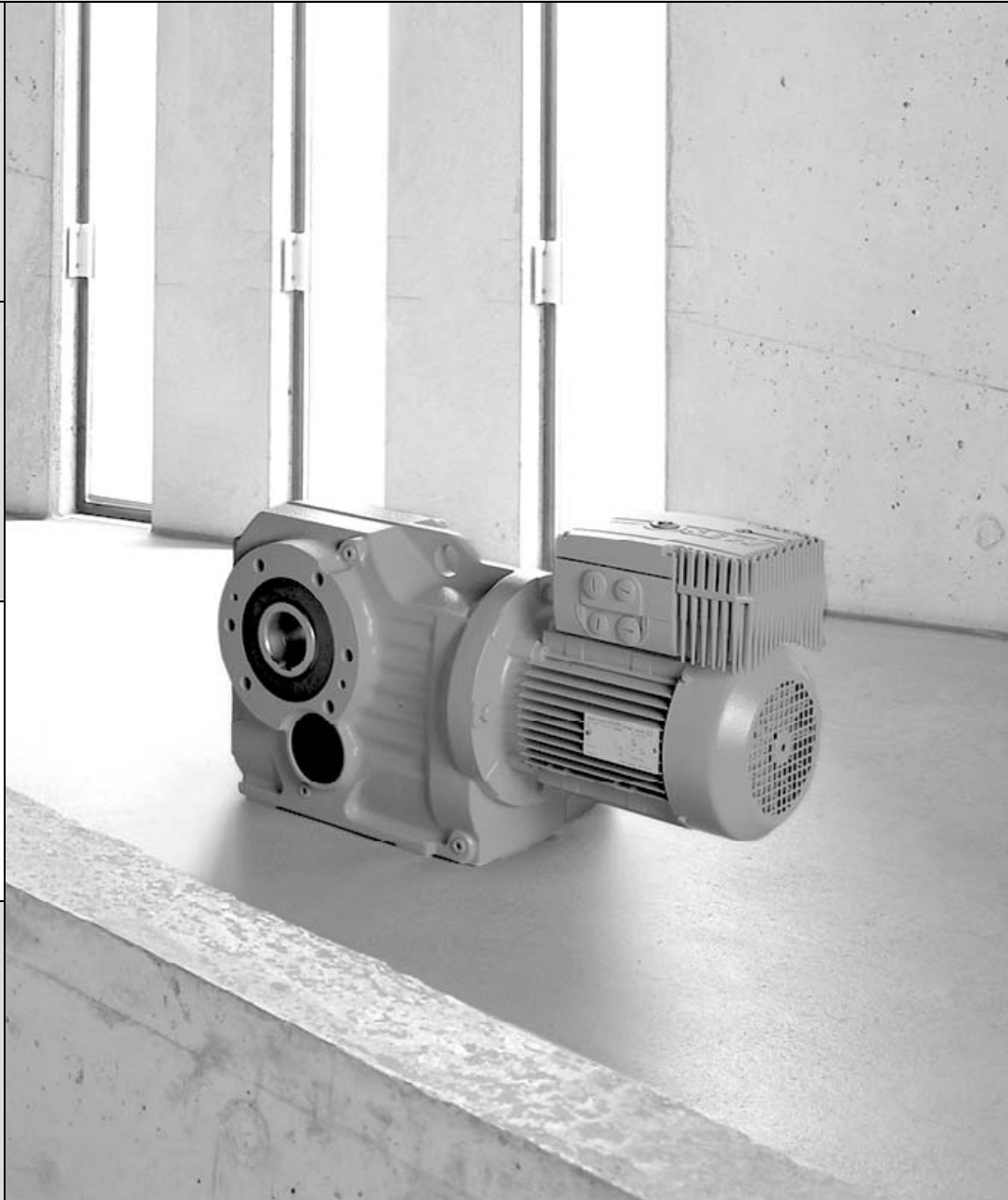
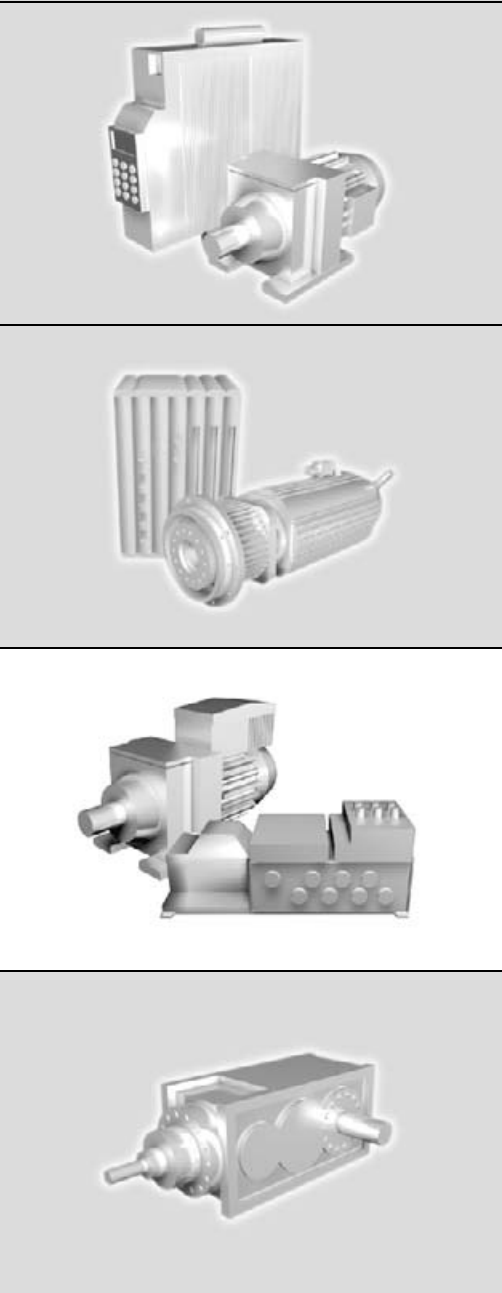




**SEW**  
**EURODRIVE**



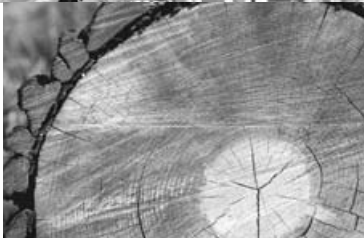
# Safe Disconnection for MOVIMOT<sup>®</sup> MM..C – Conditions

C1110000

Edition 05/2005

11361816 / EN

# Manual





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## Important Notes

### Safety and warning instructions

## 1 Important Notes

### 1.1 Safety and warning instructions

Always follow the safety and warning notes in this publication!



#### Electrical hazard

Possible consequences: Severe or fatal injuries.



#### Hazard

Possible consequences: Severe or fatal injuries.



#### Hazardous situation

Possible consequences: Slight or minor injuries.



#### Harmful situation

Possible consequences: Damage to the unit and the environment.



Tips and useful information.

#### Document content

This document contains **safety-related addendum and conditions** for the operation of **MOVIMOT® with safe disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart according to EN 954-1, safety category 3**. The system comprises a frequency inverter with asynchronous motor and safety-tested external disconnecting device. **The external disconnecting device must have been approved for at least safety category 3 according to EN 954-1.**

#### Other applicable publications



This document supplements the MOVIMOT® MM..C operating instructions and limits the application notes according to the following information. **It can only be used in conjunction with the following publications.**

- MOVIMOT® MM03C-MM3XC operating instructions
- PROFIBUS Interfaces, Field Distributors manual
- InterBus Interfaces, Field Distributors manual
- DeviceNet/CANopen Interfaces, Field Distributors manual

Permitted design connections can be found in the publication "Safe Disconnection for MOVIMOT® MM..C – Applications".

**Use only those components in safety applications that were explicitly delivered in this design by SEW-EURODRIVE!**



**The guidelines in this documentation must be strictly observed for safety applications. This applies particularly to the conditions resulting from the test reports of the TÜV (German Technical Control Board).**



## 1.2 Safety concept

- In case of danger, any potential risk to a machine must be eliminated as quickly as possible. Standstill with restart prevention is generally the safe condition for preventing dangerous movements.
- The MOVIMOT<sup>®</sup> frequency inverter is characterized by the option to connect an external fail-safe, approved emergency stop relay (according to category 3, EN 954-1). The emergency stop relay disconnects all active elements that generate the pulse trains to the power output stage (IGBT) when a connected control device (e.g. EMERGENCY OFF button with latching function) is activated.
- Disconnecting the 24 V supply voltage ensures that the supply voltages required for operation of the frequency inverter are safely interrupted, preventing automatic restart.
- Instead of galvanic separation of the drive from the supply system using relays or switches, the disconnection of the 24 V supply described here safely prevents the control of the power semiconductors in the frequency inverter. This process disconnects the rotating field generation for the respective motor. The individual motor cannot develop any torque in this state even though the mains voltage is still present.
- The requirements for the emergency stop relay are clearly defined in the following sections and must be strictly observed.

### Using a suitable external circuit via an emergency stop relay with

- approval for at least category 3
- dual-channel design
- crossfault monitoring

allows the MOVIMOT<sup>®</sup> drive system to be operated with safe disconnection according to stop category 1 (to EN 60204-1) and ensures protection against restart according to safety category 3 (according to EN 954-1).

### Limitations



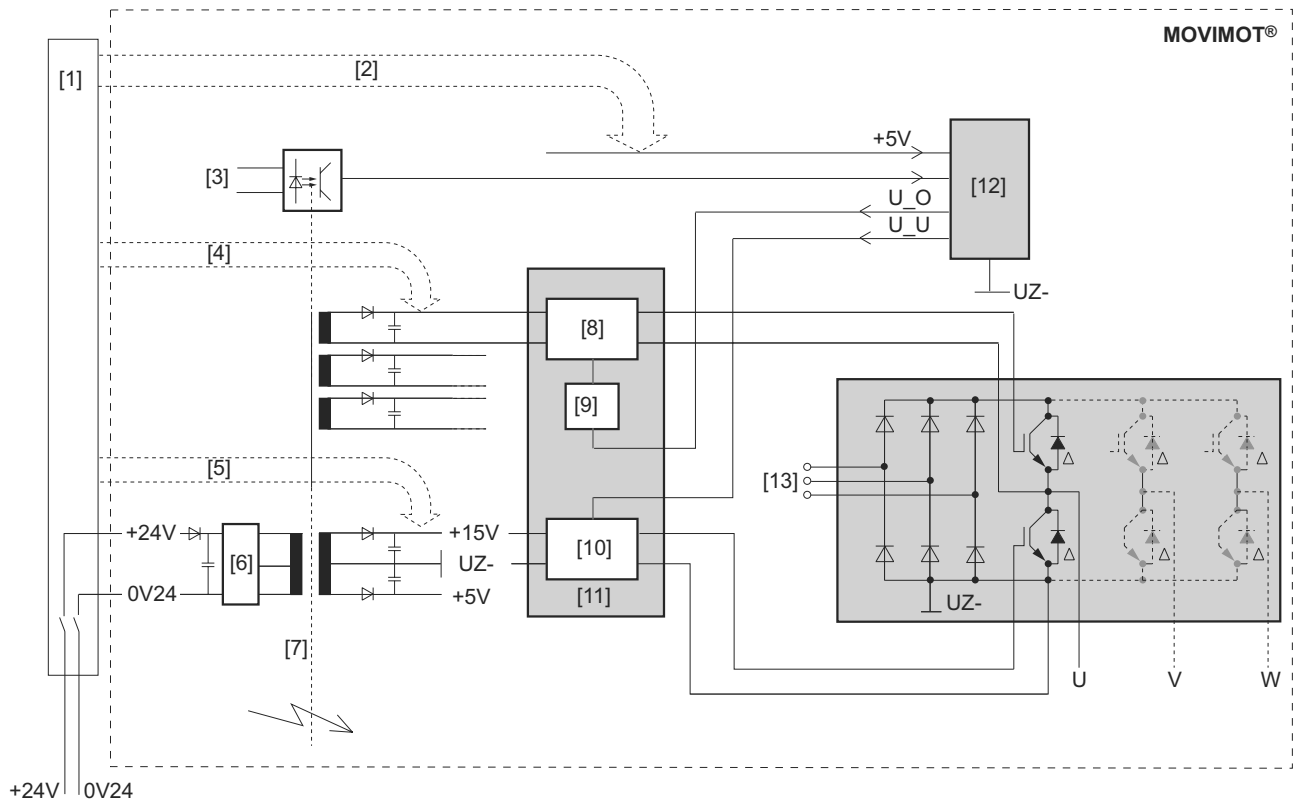
- **Important: The safety concept is only suitable for performing mechanical work on system/machine components.**  
**Important:** When using a thermistor, protection against restart is not guaranteed when the thermistor is triggered. This fact must be taken into account in the risk analysis and, if necessary, appropriate measures must be taken.
- **Important:** A system/machine-specific risk analysis must be carried out by the system/machine manufacturer and taken into account when using the drive system with MOVIMOT<sup>®</sup>.
- **Danger of fatal injury:** If the 24 V supply voltage is disconnected, the mains supply voltage is still present at the frequency inverter DC link.
- **Important: If work is carried out on the electrical section of the drive system, the supply voltage must be disconnected using an external maintenance switch.**



## Important Notes

### Safety concept

#### Schematic representation of the "Safety concept for MOVIMOT®"



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Figure 1: Schematic representation of "Safety concept for MOVIMOT®"

- [1] Emergency stop relay (external) approved for at least category 3 according to EN 954-1
- [2] Disconnection of supply voltage for controller to prevent generation of pulse patterns
- [3] Terminals for RS-485 and binary signals
- [4] Disconnection of supply voltage for the control of upper power transistors
- [5] Disconnection of supply voltage for the control of lower power transistors
- [6] Switched-mode power supply controller
- [7] Electrical isolation
- [8] Control of upper power transistors
- [9] Level shifter
- [10] Control of lower power transistors
- [11] Control module
- [12] Controller
- [13] Mains



## 2 Certificate

The following certificate is available for MOVIMOT® in conjunction with safe disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart to EN 954-1 safety category 3 (in accordance with the "Safety Concept" section):

- Product certificate of the Rheinisch-Westfälischer Technischer Überwachungsverein e.V (RW TÜV)

The certification reports accompanying the respective certificate must be observed. The conditions are listed in this publication.

The certificate applies to the MOVIMOT® drive system with safe disconnection according to stop category 0 or 1 to EN 60204-1 and protection against restart according to EN 954-1 safety category 3. The certificate requires that the specifications in the section "Safety Requirements" are met.



# Zertifikat

Die Zertifizierungsstelle der RWTÜV Systems GmbH  
für Gerätesicherheit und Medizinprodukte bestätigt

## SEW Eurodrive GmbH

Ernst Blickle Straße 42

D-76642 Bruchsal

für das Produkt

Frequenzumrichter des Antriebssystems MOVIMOT für dezentrale Installation  
Typ: MMXXC-503-00

die Erfüllung der Anforderungen der nachfolgenden Normen:

- EN 60204-1:1997; sicherheitsgerichtete Abschaltung nach Stop-Kategorie 1 und Sicherstellung des Schutzes gegen Wiederanlauf
- EN 954-1:1997; Kategorie 3; mit geeigneter externen Beschaltung über ein Sicherheitsschaltgerät mit zweikanaliger Abschaltung und Querschlusserkennung

Auf Grundlage des Berichtes Nr. 701-049/2002 in der jeweils gültigen Fassung

Dieses Zertifikat berechtigt zur Nutzung des Prüfzeichens



Zertifikats-Registrier-Nr.: SAS0173/03

Essen, 2003-01-22 Aktenzeichen: 2.4-395/01

Gültig bis: 2008-01-22

RWTÜV Systems GmbH  
Postfach 10 32 61 - 45032 Essen

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### 3 Safety Conditions

The following conditions are mandatory for the installation and operation of MOVIMOT® MM..C in applications with safe disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart according to EN 954-1, safety category 3. The conditions are divided into the following sections:

- Permitted unit combinations and connection variants
- Installation requirements
- Requirements for external emergency stop relays
- Startup requirements
- Operation requirements



**When using temperature sensors and automatic disconnection in the case of overtemperature, note that the motor restarts automatically once it has cooled down. If danger could result from automatic restarts, additional measures must be taken to prevent access to the hazardous areas that are connected to the drive.**

#### Information on the stop categories:

- For stop category 0, the control signals must be disconnected at the same time as the safety 24 V supply.
- For stop category 1, observe the following procedure:
  - Decelerate the drive using an appropriate brake ramp specified by the setpoint.
  - Disconnect the safety 24 V supply voltage.



## Safety Conditions

### Permitted unit combinations and connection variants

#### 3.1 Permitted unit combinations and connection variants

Only the following unit combinations are permitted with MOVIMOT<sup>®</sup> for applications with safe disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart according to EN 954-1, category 3:

You will find approved design versions in the following publication: "Safe Disconnection for MOVIMOT<sup>®</sup> MM..C – Applications."

- MOVIMOT<sup>®</sup> with binary control (control via terminals)
- MOVIMOT<sup>®</sup> with MBG11A option
- MOVIMOT<sup>®</sup> with MWA 21A option
- MOVIMOT<sup>®</sup> with MFZ.6 field distributor. (Connection via pre-fabricated cable). The following combinations are permitted:

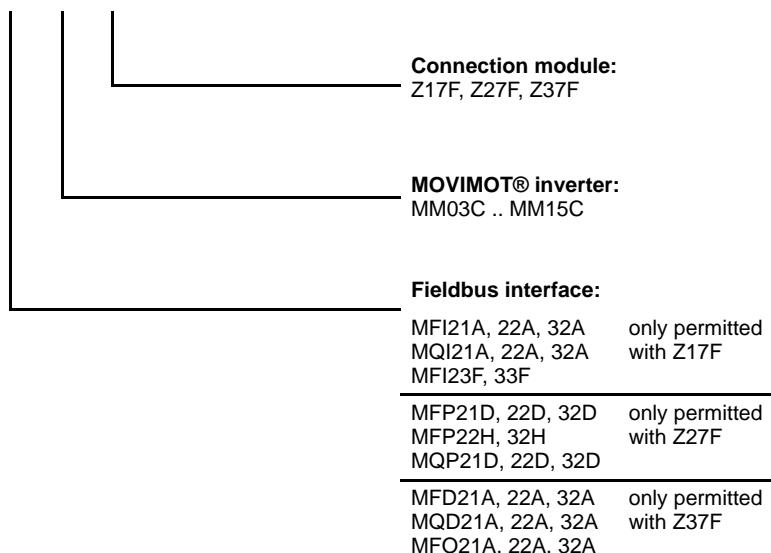
MF..JZ.6./A..  
MQ..JZ.6./A..

	<b>Connection technology:</b>	
	AF0	only permitted with Z16F, Z26F, Z26J
	AF1	only permitted with Z36F
	AF2, AF3	only permitted with Z26F, Z26J
	<b>Connection module:</b>	
	Z16F, Z26F, Z26J, Z36F	
	<b>Fieldbus interface:</b>	
	MFI21A, 22A, 32A	only permitted with Z16F
	MQI21A, 22A, 32A	
	MFI23F, 33F	
	MFP21D, 22D, 32D	only permitted with Z26F, Z26J
	MFP22H, 32H	
	MQP21D, 22D, 32D	
	MFD21A, 22A, 32A	only permitted with Z36F
	MQD21A, 22A, 32A	
	MFO21A, 22A, 32A	



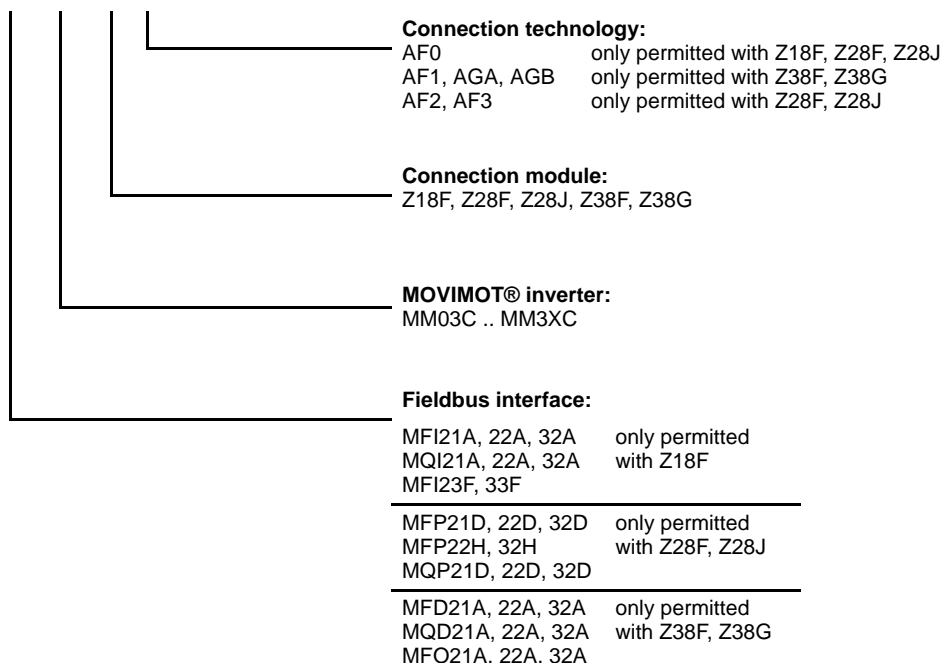
- MOVIMOT<sup>®</sup> frequency inverter integrated in the MFZ.7 field distributor. (Connection of the AC motor via pre-fabricated cable). The following combinations are permitted:

MF../MM../Z.7.  
MQ../MM../Z.7.



- MOVIMOT<sup>®</sup> frequency inverter integrated in the MFZ.8 field distributor. (Connection of the AC motor via pre-fabricated cable). The following combinations are permitted:

MF../MM../Z.8.JA..  
MQ../MM../Z.8.JA..



Any combinations and option modules listed in other publications are not permitted.



## Safety Conditions

### Permitted unit combinations and connection variants

#### **Hazard caused by coasting of the drive**

Note that if the drive does not have a mechanical brake, or if the brake is defective, the drive may coast to a halt.



**Note: If coasting to a halt should result in application-dependent dangers, additional protective measures (e.g. movable covers with closure) must be taken which cover the dangerous area until persons are no longer in danger.**

The additional protective measures must be designed and integrated in such a way that they meet the safety category required for the machine.

After activation of the stop command, access to the machine must be prevented until the drive has reached a standstill, or the access time has to be determined to ensure that an adequate safety distance is maintained.

#### *Principle of the emergency stop function*

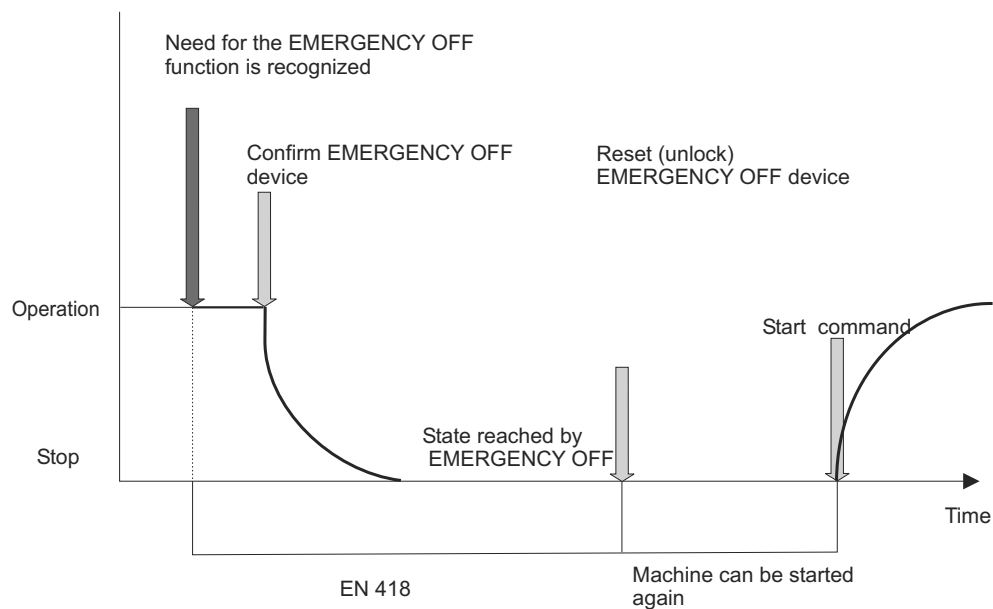


Figure 2: Principle of the emergency stop function

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**Design variants with a brake motor ensure that the brake is applied automatically when the 24 V supply is disconnected.**



### 3.2 Installation requirements

- Use only SEW hybrid cables for MOVIMOT® applications with field distributors in conjunction with safe disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart to EN 954-1 safety category 3:
- Do not shorten SEW hybrid cables. Use cables in their original lengths with pre-fabricated connectors. Check for proper connection.
- For MOVIMOT® applications with safe disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart to EN 954-1 safety category 3, the power cables and 24 V supply must be routed in separate cables.

The cable for the 24 V supply must be designed as follows to avoid induced voltages:

- Use shielded cables with a degree of shield coverage of at least 85 % (e.g. LAPP ÖLFLEX CLASSIC 110 CY).
- The shield must be grounded at both ends.
- Intermediate grounding is required if the cable length exceeds 50 m.
- The cables must be routed in cable ducts or piping.
- The total cable length must be limited to  $\leq 100$  m.
- Only the voltage for the safety-oriented 24 V supply is permitted for connecting the direction of rotation signals and setpoint changeover (terminals R, L, f1/f2).
- Use only suitable units with a limited output voltage ( $V_{\max} = 30 V_{DC}$ ) and limited output current ( $I \leq 8$  A) as external 24 V voltage sources (observe the technical data of MOVIMOT®).
- For EMC-compliant installation, observe the information in the following publications:
  - MOVIMOT® operating instructions
  - PROFIBUS Interfaces, Field Distributors manual
  - InterBus Interfaces, Field Distributors manual
  - DeviceNet/CANopen Interfaces, Field Distributors manual

It is important that the shielding of the 24 V supply line is connected to the housing at both ends.

- The voltage supplies of all stations in the fieldbus, including the fieldbus supply, must be checked to EN 60950.

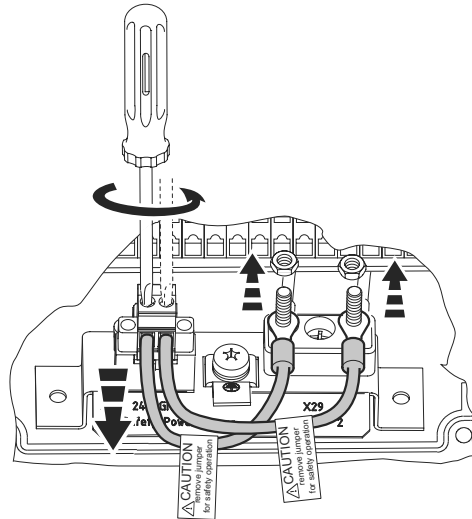


## Safety Conditions

### Installation requirements



- For applications with safe disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart according to EN 954-1, category 3, the bridges between 24V/X40 and 24V/X29 in the field distributor with the label "Caution, remove jumper for safety operation" must be removed. (See the illustration below.)



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Figure 3: Removing jumpers

- Do not make any changes to the wiring of the field distributor.
- When planning the installation, observe the technical data of MOVIMOT® MM..C.



### 3.3 Requirements for external emergency stop relays

The following requirements apply to safety switching devices:

- Emergency stop relays must be approved at least for category 3 according to EN 954-1.
- Emergency stop relays must allow for dual channel connection and crossfault monitoring of the control device to trigger the disconnection process.
- The wiring must be carried out in dual-channel design with crossfault monitoring.
- The emergency stop relays must feature an option for signaling crossfault monitoring and trigger recognition.
- The values specified for the safety switching devices must be adhered to when designing the circuit.
- The switching capacity of the emergency stop relays must correspond at least to the maximum permitted limited output current of the 24 V voltage supply. **Observe the manufacturer's instructions for the safety switching devices concerning the permitted contact loads and fusing that may be required for the safety contacts. Unless specified otherwise, the contacts must be protected with 0.6 times the nominal value of the maximum contact rating specified by the manufacturer.**
- Control devices with force guided contacts (according to EN 60947-5-1) must be used for triggering a safety-related disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart according to EN 954-1 safety category 3.
- The emergency stop relays must be designed and connected in such a way that resetting the control device itself will not lead to a restart. A restart may only be carried out after an additional reset of the emergency stop relay.
- Bipolar disconnection of the safety circuit is required.
- Manufacturers of emergency stop relays are, for example, Pilz and Siemens.
- The 24V MOVIMOT<sup>®</sup> supply input comes equipped with a serial polarity protection diode as well as a buffer capacitor with  $C = 100 \mu\text{F}$ . These components have to be considered as load when selecting the emergency stop relay.





#### Sample circuit for an "emergency stop relay"

The following figure shows the basic interface of an external emergency stop relay (according to the before mentioned requirements) to MOVIMOT® MM..C.

The information in the respective manufacturer's data sheets must be observed for connection.

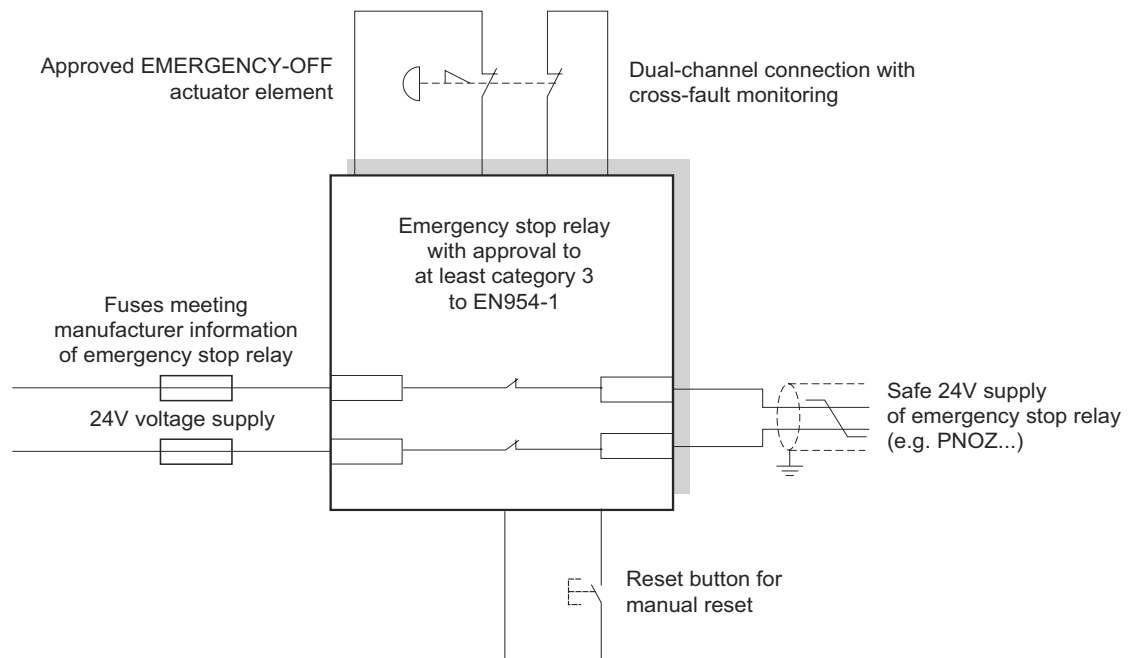


Figure 4: Sample circuit for stop category 0

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### 3.4 Startup requirements

- Startup must be documented and proof of the efficacy of the safety functions is required.
- Startup tests of the emergency stop relay and the correct wiring must be performed and documented for MOVIMOT® applications with safe disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart according to EN 954-1 safety category 3.
- During the startup/function test, you must measure the voltage supplies (e.g. safety power X40, bus module supply X29) to check whether they are assigned correctly.
- The function test must be carried out in succession for all potentials, i.e. separately.

### 3.5 Operation requirements

- Operation is only allowed within the limits specified in the data sheets. This principle applies to the external safety equipment as well as MOVIMOT® and approved options.
- The safety functions must be checked at regular intervals to ensure that the functions work properly. The intervals between the checks should not exceed three months.





## 4 Connection Variants



Permitted connection variants of the unit combinations and connection variants for safe disconnection of the drive according to stop category 0 or 1 to EN 60204-1 and fail-safe protection against restart according to EN 954-1, safety category 3 listed on page 10 can be found in the publication "Safe Disconnection for MOVIMOT<sup>®</sup> MM..C - Applications."

The publication "Safe Disconnection for MOVIMOT<sup>®</sup> MM..C – Applications" is constantly being extended by new applications. The publication includes checklists, which offer additional assistance in project planning and installation as well as operating MOVIMOT<sup>®</sup> drives in safety-oriented applications.

It is essential that you comply with the publications listed in the section "Safety and warning instructions" for all the connection variants listed in the publication "Safe Disconnection for MOVIMOT<sup>®</sup> MM..C - Applications."



### 5 Index of Changes

Here is a list of changes in the individual sections.

- Safety concept**
- The schematic representation of the MOVIMOT<sup>®</sup> safety concept has been revised.
- Certificate**
- The following certificate has become obsolete:
    - Approval certification of the testing and certification body of the Fachausschusses Maschinenbau, Hebezeuge, Hütten- und Walzwerksanlagen (MHHW) at the Berufsgenossenschaftlichen Zentrale für Sicherheit und Gesundheit -BGZ- der gewerblichen Berufsgenossenschaften e.V.
- Approved unit combinations and design versions**
- New versions have been added to the existing unit combinations and designs.
- Requirements for external emergency stop relays**
- The section "Requirements for external emergency stop relays" now includes information on the 24V MOVIMOT<sup>®</sup> supply input.



## Address List

Germany			
<b>Headquarters Production Sales</b>	<b>Bruchsal</b>	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal P.O. Box Postfach 3023 · D-76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 <a href="http://www.sew-eurodrive.de">http://www.sew-eurodrive.de</a> <a href="mailto:sew@sew-eurodrive.de">sew@sew-eurodrive.de</a>
<b>Service Competence Center</b>	<b>Central</b> Gear units / Motors	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 <a href="mailto:sc-mitte-gm@sew-eurodrive.de">sc-mitte-gm@sew-eurodrive.de</a>
	<b>Central</b> Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 <a href="mailto:sc-mitte-e@sew-eurodrive.de">sc-mitte-e@sew-eurodrive.de</a>
	<b>North</b>	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 D-30823 Garbsen (near Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 <a href="mailto:sc-nord@sew-eurodrive.de">sc-nord@sew-eurodrive.de</a>
	<b>East</b>	SEW-EURODRIVE GmbH & Co KG Dänkritzter Weg 1 D-08393 Meerane (near Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 <a href="mailto:sc-ost@sew-eurodrive.de">sc-ost@sew-eurodrive.de</a>
	<b>South</b>	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 D-85551 Kirchheim (near München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 <a href="mailto:sc-sued@sew-eurodrive.de">sc-sued@sew-eurodrive.de</a>
	<b>West</b>	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 D-40764 Langenfeld (near Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 <a href="mailto:sc-west@sew-eurodrive.de">sc-west@sew-eurodrive.de</a>
	<b>Drive Service Hotline / 24 Hour Service</b>		
Additional addresses for service in Germany provided on request!			
France			
<b>Production Sales Service</b>	<b>Hagenau</b>	SEW-USOCOME 48-54, route de Soufflenheim B. P. 20185 F-67506 Hagenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 <a href="http://www.usocome.com">http://www.usocome.com</a> <a href="mailto:sew@usocome.com">sew@usocome.com</a>
<b>Assembly Sales Service</b>	<b>Bordeaux</b>	SEW-USOCOME Parc d'activités de Magellan 62, avenue de Magellan - B. P. 182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	<b>Lyon</b>	SEW-USOCOME Parc d'Affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
	<b>Paris</b>	SEW-USOCOME Zone industrielle 2, rue Denis Papin F-77390 Vermeuil l'Etang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
Additional addresses for service in France provided on request!			
Algeria			
<b>Sales</b>	<b>Alger</b>	Réducom 16, rue des Frères Zagnoun Bellevue El-Harrach 16200 Alger	Tel. +213 21 8222-84 Fax +213 21 8222-84
Argentina			
<b>Assembly Sales Service</b>	<b>Buenos Aires</b>	SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garin, Lote 35 Ruta Panamericana Km 37,5 1619 Garin	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 <a href="mailto:sewar@sew-eurodrive.com.ar">sewar@sew-eurodrive.com.ar</a>



## Address List

Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 <a href="http://www.sew-eurodrive.com.au">http://www.sew-eurodrive.com.au</a> <a href="mailto:enquires@sew-eurodrive.com.au">enquires@sew-eurodrive.com.au</a>
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 <a href="mailto:enquires@sew-eurodrive.com.au">enquires@sew-eurodrive.com.au</a>
Austria			
Assembly Sales Service	Wien	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Strasse 24 A-1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 <a href="http://sew-eurodrive.at">http://sew-eurodrive.at</a> <a href="mailto:sew@sew-eurodrive.at">sew@sew-eurodrive.at</a>
Belgium			
Assembly Sales Service	Brüssel	SEW Caron-Vector S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 <a href="http://www.caron-vector.be">http://www.caron-vector.be</a> <a href="mailto:info@caron-vector.be">info@caron-vector.be</a>
Brazil			
Production Sales Service	Sao Paulo	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 50 Caixa Postal: 201-07111-970 Guarulhos/SP - Cep.: 07251-250	Tel. +55 11 6489-9133 Fax +55 11 6480-3328 <a href="http://www.sew.com.br">http://www.sew.com.br</a> <a href="mailto:sew@sew.com.br">sew@sew.com.br</a>
Additional addresses for service in Brazil provided on request!			
Bulgaria			
Sales	Sofia	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9532565 Fax +359 2 9549345 <a href="mailto:bever@fastbg.net">bever@fastbg.net</a>
Cameroon			
Sales	Douala	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 4322-99 Fax +237 4277-03
Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, Ontario L6T3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 <a href="http://www.sew-eurodrive.ca">http://www.sew-eurodrive.ca</a> <a href="mailto:l.reynolds@sew-eurodrive.ca">l.reynolds@sew-eurodrive.ca</a>
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 <a href="mailto:b.wake@sew-eurodrive.ca">b.wake@sew-eurodrive.ca</a>
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Street LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 <a href="mailto:a.peluso@sew-eurodrive.ca">a.peluso@sew-eurodrive.ca</a>
Additional addresses for service in Canada provided on request!			
Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMP RCH-Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 <a href="mailto:ventas@sew-eurodrive.cl">ventas@sew-eurodrive.cl</a>
China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25322611 <a href="mailto:gm-tianjin@sew-eurodrive.cn">gm-tianjin@sew-eurodrive.cn</a> <a href="http://www.sew.com.cn">http://www.sew.com.cn</a>



China			
<b>Assembly Sales Service</b>	<b>Suzhou</b>	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021 P. R. China	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew.com.cn
Colombia			
<b>Assembly Sales Service</b>	<b>Bogotá</b>	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 sewcol@sew-eurodrive.com.co
Croatia			
<b>Sales Service</b>	<b>Zagreb</b>	KOMPEKS d. o. o. PIT Erdödy 4 II HR 10 000 Zagreb	Tel. +385 1 4613-158 Fax +385 1 4613-158 kompeks@net.hr
Czech Republic			
<b>Sales</b>	<b>Praha</b>	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Luná 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 a220121236 Fax +420 220121237 <a href="http://www.sew-eurodrive.cz">http://www.sew-eurodrive.cz</a> sew@sew-eurodrive.cz
Denmark			
<b>Assembly Sales Service</b>	<b>Kopenhagen</b>	SEW-EURODRIVEA/S Geminivej 28-30, P.O. Box 100 DK-2670 Greve	Tel. +45 43 9585-00 Fax +45 43 9585-09 <a href="http://www.sew-eurodrive.dk">http://www.sew-eurodrive.dk</a> sew@sew-eurodrive.dk
Estonia			
<b>Sales</b>	<b>Tallin</b>	ALAS-KUUL AS Paldiski mnt.125 EE 0006 Tallin	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee
Finland			
<b>Assembly Sales Service</b>	<b>Lahti</b>	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 <a href="http://www.sew-eurodrive.fi">http://www.sew-eurodrive.fi</a> sew@sew.fi
Gabon			
<b>Sales</b>	<b>Libreville</b>	Electro-Services B.P. 1889 Libreville	Tel. +241 7340-11 Fax +241 7340-12
Great Britain			
<b>Assembly Sales Service</b>	<b>Normanton</b>	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 <a href="http://www.sew-eurodrive.co.uk">http://www.sew-eurodrive.co.uk</a> info@sew-eurodrive.co.uk
Greece			
<b>Sales Service</b>	<b>Athen</b>	Christ. Boznos & Son S.A. 12, Mavromichali Street P.O. Box 80136, GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 <a href="http://www.boznos.gr">http://www.boznos.gr</a> info@boznos.gr
Hong Kong			
<b>Assembly Sales Service</b>	<b>Hong Kong</b>	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 2 7960477 + 79604654 Fax +852 2 7959129 sew@sewhk.com



## Address List

Hungary			
<b>Sales Service</b>	<b>Budapest</b>	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 office@sew-eurodrive.hu
India			
<b>Assembly Sales Service</b>	<b>Baroda</b>	SEW-EURODRIVE India Pvt. Ltd. Plot No. 4, Gidc Por Ramangamdi · Baroda - 391 243 Gujarat	Tel. +91 265 2831086 Fax +91 265 2831087 mdoffice@seweurodriveindia.com
<b>Technical Offices</b>	<b>Bangalore</b>	SEW-EURODRIVE India Private Limited 308, Prestige Centre Point 7, Edward Road Bangalore	Tel. +91 80 22266565 Fax +91 80 22266569 salesbang@seweurodriveinindia.com
	<b>Mumbai</b>	SEW-EURODRIVE India Private Limited 312 A, 3rd Floor, Acme Plaza Andheri Kurla Road, Andheri (E) Mumbai	Tel. +91 22 28348440 Fax +91 22 28217858 salesmumbai@seweurodriveindia.com
Ireland			
<b>Sales Service</b>	<b>Dublin</b>	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458
Israel			
<b>Sales</b>	<b>Tel-Aviv</b>	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 lirazhandasa@barak-online.net
Italy			
<b>Assembly Sales Service</b>	<b>Milano</b>	SEW-EURODRIVE di R. Blicke & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 799781 sewit@sew-eurodrive.it
Ivory Coast			
<b>Sales</b>	<b>Abidjan</b>	SICA Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36
Japan			
<b>Assembly Sales Service</b>	<b>Toyoda-cho</b>	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 sewjapan@sew-eurodrive.co.jp
Korea			
<b>Assembly Sales Service</b>	<b>Ansan-City</b>	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate Unit 1048-4, Shingil-Dong Ansan 425-120	Tel. +82 31 492-8051 Fax +82 31 492-8056 master@sew-korea.co.kr
Latvia			
<b>Sales</b>	<b>Riga</b>	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 7139386 Fax +371 7139386 info@alas-kuul.ee
Lebanon			
<b>Sales</b>	<b>Beirut</b>	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 gacar@beirut.com



Lithuania			
<b>Sales</b>	<b>Alytus</b>	UAB Irseva Merkines g. 2A LT-62252 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt www.sew-eurodrive.lt
Luxembourg			
<b>Assembly Sales Service</b>	<b>Brüssel</b>	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.caron-vector.be info@caron-vector.be
Malaysia			
<b>Assembly Sales Service</b>	<b>Johore</b>	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 kchtan@pd.jaring.my
Mexico			
<b>Assembly Sales Service</b>	<b>Queretaro</b>	SEW-EURODRIVE, Sales and Distribution, S. A. de C. V. Privada Tequisquiapan No. 102 Parque Ind. Queretaro C. P. 76220 Queretaro, Mexico	Tel. +52 442 1030-300 Fax +52 442 1030-301 scmexico@seweurodrive.com.mx
Morocco			
<b>Sales</b>	<b>Casablanca</b>	S. R. M. Société de Réalisations Mécaniques 5, rue Emir Abdelkader 05 Casablanca	Tel. +212 2 6186-69 + 6186-70 + 6186-71 Fax +212 2 6215-88 srm@marocnet.net.ma
Netherlands			
<b>Assembly Sales Service</b>	<b>Rotterdam</b>	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu
New Zealand			
<b>Assembly Sales Service</b>	<b>Auckland</b>	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 sales@sew-eurodrive.co.nz
	<b>Christchurch</b>	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz
Norway			
<b>Assembly Sales Service</b>	<b>Moss</b>	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 241-020 Fax +47 69 241-040 sew@sew-eurodrive.no
Peru			
<b>Assembly Sales Service</b>	<b>Lima</b>	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 sewperu@sew-eurodrive.com.pe
Poland			
<b>Assembly Sales Service</b>	<b>Lodz</b>	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Lodz	Tel. +48 42 67710-90 Fax +48 42 67710-99 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl



## Address List

Portugal			
<b>Assembly Sales Service</b>	<b>Coimbra</b>	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 <a href="http://www.sew-eurodrive.pt">http://www.sew-eurodrive.pt</a> <a href="mailto:infosew@sew-eurodrive.pt">infosew@sew-eurodrive.pt</a>
Romania			
<b>Sales Service</b>	<b>Bucuresti</b>	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 <a href="mailto:sialco@sialco.ro">sialco@sialco.ro</a>
Russia			
<b>Sales</b>	<b>St. Petersburg</b>	ZAO SEW-EURODRIVE P.O. Box 263 RUS-195220 St. Petersburg	Tel. +7 812 5357142 +812 5350430 Fax +7 812 5352287 <a href="http://www.sew-eurodrive.ru">http://www.sew-eurodrive.ru</a> <a href="mailto:sew@sew-eurodrive.ru">sew@sew-eurodrive.ru</a>
Senegal			
<b>Sales</b>	<b>Dakar</b>	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 849 47-70 Fax +221 849 47-71 <a href="mailto:senemeca@sentoo.sn">senemeca@sentoo.sn</a>
Serbia and Montenegro			
<b>Sales</b>	<b>Beograd</b>	DIPAR d.o.o. Kajmakcalanska 54 SCG-11000 Beograd	Tel. +381 11 3088677 / +381 11 3088678 Fax +381 11 3809380 <a href="mailto:dipar@yubc.net">dipar@yubc.net</a>
Singapore			
<b>Assembly Sales Service</b>	<b>Singapore</b>	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 <a href="mailto:sewsingapore@sew-eurodrive.com">sewsingapore@sew-eurodrive.com</a>
Slovakia			
<b>Sales</b>	<b>Sered</b>	SEW-Eurodrive SK s.r.o. Trnavska 920 SK-926 01 Sered	Tel. +421 31 7891311 Fax +421 31 7891312 <a href="mailto:sew@sew-eurodrive.sk">sew@sew-eurodrive.sk</a>
Slovenia			
<b>Sales Service</b>	<b>Celje</b>	Pakman - Pogonska Tehnika d.o.o. Ul. XIV. divizije 14 SLO – 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 <a href="mailto:pakman@siol.net">pakman@siol.net</a>
South Africa			
<b>Assembly Sales Service</b>	<b>Johannesburg</b>	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 <a href="mailto:dross@sew.co.za">dross@sew.co.za</a>
	<b>Capetown</b>	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 <a href="mailto:dswanepoel@sew.co.za">dswanepoel@sew.co.za</a>
	<b>Durban</b>	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 <a href="mailto:dtait@sew.co.za">dtait@sew.co.za</a>





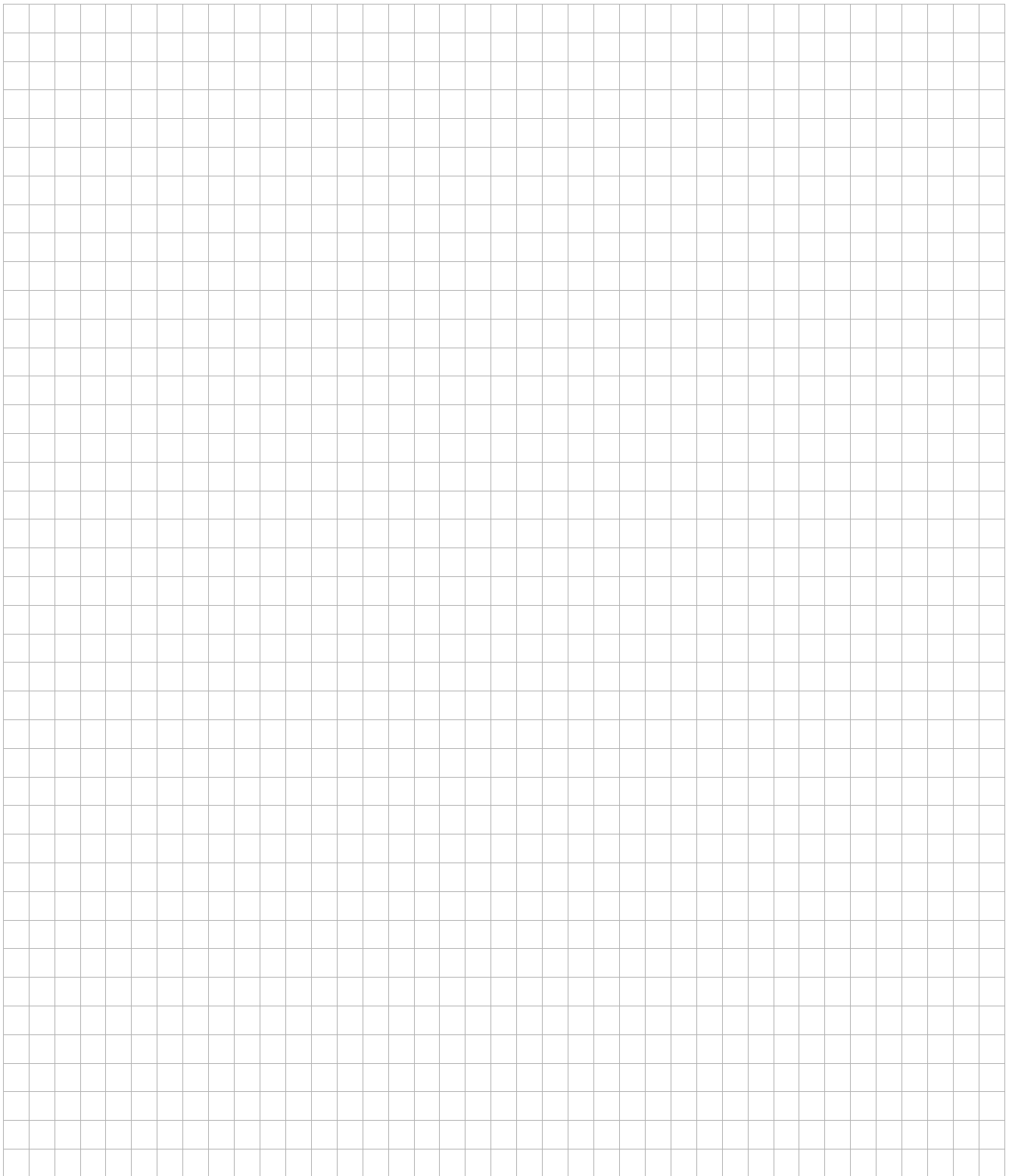
Spain			
<b>Assembly Sales Service</b>	<b>Bilbao</b>	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 9 4431 84-70 Fax +34 9 4431 84-71 sew.spain@sew-eurodrive.es
Sweden			
<b>Assembly Sales Service</b>	<b>Jönköping</b>	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 <a href="http://www.sew-eurodrive.se">http://www.sew-eurodrive.se</a> info@sew-eurodrive.se
Switzerland			
<b>Assembly Sales Service</b>	<b>Basel</b>	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 41717-17 Fax +41 61 41717-00 <a href="http://www.imhof-sew.ch">http://www.imhof-sew.ch</a> info@imhof-sew.ch
Thailand			
<b>Assembly Sales Service</b>	<b>Chon Buri</b>	SEW-EURODRIVE (Thailand) Ltd. Bangpakong Industrial Park 2 700/456, Moo.7, Tambol Donhuaroh Muang District Chon Buri 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.co.th
Tunisia			
<b>Sales</b>	<b>Tunis</b>	T. M.S. Technic Marketing Service 7, rue Ibn El Heithem Z.I. SMMT 2014 Mégrine Erriadh	Tel. +216 1 4340-64 + 1 4320-29 Fax +216 1 4329-76
Turkey			
<b>Assembly Sales Service</b>	<b>Istanbul</b>	SEW-EURODRIVE Hareket Sistemleri Sirketi Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419163 + 216 4419164 + 216 3838014 Fax +90 216 3055867 sew@sew-eurodrive.com.tr
Ukraine			
<b>Sales Service</b>	<b>Dnepropetrovsk</b>	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 m.piatnitsa@sew-eurodrive.de
USA			
<b>Production Assembly Sales Service</b>	<b>Greenville</b>	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 <a href="http://www.seweurodrive.com">http://www.seweurodrive.com</a> cslyman@seweurodrive.com
<b>Assembly Sales Service</b>	<b>San Francisco</b>	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6381 cshayward@seweurodrive.com
	<b>Philadelphia/PA</b>	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	<b>Dayton</b>	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	<b>Dallas</b>	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
Additional addresses for service in the USA provided on request!			



## Address List

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Venezuela			
<b>Assembly Sales Service</b>	<b>Valencia</b>	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 sewventas@cantv.net sewfinanzas@cantv.net



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SEW-EURODRIVE GmbH & Co KG  
P.O. Box 3023 · D-76642 Bruchsal / Germany  
Phone +49 7251 75-0 · Fax +49 7251 75-1970  
sew@sew-eurodrive.com

→ [www.sew-eurodrive.com](http://www.sew-eurodrive.com)