Operating Instructions

AR.. and AT.. Centrifugal and Friction Couplings

Edition 12/2010
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1 General Information

1.1 How to use this documentation

The documentation is an integral part of the product and contains important information on operation and service. The documentation is written for all employees who assemble, install, startup, and service this product.

The documentation must be accessible and legible. Make sure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

1.2 Structure of the safety notes

1.2.1 Meaning of the signal words

The following table shows the grading and meaning of the signal words for safety notes, notes on potential risks of damage to property, and other notes.

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Meaning</th>
<th>Consequences if disregarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>▶ DANGER</td>
<td>Imminent danger</td>
<td>Severe or fatal injuries</td>
</tr>
<tr>
<td>▶ WARNING</td>
<td>Possible dangerous situation</td>
<td>Severe or fatal injuries</td>
</tr>
<tr>
<td>▶ CAUTION</td>
<td>Possible dangerous situation</td>
<td>Minor injuries</td>
</tr>
<tr>
<td>NOTICE</td>
<td>Possible damage to property</td>
<td>Damage to the drive system or its environment</td>
</tr>
<tr>
<td>INFORMATION</td>
<td>Useful information or tip: Simplifies the handling of the drive system.</td>
<td></td>
</tr>
</tbody>
</table>

1.2.2 Structure of the section-related safety notes

Section safety notes do not apply to a specific action, but to several actions pertaining to one subject. The used symbols indicate either a general or a specific hazard.

This is the formal structure of a section safety note:

⚠ SIGNAL WORD

Type and source of danger.

Possible consequence(s) if disregarded.
- Measure(s) to prevent the danger.

1.2.3 Structure of the embedded safety notes

Embedded safety notes are directly integrated in the instructions just before the description of the dangerous action.

This is the formal structure of an embedded safety note:

- ⚠ SIGNAL WORD Nature and source of hazard.
  Possible consequence(s) if disregarded.
  - Measure(s) to prevent the danger.
1.3 *Rights to claim under warranty*

A requirement of fault-free operation and fulfillment of any rights to claim under limited warranty is that you adhere to the information in the documentation. Read the documentation before you start working with the unit!

1.4 *Exclusion of liability*

You must comply with the information contained in this documentation to ensure safe operation of the electric motors and to achieve the specified product characteristics and performance features. SEW-EURODRIVE assumes no liability for injury to persons or damage to equipment or property resulting from non-observance of the documentation. In such cases, any liability for defects is excluded.

1.5 *Copyright*

© 2010 - SEW-EURODRIVE. All rights reserved.

Copyright law prohibits the unauthorized duplication, modification, distribution, and use of this document, in whole or in part.

1.6 *Product name and trademarks*

The brands and product names contained within this publication are trademarks or registered trademarks of the titleholders.
2 Safety Notes

The following basic safety notes must be read carefully to prevent injury to persons and damage to property. The operator must ensure that the basic safety notes are read and adhered to. Make sure that persons responsible for the system and its operation, as well as persons who work independently on the unit, have read through the operating instructions carefully and understood them. If you are unclear about any of the information in this documentation or if you require further information, please contact SEW-EURODRIVE.

2.1 Preliminary information

The following safety notes are primarily concerned with the use of the following components: AR.. and AT.. centrifugal and friction couplings. If using gearmotors, please also refer to the safety notes for gear units in the corresponding operating instructions.

Also observe the supplementary safety notes in the individual sections of this documentation.

2.2 General information

**WARNING**

During operation, the motors and gearmotors can have live, bare (in the event of open connectors/terminal boxes) and movable or rotating parts as well as hot surfaces, depending on their enclosure.

Severe or fatal injuries.

- All work related to transportation, storage, installation, assembly, connection, startup, maintenance and repair may only be carried out by qualified personnel, in strict observance of:
  - The relevant detailed operating instructions
  - The warning and safety signs on the motor/gearmotor
  - All other project planning documents, operating instructions and wiring diagrams related to the drive
  - The specific regulations and requirements for the system
  - The national/regional regulations governing safety and the prevention of accidents
- Never install damaged products
- Immediately report any damage to the shipping company

Removing the required protection cover or the housing without authorization, improper use as well as incorrect installation or operation may result in severe injuries to persons or damage to property.

This documentation provides additional information.
2.3 Target group

Any mechanical work may only be performed by adequately qualified personnel. Qualified staff in the context of this documentation are persons familiar with the design, mechanical installation, troubleshooting and servicing of the product who possess the following qualifications:

- Training in mechanical engineering, e.g. as a mechanic or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

Any electronic work may only be performed by adequately qualified electricians. Qualified electricians in the context of this documentation are persons familiar with electrical installation, startup, troubleshooting and servicing of the product who possess the following qualifications:

- Training in electrical engineering, e.g. as an electrician, electronics or mechatronics technician (final examinations must have been passed).
- They are familiar with these operating instructions.

All work in further areas of transportation, storage, operation and waste disposal must only be carried out by persons who are trained appropriately.

All qualified personnel must wear appropriate protective clothing.

2.4 Designated use

These drives and couplings are intended for industrial systems.

When installed in machines, startup of the drives and couplings (i.e. start of designated operation) is prohibited until it is determined that the machine meets the requirements stipulated in Directive 2006/42/EC (Machinery Directive).

Use in potentially explosive atmospheres is prohibited, unless measures are expressly taken to make it possible.

The ambient conditions must comply with all the specifications on the nameplate.
2.5 Other applicable documentation

The following publications and documents have to be observed as well:

- Wiring diagrams provided with the gearmotor
- "Gear Unit Series R..7, F..7, K..7, S..7, SPIROPLAN® W" operating instructions
- "DR.71 – 225, 315 AC Motors" operating instructions

2.6 Transport/storage

Inspect the shipment for any damage that may have occurred in transit as soon as you receive the delivery. Inform the shipping company immediately. It may be necessary to preclude startup.

Tighten the eyebolts securely. They are designed to only carry the weight of the motor/gearmotor; do not attach any additional loads.

The built-in lifting eyebolts comply with DIN 580. Always observe the loads and regulations listed in this standard. If the gearmotor is equipped with two eyebolts, then both of these should be used for transportation. In this case, the tension force vector of the slings must not exceed a 45° angle according to DIN 580.

Use suitable, sufficiently rated handling equipment if required. Reattach these in the case of further transportation.

Store the drive and the coupling in a dry, dust-free environment if they are not to be installed straight away. The drive and the coupling can be stored for one year without requiring any special measures before startup.
2.7 Installation

Make sure that the supports are even, the foot and flange mounting is correct and if there is direct coupling, align with precision. Resonances between the rotational frequency and the double network frequency caused by the structure are to be avoided. Release the brake (if installed), turn rotor manually, check for unusual grinding noise. Check the direction of rotation in decoupled status.

Only install or remove belt pulleys and couplings using suitable devices (heat up) and cover with a touch guard. Avoid improper belt tension.

Make the pipe connections that may eventually be required. Mounting positions with shaft ends pointing upwards should be equipped with a cover to prevent foreign objects from falling into the fan. Ensure that ventilation openings are not obstructed and that used air, including air from adjacent units, cannot be drawn in again straight away.

Observe the notes in the "Mechanical Installation" section.

2.8 Electrical connection

All work may only be carried out by qualified personnel. During work, the low-voltage machine must be on standstill, enabled, and safeguarded against an accidental restart. This also applies to auxiliary circuits (e.g. anti-condensation heating or forced cooling fan).

Check that the motor is de-energized!

Exceeding the tolerances in EN 60034-1 (VDE 0530, part 1) – voltage + 5%, frequency + 2%, curve shape, symmetry – increases the heating and influences electromagnetic compatibility. Also comply with EN 50110 (where necessary, observe other applicable national regulations, such as DIN VDE 0105 for Germany).

Observe the wiring information and differing data on the nameplate as well as the wiring diagram in the terminal box.

The connection should be a continuous secure electrical connection (no protruding wire ends); use the cable end equipment intended for this purpose. Establish a secure protective earth connection. When the motor is connected, the distances to non-insulated and live parts must not be shorter than the minimum values according to IEC 60664 and national regulations. With low voltage, the distances should be no shorter than the following values, in compliance with IEC 60664:

<table>
<thead>
<tr>
<th>Nominal voltage $V_N$</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 500 V</td>
<td>3 mm</td>
</tr>
<tr>
<td>≤ 690 V</td>
<td>5.5 mm</td>
</tr>
</tbody>
</table>

The terminal box must be free of foreign objects, dirt and humidity. Unused cable entry openings and the box itself must be closed so that they are dust and water proof. Secure keys for test mode without output elements. When operating low-voltage machines with brakes, check that the brake is functioning correctly before startup.

Observe the notes in the "Electrical Installation" chapter.
2.9 **Startup/operation**

Whenever changes to normal operation occur, such as increased temperatures, noise, vibrations, etc., you should determine the cause. Consult the manufacturer if required. Never deactivate protection devices, even in test mode. Switch off the motor if you are not sure.

Regularly clean air ducts in dusty or dirty environments.
3 Structure

3.1 Drive with AR.. friction coupling

Drives with a torque limiting coupling consist of a standard gear unit and motor/variable speed gearmotor with an adapter installed between them. This adapter accommodates the friction coupling. In gearmotors with a multi-stage gear unit, the torque limiting coupling may be located between the first and second gear units.


3.1.1 W speed monitor

The following figure shows a drive with friction coupling and W: speed monitor

![Diagram showing drive components](1901048587)


The speed monitor [8] is used with constant-speed gearmotors and is connected to the encoder [2] in the adapter.

The speed of the coupling plate at the output end is picked up by an encoder [2] and passed on to a monitoring unit [8]. Speed monitors and slip monitors are used as monitoring units. You can install them together with contactors, safety devices, etc. on a 35 mm standard rail (according to DIN EN 50 022) in a control cabinet or mounted via 2 bores.

**INFORMATION**

For information on the W speed monitor, please refer to the separate operating instructions of the manufacturer.
3.1.2 WS slip monitor

The slip monitor [8] is used with the following components:

- speed-controlled motors with speed sensor
- VARIBLOC® variable-speed gear units

Input 1 of the slip monitor is connected to the encoder of the adapter. Depending on the application, either the encoder of the speed-controlled motor or the VARIBLOC® variable speed gear unit is connected to input 2 of the slip monitor.

The input and output speed is compared in order to determine the slip of the frictional coupling. The slip monitor compares the pulses from input 1 and input 2. Slip is signaled when the difference between the pulses within a certain cycle time exceeds the specified sensitivity value.

The following figure shows an adapter with friction torque and WS slip monitor for speed-controlled motors:

![Diagram of an adapter with friction torque and WS slip monitor for speed-controlled motors](image)

[1] Encoder

For speed-controlled motors with speed sensor, the slip monitor (input 2) is connected to the encoder [1].

The following figure shows an adapter with friction torque and WS slip monitor for VARIBLOC®:

![Diagram of an adapter with friction torque and WS slip monitor for VARIBLOC®](image)

[1] Trigger cam
[2] Encoder
[3] Driving disk
[4] Friction lining
[5] Spring washer
[6] Slotted nut
[7] Slip hub
[8] Slip monitor
[9] Encoder IG
3.2 Drive with AT.. hydraulic centrifugal coupling

The following figure shows the structure of a drive with hydraulic centrifugal coupling:

Hydraulic centrifugal couplings are fluid couplings based on the Föttinger principle. They consist of 2 hinged hemispheres with blades separated by a tight gap.

The applied torque is transmitted by the inertial force of the streaming fluid. This fluid circulates within a closed circuit, between the pump wheel (primary side) [12] on the driving shaft (motor shaft) and the turbine wheel (secondary side) [9] on the driven shaft (gear unit input shaft).

A speed difference (slip) is required in order to maintain the oil circulation, and thus to transmit the torque. The hydraulic centrifugal coupling will not transmit torque if the slip is zero.

INFORMATION
For information on the WS slip monitor, refer to the separate operating instructions of the manufacturer.
The following figure shows the structure of a drive with hydraulic centrifugal coupling and BM(G) brake:

[1] Gear unit
[2] Basic flange complete
[3] Brake bearing flange with integrated brake complete
[4] Bearing flange
[6] Extended housing complete
[8] Terminal box, brake
3.3 Nameplate

3.3.1 Adapter AR..

The following figure shows a sample nameplate for AR.. adapters:

![AR.. Nameplate](image)

- $n_a$: Permitted maximum input speed/output speed in rpm
- $M_{a\text{max}}$: Permitted maximum output torque in Nm
- $M_{e\text{max}}$: Permitted maximum input torque in Nm
- $\text{kg}$: Weight

3.3.2 Adapter AT..

The following figure shows a sample nameplate for AT.. adapters:

![AT.. Nameplate](image)

- $f$: Frequency in Hz
- $n_{\text{epk}}$: Permitted maximum input speed/output speed in rpm
- $P_N$: Nominal power $P_N$ in kW
- $S$: Operating mode
- $\cos \varphi$: Power factor
- $\text{Iso.KI}$: Thermal class
- $i$: Gear unit reduction ratio
- $M_{\text{apk}}$: Permitted maximum output torque in Nm
- $\text{kg}$: Weight
- $\text{nm}$: Mounting position
- $i$: Gear unit reduction ratio
- $\text{rpm}$: Permitted maximum input speed/output speed in rpm
- $\text{N}$: Mounting position
- $\text{Nm}$: Permitted maximum input torque in Nm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum output torque in Nm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum input speed/output speed in rpm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum output torque in Nm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum input speed/output speed in rpm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum output torque in Nm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum input speed/output speed in rpm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum output torque in Nm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum input speed/output speed in rpm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum output torque in Nm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum input speed/output speed in rpm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum output torque in Nm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum input speed/output speed in rpm
- $\text{kg}$: Weight
- $\text{rpm}$: Permitted maximum output torque in Nm
- $\text{kg}$: Weight
3.4 Unit designation

3.4.1 Adapter AR..

An AR.. adapter, for example, has the following type designation:

AR 100 /WS

Options:
WS: Slip monitor
W: Speed monitor

Adapter size

Adapter type

3.4.2 Adapter AT..

An AT.. adapter, for example, has the following type designation:

AT 321 /BMG

Brake option

Adapter size

Adapter type
4 Mechanical Installation

4.1 Required tools/resources

- Standard tools
- Spanner wrench
- Mounting/dismantling tool
- Torque wrench

4.2 Prerequisites for assembly

⚠️ CAUTION
Risk of injury due to protruding gear unit parts.
Minor injuries.
- Keep a sufficient safety distance to the gear unit/gearmotor.

4.3 Drive with AR.. friction coupling

⚠️ NOTICE
Improper assembly may cause damages to the gear unit and the coupling.
Possible damage to property
- Do closely observe the notes in this chapter.
- Make sure that the machine is at standstill before you work on the gear unit and the coupling. Secure the drive unit against unintentional power-up.
- Protect the gear unit from direct cold air currents. Condensation may cause water to accumulate in the oil.
4.3.1 Encoder installation

1. Remove the fan guard from the driving motor.
2. Slowly turn the motor and adapter shaft end until you can see a control cam (= head of the pan head screw) in the tapped hole.
3. Screw in the encoder until contact is made with the control cam.
4. Turn the encoder [1] back by 2 turns (corresponds to a clearance of 2 mm).
5. Secure the encoder with a lock nut on the outside of the encoder.
6. Check: Slowly turn the motor and adapter shaft end.
   The encoder is installed correctly if the control cams do not contact the encoder.
7. Mount fan guard.
4.3.2 Connecting monitoring devices

**WARNING**

Interference voltages due to improper cabling.

Severe or fatal injuries.

- Do not lay incoming cables in multicore cables.
- Do not exceed the maximum cable length of 500 m at a cross section of 1.5 mm².
- Use shielded cables if there is a risk of interference from power current or control cables and if the lines are longer than 10 m.

1. Encoder connection

**For version with W speed monitor:**

- Connect the encoder of the adapter to the speed monitor.
  - via three-core cable

→ Encoder generates 1 pulse per revolution

**For version with WS slip monitor:**

- Connect the encoders of the adapter and motor to the slip monitor.
  - Encoder of the adapter to terminals 4, 5, 6 (input 1) using a three-core cable
  - With speed-controlled motor:
    - Encoder to terminals 5, 6, 11 (Input 2) via three-core cable
    - with VARIBLOC®:
      - Encoder to terminals 5, 6, 11 (Input 2) via three-core cable

→ Depending on the respective encoder, the motor encoder generates the following pulses per revolution

<table>
<thead>
<tr>
<th>Encoder type</th>
<th>EI71</th>
<th>EI72</th>
<th>EI76</th>
<th>NV11</th>
<th>NV12</th>
<th>NV16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motors</td>
<td>DR.71 – 132</td>
<td>DT71 – DV132S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulse(s)</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

2. Connect the speed or slip monitor according to the manufacturer instructions (refer to the enclosed operating instructions).
4.4 Drive with AT.. hydraulic centrifugal coupling

⚠️ NOTICE
Improper assembly may cause damages to the gear unit and the coupling.
Possible damage to property
• Do closely observe the notes in this chapter.
• Make sure that the machine is at standstill before you work on the gear unit and the coupling. Secure the drive unit against unintentional power-up.
• Protect the gear unit and the coupling from direct cold air currents. Condensation may cause water to accumulate in the oil.

4.4.1 Brake connection

INFORMATION
Comply with the applicable regulations issued by the relevant employer's liability insurance association regarding phase failure protection and the associated circuit/circuit modification!
The brake is released electrically. The brake is applied mechanically when the voltage is switched off.

INFORMATION
In view of the DC voltage to be switched and the high level of current load, it is essential to use either special brake contactors or AC contactors with contacts in utilization category AC-3 to EN 60947-4-1.

Proceed as follows to connect the brake:
1. Connect the brake according to the provided wiring diagram
2. **For variant with manual brake release:**
   • For variant with self-reengaging manual brake release: Screw in hand lever
   • For variant with lockable manual brake release: Screw in the setscrew

4.4.2 Brake control connection
The DC disk brake is powered from a brake control system with protection circuit. It is located in the terminal box/IS lower part or must be installed in the control cabinet. Observe the EMC notes in the "AC motors DR.71-225, 315" operating instructions.

1. Connect the brake controller according to the wiring diagram supplied with the brake.
2. Check cable cross sections – brake currents (see chapter "Technical Data" in the "AC motors DR.71-225, 315" manual)
5 Startup/Operation

⚠️ WARNING
Thermal overload due to blocked drive.
Severe injuries.
- Switch off the drive immediately.

⚠️ WARNING
Danger of burns and blindness due to spouting liquid from fusible screw plug.
Severe injuries.
- Switch off the drive immediately.
- Observe the permitted maximum ambient temperature.
- Wear safety goggles.
- Avoid contact with the lubricant

⚠️ WARNING
Damage due to incorrect speed or incorrect coupling filling.
Possible injury.
- Do only operate the coupling with the fill quantity specified in the order confirmation.
- Never operate the coupling without lubricant.
- Consult SEW-EURODRIVE if you require a stationary operation with an operating point different from the specified one.
- The lubricant must correspond to the specifications in chapter "Lubricants".

⚠️ WARNING
Danger of fire and explosion due to sparks caused by worn elastic components.
Serious injury.
- Check elastic components regularly and replace them if necessary.

⚠️ WARNING
Damage due to high speeds.
Possible injury.
- Provide for a device that safely prevents excessive speeds, e.g. brake or backstop.

⚠️ WARNING
Irreparable damage to the bearings of the hydraulic centrifugal coupling due to insufficient lubrication.
Serious injury.
- In order to ensure the lubrication of the bearings of adapter types AT311 – AT542, the drive unit must be set to standstill once a week.
Prior to startup, make sure that
• all parts of the drive and the coupling (especially the protective covers) have been mounted properly.
• all connections are have been established properly.
• the drive is not blocked.
• no other sources of danger are present.
• the switching time between star and delta is a short as possible (2 – 5 s) if you operate the drive in star-delta connection.
• for hydraulic centrifugal coupling:
  that the fill quantity is correct after a longer storage period. The required oil quantity is specified on the order confirmation.
5.1 Drive with AR.. friction coupling

5.1.1 Setting the W speed monitor

The following figure shows the front of the speed monitor:

![Speed Monitor Diagram]

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
<th>Setting measures / values</th>
</tr>
</thead>
</table>
| [1] Switching speed | allows for an exact setting of the desired value  
Note: If the drive stalls, you can achieve the shortest possible slip times by setting the switching speed slightly below the rated speed. | Rough adjustment with step switch (1, 10, 100)  
Fine adjustment with potentiometer (5 – 50)  
Example: Step switch "100", potentiometer setting "13":  
Switching speed = 100 x 13 = 1300 Imp/min |
| [2] Switching function | Defines the properties of monitoring function II = speed below set speed; the LED lights up when relay has picked up. | setting to function II |
| [3] Starting lag | You can avoid error messages during motor startup by setting a delay. | – |
| [4] Hysteresis | Difference between the switch-on and switch-off point of the relay. | monitoring of the speed undercut: Potentiometer setting "5%" |

1. Perform settings on the speed monitor according to the following table:

2. Functional check: Set the switching speed on the potentiometer in monitoring electronics. The value must exceed the rated speed.  
   → The setting is correct if the relay in the speed monitor triggers.
LED messages:

<table>
<thead>
<tr>
<th>LED</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>lights up when relay has picked up</td>
</tr>
<tr>
<td>2</td>
<td>lights up if there is an input pulse</td>
</tr>
<tr>
<td>3</td>
<td>lights up if operating voltage is correct.</td>
</tr>
</tbody>
</table>

Relay position

<table>
<thead>
<tr>
<th>Function</th>
<th>Relay position when speed is exceeded</th>
<th>too low</th>
<th>for normal operation and start bypass</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td><img src="image1" alt="Diagram" /></td>
<td><img src="image2" alt="Diagram" /></td>
<td><img src="image3" alt="Diagram" /></td>
</tr>
<tr>
<td>II</td>
<td><img src="image4" alt="Diagram" /></td>
<td><img src="image5" alt="Diagram" /></td>
<td><img src="image6" alt="Diagram" /></td>
</tr>
<tr>
<td>III</td>
<td><img src="image7" alt="Diagram" /></td>
<td><img src="image8" alt="Diagram" /></td>
<td><img src="image9" alt="Diagram" /></td>
</tr>
<tr>
<td>IV</td>
<td><img src="image10" alt="Diagram" /></td>
<td><img src="image11" alt="Diagram" /></td>
<td><img src="image12" alt="Diagram" /></td>
</tr>
</tbody>
</table>
5.1.2 Setting the WS slip monitor

**INFORMATION**

- The specified parameters are recommendations for safe operation. Depending on the type of control of the existing plant, you may have to adjust the parameters.
- Observe the operating instructions of the slip monitor.

The parameters mentioned below cause a fast cut-off in the event of the slightest slip. If slip is intended temporarily during normal operation of the system, for instance with short torque impulses caused by load fluctuations, then the parameters must be modified accordingly.

The x in some parameter designations stands as placeholder for sensor input 1 or 2.
- The encoder of the adapter is connected to input 1.
- The encoder of the variable-speed gear unit or frequency-controlled motor is connected to input 2.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Meaning</th>
<th>Value</th>
<th>Factory setting</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOx</td>
<td>Switching function of outputs 1 and 2</td>
<td>F4</td>
<td>Yes</td>
<td>Relay picked-up in normal operation and during start bypass.</td>
</tr>
<tr>
<td>CTx</td>
<td>Cycle time</td>
<td>0.0 (s)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>NCx</td>
<td>Number of trigger cams</td>
<td>NC1 1, NC2 2</td>
<td>No</td>
<td>Setting for operation of the adapter with VARIBLOC® variable-speed gear unit</td>
</tr>
<tr>
<td></td>
<td>Number of trigger cams</td>
<td>NC1 1, NC2 2</td>
<td>No</td>
<td>Setting for operation of the adapter with motor. Number of pulses of input 2 depends on the proximity switch used on the motor (page 20).</td>
</tr>
<tr>
<td>STP</td>
<td>Start bypass time</td>
<td>3.0 (s)</td>
<td>No</td>
<td>Output relay remains picked-up during that time in order to allow for coupling slip during the start of a plant without cut-off. Under favorable conditions, i.e. with low external mass moments of inertia and low drive utilization in normal operation, this time can be reduced or even set to 0.0 s. This has to be evaluated via tests under nominal load.</td>
</tr>
<tr>
<td>SOP</td>
<td>Memory function of the outputs</td>
<td>1</td>
<td>No</td>
<td>With this setting, after a cut-off, the outputs are reset via a reset on the front of the speed monitor. This function may have to be adapted to the respective plant control and processes.</td>
</tr>
<tr>
<td>OPP</td>
<td>Simultaneous switching of outputs 1 and 2</td>
<td>1</td>
<td>No</td>
<td>Both outputs drop in the event of slip.</td>
</tr>
<tr>
<td>DIM</td>
<td>Display format</td>
<td>0</td>
<td>Yes</td>
<td>Display in rpm</td>
</tr>
<tr>
<td>VER</td>
<td>Software version</td>
<td>-</td>
<td>-</td>
<td>Query option regarding the installed software version</td>
</tr>
<tr>
<td>SPx</td>
<td>Max. number of differential pulses</td>
<td>1</td>
<td>Yes</td>
<td>Slip is signaled after a differential pulse</td>
</tr>
<tr>
<td>DTx</td>
<td>Delay time of the outputs</td>
<td>0.0 (s)</td>
<td>Yes</td>
<td>No switch-off delay</td>
</tr>
<tr>
<td>FTx</td>
<td>Impulse relay function</td>
<td>0.0 (s)</td>
<td>Yes</td>
<td>Impulse time not active</td>
</tr>
</tbody>
</table>
6 Inspection/Maintenance

6.1 Preliminary work

Observe the following notes before you start with the inspection/maintenance work.

⚠️ WARNING
Risk of crushing if the drive starts up unintentionally.
Severe or fatal injuries.
• Disconnect the gearmotor from the power supply before starting work and protect it against unintentional re-start.

⚠️ WARNING
Danger of burns due to hot gear unit, hot coupling and hot gear unit oil.
Severe injuries.
• Let the gear unit cool and the coupling down before you begin with your work.
• Only remove the oil level and oil drain plug very carefully.

NOTICE
Filling in the wrong gear unit or coupling oil may result in significantly different lubricant characteristics.
Potential damage to property
• Do not mix different synthetic lubricants and do not mix synthetic with mineral lubricants.
• Mineral oil is used as standard lubricant.
• The lubricant must correspond to the specifications in chapter "Lubricants".

NOTICE
Improper maintenance may cause damages to the gear unit and the coupling.
Possible damage to property.
• All work on the gear unit and the coupling may only be carried out by qualified personnel.
• Observe the notes in this chapter.

• Use original spare parts only.
• Strict adherence to the inspection and maintenance intervals is absolutely necessary to ensure safe working conditions.
• Before releasing shaft connections, be sure that there are no active torsional moments present (tensions within the system).
• Prevent foreign bodies from entering into the gear unit and the coupling during the maintenance/inspection work.
• Do not clean the gear unit and the coupling with a high-pressure cleaning system as water might enter and the seals might be damaged.
• Perform safety and function tests following all maintenance and repair work.

## 6.2 Inspection and maintenance intervals

<table>
<thead>
<tr>
<th>Unit / unit part</th>
<th>Time interval</th>
<th>Required steps</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic centrifugal coupling</td>
<td>every 500 operating hours, at the latest after 3 months.</td>
<td>Check drive for irregularities.</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>3 months after startup at the latest, then annually, however, after 4000 hours of operation at the latest1)</td>
<td>replace worn elastic components of the coupling if required.</td>
<td>see, “Adjusting and changing elastic components” (page 33)</td>
</tr>
<tr>
<td></td>
<td>after 5 years</td>
<td>Change elastic components</td>
<td>see, “Adjusting and changing elastic components” (page 33)</td>
</tr>
<tr>
<td></td>
<td>every 15000 hours of operation</td>
<td>Inspect oil and change it if necessary</td>
<td>see &quot;Inspecting/changing the oil&quot; (page 34)</td>
</tr>
<tr>
<td>Adapter with centrifugal coupling with brake BM(G)</td>
<td>The periods of wear are affected by many factors and may be short. Calculate the required inspection/maintenance intervals in accordance with the project planning documents.</td>
<td>Inspect the brake • Working air gap • Brake disk Suck off any abrasion Inspect the switch elements and replace them if necessary (e.g. in case of burn-out)</td>
<td>see &quot;Removing the hydraulic centrifugal coupling&quot; (page 36) and operating instructions &quot;AC Motors DR.71 – 225, 315&quot;</td>
</tr>
<tr>
<td>Adapter with frictional coupling</td>
<td>at least every 3 000 hours of operation</td>
<td>Inspect and replace the friction lining and cup springs, adjust the slip torque if necessary</td>
<td>See &quot;Inspection/maintenance of the drive with AR.. frictional coupling&quot; (page 29)</td>
</tr>
</tbody>
</table>

1) Should you, based on the existing wear, expect the elastic components to show a wear of 80% of the tabular value (page 33) by the next check, you have to replace the elastic components or plan shorter maintenance intervals. Observe increased wear due to changing operating conditions.
6.3 Drive with AR.. friction coupling

6.3.1 Inspecting/replacing the friction lining, adjusting the slip torque

⚠️ WARNING

Risk of crushing if the drive starts up unintentionally.
Severe or fatal injuries.

- Before starting work, isolate the motor and, if installed, the forced cooling fan from the power supply.
- Safeguard against accidental startup.
- Carefully observe the steps described below.

Use a torque wrench with a suitable connection piece for checking and adjusting the slip torque, see table (page 31) for setting values.

The following figure shows the structure of the frictional coupling:

![Diagram of frictional coupling]

1. Locking screw
2. Cylinder head screw
3. Proximity switch
4. Friction disk
5. Friction lining
6. Spring washer
7. Slotted nut
8. Slip hub

The following figure shows the rough torque adjustment:

**AR71 – 115**

![Diagram of rough torque adjustment for AR71]

1. Marking
2. Lock washer (cam)
3. Slotted nut
4. Markings (driving disk)
5. Slotted nut

**AR132 – 195**

![Diagram of rough torque adjustment for AR132]

1. Marking
2. Lock washer (cam)
3. Slotted nut
4. Markings (driving disk)
5. Slotted nut
1. Disconnect the motor/variable speed gearmotor from the adapter
2. Unscrew the safety screw [1], pull the friction hub [8] off the shaft extension.
4. **with AR 71 – 115:** Unscrew the lock washer [10].
   **with AR 132 – 195:** Unscrew the clamping screw on the slotted round nut [7]
5. Loosen the slotted round nut until you can easily adjust the frictional coupling manually.
   **with AR 132 – 195:** Mark the driving disk [12].
7. Unscrew and remove the slotted round nut, remove the cup springs [6].
   Important: Note the sequence of the cup springs.
8. Inspect the friction lining [5]: replace if worn.
   **\[** NOTICE **\] Irreparable damage to the surface due to lubricant on the friction surface.**
   Potential damage to property.
   • Do not allow any lubricants to get onto the friction surface.
9. Inspect the cup springs [6]: replace if burned out.
10. Reinstall the cup springs [6] (in the same sequence as before).
11. Screw on the slotted round nut up to the mark.
12. Measure and adjust if required
   **with a torque wrench**
   • Connect the torque wrench to the hole in the hub
   • Measure the torque (in both directions), if necessary readjust using the slotted round nut
   **Rough adjustment without torque wrench**
   • Use the hook spanner to set the torque limiting coupling.
   • Slip torque according to value “Z” (see the following table), calculated from the marking
     **with AR 71 – 115:** = Number of cams on the lock washer
     **with AR 132 – 195:** = Number of slots in the slotted nut
13. Secure the slotted round nut with the lock washer or clamping screw.
14. Proceed the other way round to assemble the drive.
### 6.3.2 Slip torques AR..

<table>
<thead>
<tr>
<th>Adapter type</th>
<th>No. of cams or slots “Z”</th>
<th>Slip torque $M_{R}$ in Nm</th>
<th>Setting range in Nm</th>
<th>Cup springs Thickness in mm</th>
<th>Sequence 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR71</td>
<td>1</td>
<td>1.0</td>
<td>1.0 1.4 1.6 1.8 2.0</td>
<td>0.6</td>
<td>1.0-2.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2.1</td>
<td>- 2.4 2.6 3.2 3.4 3.8 4</td>
<td>1.0-2.0</td>
<td>1.0-2.0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4.1</td>
<td>4.1 5.0 5.8 6.0</td>
<td>1.0-2.0</td>
<td>1.0-2.0</td>
</tr>
<tr>
<td>AR80</td>
<td>1</td>
<td>1.0</td>
<td>1.0 1.4 1.6 2.8 2.0</td>
<td>0.6</td>
<td>1.0-2.0</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2.1</td>
<td>- 2.4 2.6 3.2 3.4 3.8 4</td>
<td>1.0-2.0</td>
<td>1.0-2.0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>4.1</td>
<td>4.1 5.0 5.8 6.0</td>
<td>1.0-2.0</td>
<td>1.0-2.0</td>
</tr>
<tr>
<td>AR85</td>
<td>1</td>
<td>2</td>
<td>2.0 2.4 3.0 3.8 4.0</td>
<td>0.6</td>
<td>2.0-4.0</td>
</tr>
<tr>
<td>AR90</td>
<td>2</td>
<td>3</td>
<td>4.1</td>
<td>4.1-6.0</td>
<td>4.1-6.0</td>
</tr>
<tr>
<td>AR95</td>
<td>3</td>
<td>4</td>
<td>4.1</td>
<td>4.1-6.0</td>
<td>4.1-6.0</td>
</tr>
<tr>
<td>AR100</td>
<td>6</td>
<td>5</td>
<td>5.0 6.0 8.0 9.0 10 11 12 13</td>
<td>0.7</td>
<td>5.0-13</td>
</tr>
<tr>
<td>AR105</td>
<td>2</td>
<td>14</td>
<td>14 16 17 18 20 22 23 24 26 27 28 - 30 31 32 35</td>
<td>1.45</td>
<td>14-S-5</td>
</tr>
<tr>
<td>AR112</td>
<td>3</td>
<td>36</td>
<td>36 41 45 48 54 58 60</td>
<td>2-36-80</td>
<td>36-80</td>
</tr>
<tr>
<td>AR115</td>
<td>4</td>
<td>15</td>
<td>15 18 22 24 26 - 28 30 32</td>
<td>1.5</td>
<td>15-32</td>
</tr>
<tr>
<td>AR132S/ M</td>
<td>2</td>
<td>33</td>
<td>33 40 50 58 67</td>
<td>1.5</td>
<td>36-65</td>
</tr>
<tr>
<td>AR132M/ L</td>
<td>3</td>
<td>66</td>
<td>66 100 120 135</td>
<td>1.5</td>
<td>66-130</td>
</tr>
<tr>
<td>AR135</td>
<td>4</td>
<td>30</td>
<td>30 36 38 40 41 42 43 44 45</td>
<td>1.5</td>
<td>30-45</td>
</tr>
<tr>
<td>AR145</td>
<td>2</td>
<td>46</td>
<td>46 48 60 65 70 75 80 85</td>
<td>1.5</td>
<td>46-85</td>
</tr>
<tr>
<td>AR160</td>
<td>3</td>
<td>66</td>
<td>66 100 120 135</td>
<td>1.5</td>
<td>66-130</td>
</tr>
<tr>
<td>AR165</td>
<td>1</td>
<td>30</td>
<td>30 36 38 40 41 42 43 44 45</td>
<td>1.5</td>
<td>30-45</td>
</tr>
<tr>
<td>AR180</td>
<td>2</td>
<td>86</td>
<td>86 90 110 125 135 150 160 180 190 200</td>
<td>1.5</td>
<td>86-200</td>
</tr>
<tr>
<td>AR185</td>
<td>3</td>
<td>200</td>
<td>200 280 300</td>
<td>1.5</td>
<td>200-300</td>
</tr>
<tr>
<td>AR195</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

1) For sequence of cup springs, refer to the legend below:

1. Double alternating sequence (()),
2. Alternating sequence (),
3. Aligned sequence ()
6.3.3 Replacing the encoder of the adapter

**WARNING**

Risk of crushing if the drive starts up unintentionally.

Severe or fatal injuries.

- Before starting work, isolate the motor and, if installed, the forced cooling fan from the power supply.
- Safeguard against accidental startup.
- Carefully observe the steps described below.

The switching output of the encoder is contactless, thus the service life is not limited by the switching frequency. Proceed as follows if you have to replace it anyway:

1. Remove the fan guard from the driving motor.
2. Remove the encoder connection.
3. Loosen the lock nut on the encoder and remove the old encoder.
4. Install the new encoder, see chapter "Assembly" > "Installing the encoder" (page 19)
5. Connect the encoder to the speed and slip monitor.

6.4 Drive with AT.. hydraulic centrifugal coupling

6.4.1 Tightening torques of the screws

The following figure shows an AT..centrifugal coupling:

![AT.. Centrifugal Coupling Diagram](image)

The hydraulic centrifugal coupling is equipped with fusible screw plugs, filling plugs and retaining screws. During maintenance, it is important to adhere to the tightening torques specified in the table below precisely to ensure the coupling is working and does not leak.
6.4.2 Check and replace elastic components

1. Turn the coupling until the elastic components are free from load.
2. Provide for markings on the coupling and the coupling half on the motor side.
3. Turn the coupling in the opposite direction until the elastic components are free from load.
4. Measure the distance between the markings in circumferential direction on the outside diameter of the coupling and the coupling half on the motor side.
5. Note down the measured distance.

The following table shows the permitted distance values:

<table>
<thead>
<tr>
<th>Coupling size</th>
<th>Measured distance in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT311, AT312</td>
<td>&lt; 6</td>
</tr>
<tr>
<td>AT421, AT422, AT522</td>
<td>&lt; 6</td>
</tr>
<tr>
<td>AT541, AT542</td>
<td>&lt; 8</td>
</tr>
</tbody>
</table>

You must replace the elastic components if the measured distance exceeds the listed values.

Proceed as follows to replace the elastic components:

1. Remove the motor.
2. Remove the old elastic components
3. Install new elastic components.
4. Reattach the motor.

1) Fusible screw plugs for the temperatures in brackets are available on request.
6.4.3 Inspecting/changing the oil

⚠️ WARNING
Risk of crushing if the drive starts up unintentionally.
Severe or fatal injuries.
- Before starting work, isolate the motor and, if installed, the forced cooling fan from the power supply.
- Safeguard against accidental startup.
- Carefully observe the steps described below.

⚠️ WARNING
The surface temperatures on the coupling can be very high during operation.
Danger of burns.
- Let the motor and the coupling cool down before you start your work.

Only use hydraulic oils that correspond to the specified technical data (page 40).

1. Remove the cover, place a collecting vessel underneath
2. Remove the filling plug and the fusible screw plug for the air balance
3. Drain some oil at the filling plug or the fusible screw plug.
4. Check the oil properties.
   - Viscosity
   - Oil ageing
   - If OK, close the filling plug and the fusible screw plug and install the cover
5. With horizontal coupling
   - Turn the coupling until the hole of the filling plug is in a vertical position and drain old oil
   - fill in new oil
   - Screw in filling plug

With vertical coupling
   - Drain old oil
   - Screw in filling plug
   - Fill in new oil via the opening of the fusible screw plug
6. Screw in fusible screw plug and install the cover.
6.4.4 Replacing defective fuses

**WARNING**

Risk of crushing if the drive starts up unintentionally. Severe or fatal injuries.
- Before starting work, isolate the motor and, if installed, the forced cooling fan from the power supply.
- Safeguard against accidental startup.
- Carefully observe the steps described below.

**WARNING**

The surface temperatures on the coupling can be very high during operation. Danger of burns.
- Let the motor and the coupling cool down before you start your work.

The fuse trips in the event of a malfunction of the working machine that causes the centrifugal coupling to heat up excessively. This empties the coupling housing, and prevents damage to the drive.

Proceed as follows to replace the fusible screw plugs:
1. Remove the cover, place a collecting vessel underneath
2. Remove the filling plug and the defective fusible screw plug.
3. Drain the remaining oil
4. **With horizontal coupling**
   - Turn the coupling until the hole of the filling plug is in a vertical position
   - Fill in new oil
   - Screw in filling plug
**With vertical coupling**
   - Screw in filling plug
   - Fill in new oil via the opening of the fusible screw plug
5. Screw in new fusible screw plug
   - Use original fuses (page 32) only.
6. Mount the cover, observe the tightening torques (page 32)
6.4.5 Replacing the hydraulic centrifugal coupling

**NOTICE**

Material damage or leakage due to improper coupling assembly.
Potential damage to property.
- Never install or remove the coupling via the housing.

The following figure shows how to remove the centrifugal coupling:

1. Remove drive motor.
2. Remove holding screw.
3. Use the mounting/dismantling tool to remove the coupling via the coupling hub.
4. **With brakemotors**: Brake inspection/maintenance, see "DR.71-225, 315 AC Motors" operating instructions.
The following figure shows how to install the centrifugal coupling:

[4] Holding disk

Proceed as follows to install the centrifugal coupling:

1. Mount the coupling.
2. Mount the holding disk.
3. Mount the drive motor.
### 7 Malfunctions

#### 7.1 Drive with AR.. friction coupling – malfunctions

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible causes</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No display</td>
<td>Encoder on adapter is defective</td>
<td>Measure input pulses, • replace encoder of the adapter if required, see chapter “Inspection/Maintenance”, “Changing the encoder of the adapter” (page 32)</td>
</tr>
<tr>
<td></td>
<td>For VARIBLOC® with slip monitor: • Encoder defective • Sensing distance of proximity switch too big</td>
<td></td>
</tr>
<tr>
<td></td>
<td>With speed-controlled motor: • Encoder defective</td>
<td>• Replace encoder of the motor</td>
</tr>
<tr>
<td>Slip torque is not reached</td>
<td>Cup springs burned out or installed incorrectly after maintenance</td>
<td>Inspect cup springs, see chapter “Inspection/Maintenance”, “Inspecting/replacing friction lining, adjusting the slip torque” (page 29)</td>
</tr>
<tr>
<td></td>
<td>Friction lining worn</td>
<td>Inspect friction lining, see &quot;Inspecting/replacing friction lining, adjusting the slip torque&quot; (page 29)</td>
</tr>
</tbody>
</table>

#### 7.2 Drive with AT.. hydraulic centrifugal coupling – malfunctions

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible causes</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive does not start up</td>
<td>too little or too much oil</td>
<td>Check and correct filling, see &quot;Inspecting/changing the oil&quot; (page 34)</td>
</tr>
<tr>
<td>Coupling heats up excessively</td>
<td>Too much slip at the coupling due to overload</td>
<td>Check motor current and reduce load if necessary</td>
</tr>
<tr>
<td></td>
<td>too little or too much oil</td>
<td>Check and correct filling see &quot;Inspecting/changing the oil&quot; (page 34)</td>
</tr>
<tr>
<td>Oil leaking</td>
<td>Defective fuse due to overheating</td>
<td>Check and replace fuse, see chapter &quot;Inspection/Maintenance&quot;, &quot;Replacing defective fuses&quot; (page 35) Replace lubricant Remove cause of overheating</td>
</tr>
<tr>
<td>Coupling leaking</td>
<td>Excessive temperatures</td>
<td>avoid/remove cause of excessive temperature Check and replace elastic components (page 33)</td>
</tr>
<tr>
<td></td>
<td>Contact with aggressive media</td>
<td>Avoid/remove aggressive media Check and replace elastic components (page 33) Check coupling parts for damages and replace them, if necessary</td>
</tr>
<tr>
<td>Worn elastic components</td>
<td>Wear or breakage of the coupling drivers</td>
<td>replace damaged coupling parts and check and replace elastic components (page 33) Reduce maintenance intervals for elastic components</td>
</tr>
<tr>
<td>Defective or worn elastic components</td>
<td>Plant with hydraulic centrifugal coupling does not run smoothly</td>
<td>Check and replace elastic components (page 33)</td>
</tr>
</tbody>
</table>
7.3 **Customer service**

Have the following information to hand if you require the assistance of our customer service:

- Nameplate data (complete)
- Type and extent of the problem
- Time the problem occurred and any accompanying circumstances
- Fill quantity specifications of the AT.. coupling (see order confirmation)
- Assumed cause
- Environmental conditions e.g.:
  - Ambient temperature
  - Humidity
  - Installation altitude
  - Dirt
  - etc.

7.4 **Disposal**

Dispose of the parts in accordance with the material structure and the regulations in force for instance as:

- Iron
- Aluminum
- Copper
- Plastics
- Electronic parts
- Oil and grease (not mixed with solvents)
8 Technical Data

8.1 Lubricants

On delivery, the couplings are filled with the required lubricant type and quantity.

**WARNING**

Tripping fusible screw plugs due to incorrect lubricant type or quantity.
Serious injury.
- Observe the fill quantity specified on the order confirmation.
- Observe the following specifications regarding hydraulic oils.

Only use hydraulic oils that comply with the specifications in the following table. Do not mix different lubricants. The required oil quantity is specified on the order confirmation.

<table>
<thead>
<tr>
<th>Requirements for hydraulic oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity</td>
</tr>
<tr>
<td>ISO VG 32</td>
</tr>
<tr>
<td>Pour point</td>
</tr>
<tr>
<td>&lt; -24 °C</td>
</tr>
<tr>
<td>Starting viscosity</td>
</tr>
<tr>
<td>&lt; 15 000 mm²/s</td>
</tr>
<tr>
<td>Flash point</td>
</tr>
<tr>
<td>≥ 180 °C / ≥ 200 °C¹</td>
</tr>
<tr>
<td>Raffinate</td>
</tr>
<tr>
<td>Highly age-resistant</td>
</tr>
<tr>
<td>Compatibility</td>
</tr>
<tr>
<td>NBR and FPM/FKM gaskets</td>
</tr>
</tbody>
</table>

¹) Fusible screw plug ≥ 160 °C
## Address List

### Germany

<table>
<thead>
<tr>
<th>Category</th>
<th>Location</th>
<th>Address</th>
<th>Telephone</th>
<th>Fax</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headquarters Sales</td>
<td>Bruchsal</td>
<td>SEW-EURODRIVE GmbH &amp; Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal</td>
<td>Tel. +49 7251 75-0</td>
<td>+49 7251 17-1901</td>
<td><a href="mailto:sew@sew-eurodrive.de">sew@sew-eurodrive.de</a></td>
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<td>Service Competence Center</td>
<td>Central</td>
<td>SEW-EURODRIVE GmbH &amp; Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf</td>
<td>Tel. +49 7251 75-1710</td>
<td>+49 7251 17-1711</td>
<td><a href="mailto:sc-mitte@sew-eurodrive.de">sc-mitte@sew-eurodrive.de</a></td>
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<td>North</td>
<td>SEW-EURODRIVE GmbH &amp; Co KG Alte Ricklinger Straße 40-42 D-30823 Garbsen (near Hannover)</td>
<td>Tel. +49 5137 8798-30</td>
<td>+49 5137 8798-55</td>
<td><a href="mailto:sc-nord@sew-eurodrive.de">sc-nord@sew-eurodrive.de</a></td>
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<tr>
<td>Service Competence Center</td>
<td>East</td>
<td>SEW-EURODRIVE GmbH &amp; Co KG Dänkriter Weg 1 D-08393 Meerane (near Zwickau)</td>
<td>Tel. +49 3764 7606-0</td>
<td>+49 3764 7606-30</td>
<td><a href="mailto:sc-ost@sew-eurodrive.de">sc-ost@sew-eurodrive.de</a></td>
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<tr>
<td>Service Competence Center</td>
<td>South</td>
<td>SEW-EURODRIVE GmbH &amp; Co KG Domagkstraße 5 D-85551 Kirchheim (near München)</td>
<td>Tel. +49 89 909552-10</td>
<td>+49 89 909552-50</td>
<td><a href="mailto:sc-sued@sew-eurodrive.de">sc-sued@sew-eurodrive.de</a></td>
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<tr>
<td>Service Competence Center</td>
<td>West</td>
<td>SEW-EURODRIVE GmbH &amp; Co KG Siemensstraße 1 D-40764 Langenfeld (near Düsseldorf)</td>
<td>Tel. +49 2173 8507-30</td>
<td>+49 2173 8507-55</td>
<td><a href="mailto:sc-west@sew-eurodrive.de">sc-west@sew-eurodrive.de</a></td>
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<tr>
<td>Service Competence Center</td>
<td>Electronics</td>
<td>SEW-EURODRIVE GmbH &amp; Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal</td>
<td>Tel. +49 7251 75-1780</td>
<td>+49 7251 75-1769</td>
<td><a href="mailto:sc-elektronik@sew-eurodrive.de">sc-elektronik@sew-eurodrive.de</a></td>
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<tr>
<td></td>
<td>Drive Service Hotline / 24 Hour Service</td>
<td>+49 180 5 SEWHELP +49 180 5 7394357</td>
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**Note:** Additional addresses for service in Germany provided on request!

### France

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<td>Haguenau</td>
<td>SEW-USOCOME 48-54 route de Soufflenheim B. P. 20185 F-67506 Haguenau Cedex</td>
<td>Tel. +33 3 88 73 67 00</td>
<td>+33 3 88 73 66 00</td>
<td><a href="http://www.usocome.com">http://www.usocome.com</a> <a href="mailto:sew@usocome.com">sew@usocome.com</a></td>
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<tr>
<td>Assembly Sales Service</td>
<td>Forbach</td>
<td>SEW-USOCOME Zone industrielle Technopôle Forbach Sud B. P. 30269 F-57604 Forbach Cedex</td>
<td>Tel. +33 3 87 29 38 00</td>
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<td>Assembly Sales Service</td>
<td>Bordeaux</td>
<td>SEW-USOCOME Parc d’activités de Magellan 62 avenue de Magellan - B. P. 182 F-33607 Pessac Cedex</td>
<td>Tel. +33 5 57 26 39 00</td>
<td>+33 5 57 26 39 09</td>
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<tr>
<td>Lyon</td>
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<td>SEW-USOCOME Parc d’affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin</td>
<td>Tel. +33 4 72 15 37 00</td>
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<td>Nantes</td>
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<td>SEW-USOCOME Parc d’activités de la forêt 4 rue des Fontenelles F-44140 Le Bignon</td>
<td>Tel. +33 2 40 78 42 00</td>
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<td>SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garín, Lote 35 Ruta Panamericana Km 37,5 1619 Garín Tel. +54 3327 4572-84 Fax +54 3327 4572-21 <a href="mailto:sewar@sew-eurodrive.com.ar">sewar@sew-eurodrive.com.ar</a> <a href="http://www.sew-eurodrive.com.ar">http://www.sew-eurodrive.com.ar</a></td>
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<td>SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043 Tel. +61 3 9933-1000 Fax +61 3 9933-1003 <a href="mailto:enquires@sew-eurodrive.com.au">enquires@sew-eurodrive.com.au</a></td>
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<td>Minsk</td>
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<tr>
<td>Belgium</td>
<td>Brussels</td>
<td>SEW Caron-Vector Research park Haasrode Evenementenlaan 7 BE-3001 Leuven Tel. +32 16 386-311 Fax +32 16 386-336 <a href="http://www.sew-eurodrive.be">http://www.sew-eurodrive.be</a> <a href="mailto:info@sew-eurodrive.be">info@sew-eurodrive.be</a></td>
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<td>Antwerp</td>
<td>SEW Caron-Vector Rue de Parc Industriel, 31 BE-6900 Marche-en-Famenne Tel. +32 84 219-878 Fax +32 84 219-879 <a href="http://www.sew-eurodrive.be">http://www.sew-eurodrive.be</a> <a href="mailto:service-wallonie@sew-eurodrive.be">service-wallonie@sew-eurodrive.be</a></td>
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<td>Sofia</td>
<td>BEVER-DRIVE GmbH</td>
<td>Bogdanovetz Str.1, BG-1606 Sofia</td>
<td>Tel. +359 2 9151160</td>
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<tr>
<td>Cameroon</td>
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<td>Douala</td>
<td>Electro-Services</td>
<td>Rue Drouot Akwa, B.P. 2024</td>
<td>Tel. +237 33 431137</td>
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<tr>
<td>Canada</td>
<td>Assembly</td>
<td>Toronto</td>
<td>SEW-EURODRIVE CO. OF CANADA LTD.</td>
<td>210 Walker Drive, Bramalea, ON L6T 3W1</td>
<td>Tel. +1 905 791-1553</td>
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<tr>
<td>Canada</td>
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<td>Toronto</td>
<td>SEW-EURODRIVE CO. OF CANADA LTD.</td>
<td>7188 Honeyman Street, Delta, BC V4G 1G1</td>
<td>Tel. +1 604 946-5535</td>
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<td>SEW-EURODRIVE CO. OF CANADA LTD.</td>
<td>2555 Rue Leger, Lasalle, PQ H8N 2V9</td>
<td>Tel. +1 514 367-1124</td>
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<td>Chile</td>
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<td>Santiago de Chile</td>
<td>SEW-EURODRIVE CHILE LTDA.</td>
<td>Las Encinas 1295, Parque Industrial Valle Grande, LAMPA, RCH-Santiago de Chile, P.O. Box, Casilla 23 Correo Quiligura - Santiago - Chile</td>
<td>Tel. +56 2 75770-00</td>
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<tr>
<td>China</td>
<td>Production</td>
<td>Tianjin</td>
<td>SEW-EURODRIVE (Tianjin) Co., Ltd.</td>
<td>No. 46, 7th Avenue, TEDA, Tianjin 300457</td>
<td>Tel. +86 22 25322612</td>
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<td>China</td>
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<td>SEW-EURODRIVE (Suzhou) Co., Ltd.</td>
<td>333, Suhong Middle Road, Suzhou Industrial Park, Jiangsu Province, 215021</td>
<td>Tel. +86 512 62581781</td>
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<td>SEW-EURODRIVE (Guangzhou) Co., Ltd.</td>
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<td>10A-2, 6th Road, Shenyang Economic Technological Development Area, Shenyang, 110141</td>
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<td>10A-2, 6th Road, No. 59, the 4th GuanLi Road, WEDA, 430056 Wuhan</td>
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## Address List

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<td>SEW-EURODRIVE (Xi'an) Co., Ltd. No. 12 Jinye 2nd Road Xi'an High-Technology Industrial Development Zone Xi'an 710065</td>
<td>+86 29 68686262</td>
<td>+86 29 68686311</td>
<td><a href="mailto:xian@sew-eurodrive.cn">xian@sew-eurodrive.cn</a></td>
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Additional addresses for service in China provided on request!

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<td>SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá</td>
<td>+57 1 54750-50</td>
<td>+57 1 54750-44</td>
<td><a href="http://www.sew-eurodrive.com.co">http://www.sew-eurodrive.com.co</a> <a href="mailto:sewcol@sew-eurodrive.com.co">sewcol@sew-eurodrive.com.co</a></td>
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<td>Zagreb</td>
<td>KOMPEKS d. o. o. Zeleni dol 10 HR 10 000 Zagreb</td>
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<td>+385 1 4613-158</td>
<td><a href="mailto:kompeks@inet.hr">kompeks@inet.hr</a></td>
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<td>Denmark</td>
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<td>SEW-EURODRIVEA/S Geminivej 28-30 DK-2670 Greve</td>
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<td>+45 43 9585-09</td>
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<td>Cairo</td>
<td>Copam Egypt for Engineering &amp; Agencies 33 El Hegaz ST, Helopolis, Cairo</td>
<td>+20 2 22566-299 + 1 23143088</td>
<td>+20 2 22594-757</td>
<td><a href="http://www.copam-egypt.com/">http://www.copam-egypt.com/</a> <a href="mailto:copam@datum.com.eg">copam@datum.com.eg</a></td>
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<td>+372 6593231</td>
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<td>Lahti</td>
<td>SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2</td>
<td>+358 201 589-300</td>
<td>+358 3 780-6211</td>
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<td>gabon</td>
<td>Libreville</td>
<td>ESG Electro Services Gabun Feu Rouge Lalala 1889 Libreville Gabun</td>
<td>+241 741059</td>
<td>+241 741059</td>
<td><a href="mailto:esg_services@yahoo.fr">esg_services@yahoo.fr</a></td>
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<td>Karkkila</td>
<td>SEW Industrial Gears Oy Valurinkatu 6, PL 8 FI-03600 Karkkila, 03601 Karkkila</td>
<td>+358 201 589-300</td>
<td>+358 201 589-310</td>
<td><a href="mailto:sew@sew.fi">sew@sew.fi</a> <a href="http://www.sew-eurodrive.fi">http://www.sew-eurodrive.fi</a></td>
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<tr>
<td>Great Britain</td>
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<td>Normanton, SEW-EURODRIVE Ltd. Beckbridge Industrial Estate, P.O. Box No.1, WF6 1QR</td>
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<td>Registered Office</td>
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<tr>
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<td>Rainbow Park, Cnr. Racecourse &amp; Omuramba Road, Montague Gardens, Cape Town, P.O.Box 36556, Chempet 7442, Cape Town</td>
<td>+27 21 552-9820</td>
<td>+27 21 552-9830</td>
<td><a href="mailto:cfoster@sew.co.za">cfoster@sew.co.za</a></td>
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<td>Durban</td>
<td>SEW-EURODRIVE (PROPRIETARY) LIMITED</td>
<td>2 Monaco Place, Pinetown, Durban, P.O. Box 10433, Ashwood 3605</td>
<td>+27 31 700-3451</td>
<td>+27 31 700-3847</td>
<td><a href="mailto:cdejager@sew.co.za">cdejager@sew.co.za</a></td>
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<td>Nelspruit</td>
<td>SEW-EURODRIVE (PTY) LTD.</td>
<td>7 Christie Crescent, Vintonia, P.O.Box 1942, Nelspruit 1200</td>
<td>+27 13 752-8007</td>
<td>+27 13 752-8008</td>
<td><a href="mailto:robermeyer@sew.co.za">robermeyer@sew.co.za</a></td>
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<td>SEW-EURODRIVE KOREA CO., LTD.</td>
<td>B 601-4, Banweol Industrial Estate, 1048-4, Shingil-Dong, Ansan 425-120</td>
<td>+82 31 492-8051</td>
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<td>Busan</td>
<td>SEW-EURODRIVE KOREA Co., Ltd.</td>
<td>No. 1720 - 11, Songjeong - dong, Gangseo-ku, Busan 618-270</td>
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<td>+34 94 43184-70</td>
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<td>Gnejsvägen 6-8, S-55303 Jönköping, Box 3100 S-55003 Jönköping</td>
<td>+46 36 3442 00</td>
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### Switzerland

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<td>+41 61 417 1717</td>
<td>+41 61 417 1700</td>
<td><a href="mailto:info@imhof-sew.ch">info@imhof-sew.ch</a></td>
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### Thailand

<table>
<thead>
<tr>
<th>Location</th>
<th>Name</th>
<th>Address Details</th>
<th>Tel.</th>
<th>Fax</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chonburi</td>
<td>SEW-EURODRIVE (Thailand) Ltd.</td>
<td>700/456, Moo.7, Donhuaroh, Muang, Chonburi 20000</td>
<td>+66 38 454281</td>
<td>+66 38 454288</td>
<td><a href="mailto:sewthailand@sew-eurodrive.com">sewthailand@sew-eurodrive.com</a></td>
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### Tunisia

<table>
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</thead>
<tbody>
<tr>
<td>Tunis</td>
<td>T. M. S. Technic Marketing Service</td>
<td>Zone Industrielle Mghira 2, Lot No. 39, 2082 Foucahna</td>
<td>+216 79 40 88 77</td>
<td>+216 79 40 88 66</td>
<td><a href="mailto:tms@tms.com.tn">tms@tms.com.tn</a></td>
</tr>
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## Address List

### Turkey

<table>
<thead>
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### Ukraine

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<th>Website</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Dnepropetrovsk</td>
<td>SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk</td>
<td>Tel. +380 56 370 3211</td>
<td>Fax +380 56 372 2078</td>
<td><a href="http://www.sew-eurodrive.ua">http://www.sew-eurodrive.ua</a></td>
<td><a href="mailto:sew@sew-eurodrive.ua">sew@sew-eurodrive.ua</a></td>
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</table>

### United Arab Emirates

<table>
<thead>
<tr>
<th>Region</th>
<th>Location</th>
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<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Sharjah</td>
<td>Copam Middle East (FZC) Sharjah Airport International Free Zone P.O. Box 120709 Sharjah</td>
<td>Tel. +971 6 5578-488</td>
<td>Fax +971 6 5578-499</td>
<td></td>
<td><a href="mailto:copam_me@eim.ae">copam_me@eim.ae</a></td>
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### USA

<table>
<thead>
<tr>
<th>Region</th>
<th>Location</th>
<th>Address</th>
<th>Phone</th>
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</thead>
<tbody>
<tr>
<td>Production Assembly</td>
<td>Southeast Region</td>
<td>SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365</td>
<td>Tel. +1 864 439-7537</td>
<td>Fax Sales +1 864 439-7830</td>
<td>Fax Manufacturing +1 864 439-9948</td>
<td>Fax Assembly +1 864 439-0566</td>
</tr>
<tr>
<td>Sales Service Corporate Offices</td>
<td>Northeast Region</td>
<td>SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014</td>
<td>Tel. +1 856 467-2277</td>
<td>Fax +1 856 465-3179</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Midwest Region</td>
<td>SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373</td>
<td>Tel. +1 937 335-0036</td>
<td>Fax +1 937 332-0038</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Southwest Region</td>
<td>SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237</td>
<td>Tel. +1 214 330-4824</td>
<td>Fax +1 214 330-4724</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Western Region</td>
<td>SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544</td>
<td>Tel. +1 510 487-3560</td>
<td>Fax +1 510 487-6433</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional addresses for service in the USA provided on request!

### Venezuela

<table>
<thead>
<tr>
<th>Component</th>
<th>Location</th>
<th>Address</th>
<th>Phone</th>
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<th>Email</th>
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</thead>
</table>

### Vietnam

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<th>Phone</th>
<th>Fax</th>
<th>Website</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>Ho Chi Minh City</td>
<td>Nam Trung Co., Ltd 91 - 93 Tran Minh Quyen Street, District 10, HCMC</td>
<td>Tel. +84 8 8301026</td>
<td>Fax +84 8 8392223</td>
<td></td>
<td><a href="mailto:namtrungco@hcm.vnn.vn">namtrungco@hcm.vnn.vn</a></td>
</tr>
</tbody>
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