check the electric contacts to verify that they are free from corrosion |
| | ■ | ■ | Measure insulation resistance. Dry the winding at a value of < 1kOhm per volt rated voltage. |

Tab. 5-5: Measures before commissioning motors that have been stored over a prolonged period of time

Cables und plug connectors

| Storage time/months | | | Measures for commissioning |
|---------------------|------|------|--|
| > 1 | > 12 | > 60 | |
| ■ | ■ | ■ | Visual inspection of all parts to be damage-free |
| | ■ | ■ | Check the electric contacts to verify that they are 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. 5-6: Measures before commissioning cables and connectors that have been stored over a prolonged period of time

6 Assembly

6.1 General notes



The machine manufacturer must observe the special features of the construction and create a special assembly instruction for the motor components rotor and stator. The machine manufacturer's mounting instructions are the only binding guidelines.

The project planning manual  Rexroth 1MB contains a suggestion to assemble motor components. This suggestion can be understood as a guideline to estimate the necessary assembly effort and to prepare the necessary implements for assembly.

The volume and order of the working steps described can be affected by special features of the machine construction and deviate from the schematic procedure.

Screw lock

All screwed connections must be secured against potential impacts and vibrations during operation of the machine. A suitable and field-tested screw lock for all metal thread connections is, e.g., Loctite 243.

Loctite 243 is a liquid screw lock (medium-hard) and is applied to the parts to be mounted immediately prior to assembly. For detailed information on correct handling and processing, please refer to the manufacturer's data sheets under <http://www.loctite.de>. The manufacturer's homepage also provides information on hardening accelerators or other screw locks.

6.2 Mechanical assembly

6.2.1 Assembly stator



The machine manufacturer must observe the special features of the construction and create a special assembly instruction for the motor components rotor and stator. The machine manufacturer's mounting instructions are the only binding guidelines.



- The stator may only be connected to the machine at one of the two stator end faces.
- All screwed connections are equipped with a liquid screw lock. See also "[Screw lock](#)" on page 23.
- The necessary screw length for fastening the stator depends on the machine construction.
- The screwed connections has to be able to take up both the force due to the weight of the motor and the forces acting during operation.

Assemble the stator according to the specifications of the machine manufacturer. The machine manufacturer has to consider the special character of his construction and has to prepare special mounting instructions.

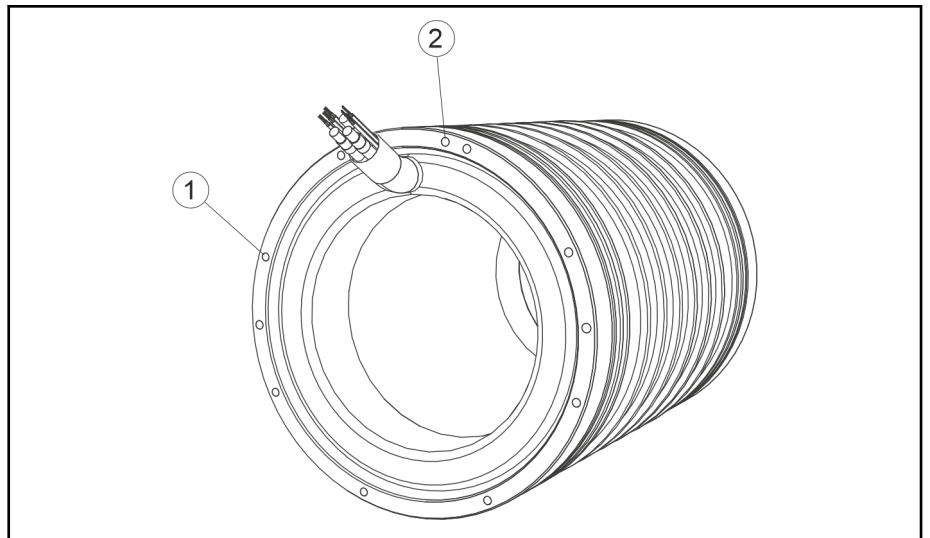
For general orientation, the project planning manual Rexroth 1MB contains an assembly instruction. It describes a schematic construction without considering the special structural features of the machine and serve only for general orientation. The figures also show parts that are required but are maybe not included in the Bosch Rexroth delivery and have to be appropriately dimensioned and provided by the user.

General procedure during disassembly: The motor components lie on a clean and a flat surface.

1. Check whether the components are damaged. Damaged components must not be mounted.
2. Provide tools, auxiliary material, measuring and test equipment and make sure that the rotor can be mounted in a clean, dry and dust-free environment.
3. Check all components and mounting surfaces, holes and threads, as well as the O-ring grooves on the stator to verify that they are clean and free from burrs. Everything must be **clean, stainless and completely free from burrs**. Clean and deburr such areas if necessary.
4. Prior to assembly, clean the contact surfaces of the stator with a suitable cleaning agent (e.g., RIVOLTA A.C.S.3).
5. Grease the O-rings (dependent upon type) with an ordinary lubricant grease and mount the O-rings in the stator grooves provided. Avoid twisting and soiling of the O-rings.
6. Screw the lifting eye bolts which are required for transport in mutually opposite threads.

Ensure cleanliness during all working steps!

Fastening thread at the stator



- ① Rotary fastening thread at the stator
 ② Fastening thread for ground connection

Fig. 6-1: Fastening thread at the stator

| Stator 1MS... | Fastening thread at the stator | | Ground connection | |
|---------------|--------------------------------|-----------------------------|--------------------------|-----------------------------|
| | Dimension | (Amount) (per front end) | Dimension | (Amount) (per front end) |
| 105 | M5 / 15 mm deep | 8 | M6 / 15 mm deep | 1 |
| 140 | M5 / 15 mm deep | 8 | M6 / 15 mm deep | 1 |
| 160 | M5 / 15 mm deep | 8 | M6 / 15 mm deep | 1 |
| 163 | M5 / 12 mm deep | 8 | M5 / 12 mm deep | 1 |
| 200 | M5 / 18 mm deep | 8 | M6 / 18 mm deep | 1 |
| 240 | M8 / 18 mm deep | 8 | M8 / 18 mm deep | 1 |
| 241 | M8 / 18 mm deep | 8 | M8 / 18 mm deep | 1 |
| 242 | M8 / 18 mm deep | 8 | M8 / 18 mm deep | 1 |
| 243 | -/- | | provided by the customer | |
| 270 | M8 / 23 mm deep | 8 | M8 / 23 mm deep | 1 |
| 310 | M8 / 23 mm deep | 8 | M8 / 23 mm deep | 1 |
| 312 | M8 / 23 mm deep | 8 | M8 / 23 mm deep | 1 |

| Stator 1MS... | Fastening thread at the stator | | Ground connection | |
|---------------|--------------------------------|-----------------------------|-------------------|-----------------------------|
| | Dimension | (Amount) (per front end) | Dimension | (Amount) (per front end) |
| 313 | M8 / 23 mm deep | 8 | M8 / 23 mm deep | 1 |
| 375 | M8 / 33 mm deep | 8 | M8 / 33 mm deep | 1 |
| 376 | M8 / 22 mm deep | 8 (only onesided) | M8 / 22 mm deep | 1 (only onesided) |
| 480 | M8 / 22 mm deep | 8 (only onesided) | M8 / 22 mm deep | 1 (only onesided) |
| 530 | M8 / 20 mm deep | 8 (only onesided) | M8 / 12 mm deep | 1 (only onesided) |

Tab. 6-1: Fastening thread at the stator



For exact position of the threaded holes, refer to the dimension sheet of the stator in project planning manual 1MB Kit Spindle Motors (see [tab. 1-2 "Additional documentation" on page 1](#)).

6.2.2 Mounting the rotor



The machine manufacturer must observe the special features of the construction and create a special assembly instruction for the motor components rotor and stator. The machine manufacturer's mounting instructions are the only binding guidelines.

WARNING

Hot surfaces with temperatures over +100 °C during shrink-fitting may cause burns!



- ▶ When mounting the rotor on the motor spindle, it must be heated to a temperature between +180 °C and +200 °C.
- ▶ Mount the rotor with utmost care. Wear heat-resistant work clothes and safety gloves!

Assemble the rotor according to the specifications of the machine manufacturer. The machine manufacturer has to consider the special character of his construction and has to prepare special mounting instructions.

For general orientation, the project planning manual Rexroth 1MB contains an assembly instruction. It describes the schematic construction without considering the special structural features of the machine. The figures also show parts that are required but are maybe not included in the Bosch Rexroth delivery and have to be appropriately dimensioned and provided by the user.

6.3 Connection technique

6.3.1 Power connection

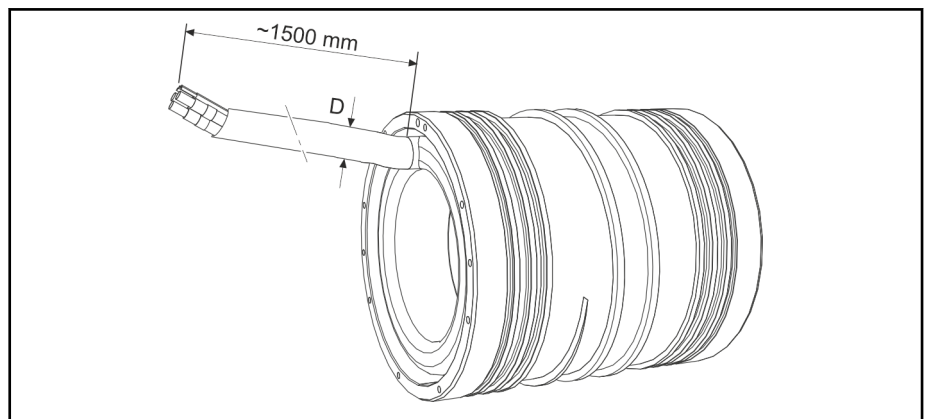
General

⚠ CAUTION

Motor destruction by direct connection to the 50/60 Hz power grid (three-wire or single-phase power supply)!

The motors described here can only be operated with suitable drive controllers with variable output voltage and frequency (converter mode) as specified by Rexroth.

The stators in standard design are provided with an approx. 1.5m long connection strand (single wires within a protective conduit). The connection strand consists of three power wires or three power wire pairs and two up to six wire pairs for the cold conductors in the winding head.



D Diameter of connection strand

Fig. 6-2: 1MS Connection strand

Wire designation in connection strand

At cross-sections exceeding 10 mm², the power wires in the connection strand of the motor are marked with U-V-W.

Smaller power wire cross-sections can be color-coded:

- U = Yellow (YE)
- V = Green (GN)
- W = Blue (BU)

Connection wires in connection strand

For the designation of the temperature sensors refer to [Fig. 6-3](#) or [Fig. 6-4](#).

The connection strand is a motor-internal connection. For this reason, the insulation of the connection strand is designed for higher temperatures than the power cables (connection between stator and controller). For this reason, the minimum cross-sections for power wires specified in the motor data sheet may deviate from the power wire cross-sections in the connection strand specified below.



The cross-section of the conductor pairs of the temperature sensors is AWG 22 (KTY84) or 0.5 mm² (NTC and bimetal).

Assembly

| Motor frame size | Power strand cross-section in connection strand [mm ²] | Diameter of connection strand (D) +/- 1 mm | Minimal bending radius statically [mm] |
|--------------------|--|--|--|
| 1MS105N-4A | AWG 10 | 17 | 4 x D |
| 1MS105N-4B | AWG (16) | 14 | |
| 1MS140B-4A | 10 | 22 | |
| 1MS140B-4B | 10 | | |
| 1MS140D-4B | 10 | | |
| 1MS140F-4A | 10 | | |
| 1MS140H-4B | 16 | | |
| 1MS160B-4A | 10 | 22 | |
| 1MS160D-4A | 10 | | |
| 1MS160D-4B | AWG 12 | 14 | |
| 1MS160E-4B | 10 | 22 | |
| 1MS160F-4A | 16 | | |
| 1MS160F-4B | 10 | | |
| 1MS160F-4D | AWG 12 | 14 | |
| 1MS160H-4A | 10 | 22 | |
| 1MS160N-4A | 16 | 30 | |
| 1MS160N-4B | 16 | | |
| 1MS160N-4C | AWG 10 | 14 | |
| 1MS163H-8A | 10 | 22 | |
| 1MS200C-4A | 10 | 22 | |
| 1MS200D-4B | 16 | | |
| 1MS200D-4C | 16 | | |
| 1MS200D-4D | 16 | | |
| 1MS200D-4E | 16 | | |
| 1MS200D-4F | 25 | 30 | |
| 1MS200E-4B | 16 | 22 | |
| 1MS200E-4C | 25 | 30 | |
| 1MS200H-4B | 16 | 22 | |
| 1MS200H-4D | 16 | | |
| 1MS200H-4D-...S010 | 16 | 30 | |
| 1MS240B-4A | 10 | 22 | |
| 1MS240F-4A | 16 | | |
| 1MS240H-4B | 16 | | |
| 1MS241C-6B | 25 | 30 | |

| Motor frame size | Power strand cross-section in connection strand [mm ²] | Diameter of connection strand (D) +/- 1 mm | Minimal bending radius statically [mm] |
|------------------|--|--|--|
| 1MS241D-6A | 10 | 22 | 4 x D |
| 1MS241D-6C | 10 | | |
| 1MS241D-6D | 16 | | |
| 1MS241H-6C | 16 | | |
| 1MS241H-6D | 16 | | |
| 1MS242N-4B | 35 | 30 | |
| 1MS243F-4Y | 25 | | |
| 1MS270C-4B | 25 | | |
| 1MS310B-6B | 16 | 22 | |
| 1MS310B-6D | 16 | | |
| 1MS310B-6E | 16 | | |
| 1MS310D-6B | 16 | | |
| 1MS310F-6A | 25 | 30 | |
| 1MS310F-6B | 25 | | |
| 1MS312B-4A | 16 | 22 | |
| 1MS312C-4A | 25 | 30 | |
| 1MS312C-4C | 16 | 22 | |
| 1MS313F-8D | 25 | 30 | |
| 1MS375B-6B | 25 | | |
| 1MS375D-6B | 25 | | |
| 1MS375D-6D | 25 | | |
| 1MS376A-QA | 10 | 22 | |
| 1MS376A-QB | 10 | | |
| 1MS480A-GA | 16 | | |
| 1MS530A-GA | 10 | | |

Tab. 6-2: Connection wire cross section

Connection strand installation

The connection strand connected to the stator ends with open wire ends and must not be subject to dynamic bending loads.

When connecting the cables at the spindle housing, it must be ensured that

- the specified admissible bending radius of the cable strand is observed
- the edges of the through holes at the spindle housing are rounded or protected by a plastic sleeve.

Ground connection

For this purpose, the stator is equipped with threaded bores for grounding connection at both face ends. Fasten the ground cable with a ring terminal at one of these threaded holes.

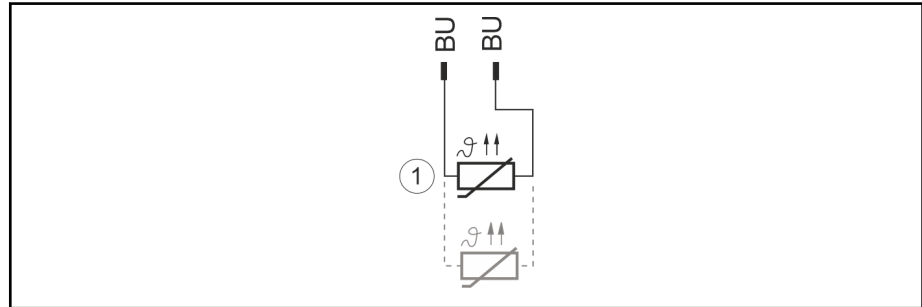
For details on the exact position and the connection thread of the threaded hole, refer to the dimensional drawing of the respective motor. The minimum cross-section depends on the type of motor. The corresponding data are listed in Fig. 6-2.



The power wire cross-section specified in the data sheet of the motor is also applies for the grounding cable and must be complied with.

6.3.2 Temperature sensors

Standard stator As standard, two thermistors (NTC) for motor protection are mounted into the motor winding of 1MS stators. One sensor must be connected, the other serves as a replacement. If the connected sensor fails, the replacement sensor can continue to be used.



① NTC

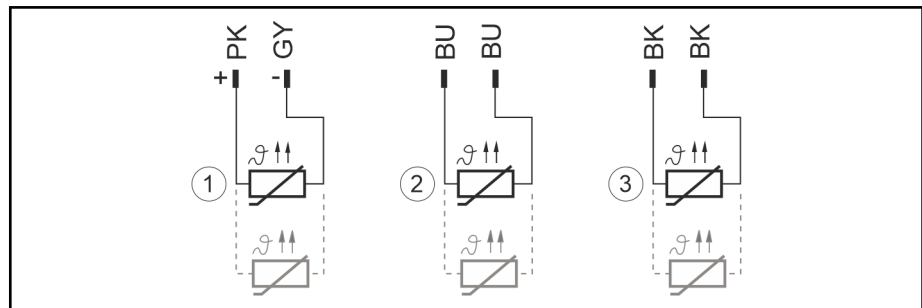
Fig. 6-3: Wire designation 1MS temperature sensor in standard design



- The polarity within the wire pair is not relevant for the function of the hot wire.
- The function of the replacement sensor cannot be guaranteed and must therefore be ensured before commissioning.

Stators in special design S010

In the case of 1MS stators in the "S010" design, three temperature sensors are permanently installed in the motor winding. Each of these sensors is doubly present. If the connected sensor fails, the replacement sensor can continue to be used.



① KTY84-130

② NTC

③ Bimetal

Fig. 6-4: Wire designation 1MS temperature sensors in special design S010



- Observe polarity when connecting the KTY84.
 - The function of the replacement sensors cannot be guaranteed and must therefore be ensured before commissioning.
-

6.3.3 Motor cooling

General

For details on the dimension and position of the coolant connections, refer to the dimensional drawing of the respective stator.

Install systems in the cooling circuit for monitoring flow, pressure and temperature.

The allocation of intake (IN) and outtake (OUT) can be arbitrarily done. It does not influence the power data of the motor in any way.



You need other installation materials like couplings, tubes and fastening clips (not in the scope of delivery) to supply motors with a coolant.

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

Additional, regular inspections to ensure proper condition of the coolant connection should be logged in the maintenance schedule of the machine.

Operating pressure

The maximum coolant supply pressure of **6 bar** applies to all 1MB motors based on the effective current pressure directly at the coolant connection on the motor.

Please observe that additional screw connections or junctions in the cooling circuit can reduce the flow and supply pressure of the cooling medium.

Select well-spaced dimensioned connection screws and tube diameters.

6.3.4 Motor encoder

Encoder and encoder connection components are not included in the scope of delivery of the motor. Select the components according to the machine requirements.

7 Commissioning and operation

7.1 Safety

WARNING

High electric voltage! Danger to life, risk of injury by electric shock.



Life parts are dangerous.

- ▶ Do not open any covers or flange sockets during operation.
- ▶ Do not connect or disconnect plug-connectors and connection clamps.

WARNING

Risk of injury due to rotating motor shaft!



▶ Do not remove covers, machine parts or protective devices during operation.

▶ Do not enter the motion area of the machine. Prevent personnel from accidentally entering the machine's range of motion by using, for example:

- Safety fences, safety screens or protective covers.
- Light barrier

CAUTION

Thermal hazard due to hot surfaces during operation with temperatures over 70 °C.




▶ 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.

7.2 Commissioning




The motor can be operated only after installation into a machine. For start up, please observe the documentation of all system components. For detailed start up procedure of the motors refer to the 1MB project planning manual  and the respective documentation about drive controller or firmware description.

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

- Make sure that the motor cooling as well as the motor are mechanically and electrically connected correctly.
- Ensure that the motor and all participating components of the drive are undamaged and functional (e.g. encoder, cooling, brake, ...).
- Make sure that the axis can rotate freely over the complete rotation range.

7.3 Operation

During operation, keep the ambient and operation conditions and technical data specified in the 1MB project planning manual .

Checks during operation:

- ▶ Pay attention to exceptional noise.
- ▶ Pay attention to increased vibrations.
- ▶ Check the motor for cleanliness.
- ▶ Check the tightness of the coolant connections.
- ▶ Check the monitoring devices and diagnostic / error messages of the controllers.

Decommission the drive when deviations from normal operation exist. For further procedure refer to [chapter 9 "Disassembly" on page 39](#).

8 Maintenance and repair

8.1 Cleaning and servicing

WARNING

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



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

Prior to commencing work:

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

WARNING

Personal and material damage during maintenance work in operation!



- ▶ Never do any maintenance work on live machines.
- ▶ While carrying out maintenance work, secure the machine such that it cannot restart or be used by unauthorized persons.

CAUTION

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



- ▶ Before you work in the machine, let the motor cool down.
- ▶ Wear safety gloves.
- ▶ Do not work on hot surfaces.

Motors

Excessive dirt, dust or chips may adversely affect the functionality of the motors and, in extreme cases, even cause a failure of the motors. Clean 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.

Connection cable

WARNING

Death by electrocution possible due to live parts!



- ▶ Immediately put the machine out of operation and replace defective connection cables.
- ▶ Never do any provisional repairs on the connection cables.

- Check in regular distances the connection cables on damage and replace them if necessary.
- Check optionally existing drag chains (Drag chains) on defects.
- Check the protective conductor connection for proper condition and firm seating at regular intervals. Replace it, if necessary.

8.2 Service repair, maintenance and spare parts

Asynchronous motors of the 1MB series are maintenance-free as long as they are operated under the specified operating conditions and during their service life. Operation under unfavorable conditions can, however, lead to restrictions in availability.

- Increase availability with regular preventive maintenance measures. Comply with the machine manufacturer's instructions in the machine maintenance plan and the maintenance measures described below.
- Record all maintenance measures in the machine maintenance plan.

Bosch Rexroth recommends the following maintenance measures based on the machine manufacturer's maintenance plan:

| Measure | Interval |
|---|---|
| Check the cooling system for proper functioning. | According to the specifications in the machine maintenance plan, but at least every 1000 operating hours. |
| Check the mechanical and electrical connections. | According to the specifications in the machine maintenance plan, but at least every 1000 operating hours. |
| Check the machine for smooth running, vibrations and bearing noise. | According to the specifications in the machine maintenance plan, but at least every 1000 operating hours. |
| Remove dust, chips and other dirt in the motor, from the motor housing, cooling fins and the connections. | Depending on the degree of soiling, but after one operating year at the latest. |

Tab. 8-1: Maintenance measures

8.3 Service and support

Our worldwide service network provides an optimized and efficient support. Our experts offer you advice and assistance should you have any queries. You can contact us **24/7**.

Service Germany

Our technology-oriented Competence Center in Lohr, Germany, is responsible for all your service-related queries for electric drive and controls.

Contact the **Service Hotline** and **Service Helpdesk** under:

Phone: **+49 9352 40 5060**
 Fax: **+49 9352 18 4941**
 E-mail: service.svc@boschrexroth.de
 Internet: <http://www.boschrexroth.com>

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

Service worldwide

Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

Preparing information

To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances

- Type plate specifications of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your e-mail address)

9 Disassembly

⚠ DANGER

Fatal injury due to errors during the activation of motors or work on moving elements!

- ⇒ Work on machines is only allowed if they are secured and while they are not running.
- ⇒ Before starting disassembly, secure the machine against unforeseeable movements and against unauthorized operation.
- ⇒ Before dismantling the motor and the supply lines, secure them against dropping or moving and disconnect the mechanical connections only thereafter.



The machine manufacturer must observe the special features of the construction and create a special disassembly instruction for the motor components rotor and stator. Only this disassembly instruction of the machine manufacturer is binding.


1. Observe the disassembly instruction of the machine manufacturer.
2. Use the machine-side control command to decelerate the drive to a controlled standstill.
3. Switch off the power and control voltage of the controller.
4. Switch off the main switch of the machine and deactivate external systems according to the instructions of the manufacturer.
5. Secure the machine against accidental movements and against unauthorized operation.
6. Wait until the discharge time of the electrical systems has elapsed and then disconnect all electrical connections. Lock electric cables and contacts against contact with other electrical parts.
7. Remove dirt, chips and other any kind of residues from the motor.
8. Before disassembling the motor and the supply lines, secure them against dropping or movements. Subsequently, disconnect the mechanical connections.
9. Empty the coolant ducts of the motor and dismantle the motor from the machine. Store the motor appropriately.
10. If necessary, record all measures in the commissioning log or machine maintenance plan.

10 Environmental protection and disposal

10.1 Environmental protection

| | | |
|---|---|---|
| Production processes | The products are manufactured in energy- and resource-optimized production processes which allow re-using and recycling the resulting waste. We regularly try to replace pollutant-loaded raw materials and supplies by more environment-friendly alternatives. | |
| No release of hazardous substances | Our products do not contain any hazardous substances which may be released in case of appropriate use. Normally, our products will not have any negative influences on the environment. | |
| Significant components | Significant components of our products are: | |
| | Electronic devices <ul style="list-style-type: none"> • Steel • Aluminum • Copper • Plastics • Electronic components | Motors <ul style="list-style-type: none"> • Steel / Stainless steel • Aluminum • Copper • Brass • Magnetic materials • Elektronic components |

10.2 Disposal

| | |
|-----------------------------------|--|
| Return of products | <p>Our products can be returned to us for disposal free of charge. However, this requires that the products be free from oil, grease or other dirt.</p> <p>Furthermore, the products returned for disposal may not contain any undue foreign material or foreign components.</p> <p>Deliver the products "free domicile" to the following address:</p> <p style="text-align: center;">Bosch Rexroth AG Electric Drives and Controls Buergermeister-Dr.-Nebel-Straße 2 97816 Lohr am Main, Germany</p> |
| Packaging | <p>Packaging materials consist of cardboard, wood and polystyrene They can be recycled anywhere without any problem.</p> <p>For ecological reasons, please refrain from returning the empty packages to us.</p> |
| Batteries and accumulators | <p>Batteries and accumulators can be labeled with this symbol.</p> <p> The symbol indicating "separate collection" for all batteries and accumulators is the crossed-out wheeled bin.</p> <p>End users in the EU are legally bound to return used batteries and accumulators. Outside the validity of the EU Directive 2006/66/EC, the particularly applicable regulations must be followed.</p> <p>Batteries and accumulators can contain hazardous substances which can harm the environment or people's health when improperly stored or disposed of.</p> <p>After use, the batteries or accumulators contained in Rexroth products must be properly disposed of according to the country-specific collection systems.</p> |

- 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.
- 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.

11 Troubleshooting

11.1 Procedure

Possible causes for failures of 1MB motors can be restricted to the following areas:

- Motor cooling circuit and temperature curve
- Internal temperature sensor
- Mechanical damage of the motor
- Mechanical connection to machine

Encoder and temperature sensor are controlled by the controller or the control unit; corresponding diagnostic messages are displayed. Comply with the instructions in the corresponding documentation.

The sections below describe examples of some fault states along with possible causes. This list is not exhaustive.

| Malfunction | Error cause | Measures |
|--|--|---|
| Motor does not run | Controller enable signal missing | Activate controller enable signal |
| | Controller fault | Troubleshoot acc. to documentation of controller |
| | Voltage supply missing | Control voltage supply |
| | 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 loose | Lock screw connections acc. to specifications |
| Running noise | Foreign bodies within the motor | Stop the motor --> repair by manufacturer |
| | Bearing is damaged | Stop the motor --> repair by manufacturer |
| High motor temperatures Motor temperature monitoring is activated | Operation outside of rated data | Reduce load and check the dimensioning |
| | Heat dissipation is impaired | Clean the motor For liquid cooling, check cooling circuit. |
| Wrong or defective temperature display | Temperature sensor not connected | Connect temperature sensor |
| | Temperature sensor defective | Connect backup temperature sensor |


Tab. 11-1: Malfunctions on 1MB motors




In the case of malfunctions or troubleshooting, please observe the notes in the project planning manual, too. Contact the manufacturer, if necessary.

12 Appendix

12.1 Technical data

Technical data and operating characteristic curves are described for all motor types in  1MB project planning manual.

12.2 Declaration of conformity (origin)



EU-Konformitätserklärung - Original Dok.-Nr.: DCTC-30322-003
Datum: 2018-04-30

nach Maschinenrichtlinie 2006/42/EG
 nach Niederspannungsrichtlinie 2014/35/EU
 nach EMV-Richtlinie 2014/30/EU
 nach ATEX-Richtlinie 2014/34/EU

Hiermit erklärt der Hersteller,
 Bosch Rexroth AG, Bürgermeister-Dr.-Nebel-Straße 2, 97816 Lohr am Main / Germany,

dass die nachstehenden Produkte

Bezeichnung: 3-PHASE SYNCHRONOUS MOTOR

Baureihen:

| | | | | | | | |
|----------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| Rotoren | 1MR105... | 1MR140... | 1MR160... | 1MR162... | 1MR163... | 1MR200... | 1MR530 |
| | 1MR213... | 1MR240... | 1MR241... | 1MR242... | 1MR243... | 1MR270... | |
| | 1MR293... | 1MR310... | 1MR312... | 1MR375... | 1MR376... | 1MR480... | |
| Statoren | 1MS105... | 1MS140... | 1MS160... | 1MS162... | 1MS163... | 1MS200... | 1MS530 |
| | 1MS213... | 1MS240... | 1MS241... | 1MS242... | 1MS243... | 1MS270... | |
| | 1MS293... | 1MS310... | 1MS312... | 1MS375... | 1MS376... | 1MS480... | |


Handelsbezeichnung: Rexroth
 ab Herstellungsdatum: 2018-04-30

in Übereinstimmung mit den oben genannten EU-Richtlinien entwickelt, konstruiert und gefertigt wurden.
 Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.


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) |

Lohr a. Main , den 2018-04-30
Ort Datum

ppa. 
 Dr. Ralf Koeppé
 Chief Technical Officer
 Automatisierungs- und
 Elektrifizierungslösungen

Škofja Loka , den 2018-04-30
Ort Datum


i.V. 
 Marcus Tenzer
 Werkleitung SkIP/PM

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

Seite 1 / 1

Fig. 12-1: EC declaration of conformity - origin, German

12.3 Translated declaration of conformity



EU declaration of Conformity

(Translation of the original Declaration of Conformity)

Doc. No.: DCTC-30322-003

Date: 2018-04-30

- in accordance with Machinery Directive 2006/42/EC
- in accordance with Low Voltage Directive 2014/35/EU
- in accordance with EMC Directive 2014/30/EU
- in accordance with ATEX Directive 2014/34/EU

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

hereby declares that the products below

Name: 3-PHASE SYNCHRONOUS MOTOR

Series:

| Rotors | 1MR105... | 1MR140... | 1MR160... | 1MR162... | 1MR163... | 1MR200... | 1MR530 |
|--------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| | 1MR213... | 1MR240... | 1MR241... | 1MR242... | 1MR243... | 1MR270... | |
| | 1MR293... | 1MR310... | 1MR312... | 1MR375... | 1MR376... | 1MR480... | |

| Stators | 1MS105... | 1MS140... | 1MS160... | 1MS162... | 1MS163... | 1MS200... | 1MS530 |
|---------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| | 1MS213... | 1MS240... | 1MS241... | 1MS242... | 1MS243... | 1MS270... | |
| | 1MS293... | 1MS310... | 1MS312... | 1MS375... | 1MS376... | 1MS480... | |

Trade name: Rexroth
 from the date of manufacture: 2018-04-30

were developed, designed and manufactured in compliance with the above-mentioned EU directives.]
 This declaration of conformity is issued under the sole responsibility of the manufacturer.

Harmonized Standards applied:

| Standard | Title | Edition |
|-----------------------------|---|--|
| EN 60034-1 (IEC 60034-1) | Rotating electrical machines – Part 1: Rating and performance | 2010 + Cor.:2010 (2010, modified) |
| EN 60034-5 (IEC 60034-5) | Rotating electrical machines – Part 5: Degrees of protection provided by integral design of rotating electrical machines (IP code) - Classification | 2001 + A1:2007 (2000 + Corrigendum 2001 + A1:2006) |

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

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

DCTC-30322-003 KOE N EN 2018-04-30.docx

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Fig. 12-2: Translated CE declaration of conformity

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Bosch Rexroth AG

P.O. Box 13 57

97803 Lohr a.Main, Germany

Bgm.-Dr.-Nebel-Str. 2

97816 Lohr a.Main, Germany

Phone +49 9352 18 0

Fax +49 9352 18 8400

www.boschrexroth.com/electrics



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