

Rexroth IndraDyn S

MKE Synchronous Motors
Ex-Protection (EN 60079:2009)

Instructions
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Edition 02



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MKE Synchronous Motors
Ex-Protection (EN 60079:2009)

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Purpose of Documentation This documentation ...
contains notes about personal safety when using the product
contains notes how to avoid damage and gives information about assembly,
commissioning and maintenance.

Record of Revision	Edition	Release Date	Notes
	DOK-MOTOR*-MKE*GEN2***-IB01-EN-P	11.2010	First edition
	DOK-MOTOR*-MKE*GEN2***-IB02-EN-P	05.2012	adjustment to standards EN 60079:2009 ff

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Note This document has been printed on chlorine-free bleached paper.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Table of Contents

	Page
1 About this Documentation.....	1
1.1 Validity of this Documentation	1
1.2 Additional Documentation	1
1.3 Presentation of information.....	1
1.3.1 Safety instructions.....	1
1.3.2 Symbols.....	2
2 Safety Instructions	3
2.1 About this Chapter	3
2.2 Appropriate Use	3
2.3 Inappropriate Use	3
2.4 Personnel Qualification.....	4
2.5 General safety instructions.....	4
2.6 Product and Technology-dependent Safety Instructions	4
2.6.1 Protection against Electrical Voltage.....	4
2.6.2 Protection against Mechanical Hazards.....	4
2.6.3 Protection against Magnetic and Electromagnetic Fields.....	5
2.6.4 Protection against Burns.....	5
2.6.5 Electrostatic sensitive devices (ESD).....	5
3 Scope of Delivery	7
4 About this Product.....	9
4.1 Application Conditions ATEX Device Group II, Category 2.....	9
4.2 Product Description	10
4.2.1 Technical Features.....	10
4.2.2 Frame Shape.....	11
4.2.3 Degree of Protection.....	11
4.2.4 Output Shaft.....	12
4.2.5 Bearings.....	12
4.2.6 Cooling.....	12
4.3 Product Identification.....	13
4.3.1 Type Code.....	13
4.3.2 Rating Plate.....	14
4.3.3 Labeling	14
5 Transport and Storage.....	17
5.1 Transport (Shipping) Instructions.....	17
5.2 Instructions on Machine Transport.....	17
5.3 Product Storage.....	18
5.4 Storage Times.....	19

	Page
6 Assembly	21
6.1 Motor Assembly.....	21
6.1.1 Flange Assembly.....	21
6.1.2 Attaching Transmission Elements.....	21
6.2 Connecting the Electric Supply.....	23
6.2.1 Safety.....	23
6.2.2 General Information.....	24
6.2.3 Electric Connection MKE037, MKE047, MKE098 Housing Design "E"	25
6.2.4 Electric Connection MKE118 Housing Design "E"	28
6.2.5 Connect Potential Equalization Line	33
7 Commissioning and Operation.....	35
7.1 Safety.....	35
7.2 Commissioning.....	35
7.3 Operation.....	36
8 Maintenance and Repair	37
8.1 Cleaning and Servicing	37
8.2 Service Repair, Maintenance and Spare Parts.....	39
9 Disassembly and Exchange	41
9.1 Tools Required	41
9.2 Exchanging the Motor.....	41
9.3 Preparing Storage	42
10 Environmental protection and disposal	43
11 Extension and Modification	45
11.1 Optional Accessories.....	45
11.1.1 Ready-made Connection Cables.....	45
12 Troubleshooting	47
12.1 Troubleshooting procedure	47
13 Technical Data.....	49
14 Appendix.....	50
14.1 Declaration of Conformity.....	50
14.2 Standards.....	52
Index.....	55

1 About this Documentation

1.1 Validity of this Documentation

This documentation is valid for Rexroth housing motors of the MKE motors series and must be observed by assemblers, operators, service engineers and facility operators.

1.2 Additional Documentation

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

	Title	Document type	Document number
	Rexroth MKE Synchronous Motors	Project Planning Manual	DOK-MOTOR*-MKE*GEN2***-PR-□□-□□-P
	Rexroth Connection Cables	Selection Data	DOK-CONNEC-CABLE*STAND-AU□□-□□-P

Tab. 1-1: Additional documentation

1.3 Presentation of information

1.3.1 Safety instructions

The safety instructions in these operating instructions include 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.

1.3.2 Symbols

Symbol	Meaning
	Reference to supplementary documentation
	This note gives important information, which must be observed.
	Single, independent action step
1. 2. 3.	Numbered action instructions: The numbers show that the action steps must be taken one after the other.
	Warning against dangerous electric voltage
	Warning against hot surfaces
	Warning against rotating machine parts
	Warning against overhead load
	Electrostatic sensitive devices
	Prohibition for persons with cardiac pacemaker
	Do not carry along metal parts or clocks
	Hammer scales are forbidden
	ATEX sign; explosion protection designation
	The UL Recognized Component Mark shows recognized component parts which are components of a bigger product or system.
	The letters C and E stand for "Conformité Européenne". The CE mark only shows that a product conforms with the respective EC guidelines.
	Component prepared for use in systems for "integrated safety technology".
	The symbol indicating "separate collection" for all batteries and accumulators is the crossed-out wheeled bin.

Tab. 1-2: Meaning of symbols

2 Safety Instructions

2.1 About this Chapter

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



This manual must be stored by the user during the whole product lifetime and passed on when selling.

2.2 Appropriate Use

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

The motors have been designed for installation in industrial machinery. The motors comply with the following standards and directives.

Standards

EN 60079-0	Explosive atmosphere - Part 0: Equipment - General requirements
EN 60079-1	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
EN 60079-31	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

Directives

94/9/EC	ATEX directive
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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 73/23/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 correct installation (for example: physical separation of signal and power cables, using shielded cables, ...). The converter manufacturer's EMC instructions must be observed.

The machine may not be commissioned before conformity with these directives has been determined.

2.3 Inappropriate Use

Any use of the MKE 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".

The motors are not allowed to be used where ambient conditions require a higher explosion protection than indicated at the motor type plate.

Direct operation on the three-phase network is forbidden.

2.4 Personnel Qualification

For the purpose of this manual, qualified personnel means persons who are familiar with transporting, installing, mounting, commissioning and operating the components of the electrical drive and control system and the associated hazards and have an appropriate qualification for their job.

All persons working on, with or in the vicinity of an electrical system must be informed of the relevant safety requirements, safety guidelines and internal instructions (EN 50110-1).

2.5 General safety instructions

Do not install or operate motors or components of the electric drive and control system before you have not carefully read all delivered documents.

Please observe the particular applicable national, local and system-specific regulations, the safety instructions in the documentation and the warning and informative labels on the motors.

Improper use of the motors and failure to follow the safety instructions in this document may result in material damage, personal injury, electric shock or, in extreme cases, to death!

For damage due to non-compliance with the safety instructions, Bosch Rexroth does not assume any liability.

Applications for functional safety are only allowed if the motors have the SI sign on the rating plate.

2.6 Product and Technology-dependent Safety Instructions

2.6.1 Protection against Electrical Voltage

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

Prior to commencing the work:

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

After completion of the work, unmake the measures in reverse order.

During operation, dangerous voltages occur! Danger! Risk of injury due to electric shock!

- Before switching on, establish the fixed connection of the protective conductor to all electric components according to the connection diagram.
- Operation, even for short-term measuring and testing purposes, is only permitted with the protective conductor securely connected to the component points provided.

2.6.2 Protection against Mechanical Hazards

Dangerous movements! Danger to life, risk of injury, severe personal injury or material damage!

- Do not stay within the area of motion of the machine. Prevent persons from accidentally entering the danger zone.

- Make vertical axes safe against falling or declining after switching off the motor, e.g., by
 - locking the vertical axis mechanically,
 - providing an external braking / catching / clamping device, or
 - ensuring sufficient equilibration of the vertical axis.

Only using the serially delivered **motor holding brake** or an external holding brake activated by the drive controller **is not suitable for personal protection!**

Rotating parts! Danger to life, risk of injury, severe personal 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 electric motors and can be a great danger for persons.

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.

Crushing hazard of fingers and hands due to strong attractive forces of the magnets!

- Handle only with protective gloves.

Risk of destruction of sensitive parts!

- Keep watches, credit cards, check cards and identity cards with magnetic strips as well as all ferromagnetic metallic parts such as iron, nickel and cobalt away from the permanent magnets.

2.6.4 Protection against Burns

Risk of burns by hot surfaces!

- Avoid contact with hot motor surfaces. **Temperatures may rise to over 70 °C.**
- Allow the motors 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 Electrostatic sensitive devices (ESD)

Rexroth motors contain parts which underlie an electrostatic danger. These components, especially temperature sensors of the motor winding can be destroyed by improper use.

Avoid, e.g. direct contact of open wires or contacts of the connection cable of temperature sensors without being electrostatically discharged or grounded.



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

3 Scope of Delivery

The scope of delivery of an IndraDyn housing motor contains:

- Motor in original package
- Additional rating plate
- Operating instructions with safety instructions
- Protection cover for output shaft and junction points
- Accompanying papers

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

4 About this Product

4.1 Application Conditions ATEX Device Group II, Category 2

DANGER

Danger of explosion and life or high damage to property!

All used **components and accessory parts** must fulfill the requirements for explosion protection according to the 94/9/EG directive.

The **conditions on use** given in this documentation must be taken into account for any project planning and be observed during operation.

Notes about test number

The EC type test certificate number for MKE motors is designated by the "X" in the declaration of conformity and on the type plate. This identification is a note about special conditions, which have to be observed with regard to the specified safety and medical requirements of this underlying standards. Please observe the following special conditions for a safe operation of the motors in your construction:

- The allowed ambient temperature is 0 ... 40 °C.
- The gap width and length acc. to EN 60079-1:2009, table 1 were exceed or fall below to ensure the higher requirements of the UL 674. A repair acc. to the values of table 1 in EN 60079-1 is not allowed.
- Maintenance and repair of motors have to be done by Rexroth service.
- Use screws with a minimum property class of 8.8 to fasten the pressurizing room (housing, terminal box, ...).
- Only such components for assembly and disassembly (cables and cable entries, connecting parts, bulk head connectors, ...) are allowed, which correspond technically to the standards EN 60079-0:2009, EN 60079-15:2010, EN 60079-31:2009, which are suitable for the conditions of use and have a special certificate.

Maximum housing temperature

The maximum housing temperature is 115 °C on the motor housing at an ambient temperature of 40 °C. The ignition temperature of materials which come into contact with the motors must not come under 135°C.

Connection conditions

The motors are only allowed to operate with the Rexroth Drives DIAX04, ECODRIVE, DURADRIVE and IndraDrive. Drive control devices of other manufacturers are not permitted.

Grounding

Speed-controlled drive systems create discharge currents. For this reason the motors have to be grounded over the motor cable and over a second separate ground wire with a minimum cross section of **4 mm²**. Check that the position of the grounded conductor is fixed before commissioning.

Corrosion

Corrosion of the motor housing by aggressive materials (such as certain coolants, lubricants, cutting oils or salt mists) must be prevented.

Emergency stop

Stored energies in the drive controller must be removed or isolated as quickly as possible when the **emergency stop device** is actuated to ensure that the risk or an effect into the danger zone is reduced in the event of a failure (ATEX directive 94/9/EC, appendix II, chapter 1.6.2)

The user has the following possibilities:

- Energy isolation is guaranteed from the exit of the drive device, if at emergency stop, in addition to the power loss of the drive device is locked electronically. This results from line contactor-shutdown with sub-

sequent failure reaction of the drive device because of power failure (cp. F281). Adjusting the required drive-end failure reaction must be made by the user at the drive device via the drive parameters (cp. P-0-0119) according to the functional description.

- To have the encoder feeder cable also de-energized, shutdown the control voltage of the drive device.

Are the control voltage and the power of the drive device shutdown, the exit on the motor side has electronically locked itself over the output stage and eventually stored energies in the intermediate direct current link are therewith isolated on the motor side and on the output side.

- The intermediate direct current link short-circuit can be used – if possible – to reduce the energies within the intermediate direct current link of the drive device after shutdown of supply voltage fast.

Independent from these possibilities, the user has to check – as stipulated in the safety notes - with a suited measuring instrument, in general, before working on the machine, if the machine or parts of it, are under residual voltage (e.g. caused by rest energy of capacitors in filters and drive devices etc.). Wait for their discharging time.

Fan Operation of motors according to the ATEX Directive 94/9/EG is only allowed **without** a fan.

Other environmental factors Observe the project planning manual “DOK-MOTOR*-MKE*GEN2***-PR□□-□□-P” regarding dangers due to external interference effects, such as ...

- Operation only inside the specified ambient conditions
- Maximum vibration and impact loads
- Protection of protective conductor connections against dirt, corrosion, moisture and/or aggressive materials, etc.
- ...

4.2 Product Description

4.2.1 Technical Features

The motors of the MKE motors series are three-phase synchronous motors which are energized by a permanent magnet and are suitable for operation on converters or inverters of Bosch Rexroth.

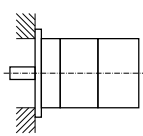
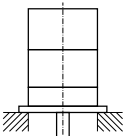
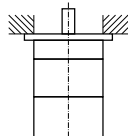
Product	Three-phase synchronous motor
Manufacturer	Bosch Rexroth Electric Drives and Controls GmbH Buergermeister-Dr.-Nebel-Strasse 2 97816 Lohr am Main / Germany
Type	MKE037, -047, -098, -118
Listing acc. to UL standard (UL)	UL 1004, Fifth Edition
Listing acc. to CSA standard (UL)	Canadian National Standard(s) C22.2 No. 100-04
UL files (UL)	E 335445
Ambient temperature in operation	0 ... 40 °C
Motor design	B5 (EN 60034-7)
Degree of protection	IP65 (EN 60034-5)
Vibration severity grade	Vibration severity grade N according to DIN VDE 0530, Part 14. Edition 02.93
Concentricity, run-out and alignment	Tolerance N (IEC 60072-1)
Flange	acc. to DIN 42948
Shaft end	Cylindric (DIN 748 part 3), keyway optional, centering hole (DIN 332 part 2)

Installation altitude	0 ... 1,000 m
Sound pressure level	< 75 dB(A)
Insulation class	155 (EN 60034-1)
Balancing	Full-key balancing
Electrical connection	Terminal box
Encoder system	A (optical, Singleturn Hiperface, 128 signal periods) B (optical, Singleturn EnDat 2.1, 2,048 signal periods) C (optical, Multiturn Hiperface, 128 signal periods) D (optical, Multiturn Hiperface, 2048 signal periods)
Motor holding brake (optional)	Principle: electrically released U_N 24V DC ($\pm 10\%$)



Special versions may deviate from the details specified in these operating instructions. In this case, the related supplementary documentation must be requested.

4.2.2 Frame Shape

Motor design B05		
IM B5	IM V1	IM V3
		
Flange attachment on the drive side of the flange	Flange attachment on the drive side of the flange, drive side facing down	Flange attachment on the drive side of the flange, drive side facing up

Tab. 4-1: Permissible types of installation according to EN 60034-7

4.2.3 Degree of Protection

Motor area	Degree of Protection	Remark
Motor housing, drive shaft, power and encoder connections (only for correct assembly)	IP65	Standard design

Tab. 4-2: IP protection areas of MSK motors

4.2.4 Output Shaft

Centering hole, according to DIN 332 Part 2, Edition 05.83	MKE			
	037	047	098	118
DS M3	■			
DS M5		■		
DS M8			■	
DS M10				■

Tab. 4-3: Centering hole

Corresponding key according to DIN 6885-A (is not included in scope of delivery)	MKE			
	037	047	098	118
3×3×16	■			
5×5×20		■		
8×7×40			■	
10×8×45				■

Tab. 4-4: Keys

4.2.5 Bearings

The motors are equipped with permanently greased deep-groove ball bearings. The fixed bearing is on the B-side. The nominal bearing service life L_{10h} is 30,000 h, considering the shaft and bearing loads specified in the project planning manual.

4.2.6 Cooling

Natural Convection

Nominal data is reached at ambient temperatures of up to 40 °C. The installation situation must be selected such that sufficient heat dissipation is ensured. Unhindered vertical convection must be ensured by a sufficient distance of 100 mm to neighboring components on the lateral surfaces. Soiling of the motor surface reduces heat dissipation, see [chapter 12 "Troubleshooting "](#) on page 47.

4.3 Product Identification

4.3.1 Type Code

Frame size

M K E ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ ☐ ☐ = see project planning manual (e.g. „118")

Frame length

M K E ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ = see project planning manual (e.g. „B")

Winding

M K E ☐ ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐

☐ ☐ ☐ = see project planning manual (e.g. „0 4 7")

Encoder

M K E ☐ ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐

A = optical, Singleturn Hiperface, 128 signal periods
B = optical, Singleturn EnDat 2.1, 2,048 signal periods
C = optical, Multiturn Hiperface, 128 signal periods
D = optical, Multiturn EnDat 2.1, 2,048 signal periods

Shaft

M K E ☐ ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐

G = Smooth shaft with shaft sealing ring
P = Shaft with keyway acc. to DIN 68851 with shaft sealing ring

Holding brake

M K E ☐ ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐

0 = without holding brake

	MKE037	MKE047	MKE098	MKE118	
1 = holding brake	1.0	2.2	11.0	32.0	Nm
3 = holding brake	-	-	-	70.0	Nm

Electrical connection

M K E ☐ ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐

A = terminal box A side
B = terminal box B side
K = terminal box on top
L = terminal box left
R = terminal box right
U = terminal box at the bottom

Housing design

M K E ☐ ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐

E = acc. to ATEX standard
G = acc. to GOST-R standard
U = acc. to UL standard

Other design (only for MKE037, -047, -098)

M K E ☐ ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐

N N = none

Cable entries (only for MKE118)

M K E ☐ ☐ ☐ ☐ - ☐ ☐ ☐ ☐ ☐ ☐ ☐

4 = 13.0 mm ... 16.0 mm
6 = 17.0 mm ... 19.5 mm
N = US Standard

mke02-0001

Fig. 4-1: Type code overview

4.3.2 Rating Plate

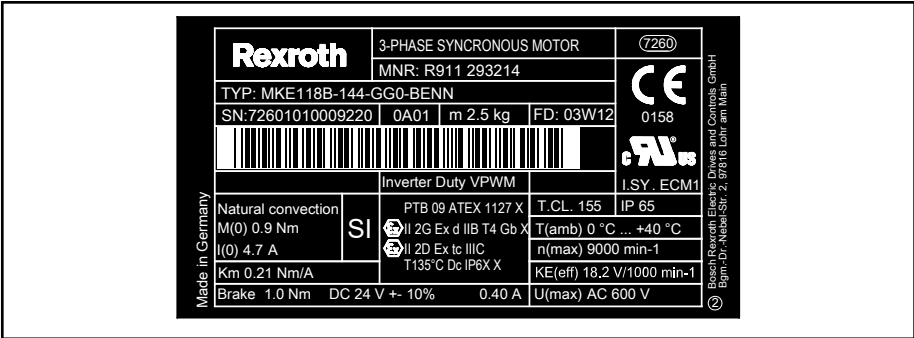


Fig. 4-2: Type plate (example)

4.3.3 Labeling

The type plate shows:

- Details about the classification of the motors according to the ATEX directive 94/9/EC
- Technical Data of the motor.



As early as during the installation of the motor, ensure that it is labeled accordingly and that it has a degree of protection that is sufficient for your application.

Explosion protection labeling and meaning:

Designation for use in areas with

- flammable gas II 2G Ex d IIB T4 Gb X
- flammable dust II 2D Ex tc IIIC T135°C Dc IP6X X

Code	Meaning
	Symbol Ex
II	Equipment group II which is suitable for all potentially explosive areas other than firedamp-endangered excavations
2	Category 2 means, equipment in this category is intended for use in areas which has to be calculated that an explosive atmosphere of gas, dust, fog, or dust/air mixtures can occur occasionally.
G	G = gas
D	D = dust
Ex	The European standard for explosion protection has been applied.
d	Ignition protection type "d" flameproof enclosure (for EPL Gb)
tc:	Ignition protection type "tc" protection by housing (for EPL Dc)
IIB	Electric devices of group II are intended for use in areas where an explosive gas atmosphere ("B": typical gas is ethylene) must be expected, excerpt mine workings susceptible to fire damp.
IIIC	Electric devices of group IIIC are intended for use in areas where an explosive dust atmosphere ("C": conductive dust) must be expected, excerpt areas susceptible to fire damp.
T4	Maximum surface temperature 135 °C
T 135 °C	Maximum surface temperature inside and outside the housing, where explosive gas or dust can occur.
Gb	Device protection level (EPL) classification Gb for device with a "high" safety level for use in potentially gas explosive atmospheres where there is no ignition risk during normal operation or in the event of foreseeable faults/malfunctions.

Dc	Device protection level (EPL) classification Dc for advanced safety level for use in potentially flammable atmospheres where there is no ignition risk during normal operation or have any additional safety measures which ensure in the event of foreseeable faults/malfunctions no ignition risk exists.
IP6X	Protection class acc. to EN 60034-5
X	For designation "Special Conditions" see notes about test number

5 Transport and Storage

5.1 Transport (Shipping) Instructions

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

Please observe the following classification limitations:

- Transport temperature range -20 ... +80 °C
- Relative air humidity max. 75 % (at +30 °C)
- No occurrence of salt mist



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

5.2 Instructions on Machine Transport

NOTICE

Never touch the connection points of electrostatic sensitive devices!



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

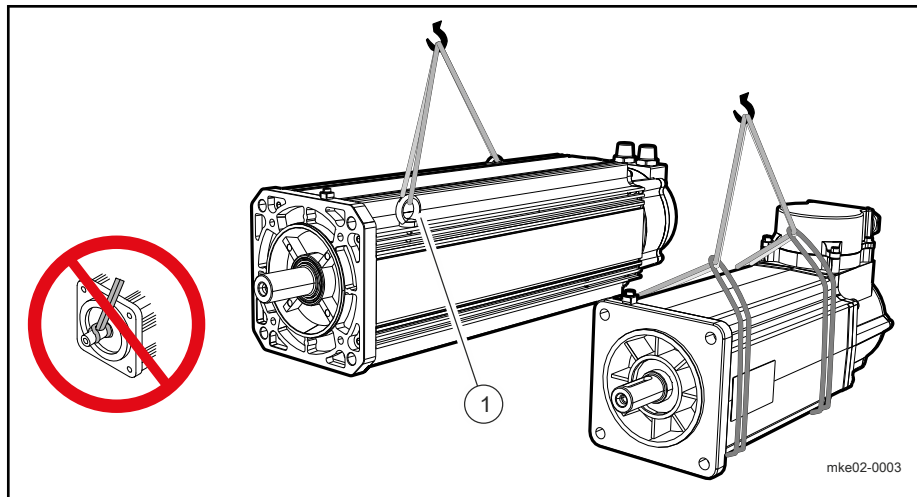
- Observe ESD safety measures.

⚠ WARNING

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



- Only use hoisting gear suited for the weight of the motors. Use lifting sling belts or lifting eye bolts. Secure the lifting eye bolts before use.
- Never walk under hanging loads.
- Never lift the motor on the shaft.
- Use suitable protective equipment and protective clothing during transport, and wear safety shoes.



① Eye bolts (check firm seating before use)

Fig. 5-1: Lifting and transporting motors

- ▶ Before transporting the motor, determine the weight of the motor. For more details about motor weight, please refer to the rating plate or the Project Planning Manual (Technical Data).
- ▶ Adjust the carrying capacity of the lifting device to the motor weight.
- ▶ If provided by the manufacturer, all lifting eye bolts must be used and tightened before use.
- ▶ Avoid increased transport vibrations.
- ▶ Remove any existing transport locks prior to commissioning and keep them

5.3 Product Storage

Store the motors in their original package at a dry, dust free, vibration free and light protected place without direct solar radiation. Please observe classes 1K2, 1B1, 1C1, 1S1, 1M2 specified for storage acc. to DIN EN 60721-3-2.

Please observe the following classification limitations:

- Storage temperature -20 ... +60 °C
- Relative air humidity 5 ... 95 %
- Absolute air humidity 1 ... 29 g/m³
- No condensation
- No ice formation/freezing
- No occurrence of salt mist

NOTICE

Damage due to moisture and humidity!

- ▶ Use coverings to protect the products from moisture.
- ▶ Store them only in rainproof and dry rooms.



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

5.4 Storage Times

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

Motors

Storage time	Measures for commissioning
< 1 year	Resurface the holding brake
1 ... 5 years	1. Check the electric contacts to verify that they are free from corrosion 2. Let the motor run in without load for one hour at 800 ... 1,000 rpm 3. Resurface the holding brake
> 5 years	1. Exchange bearings ¹⁾ 2. Exchange encoder ¹⁾ 3. Resurface the holding brake 4. Check the electric contacts to verify that they are free from corrosion

1) Service repair, for MKE motors only allowed by the manufacturer or an authorized workshop.

Tab. 5-1: Measures before commissioning motors that have been stored over a prolonged period of time

Cables and Connectors

Storage time	Measures before commissioning
< 1 year	None
1 ... 5 years	► Check the electric contacts to verify that they are free from corrosion
> 5 years	► 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. 5-2: Measure before commissioning cables and connectors that have been stored over a prolonged period of time

6 Assembly

6.1 Motor Assembly

6.1.1 Flange Assembly

NOTICE

Motor damage due to ingress of liquids!

Liquid which exists over a longer period on the shaft sealing ring of the output shaft can ingress into the motor and cause damage.

- ▶ Ensure that liquid cannot be present at the output shaft.
- ▶ Do not mount any open gearboxes (gearboxes that are not hermetically sealed).

For details on mounting holes, please refer to the Project Planning Manual.

 DOK-MOTOR*-MKE*GEN2***-PR□□-□□-P, "Rexroth MKE Synchronous Motors for hazardous areas acc. to ATEX and UL/CSA". Use all motor mounting holes to mount the motor safely to the machine.

- ▶ If coupling is direct, ensure that the support is plane and the orientation is precise.
- ▶ Avoid pinching or jamming the centering collar on the motor side.
- ▶ Avoid damage to the insertion fitting on the system side.
- ▶ Use the following screws and washers for flange assembly.

Mounting screws for MKE motors

Hole ø [mm]	Screw 8.8 DIN EN ISO 4762 DIN EN ISO 4014	Tightening torque M _A [Nm] at μ _K = 0.12	Washer DIN EN ISO 28738
4.5	M4 × 20	3	-
6.6	M6 × 20	10.1	-
11	M10 × 30	48	Yes
14	M12 × 40	84	Yes

Tab. 6-1: Tightening torque of mounting screws

6.1.2 Attaching Transmission Elements

Fit and pull off the transmission elements such as pulleys and couplings only with suitable equipment; heat them, if necessary.

- ▶ Avoid unallowed belt tensions. Please consider the allowed radial and axial forces in the project planning manuals.
- ▶ The balancing state of transmission elements must comply with the full-key balancing of the motors.

NOTICE

Motor damage due to strikes onto the motor shaft



- ▶ Do not strike the shaft end and do not exceed the allowed axial and radial forces of the motor.

Fitting

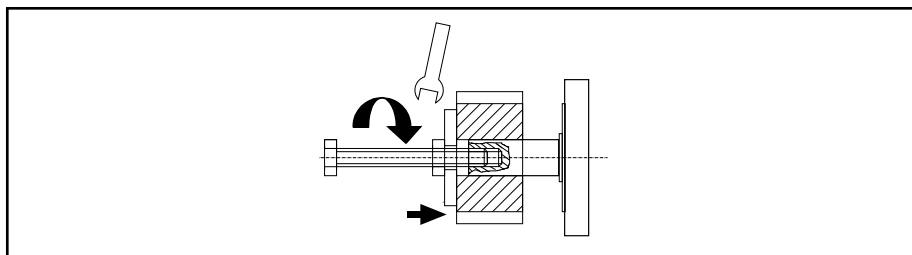


Fig. 6-1: *Fitting the transmission element*

- Use the centering hole for fitting transmission elements. For details on centering holes, please refer to the Project Planning Manual.

 DOK-MOTOR*-MKE*GEN2***-PRO□□-□□-P, "Rexroth MKE Synchronous Motors for hazardous areas acc. to ATEX and UL/CSA". Heat the output element, if necessary.

6.2 Connecting the Electric Supply

6.2.1 Safety

WARNING

Explosion hazard due to improper handling during the connection of the motor!

⇒ Make sure that the motor is only connected in the de-energized state and a non-explosive atmosphere.

- ▶ Before working on the system, always use a suitable measuring instrument (e.g. multimeter) to check whether parts are still under a residual voltage (e.g. due to the residual energies of capacitors in filters, drive devices, etc.); let their discharge times elapse.
- ▶ The connection between the grounding conductor and the system ground must be made before any other connections.
- ▶ The junctions to or on the control device must be situated outside a potentially explosive area or be licensed for the use in potentially explosive areas.

WARNING

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



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

Prior to commencing work:

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

WARNING

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



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

- ▶ Any work may only be carried out while the motor is at standstill.
- ▶ Never connect or disconnect plug connectors under load!

NOTICE

Never touch the connection points of electrostatic sensitive devices!



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

- ▶ Observe ESD safety measures.

6.2.2 General Information

The connection of the MKE motors according to European standard, consists of the following components:

Power and encoder connection

The power and the encoder cables have to be lead together with the EExd cable duct into the terminal box and have there be connected with the plug-connector and the screw-terminal.

Protection or equipotential bonding conductor

The connection of the ground terminal is to be made over the leaded ground terminal within the power cable into the terminal box of the MKE motors.

An additional connector of a grounded earth conduction or a potential equalization line for MKE motors is required according to EN 60079. All MKE motors have to be grounded over the additional connection part (ground terminal clamp on the motor flange). Ground terminal cross section see [Connect Potential Equalization Line](#).

When using terminal boxes, observe the following:

- Use ready-made cables of Rexroth, see documentation  DOK-CONNEC-CABLE*STAND-AU□□-□□-P, "Rexroth Connection Cables IndraDrive and IndraDyn".
- Observe the circuit diagrams specified in the Project Planning Manual, see  DOK-MOTOR*-MKE*GEN2***-PR□□-□□-P, "Rexroth IndraDyn MKE Synchronous Motors for Hazardous Areas acc. to ATEX and UL/CSA".
- The connections must be established such that a permanent safe electrical connection is ensured.
- Establish a safe protective conductor connection.
- Use the related cable ends for terminal boxes (no protruding wire ends).
- Only use terminal boxes which are free from dirt, foreign bodies and humidity.
- Close cable entry openings that are not required and the box itself such that they are tight to dust and water.

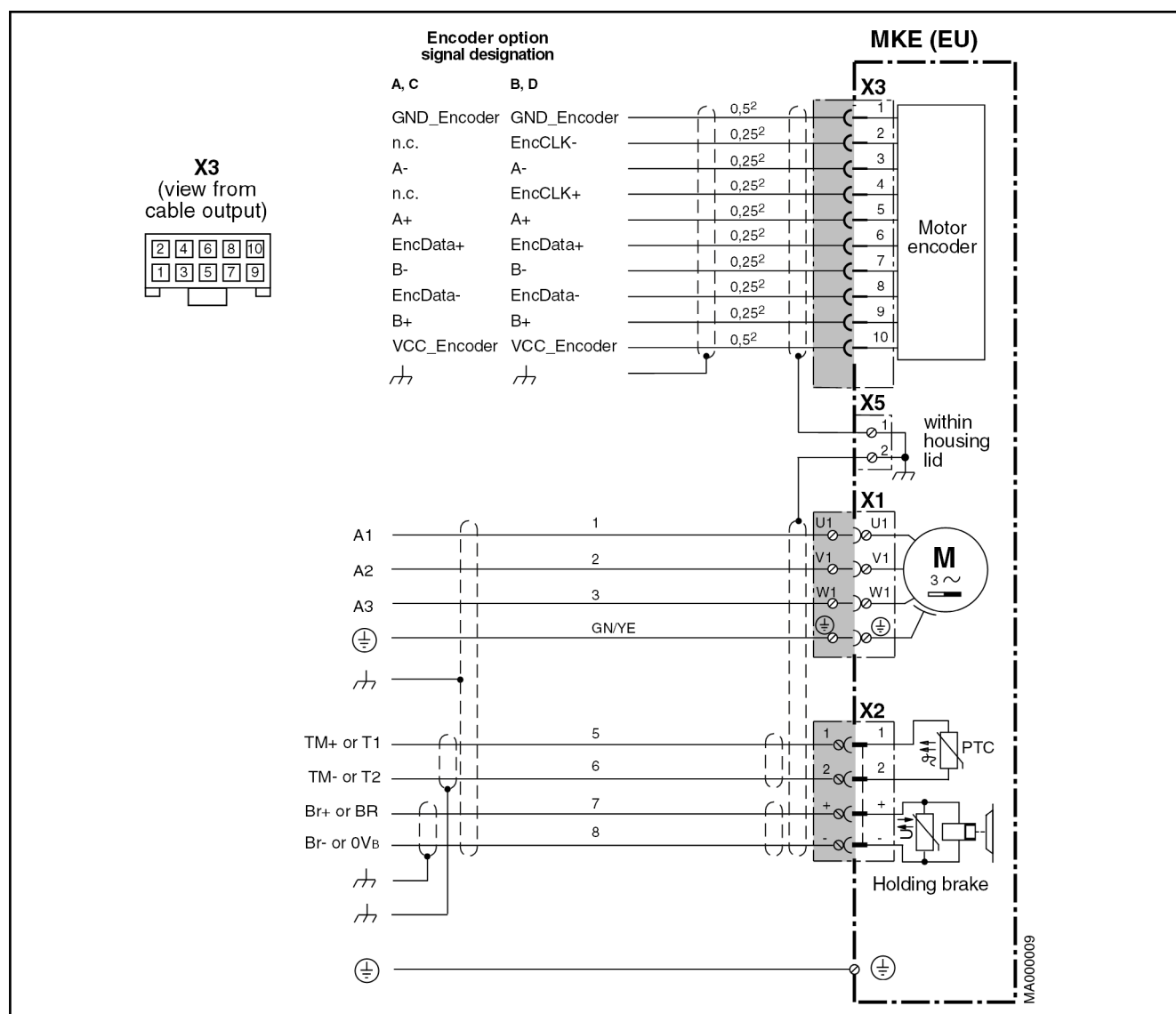


Fig. 6-2: Connection overview MKE motors according to European standard

6.2.3 Electric Connection MKE037, MKE047, MKE098 Housing Design "E"

The accessory kit **SUP-M02-MKE** is necessary to connect the motor. The accessory kit is enclosed to the motors at delivery.

Content accessory kit SUP-M02-MKE

Num-ber	Designation
1	Connector housing X3 (encoder 10 pole)
11	Contact encoder connector
1	Clamp terminal X2 (MotTemp / Br)
2	Terminal end
1	Package insert SUP-M02-MKE
4	Pan head screw M5 x 14 DIN 912 (coated)
1	Plug-in interlock for X3

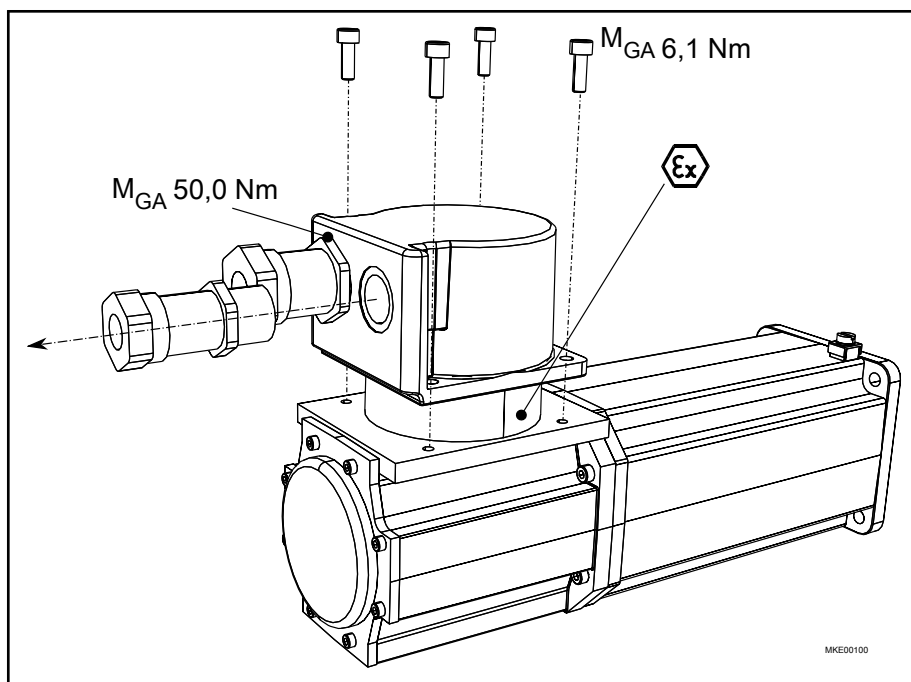


Fig. 6-3: Electric Connection MKE037, MKE047, MKE098 Housing Design "E"

⚠ WARNING

High electrical voltage! Danger to life, danger of injury due to electric shock.

All work done on a disconnected and secured against re-start locked low voltage machine is to be carried out by skilled personnel. This is also valid for auxiliary currents (like temperature sensors).

All work must be carried out at motor standstill. Motors with permanent magnet field strength create at rotating rotor a voltage > 60V on the motor connections.

Note for Assembly

- Flameproof joints must be opened and jointed during assembly operations. Avoid damage on the flameproof joints. Do not remove existing assembly grease. Let the o-rings in their factory-adjusted position. Work in a clean environment.
- When assembly damage on the flameproof joints occurred, the motor must be repaired with original spareparts by the Rexroth service.
- Lid screws are coated. By screwing in and out the screws, the coating wears. Use the enclosed screws at assembly. Secure the lid screws with Loctite 243® at re-assembly.

Connection ready-made cables

1. Remove Ex-screw connection for encoder cables, use screw connection on the ready-made cable. Tighten the screw connection with 50 Nm in the lid housing.
2. Insert the power cable into the lid housing and tighten the Ex-screw connection.

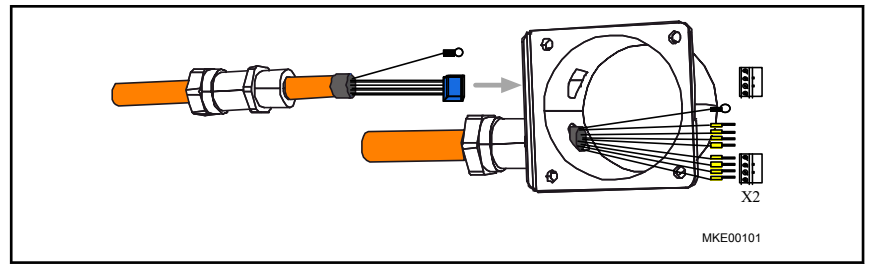


Fig. 6-4: Insert the cables

3. Connect the enclosed clamp terminal X2 on the wires for holding brake and temperature sensor acc. to the interconnection diagram (tightening torque of the clamping screws 0.5 Nm).
4. Do the shield connection of power and encoder cable. Connect the ring terminal on clamping sites within the lid housing (tightening torque 1.3 Nm)
5. Connect the power wires acc. to the interconnection diagram on X1 (tightening torque of clamping screws 0.9 Nm)
6. Plug in the clamp terminal X2 onto the printed circuit board within the motor.

Plug in the clamp terminal X3 onto the printed circuit board within the motor.

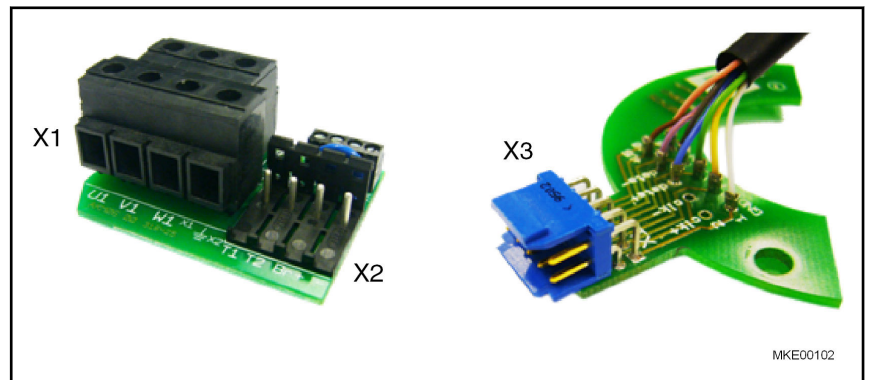


Fig. 6-5: MKE connection points

If you do not use ready-made cables:

- you have the possibility to order a hand crimping tool to handle the clamp terminal X3 at Bosch Rexroth. **Order number: R911262293.**
- Assemble the pins within connector housing X3 as described in the figure.

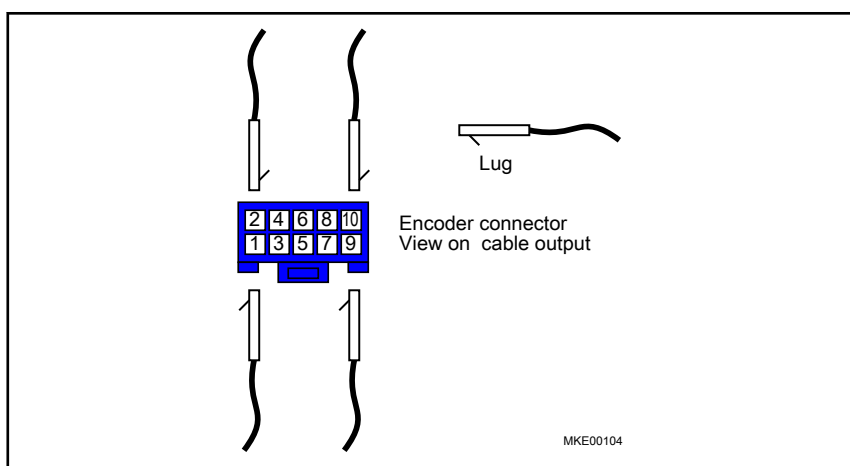


Fig. 6-6: Assembly encoder connector

- Assemble the plug-in interlock on the connector housing X3.

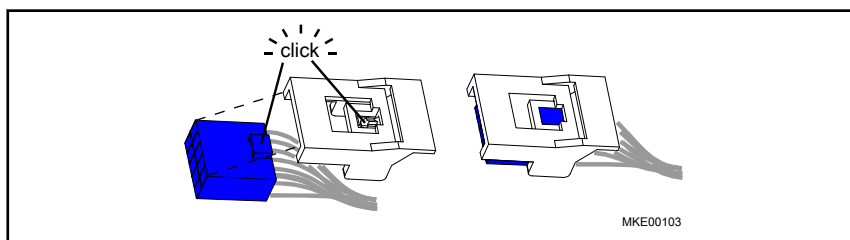


Fig. 6-7: Plug-in interlock

6.2.4 Electric Connection MKE118 Housing Design "E"

The accessory kit **SUP-M01-MKE118** is necessary to connect the motor. The accessory kit is enclosed to the motors at delivery.

Content accessory kit SUP-M02-MKE

Number	Designation
1	Connector housing X3 (encoder 10 pole)
11	Contact encoder connector
1	Clamp terminal X2 (MotTemp / Br)
2	Terminal end
1	Package insert SUP-M01-MKE118
4	Pan head screw M6 x 25 ISO 4762 (coated)
1	Plug-in interlock for X3
12	Grommets

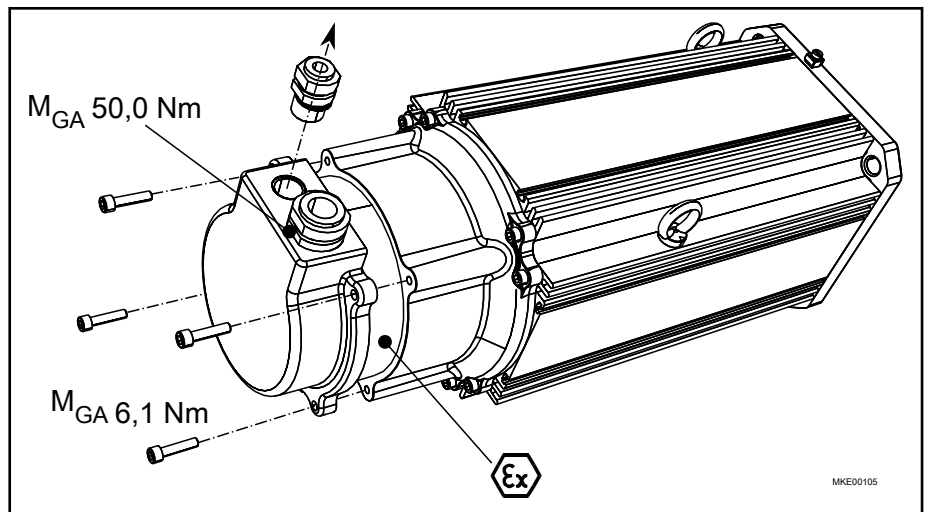


Fig. 6-8: Electric Connection MKE118 Housing Design "E"

⚠ WARNING

High electrical voltage! Danger to life, danger of injury due to electric shock.

All work done on a disconnected and secured against re-start locked low voltage machine is to be carried out by skilled personnel. This is also valid for auxiliary currents (like temperature sensors).

All work must be carried out at motor standstill. Motors with permanent magnet field strength create at rotating rotor a voltage > 60V on the motor connections.

Note for Assembly

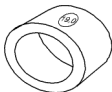
- Flameproof joints must be opened and jointed during assembly operations. Avoid damage on the flameproof joints. Do not remove existing assembly grease. Let the o-rings in their factory-adjusted position. Work in a clean environment.
- When assembly damage on the flameproof joints occurred, the motor must be repaired with original spareparts by the Rexroth service.
- Lid screws are coated. By screwing in and out the screws, the coating wears. Use the enclosed screws at assembly. Secure the lid screws with Loctite 243® at re-assembly.

Cable glands

MKE118/EU motors of Rexroth are to be connected with especially to the cable outer diameter matched Ex-threads.

The cable entries must be fastened into the electrical apparatus in such a way that they are secured against twisting and self-loosening.

Grommets **have to be used** at mounting, which are adjusted with the cable outer diameter in which the threads must be applied.

Screwed connection 	Available grommets with nominal diameter ¹⁾						
LE20/9 (Encoder)	8,5	9,0	9,5	-	-	-	-
LE26/15 (Power 2.5 mm²)	13,5	14,0	14,5	15,0	15,5	16,0	16,5
LE26/19 (Power 6.0 mm²)	17,5	18,0	18,5	19,0	19,5	-	-

¹⁾ Tolerance -0,5 mm

Tab. 6-2: Grommets for Ex-fittings

DANGER

Danger of explosion, danger to life, heavy injury and material damage

Only according to the rules mounted cable fittings hinder the penetration of hazardous gases/dusts.

Make sure that only grommets are used, which are adjusted to the cable diameter.



The explosion protection for the cable entries can only be guaranteed, when they are in their original condition. The explosion protection can no longer be guaranteed, if:

- the isolator is damaged, broken or flaking.
- The winding of the screw-grommet is damaged.
- The cleavage face of the assembling bolt was changed, processed or damaged.

Maintenance and repair of MKE motors have to be done by Rexroth service.

The following steps are necessary:

1. Collect the outer diameter of the cable on the clamping of the cable fitting.

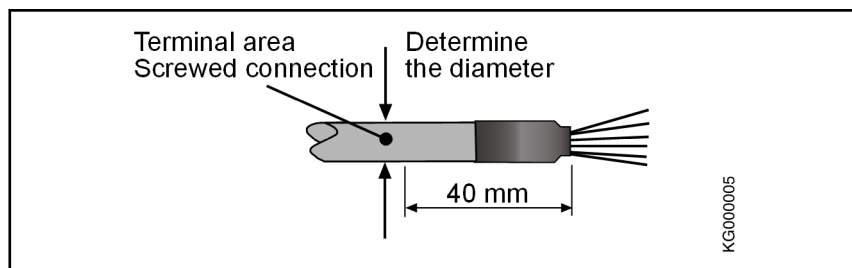


Fig. 6-9: Define the cable diameter

2. Select the necessary grommet and mount it on the cable fitting.
3. Tighten the cable fitting as far as it will go.

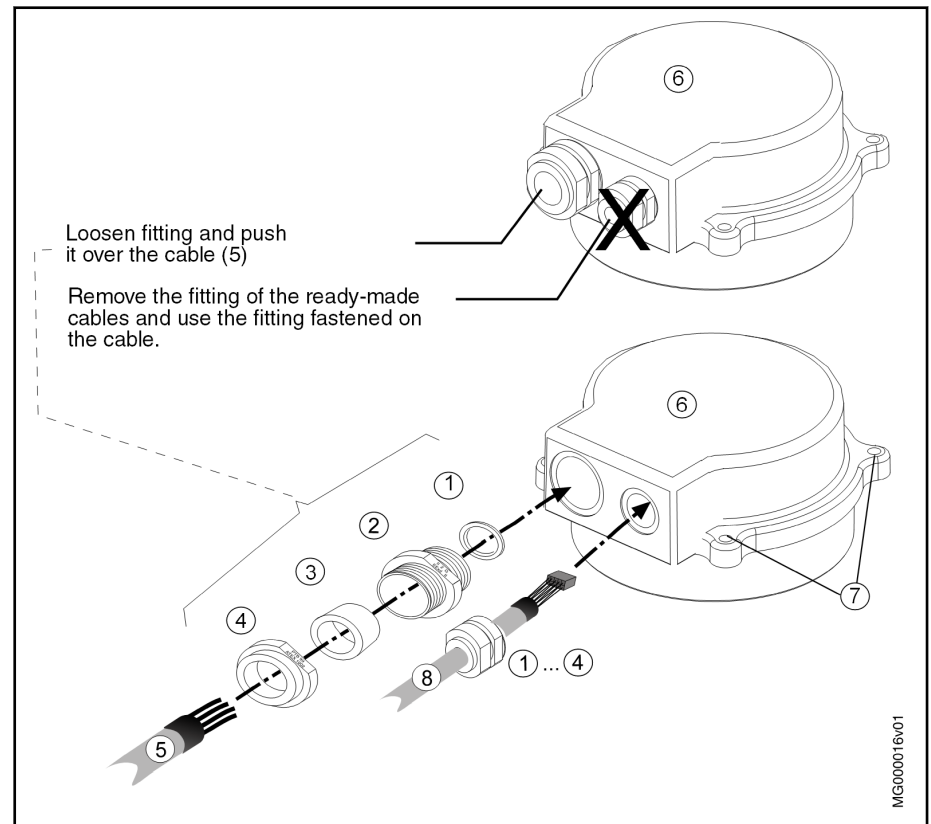
The cable fittings are mounted according to the Ex-regulations.

Mount and connect ready-made cables

Ready-made cables are mounted according to [Fig. 6-10](#).

When using ready-made encoder cables, remove the fitting, which is mounted on the motor and use the fitting, which is mounted on the cable.

It is not necessary to define the cable outer diameter, now.



Loosen and re-tighten the cable fittings is not permitted. In this cases, a "new grommet" is to be used.

1. Connect the shield.

Connect the ring terminal of the power and encoder cable on the X5 within the terminal box lid
(Tightening torque 1.3 Nm 10%)

2. Connect the power cable.

Lay the wires according to the interconnection plan onto the terminal block X1 and X2.

3. Assemble the plug-in interlock on encoder connector X3.

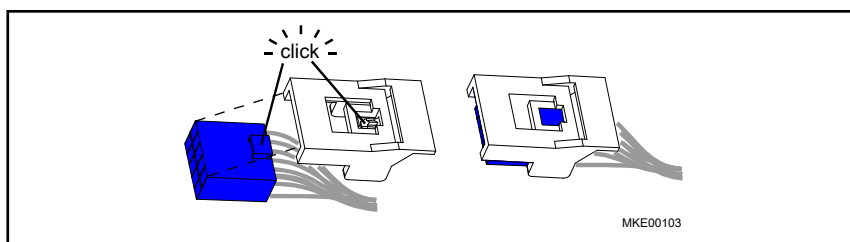


Fig. 6-11: Plug-in interlock

4. Connect the encoder cable.

5. Mount the terminal box lid.

Set the terminal box lid (9) on the motor. Make sure that no wire can be crushed or damaged.

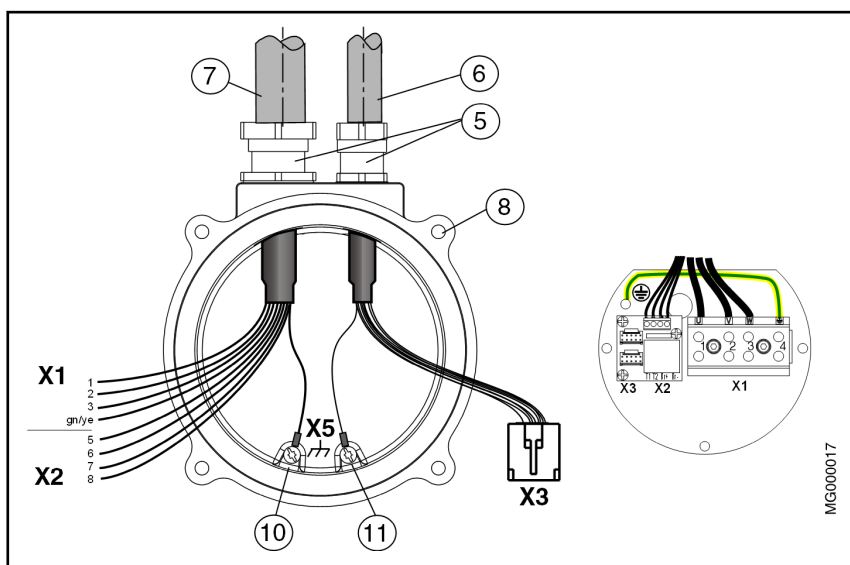
6. Tighten the terminal box lid ⑥ with the added TFL-coated lid screws ⑦ with 6.1 Nm.



When changing the lid screws ⑦ do only use hexagon socket-head bolt acc. to DIN EN ISO 4762 with strength 8.8 (or higher).



When mounting the terminal box lid, secure the lid screws ⑦ with Loctite 243 ®.

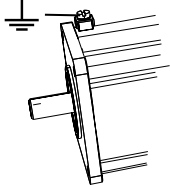


- ⑤ EExd-Cable screwing
- ⑥ Encoder Cables
- ⑦ Power cables
- ⑧ Lid screw tighten torque 6.3 Nm
- ⑩, ⑪ Shield connection screw tighten torque 1.3 Nm
- X1 Power connection
- X2 Brake, temperature
- X3 Encoder connector
- X5 Shield connection

Fig. 6-12: Insert power and encoder cable MKE118

6.2.5 Connect Potential Equalization Line

The motors for potentially explosive areas have an additional ground lug on the motor flange for this purpose. Use the potential equalization on the motor over the cable to the potential equalization of the machine or installation and tighten the screwed connections.

Protective conductor terminal (1)	Nominal cross-section	Terminal range
	4 mm ²	4 mm ² (finely stranded) 6 mm ² (single-wire)

Tab. 6-3: Terminal for potential equalization line

7 Commissioning and Operation

7.1 Safety

WARNING

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



Live parts are dangerous.

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

WARNING

Risk of injury due to rotating motor shaft!



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

CAUTION

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



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

7.2 Commissioning

Commissioning in ATEX atmospheres is prohibited until it has been ascertained that the overall system corresponds to the demands and certification conditions for ATEX protection.

The motors must only be operated with Rexroth drive control devices. Control devices from other manufacturers are not permitted.

Prior to commissioning

Have the documentation of all products used ready at hand.

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

- Storage time of the motor. Depending on the storage time, take measures to ensure safe operation. Run in bearings, resurface the holding brake, See table [chapter 5.4 "Storage Times" on page 19](#).
- Make sure, that all mechanical and electrical connections (even equipotential bonding conductor) are accordingly connected and secured against loosening.
- Ensure that a holding brake voltage of 24 V ±10% is applied to the motor. If necessary, adjust the voltage.
- Check the proper function of the holding brake.
- Ensure that the motor and all participating components of the drive are undamaged.

- Ensure that keys are protected against ejection.
- Activate the safety and monitoring equipment of the system.
- commissioning,** For details on the commissioning order, please refer to the respective documentation of the drive controller or firmware description.
- Please observe the general safety instructions on the protection against hazardous movements [chapter 2.6.2 "Protection against Mechanical Hazards" on page 4](#).

7.3 Operation

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

Checks during operation:

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

Decommission the drive when deviations from normal operation exist. For further procedure refer to [chapter 2.6.2 "Protection against Mechanical Hazards" on page 4](#).

8 Maintenance and Repair

8.1 Cleaning and Servicing

WARNING

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



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

Prior to commencing work:

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

WARNING

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



- ▶ Do not carry out any maintenance measures while the machine is running.
- ▶ During maintenance work, protect the system against re-starting and unauthorized use.

CAUTION

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



- ▶ Allow the motors to cool down prior to commencing work.
- ▶ Wear safety gloves.
- ▶ Do not work on hot surfaces.

Motors

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 cooling fins of the motors at regular intervals (after one year at the latest) to reach a sufficiently high heat emission surface. If the cooling fins are partially covered with dirt, sufficient heat dissipation via the ambient air is no longer ensured.

Connection cable

WARNING

Contact with live parts may cause death by electrocution!



- ▶ Change damaged connection cables and decommission the plant immediately.
- ▶ Do not repair any connection lines provisionally.

- Check connection cables for damage at regular intervals and replace them, if necessary.
- Check any optional energy management chains (drag chains) for defects.

- Check the protective conductor connection for proper condition and firm seating at regular intervals and replace it, if necessary.

8.2 Service Repair, Maintenance and Spare Parts

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

MKE motors may only be repaired by the manufacturer in a repair shop authorized of Bosch Rexroth. The following repairs can be done in such authorized workshops, for example:

- Replacement of motor encoder
- Replacement of the shaft sealing ring
- Repair / Change of damaged flameproof joints
- ...

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

We recommend to change the bearing after 30,000 operating hours. Shorter replacement intervals may be necessary; cf. checks during operation [chapter 7.3 "Operation" on page 36](#).

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

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

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

Preparing information

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

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

9 Disassembly and Exchange

9.1 Tools Required

NOTICE

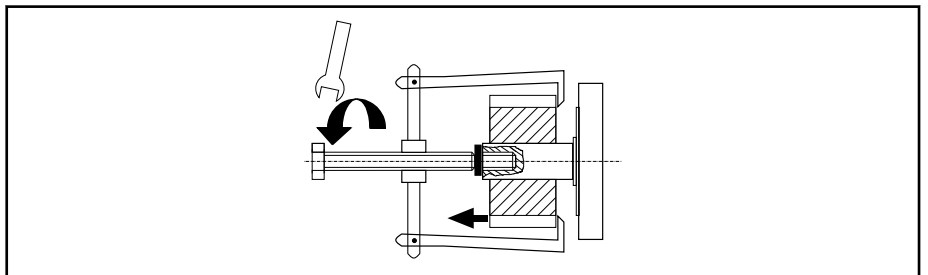
Motor damage due to strikes onto the motor shaft



- Do not strike the shaft end and do not exceed the allowed axial and radial forces of the motor.

Use suitable tools when disassembling transmission elements.

Pulling off



① Shim

Fig. 9-1: Pulling off the transmission element

Use tools suitable for pulling off. Use a shim to protect the shaft end when using pulling-off tools. Heat the output element, if necessary.

9.2 Exchanging the Motor

⚠ WARNING

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

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



The motor should be replaced by a motor of identical type. Only then is ensured that the parameterization remains unchanged.

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



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

5. Exchange the motor



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

6. Re-establish the plug connections

7. Re-establish the dimensional reference

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

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

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

9.3 Preparing Storage

Before motors are stored, the protection covers on flange socket, shaft and input openings for cooling water in case of liquid-cooled motors which were attached on delivery must be re-attached.

When motors are liquid-cooled, completely discharge the coolant from the cooling tubes (e.g., via purging the coolant holes with pressure air). This will prevent frost damage at storage temperatures lower than 0 °C.

10 Environmental protection and disposal

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

Recycling Most of the products can be recycled due to their high content of metal. In order to recycle the metal in the best possible way, the products must be disassembled into individual assemblies. Metals contained in electric and electronic assemblies can also be recycled by means of special separation processes.

Significant motor components

Basically, our motors consist of the following components:

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

Plastic parts of the products may contain flame retardants. These plastic parts are labeled according to EN ISO 1043. They have to be recycled separately or disposed of according to the applicable legal provisions.

WARNING

Danger due to permanent magnets!



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



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



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



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

Dismagnetize magnets

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



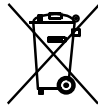
In the case of successful demagnetization, the magnets can be separated from the rotor sleeves after cooling of the rotor without any effort.

Packaging

Out packaging materials do not contain any problematic materials and can be recycled without any problems. Wood, cardboard and styrofoam are used as packaging materials.

Batteries and Accumulators

Batteries and accumulators can be labeled with this symbol.



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

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

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

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

Disposal by the manufacturer

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

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

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

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

11 Extension and Modification

11.1 Optional Accessories

11.1.1 Ready-made Connection Cables

	Title	Document type	Document number
	Rexroth Connection Cables	Selection Data	DOK-CONNEC-CABLE*STAND-AU□□-□□--P

Tab. 11-1: Additional documentation

12 Troubleshooting

12.1 Troubleshooting procedure

As a matter of principle, the instructions in the project planning and commissioning manuals must be followed in case of failures and errors. If necessary, the manufacturer must be contacted.

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

Tab. 12-1: Measure at malfunction

13 Technical Data

Technical data with operating characteristic curves are described in the project planning manual for all motor types. Please, refer to the following documentation for relevant information.

	Title	Document type	Document number
	Rexroth synchronous motors MKE for potentially explosive areas acc. to ATEX and UL/CSA	Project Planning Manual	DOK-MOTOR*-MKE*GEN2***-PR□□-□□-P

Tab. 13-1: Additional documentation

14 Appendix

14.1 Declaration of Conformity

Electric Drives and Controls	Hydraulics	Linear Motion and Assembly Technologies	Pneumatics	Service	Rexroth Bosch Group
---------------------------------	------------	--	------------	---------	-------------------------------

Konformitätserklärung

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

Hiermit erklärt der Hersteller,

Bosch Rexroth Electric Drives and Controls GmbH
 Bürgermeister-Dr.-Nebel-Straße 2
 97816 Lohr a. Main / Germany

dass das nachstehende Produkt

Bezeichnung: Drehstrom-Synchronmotor
 Typ: MKE037-.....-E. MKE047-.....-E.
 MKE098-.....-E. MKE118-.....-E.

Ab Herstelldatum: 2012-07-01

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

Angewandte harmonisierte Normen:

Norm	Titel	Ausgabe
EN 60079-0	Explosionsfähige Atmosphäre – Teil 0: Geräte – Allgemeine Anforderungen	2009
EN 60079-1	Explosionsfähige Atmosphäre – Teil 1: Geräteschutz durch druckfeste Kapselung „d“	2007
EN 60079-31	Explosionsfähige Atmosphäre – Teil 31: Geräte-Staubexplosionsschutz durch Gehäuse „t“	2009

Der Motor hat folgende Kennzeichnung:

II 2G Ex d IIB T4 Gb X
 II 2D Ex tc IIIC T135°C Dc IP6X X

Benannte Stelle, die das EG-Baumusterprüfverfahren nach oben genannter Richtlinie durchgeführt hat:

Name:	Physikalisch-Technische Bundesanstalt (PTB)
Anschrift:	Bundesallee 100, 38116 Braunschweig / Germany
Kennnummer:	0102
EG-Baumusterprüfbescheinigungs-Nr.:	PTB 09 ATEX 1128 X (MKE037, MKE047, MKE098) PTB 09 ATEX 1127 X (MKE118)

Weitere Erläuterungen:
 Das Produkt ist ausschließlich zum Anbau in eine Maschine bestimmt.
 Der bestimmungsgemäße Gebrauch des Produktes setzt die Einhaltung der Benutzungsbestimmungen und Anwendungsbedingungen,
 die in der Betriebsanleitung (MNR: R911323847) angegeben werden, durch den Nutzer voraus.

Lohr a. Main , den 2012-05-10 ppa. i.V.
 Ort Datum

Joachim Hennig
Werkleitung LoP2

Eberhard Schemm
Entwicklungsbereichsleiter Antriebe

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

Seite 1 / 1

Fig. 14-1: Declaration of Conformity TC30504-1:2012-05-10 (original)

Declaration of Conformity

Doc. No.: TC30504-1
Date: 2012-05-10

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

The manufacturer

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

hereby declares that the product below

Name: Three-phase synchronous motor
Type MKE037.-...-...-E. MKE047.-...-...-E.
MKE098.-...-...-E. MKE118.-...-...-E.

From date of manufacture 2012-07-01
was developed, designed and manufactured in compliance with the above-mentioned EU directive.
Harmonized standards applied:

Standard	Title	Edition
EN 60079-0	Electrical apparatus for explosive gas atmospheres Part 0: General Requirements	2009
EN 60079-1	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"	2007
EN 60079-31	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"	2009

The motor has the following labeling

⊕ II 2G Ex d IIB T4 Gb X
⊕ II 2D Ex tc IIIC T135°C Dc IP6X X

The EC type examination procedure is performed by the nominated authority:

Name: Physikalisch Technische Bundesanstalt (PTB)
Address: Bundesallee 100, 38116 Braunschweig / Germany
Code number: 0102
EC type test certificate number: PTB 09 ATEX 1128 X (MKE037, MKE047, MKE098)
PTB 09 ATEX 1127 X (MKE118)

Further explanations:

The product is intended solely for installation in a machine. For the product to be used as intended the user must comply with the provisions of use and conditions of application laid down in the instructions.

Place/Date/Signature as in the original declaration of conformity.

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

Tab. 14-1: Declaration of Conformity TC30504-1:2012-05-10 (copy/translation)

14.2 Standards

Document no.	Title	Edition
DIN 332-2	Center holes 60° with thread for shaft ends for rotating electrical machines	1983-05
DIN 748-1	Zylindric shaft end, dimensions, rated torque	1970-01
DIN 3760	Rotary shaft lip type seals	1996-09
DIN 6885-1	Drive Type Fastenings without Taper Action; Keys, Keyways, Deep Pattern	1968-08
DIN 42955	Tolerances of shaft extension run-out and of mounting flanges for rotating electrical machinery, test	1981-12
EN 60034-1	Rotating electrical machines - Part 1: Rating and performance (IEC 60034-1:2010, modified); German version EN 60034-1:2010 + Cor.:2010	2011-02
EN 60034-1 Corrigendum 1	Rotating electrical machines - Part 1: Rating and performance (IEC 60034-1:2004); German version EN 60034-1:2004, Corrigendum to DIN EN 60034-1 (VDE 0530-1):2005-04	2007-09
EN 60034-5	Rotating electrical machines - Part 5: Degrees of protection provided by integral design of rotating electrical machines (IP code) - Classification (IEC 60034-5:2000 + Corrigendum 2001 + A1:2006); German version EN 60034-5:2001 + A1:2007	2007-09
EN 60034-7	Rotating electrical machines - Part 7: Classification of types of construction, mounting arrangements and terminal box position (IM code) (IEC 60034-7:1992 + A1:2000); German version EN 60034-7:1993 + A1:2001	2001-12
EN 60034-14	Rotating electrical machines - Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher - Measurement, evaluation and limits of vibration severity (IEC 60034-14:2003 + A1:2007); German version EN 60034-14:2004 + A1:2007	2008-03
EN 60068-2-6	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal) (IEC 60068-2-6:2007); German version EN 60068-2-6:2008	2008-10
EN 60079-0	Explosive atmospheres - Part 0: Equipment - General requirements (IEC 60079-0:2009, modified); German version FprEN 60079-0:2009	2010-03
EN 60079-0 Corrigendum 1	Explosive atmospheres - Part 0: Equipment - General requirements (IEC 60079-0:2007); German version EN 60079-0:2009; Corrigendum to DIN EN 60079-0 (VDE 0170-1):2010-03; (IEC-Cor.:2010 about IEC 60079-0:2007)	2011-04
EN 60079-1	Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosures "d" (IEC 60079-1:2003); German version EN 60079-1:2004	2008-04
EN 60079-31	Explosive atmospheres -- Part 31: Equipment dust ignition protection by enclosure "t" (IEC 31/910/CD:2010)	2010-07
EN 60721-3-3	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities; section 3: Stationary use at weatherprotected locations (IEC 60721-3-3:1994); German version EN 60721-3-3:1995	1995-09
EN 60721-3-3/A2	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities; section 3: Stationary use at weatherprotected locations; Amendment A2 (IEC 60721-3-3:1994/A2:1996); German version EN 60721-3-3: 1995/A2:1997	1997-07

Document no.	Title	Edition
94/9/EG * 94/9/CE * 94/9/EC	Directive 94/9/EC of the European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres (OJ L100, 19.4.1994)	23.03.1994
94/9/EGBER * 94/9/CEBER * 94/9/ECBER	Corrigendum of Directive 94/9/EC of the European Parliament and the Council of 23 March 1994 on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres (OJ L100, 19.4.1994)	26.01.2000

Tab. 14-2: Standards

Index

A

Accessories.....	45
Accumulators.....	43
Alignment.....	10
Ambient temperature.....	10

B

Balance.....	21
Balancing.....	11
Batteries.....	43
Bearing service life.....	12

C

Centering hole.....	12
Concentricity	10
Connection cables.....	37
Connection conditions.....	9
Contained substances see "Significant motor components".....	43
Cooling.....	12
Cooling fins.....	37
Coupling.....	21

D

Degree of protection.....	10, 11
Design.....	11
Disposal.....	43
Drag chains.....	37

E

Electrical connection.....	11
Emergency stop.....	9
Encoder system.....	11
Energy management chains.....	37
Exchanging the motor.....	41

F

Fan.....	10
Flange.....	10

G

Grounding.....	9
----------------	---

H

Heat dissipation.....	37
Housing temperature (maximum).....	9

I

Installation altitude	11
Insulation class.....	11

K

Key.....	12
----------	----

L

Lifting eye bolts.....	18
------------------------	----

M

Minimum distance Motor.....	12
Motor design.....	10
Motor holding brake.....	11
Mounting screws.....	21

N

Natural convection.....	12
-------------------------	----

P

Packaging.....	43
Potential equalization line.....	33
Pulley.....	21
Pulling off the transmission element.....	41

R

Redemption.....	44
Risk of Corrosion.....	9
Run-out.....	10

S

Service.....	39
Shaft end.....	10
Significant motor components.....	43
Sound pressure level.....	11
Storage.....	18
Storage time.....	19

T

Transmission element.....	21
Fitting.....	22
Pulling off.....	41
Transport.....	17, 18
Troubleshooting.....	47
Types of installation.....	11

U

UL listing.....	10
-----------------	----

V

Vibration severity grade.....	10
-------------------------------	----

Notes

Notes

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