User manual

Interroll RollerDrive

EC310
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Introduction

Information about the operating instructions

This manual contains important advice, notes and information about the RollerDrive EC310 in all phases of its lifecycle:

- Transport, assembly and start-up
- Safe operation, maintenance and troubleshooting, disposal
- Accessories

Validity of the manual

The manual describes the RollerDrive EC310 as it is delivered by Interroll. In addition to this manual, special contractual agreements and technical documents apply to special versions.

The manual is part of the product

- For trouble-free, safe operation and warranty claims, read the manual and follow the instructions before handling the RollerDrive EC310.
- Keep the manual near to the RollerDrive EC310.
- Pass the manual on to any subsequent operator or occupant of the RollerDrive EC310.
- Interroll does not accept any liability for malfunctions or defects due to non-observance of this manual.
- If you have any questions after reading the operation manual, feel free to contact our customer service. See the last page for your local contact.

Warnings in this manual

The warnings in this document refer to risks which may arise while using the RollerDrive EC310. For relevant warnings, see “Safety”, page 4 and the warnings at the beginning of each chapter.

There are three categories of danger. The following signal words are used in the document as required:

- Danger
- Warning
- Caution

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>Indicates a hazardous situation which, if not avoided, will result in death or serious injury.</td>
</tr>
<tr>
<td>Warning</td>
<td>Indicates a hazardous situation which, if not avoided, could result in death or serious injury.</td>
</tr>
<tr>
<td>Caution</td>
<td>Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.</td>
</tr>
</tbody>
</table>

Structure of warnings

Nature and source of the hazard
Possible consequence of non-observance
- Information about how to avoid the hazard.
Further symbols

This symbol identifies possible material damage.
- Information about how to avoid damage.

This symbol marks safety instructions.

This symbol marks useful and important information.
- This symbol marks the steps that have to be carried out.
Safety

General safety instructions

The RollerDrive EC310 is designed according to the technical state of the art and is reliable in operation, once distributed. However, risks may still arise.

- Risks of physical injury to the user or bystanders.
- Adverse effects of the RollerDrive and other material.

Always read the entire operating and safety instructions before starting to work with the RollerDrive and follow the information contained herein in full.

- Only instructed and qualified persons may work with the RollerDrive.
- Always keep this user manual at hand when working on the RollerDrive so that you can consult it quickly if required.
- Always comply with relevant national safety regulations.
- If you have any questions after reading this user manual, feel free to contact our customer service. See the last page for contact information.

Intended use

The RollerDrive EC310 may only be used for industrial applications and in an industrial environment to convey goods such as parts, cartons, totes or boxes. It must be integrated in a conveyor module or a conveying system. Any other use is not permitted.

Any changes that affect the safety of the product are not allowed.

The RollerDrive EC310 may only be used within the given operation limits.

Unintended use

The RollerDrive EC310 may not be used to transport persons, bulk cargo or small parts.

The RollerDrive is not intended for use under impact or shock loads.

Applications not according to the intended use of the RollerDrive EC310 require approval from Interroll.
RollerDrive EC310

Safety

Qualified persons

Qualified persons are persons who read and understand the manual and, taking national regulations into account, can competently execute incidental work.

Only instructed and qualified persons may work with the RollerDrive, taking the following into account:

• the relevant manuals and diagrams,
• the warning and safety instructions in this manual,
• the system specific regulations and requirements,
• national or local regulations and requirements for safety and accident prevention.

Dangers

The following list provides information about the various types of danger or damage that may occur while working with the RollerDrive EC310.

Bodily injury

➢ Maintenance or repair work must only be performed by authorized and qualified persons in accordance with the applicable regulations.
➢ Before turning on the RollerDrive, ensure that no unauthorized persons are near the conveyor.

Electricity

➢ Only perform installation and maintenance work after you have switched off the power. Ensure that the RollerDrive cannot be turned on accidentally.

Rotating parts

➢ Keep your fingers and hair away from moving parts.
➢ If you have long hair, always wear a hair net.
➢ Never wear loose clothing.
➢ Never wear jewelry, such as necklaces or bracelets.
➢ Wear safety shoes.

Heat

➢ Do not touch the RollerDrive during operation. With applications with high switching cycles, the temperature of the tube can reach up to 60 °C (140 °F).

Working environment

➢ Do not use the RollerDrive in explosive atmospheres.
➢ Remove equipment or material which is not required from the workspace.
➢ Wear safety shoes.
➢ Regulate and monitor careful placement of the goods on the conveyor.

Faults during operation

➢ Regularly check the RollerDrive for visible damage.
➢ In case of fumes, unusual noise or blocked or damaged goods, stop the RollerDrive at once and ensure that the RollerDrive cannot be started accidentally.
➢ Contact qualified personnel immediately to find the source of the fault.
➢ Do not step on the RollerDrive during operation.

Maintenance

➢ As the product is maintenance free, you only need to check regularly for visible damages, unusual noise and that the screws and nuts are still tightened.
➢ Do not open the RollerDrive.

Accidental start-up

➢ Make sure that the RollerDrive cannot start up accidentally, particularly during assembly, maintenance work and in the event of a fault.
RollerDrive EC310

Safety

Interfaces

By assembling the RollerDrive in a conveyor module, potential hazards may occur. These are not described in this manual and have to be analyzed during the design, installation, and startup of the conveyor module.

➢ After assembling the RollerDrive in a conveyor module, check the whole system for any new potential dangerous condition prior to turning on the conveyor.

Operating modes

**Normal mode**

Operation of the installed device at the end customer’s as a component in a conveyor in a complete system.

**Special mode**

All operating modes which are required to guarantee and maintain safe and normal operation.

<table>
<thead>
<tr>
<th>Special operating mode</th>
<th>Explanation</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport/Storage</td>
<td>Loading and unloading, transport and storage</td>
<td>-</td>
</tr>
<tr>
<td>Assembly/Initial start-up</td>
<td>Installation at the end customer’s and performing the test run</td>
<td>When de-energized</td>
</tr>
<tr>
<td>Cleaning</td>
<td>External cleaning</td>
<td>When de-energized</td>
</tr>
<tr>
<td>Maintenance/Repairs</td>
<td>Maintenance and inspection tasks</td>
<td>When de-energized</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>Troubleshooting in the event of a fault</td>
<td>When de-energized</td>
</tr>
<tr>
<td>Fault elimination</td>
<td>Eliminating the fault</td>
<td>When de-energized</td>
</tr>
<tr>
<td>Shut-down</td>
<td>Dismantling from the conveyor</td>
<td>When de-energized</td>
</tr>
<tr>
<td>Disposal</td>
<td>Disposal of RollerDrive and packaging</td>
<td>-</td>
</tr>
</tbody>
</table>
Product information

Components

RollerDrive EC310

① Motor plug with cable
② Motor shaft
③ Fixed bearing housing assembly
④ Motor
⑤ Fastening screw for idler shaft
⑥ Idler bearing housing assembly
⑦ Tube
⑧ Pipe coupling
⑨ Gears
RollerDrive EC310

Product information

Product Description
The RollerDrive EC310 is an electronically commutated drive roller. The motor electronics, motors and gears are installed in the RollerDrive. It has nine gear stages and can be operated at a constant conveying speed.

Overload protection device
There are several overload protection systems.

- **Stall timing device**: If the RollerDrive is stalled while there is a run command, the motor tries to restart ten times every three seconds for one second. If the stall persists after these ten attempts, a failure signal is set and the RollerDrive tries to restart with a 60:1 cycle (restart for one second every 60 seconds) until the stall is eliminated. The RollerDrive will not be damaged if the system operates in a stall time device mode for a long period of time. If the RollerDrive is running at the selected speed again or the run command is withdrawn, the failure signal will be cancelled.

- **Slow running**: If there is a speed deviation of +/- 20% from the chosen value for more than 10 seconds, the motor will be switched off and the failure signal will be set. The RollerDrive will try to start again after 60 seconds. If the RollerDrive is running at the selected speed again or the run command is withdrawn, the failure signal will be cancelled.

- **Temperature monitoring**: The temperature of the motor and electronic assemblies is monitored.

If used appropriately, the roller can be installed in the conveyor with the required controls and then operated maintenance-free throughout the service life of the product.

Holding brake
(Zero Motion Hold)
The RollerDrive EC310 is fitted with an electronic holding brake that allows it to be used on conveyors on a gradient or incline. The motor's rotor is held in position if no travel signal is pending. In the event of failure of the supply voltage, the holding brake becomes ineffective as it is not a mechanical brake.

Energy feedback
The RollerDrive EC310 feeds energy back when the goods being conveyed brake. This results in the motor heating up less in operation and improves the energy efficiency of the system. Interroll DriveControls are fitted with a switch that prevents the voltage rising above 28 V in the supply voltage. When installing the system, ensure that the power units are capable of feedback.
RollerDrive EC310

Product information

RollerDrive Label

The information on the RollerDrive label is used to identify the RollerDrive. This is necessary in order to use the RollerDrive as intended.

Label

1. Manufacturer
2. Date of production
3. Gear ratio
4. Performance
5. Rated voltage
6. Speed range
7. Type of RollerDrive
8. Serial number

Product identification

The following information is needed to identify a RollerDrive. You can enter the values of your RollerDrive in the last column.

<table>
<thead>
<tr>
<th>Information</th>
<th>Possible value</th>
<th>Own value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RollerDrive type plate</td>
<td>Motor type</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gear ratio</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Serial number</td>
<td></td>
</tr>
<tr>
<td>Tube diameter</td>
<td>50 mm or 1.9 in</td>
<td></td>
</tr>
<tr>
<td>Tube material</td>
<td>Zinc-plated, aluminum or stainless steel (with or without sleeves)</td>
<td></td>
</tr>
<tr>
<td>Roller installation lengths</td>
<td>EL/BF</td>
<td></td>
</tr>
<tr>
<td>Roller transmission</td>
<td>Torque transmission</td>
<td></td>
</tr>
<tr>
<td>Idler shaft</td>
<td>Spring loaded or female threaded shaft pin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(see &quot;Dimensions of idler cartridges&quot;, page 14)</td>
<td></td>
</tr>
</tbody>
</table>
### Technical specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated voltage</td>
<td>24 VDC</td>
</tr>
<tr>
<td>Voltage range</td>
<td>18 to 28 VDC</td>
</tr>
<tr>
<td>Idle current</td>
<td>0.4 A</td>
</tr>
<tr>
<td>Rated current</td>
<td>2 A</td>
</tr>
<tr>
<td>Maximum peak current</td>
<td>5 A</td>
</tr>
<tr>
<td>Rated power</td>
<td>32 W</td>
</tr>
<tr>
<td>Maximum ripple from power supply</td>
<td>3 %</td>
</tr>
<tr>
<td>Maximum number of starts/stops per minute</td>
<td>30</td>
</tr>
<tr>
<td>Maximum noise emission (mounted)</td>
<td>55 dB(A) (^1)</td>
</tr>
<tr>
<td>Protection classification</td>
<td>IP54 or IP66</td>
</tr>
<tr>
<td>Ambient temperature in operation</td>
<td>0 °C to 40 °C (32 °F to 104 °F)</td>
</tr>
<tr>
<td>Ambient temperature during transport and storage</td>
<td>-30 °C to +75 °C (-22 °F to +167 °F)</td>
</tr>
<tr>
<td>Air humidity</td>
<td>5 to 85 %</td>
</tr>
<tr>
<td>Installation height above sea level</td>
<td>max. 1000 m (max. 3300 ft)</td>
</tr>
</tbody>
</table>

Data applies to an ambient temperature of 20 °C (68 °F).

\(^1\) Value can vary according to installation conditions, profile shapes and the resonance behavior of the system.

### Performance Data for RollerDrive EC310

<table>
<thead>
<tr>
<th>Gear ratio</th>
<th>Speed range m/s</th>
<th>Nominal torque Nm</th>
<th>Starting torque Nm</th>
<th>Holding torque Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:1</td>
<td>0.09 to 1.75</td>
<td>0.45</td>
<td>1.10</td>
<td>0.36</td>
</tr>
<tr>
<td>12:1</td>
<td>0.07 to 1.31</td>
<td>0.61</td>
<td>1.46</td>
<td>0.48</td>
</tr>
<tr>
<td>16:1</td>
<td>0.05 to 0.98</td>
<td>0.81</td>
<td>1.95</td>
<td>0.64</td>
</tr>
<tr>
<td>20:1</td>
<td>0.04 to 0.78</td>
<td>1.01</td>
<td>2.44</td>
<td>0.80</td>
</tr>
<tr>
<td>24:1</td>
<td>0.03 to 0.65</td>
<td>1.21</td>
<td>2.92</td>
<td>0.96</td>
</tr>
<tr>
<td>36:1</td>
<td>0.02 to 0.44</td>
<td>1.82</td>
<td>4.38</td>
<td>1.44</td>
</tr>
<tr>
<td>48:1</td>
<td>0.02 to 0.33</td>
<td>2.42</td>
<td>5.85</td>
<td>1.92</td>
</tr>
<tr>
<td>64:1</td>
<td>0.01 to 0.25</td>
<td>3.23</td>
<td>7.80</td>
<td>2.56</td>
</tr>
<tr>
<td>96:1</td>
<td>0.01 to 0.16</td>
<td>4.84</td>
<td>11.69</td>
<td>3.84</td>
</tr>
</tbody>
</table>
RollerDrive EC310

Product information

DriveControls for the RollerDrive EC310

Interroll recommends using the RollerDrive EC310 in combination with the corresponding Interroll DriveControl 20 or 54.

For more detailed information on the DriveControl, please refer to the corresponding operating manual, relevant catalogues or publications at www.interroll.com.

Speed settings

If you do not use the recommended DriveControl (see "DriveControls for the RollerDrive EC310", page 11), you may change the speed of the RollerDrive EC310 by altering the voltage on pin 5 of the motor plug.

<table>
<thead>
<tr>
<th>DIP switch setting on the DriveControl</th>
<th>Speed at gear ratio m/s</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9:1</td>
</tr>
<tr>
<td>on on on on</td>
<td>1.75</td>
</tr>
<tr>
<td>on on on off</td>
<td>1.63</td>
</tr>
<tr>
<td>on on off on</td>
<td>1.51</td>
</tr>
<tr>
<td>on on off off</td>
<td>1.39</td>
</tr>
<tr>
<td>on off on on</td>
<td>1.27</td>
</tr>
<tr>
<td>on off on off</td>
<td>1.15</td>
</tr>
<tr>
<td>on off off on</td>
<td>1.03</td>
</tr>
<tr>
<td>on off off off</td>
<td>0.92</td>
</tr>
<tr>
<td>off on on on</td>
<td>0.80</td>
</tr>
<tr>
<td>off on on off</td>
<td>0.68</td>
</tr>
<tr>
<td>off on off on</td>
<td>0.56</td>
</tr>
<tr>
<td>off on off off</td>
<td>0.44</td>
</tr>
<tr>
<td>off off on on</td>
<td>0.32</td>
</tr>
<tr>
<td>off off on off</td>
<td>0.21</td>
</tr>
<tr>
<td>off off off on</td>
<td>0.09</td>
</tr>
<tr>
<td>off off off off</td>
<td>Stop or in accordance with the signals on the Speed A-C ports</td>
</tr>
</tbody>
</table>
### External speed setting via digital inputs

<table>
<thead>
<tr>
<th>Speed input on the DriveControl</th>
<th>Speed at gear ratio (m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9:1</td>
</tr>
<tr>
<td>A H H</td>
<td>1.75</td>
</tr>
<tr>
<td>H H L</td>
<td>1.47</td>
</tr>
<tr>
<td>H L H</td>
<td>1.19</td>
</tr>
<tr>
<td>H L L</td>
<td>0.92</td>
</tr>
<tr>
<td>L H H</td>
<td>0.64</td>
</tr>
<tr>
<td>L H L</td>
<td>0.36</td>
</tr>
<tr>
<td>L L H</td>
<td>0.09</td>
</tr>
<tr>
<td>L L L</td>
<td>0</td>
</tr>
</tbody>
</table>

*H = logically active; L = logically inactive*
RollerDrive EC310

Product information

Motor plug

<table>
<thead>
<tr>
<th>Pin</th>
<th>Color</th>
<th>Function</th>
<th>Value</th>
</tr>
</thead>
</table>
| 1   | brown | Power supply input (+)    | Rated voltage: 24 VDC  
Voltage range: 18 to 28 VDC  |
| 2   | white | Direction of rotation, seen from the cable end of the RollerDrive | U < 4 V = counter clockwise  
U > 7 V = clockwise            |
| 3   | blue  | Earth for power supply and signal (-) | Ground                                                                 |
| 4   | black | Fault output              | Open Collector  
U_{cesat} = 0.5 V for I_c = 5 mA  
U_{max} = 30 V  
I_{cmax} = 5 mA  
Error: Signal low  
No fault: Signal high |
| 5   | gray  | Analogue speed/start signal | see table below |

Analogue speed/start signal (Pin 5)

Voltage range 0 to 24 VDC
Stop (braked state) 0 to 2.3 VDC
Speed 2.3 VDC to 10 VDC  
(Incline rate above 2.3 VDC: 740 rpm (motor revolutions)  
linear between 2.3 and 10 VDC)
Max. speed 10 VDC to 24 VDC
The conveyor speed is calculated from the gear ratio and the nominal value.  
(see "Speed settings", page 11)

In case the RollerDrive is not directly connected to the corresponding DriveControl or the Interroll extension cable, connect the motor plug using a Conec M8 snap-in coupling.

**NOTICE**

Pins 1 and 3 are not protected against incorrect polarity connection.  
Damage to the motor.  
Ensure the correct polarity.
RollerDrive EC310

Product information

Dimensions of the Motor Shaft

Dimensions of idler cartridges

<table>
<thead>
<tr>
<th>Dimensions of idler cartridges</th>
<th>11 mm (0.44 in) hex, spring-loaded shaft</th>
<th>Female threaded M8 (FTM8) shaft pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight</td>
<td>5 mm (0.2 in)</td>
<td>5 mm (0.2 in)</td>
</tr>
<tr>
<td></td>
<td>15.5 mm (0.61 in)</td>
<td>AF 13 mm (0.51 in)</td>
</tr>
<tr>
<td>Straight IP66</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Round belt head</td>
<td>13 mm (0.51 in)</td>
<td>13 mm (0.51 in)</td>
</tr>
<tr>
<td></td>
<td>13.5 mm (0.53 in)</td>
<td>13.5 mm (0.53 in)</td>
</tr>
<tr>
<td></td>
<td>4 mm (0.16 in)</td>
<td>4 mm (0.16 in)</td>
</tr>
<tr>
<td></td>
<td>11 mm (0.44 in)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ø37.8 mm (1.49 in)</td>
<td>AF 17 mm (0.67 in)</td>
</tr>
<tr>
<td>PolyVee head</td>
<td>31 mm (1.22 in)</td>
<td>31 mm (1.22 in)</td>
</tr>
<tr>
<td></td>
<td>4 mm (0.16 in)</td>
<td>4 mm (0.16 in)</td>
</tr>
<tr>
<td></td>
<td>11 mm (0.44 in)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ø43 mm (1.7 in)</td>
<td>AF 17 mm (0.67 in)</td>
</tr>
</tbody>
</table>
### Product information

<table>
<thead>
<tr>
<th>PolyVee head IP66</th>
<th>Toothed belt head Poly-Chain GT; 8 mm pitch; 18 teeth</th>
<th>Sprocket head 11 mm (0.44 in) hex shaft; 3/8 in pitch; 20 teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 mm (0.44 in) hex, spring-loaded shaft</td>
<td>11 mm (0.44 in) hex, spring-loaded shaft</td>
<td>11 mm (0.44 in) hex, spring-loaded shaft</td>
</tr>
<tr>
<td>SW 13 mm (0.51 in)</td>
<td>AF 11 mm (0.43 in) hex</td>
<td>AF 11 mm (0.43 in) hex</td>
</tr>
<tr>
<td>31 mm (1.22 in)</td>
<td>35 mm (1.38 in)</td>
<td>16.8 mm (0.66 in)</td>
</tr>
<tr>
<td>4 mm (0.16 in)</td>
<td>27.5 mm (1.08 in)</td>
<td>9.5 mm (0.37 in)</td>
</tr>
<tr>
<td>Ø43 mm (1.7 in)</td>
<td>Ø45.8 mm (1.8 in)</td>
<td>Ø60.9 mm (2.4 in)</td>
</tr>
<tr>
<td>BF/EL</td>
<td>BF/EL</td>
<td>BF/EL</td>
</tr>
</tbody>
</table>

BF/EL = Between Frames / Installation Length
IGM8 female thread shaft pin, single bearing

Spring-loaded hex, double bearing

Conical RollerDrives

For conical RollerDrives there must be an 1.8° angle compensation on both ends to avoid bending forces on the RollerDrive.
Transport and storage

Transport

- Every RollerDrive has end-protectors to cover its ends.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a risk of injury if transported incorrectly</td>
</tr>
<tr>
<td>➢ Only qualified and authorized persons should transport the product.</td>
</tr>
<tr>
<td>➢ Follow the instructions below.</td>
</tr>
</tbody>
</table>

- Do not stack pallets.
- Do not stack more than four cardboard boxes on top of each other.
- Check that the RollerDrives are correctly fixed prior to transport.
- Avoid serious impacts during transport.
- Check every RollerDrive for visible damage after transport.
- In the event of damage, take photos of the damaged parts.
- Report any damage caused by transport immediately to the transport company and Interroll to retain the right to claim for compensation.
- Do not expose the RollerDrives to serious fluctuations in temperature as this could lead to condensation.

Storage

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of injury due to improper storage</td>
</tr>
<tr>
<td>➢ Do not stack pallets.</td>
</tr>
<tr>
<td>➢ Do not stack more than four cardboard boxes on top of each other.</td>
</tr>
</tbody>
</table>

- Check each RollerDrive for damage after storage.
Assembly

Warning information for assembly

![CAUTION]

Rotating parts
Risk of pinched fingers

- Do not insert fingers between the RollerDrive and the round belt, PolyVee belt or roller chain.
- Install a protection device (such as a guard plate) to prevent fingers from getting trapped in the round belt, PolyVee belt or roller chain.
- Install an appropriate warning on the conveyor.

![NOTICE]

Risk of damage leading to failure or shortened life expectancy of the RollerDrive

- Follow the instructions below.

- Do not drop or mishandle the RollerDrive to avoid internal damage.
- Check each RollerDrive visually for damage before assembly.
- In order to prevent damage to the internal connections, do not hold, carry or secure the RollerDrive by the motor cable.
- Do not force the RollerDrive when inserting it into the conveyor frame. It should fit easily into the holes in the frame.
- Ensure that the proper tightening torque is applied to the RollerDrive hex nut to prevent the shaft spinning in the frame and the wires twisting (see "Securing the RollerDrive in the conveyor frame", page 22).
- Do not twist the motor cable.
Warning notices concerning the electrical installation

NOTICE
Risk of damage to the motor and/or RollerDrive cables
➢ Observe the following safety information.

➢ All electrical work should only be performed by qualified and authorized persons.
➢ Disconnect the power supply before installing, removing or rewiring the RollerDrive.
➢ Do not apply AC current to the RollerDrive or DriveControl device at any time, as this will cause irreparable damage.
➢ Do not apply too much tension or load to the motor plug. Bending the cable and forcing the star washer over the cable can cause damage to the cable's insulation, which could result in failure of the RollerDrive.
➢ Ensure that the RollerDrive, the DriveControl and the 24 VDC power source are properly earthed through the conveyor frame or supporting structure in which the RollerDrive and the DriveControl are installed. Incorrect earthing can result in the build-up of static charge, causing the motor or DriveControl to malfunction or fail prematurely.
➢ Do not bend the motor cable at the motor shaft. Leave a minimum of 12 mm (0.5 in) of excess cable for stress relief.
➢ Give the start signal with a delay of at least 500 ms after switching on the power supply. Switching on the power supply and the start signal at the same time results in peak currents in excess of 5 A and damages the RollerDrive.
Installing the RollerDrive

- Remove any packaging and transport safety devices from the RollerDrive.
  - When installing the RollerDrive, particularly in coated profiles, it must be ensured that the fastening nuts and any star washers or torque safety devices used establish electrical contact with the profile to enable ground contact.

- Insert the motor cable and motor shaft into the hexagonal hole measuring at least 11.2 mm (0.44 in) or the round hole measuring at least 12.2 mm (0.48 in) in the conveyor frame.

**NOTICE**

Internal damage to the RollerDrive due to improper handling

- Do not yet fit the retaining nut.
- Do not bend the motor cable at the motor shaft. Leave a minimum of 12 mm (0.5 in) of excess cable for stress relief.

- Fit one or two round belts, size 4 mm, max. 5 mm (3/16 in) or PolyVee belts (if used).
RollerDrive EC310

Assembly

Inserting the idler shaft

The type of axis dictates how the idler shaft is inserted in the conveyor frame. The spring-loaded shaft is simplest to install.

Inserting the spring-loaded hexagonal shaft

- Push the spring-loaded shaft inwards and align the shaft with the hole in the conveyor frame.

- Release the spring-loaded hexagonal shaft and allow it to pop into the hole in the frame.

Inserting the female thread shaft pin

- Place a split washer onto a M8 x 20 bolt.
- Align the RollerDrive with the hole in the conveyor frame and insert the M8 bolt and split washer into the shaft. Use a wrench to prevent the shaft pin from turning (width across flats AF 13 mm or AF 19 mm, depending on the shaft pin type, see "Arrangement of Round Belt Grooves", page 16).

- Use a torque wrench to tighten the bolt with 20 Nm (177 in/lbf) until the split washer is completely compressed.
Securing the RollerDrive in the conveyor frame

There is a nut on the shaft next to the tube. This inner nut has been preassembled and secured in the correct position.

- Do not twist the inner nut.
- Use a flat wrench AF 17 mm to prevent the inner nut from turning. Use a wrench AF 36 mm with the IP66 configuration.
- Slip the nut included in the scope of supply over the motor cable and screw onto the threaded motor shaft.
- Use a torque wrench to tighten this nut with 70 Nm (619 in/lbf) while ensuring that the inner nut is not rotating.

An angular compensation on the motor end is needed to prevent bending forces on conical RollerDrives.

Mounting tool

For mounting the PolyVee belt, you may want to build a mounting tool as shown in the figure below.

- Place the mounting tool between two rollers to reduce the gap between the adjacent rollers.

Dimensions of the mounting tool depend on the roller pitch and the roller tube diameter.

Electrical Installation

- If the recommended DriveControl (see "DriveControls for the RollerDrive EC310", page 11) is used, connect the motor plug to the DriveControl.
- If the DriveControl is not used, connect your control to the motor plug (refer to see "Motor plug", page 13 for the pin assignment)
Initial startup and operation

Commissioning

Pre-commissioning checks
- Ensure that no objects are in contact with rotating or moving parts.
- Ensure that all bolts are tightened according to the specifications.
- Ensure that there are no additional areas of danger caused by interfaces to other components.
- Ensure that the wiring is in accordance with the specification and legal directives.
- Check all protection devices.
- Ensure that no personnel stand in hazardous areas near the conveyor.

For information on commissioning, refer to the DriveControl manual or the manual for your motor control.

Operation

Pre-commissioning checks
- Check the RollerDrive for visible damage.
- Check all protection devices.
- Ensure that no personnel stand in hazardous areas near the conveyor.
- Clearly specify and monitor the way goods are placed on the conveyor.
- Ensure that the RollerDrive is not blocked.

CAUTION
Rotating parts and accidental start-up
Risk of crushed fingers
- Do not insert fingers between the RollerDrive and the round belt, PolyVee belt or roller chain.
- Do not remove the protection device.
- Keep fingers, hair and loose clothing away from the RollerDrive.

NOTICE
Damage to the motor or the control due to induction
- Do not push items along the roller conveyor by hand.
- Do not spin the RollerDrive manually.

Procedure in case of accident or malfunction
- Stop the conveyor at once and ensure that it cannot be started accidentally.
- In case of an accident: Provide first aid and call for emergency assistance.
- Inform responsible persons.
- Have the malfunction repaired by qualified persons.
- Start the conveyor only after this has been approved by qualified persons.

Ambient conditions during operation see “Technical specifications”, page 10
Maintenance and cleaning

Warnings concerning maintenance and cleaning

Risk of injury due to improper handling or accidental motor starts

➤ Maintenance work and cleaning may only be executed by qualified and authorized persons.
➤ Only perform maintenance work after switching off the power. Ensure that the RollerDrive cannot be turned on accidentally.
➤ Set up signs indicating maintenance work.

Maintenance

Checking the RollerDrive

If the RollerDrive is not secured as specified in the installation instructions (see "Assembly", page 18), it may rotate in the hole in the conveyor frame. This will result in the roller leads becoming twisted and eventually severed.

➤ Monthly check the RollerDrive for visible damage.
➤ Annually ensure that the roller shaft is secured properly in the conveyor frame.

Replacing a RollerDrive

If a RollerDrive is damaged or broken down, it has to be replaced.

➤ Install a new RollerDrive (see "Abandonment", page 26 and see "Installing the RollerDrive", page 20).

Cleaning

Increased surface friction reduces the roller speed since more power is used to overcome the resistance. Therefore, in a dirty environment, periodic cleaning will ensure good contact with the goods and reduce friction.

➤ Remove foreign materials and dirt with a simple cleaning brush (not a wire brush) by brushing gently.
➤ Remove smaller amounts of dirt with a damp cloth. When doing this, make sure that wetting of the RollerDrive is no more than slightly damp.
➤ Do not use sharp-edged tools to clean the roller.
Troubleshooting

Risk of injuries due to incorrect handling
 Troubleshooting may only be done by qualified and authorized persons.
 Only perform troubleshooting after switching off the power.
 Ensure that the RollerDrive cannot be turned on accidentally.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible cause</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>RollerDrive does not run</td>
<td>No power supply</td>
<td>Check 24 VDC power supply.</td>
</tr>
<tr>
<td></td>
<td>Plug not connected properly</td>
<td>Check cable connection.</td>
</tr>
<tr>
<td>RollerDrive is rotating in the wrong</td>
<td>Wrong DriveControl settings on the speed and rotational</td>
<td>Change setting on DriveControl.</td>
</tr>
<tr>
<td>direction or at the wrong speed</td>
<td>direction Dip switches</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wrong voltage at speed setting pin</td>
<td>Check the voltage of the speed setting</td>
</tr>
<tr>
<td></td>
<td>(if the RollerDrive is not operated with the recommended Interroll DriveControl)</td>
<td>pins on the motor plug.</td>
</tr>
<tr>
<td>Abnormal noise coming from the</td>
<td>Motor or gearbox is damaged</td>
<td>Replace the RollerDrive.</td>
</tr>
<tr>
<td>RollerDrive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interrupted RollerDrive operation</td>
<td>Damaged motor cable</td>
<td>Check motor cable for damage. If the motor cable is damaged, replace the RollerDrive.</td>
</tr>
<tr>
<td></td>
<td>RollerDrive overloaded</td>
<td>see &quot;Overload protection device&quot;, page 8</td>
</tr>
</tbody>
</table>

Translation of the original instructions
Abandonment and disposal

Abandonment

![CAUTION]

Risk of injury due to improper handling
- Abandonment may only be executed by qualified and authorized persons.
- Only abandon the RollerDrive after switching off the power. Ensure that the RollerDrive cannot be turned on accidentally.

- Disconnect the motor cable from the control.
- Unscrew the outer nut at the threaded motor shaft.
- If the RollerDrive has a spring-loaded idler shaft, push the idler shaft inwards.
- If the RollerDrive has a FTM8 idler shaft, unscrew the bolt at the idler shaft.
- Extract the RollerDrive from the conveyor frame.

Disposal

The operator is responsible for the proper disposal of the RollerDrive. In doing so, industry-specific and local provisions must be observed for the disposal of the RollerDrive and its packaging.
# Appendix

## Accessories

### Belt

<table>
<thead>
<tr>
<th>Part</th>
<th>Properties</th>
</tr>
</thead>
</table>
| Toothed belt     | • Gates Poly-Chain GT or similar: Pitch 8 mm (0.31 in)  
                   • Toothed belt width: 11.2 mm (0.44 in)  
                   • Hub with 18 teeth                          |
| Round belt       | • Belts with 4 mm (0.16 in) and max. 5 mm (0.20 in) diameter |
| PolyVee belt     | • Drive head with 9 grooves for flexible V-ribbed belts  
                   • PJ form, ISO 9981, DIN 7867  
                   • Pitch 2.34 mm (0.09 mm)  
                   • Belts with a max. of 4 ribs              |

### Controls

<table>
<thead>
<tr>
<th>Part</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DriveControl 20</td>
<td>S-1001415</td>
</tr>
<tr>
<td>DriveControl 54</td>
<td>S-1001416</td>
</tr>
<tr>
<td>ZoneControl</td>
<td>S-1004023</td>
</tr>
<tr>
<td>SegmentControl</td>
<td>S-1004024</td>
</tr>
<tr>
<td>ComControl</td>
<td>S-1004025</td>
</tr>
</tbody>
</table>

### Connection accessories

<table>
<thead>
<tr>
<th>Part</th>
<th>Properties</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting cable</td>
<td>Length: 2000 mm</td>
<td>S-1004033</td>
</tr>
<tr>
<td>RollerDrive EC310 on DriveControl</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Installation Declaration
in accordance with the EC Machinery Directive 2006/42/EC, Appendix II B

The manufacturer:
Interroll Engineering GmbH
Hoeferhof 16
D - 42929 Wermelskirchen
Germany

hereby declares with sole responsibility that the product range
• RollerDrive EC310

is not a ready-to-use machine as defined by the EC Machinery Directive and, therefore, does not fully comply with the requirements of this directive. The commissioning of these conveyor modules is not permitted until conformity of the entire machine/system in which they are installed has been declared in compliance with the EC Machinery Directive.

The health and safety requirements as stated in Appendix I have been applied. The special technical documents as stated in Appendix VII B have been compiled and will be sent to the responsible authority if necessary.

Person authorized to compile the technical documents: Georg Malina,
Interroll Engineering GmbH, Hoeferhof 16, D - 42929 Wermelskirchen

Applied EC directives:
• Machinery Directive 2006/42/EC
• EMC Directive 2004/108/EC
• RoHS Directive 2002/95/EC

Applied harmonized standards:
• EN ISO 12100 Parts 1 and 2 "Safety of machinery - Basic concepts, general principles for design" - Part 1: "Basic terminology, methodology" - Part 2: "Technical principles"

Wermelskirchen, 31st March 2010

Armin Lindholm
(Managing Director)

(This declaration can be obtained at www.interroll.com, if needed.)