Mounting Instructions

Product name: euroLINE 120
Product ID: 1131236
Use

- The operating instructions must be available at the component at all times.
- The operating instructions are an integral part of the component/device.
- Always use the complete original (or the original translation) of these operating instructions.

Supplier & Manufacturer

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Service

Find your IEF service station on our website:
- http://www.ief.de

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Change History

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<thead>
<tr>
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We are always grateful for suggestions for improvements and information about errors.
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1 Declaration of Incorporation

EC declaration of incorporation in the sense of the EC directive 2006/42/EC (machinery), Annex II B

The manufacturer:
IEF-Werner GmbH
Wendelhofstraße 6
78120 Furtwangen - Germany

hereby declares that the following products (the incomplete machine/partial machine):

<table>
<thead>
<tr>
<th>Designation</th>
<th>IEF-Werner parts group number</th>
</tr>
</thead>
<tbody>
<tr>
<td>euroLINE 120</td>
<td>TG1002844</td>
</tr>
</tbody>
</table>

where possible based on the scope of delivery, corresponds to the following basic requirements of the directive on Machinery (2006/42/EC):
Annex I, item: 1.1.2; 1.1.3; 1.1.5; 1.3.2; 1.3.4; 1.5.1; 1.7.3; 1.7.4.

The incomplete machine also corresponds to the following further directives:
■ Directive 2014/30/EU of the European parliament and of the council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

The technical documents were generated according to Annex VII part B and may be electronically submitted to the national authorities upon justified request.

List of some applied harmonised standards:
■ DIN EN ISO 12100-1,-2 / DIN EN ISO 13857 / DIN EN ISO 13850 / DIN EN 60204-1

Commissioning of the incomplete machine delivered by us is not permitted until it has been determined that the overall system into which the incomplete machine is installed meets the basic safety and health protection requirements according to Annex I of the above EC directive 2006/42/EC.

Name and address of the documentation officer: IEF-Werner GmbH, Furtwangen

Furtwangen, August 2019

[Signature]
Stefan Deck (managing director)
2 Safety

2.1 Definition of Warning Notes

**DANGER**

Indicates danger.
Non-observance of the safety provisions causes death.

**WARNING**

Indicates potential danger.
Non-observance of the safety provisions may cause death or severe injury.

**CAUTION**

Indicates potential danger.
Non-observance of the safety provisions may cause injury.

**NOTE**

Indicates potential danger. Non-observance of the safety provisions may cause property damage.
2.2 General Warning Notes

The linear unit euroLINE 120 must only be commissioned by specialists who received safety-technical instruction and are able to assess potential dangers. Furthermore, all chapters of these operating instructions must have been read and understood completely.

⚠️ WARNING

Warning of dangerous electrical voltage.
The system must be powered down for all assembly, disassembly or repair work. Non-observance of the safety provisions may cause death.

⚠️ WARNING

Linear modules must only be operated with their protective device/s.
Linear modules always have to be operated in connection with suitable safety devices (e.g., safety cell, protective room, protective housing, light curtain).

⚠️ CAUTION

Do not remove plugs or clamps when live.
Motor connectors or clamps must not be inserted or disconnected when live. Risk of burning of the contacts and risk of flying sparks.

⚠️ CAUTION

Warning of hot surface.
During operation, the heated drive may cause skin burns when touched. Install a protective device, if possible! Do not touch the marked areas or wait for an adequate cooling time.
2.3 Special Hazard Warnings

In addition, this operating instructions also contains the following special hazard warnings:

**DANGER**

![Heart symbol]

Danger to persons with pacers.

There are considerable dangers for persons with pacers or other electronic implants. Strong magnetic fields may impair implants, which may influence the pulse of wearers of pacers in extreme cases. Persons with the above impairments must not stay close to the linear unit euroLINE 120.

---

**DANGER**

![Electric symbol]

Warning of electric shock.

The linear unit euroLINE 120 with motor and encoder connections is live. You may suffer fatal electric shock when touching a component.

---

**WARNING**

![Shear symbol]

Warning of shearing off of limbs.

These points of the components pose the danger of shearing off of limbs in operation.

---

**WARNING**

![Crush symbol]

Warning of crushing of limbs.

These points of the components pose the danger of crushing of limbs in operation.

---

**NOTE**

There are strong permanent magnets in the basic body that may damage magnetic data carriers (e.g. credit cards).

---

**NOTE**

The linear unit euroLINE 120 must not be used in the proximity of magnetic dusts and small parts!
Figure 1  Dangers at the euroLINE 120
3 Intended Use

The linear unit euroLINE 120 is a precise, linear adjustment unit with an iron-applied linear motor that is used in the commercial area as an attachment part in connection with other components. In combination with many standardised assembly elements, as well as the other linear units of IEF-Werner GmbH, it can be used to build complex multi-axis positioning systems as well.

Areas of use of the euroLINE 120 include:
- Component insertion systems
- Handling of small parts
- Loading and unloading stations
- Measuring and test technology
- etc.

3.1 Reasonably foreseeable misuse

The linear unit euroLINE 120 is not to be used for certain applications such as the transport of persons and animals or as a pressing/bending device for cold working of metal.

Use of the linear unit without additional measures is also not possible in special fields of application, such as the chemical or food industry or in explosive atmospheres. In case of doubt, consult the manufacturer.
Assembly Instructions

Installation Position

The linear unit euroLINE 120 is only intended for horizontal use. The carriage movement must be horizontal. Vertical use is not intended.

Figure 3  Linear unit euroLINE 120, horizontal use
4.2 Transverse Installation

For cross installation of the linear unit euroLINE 120, there are clamping elements in standard lengths (centering ring, clamping elements).
Many axle combinations can be implemented.
Examples:
- Multiple axle carriage systems
- X/Y system
- X/Y portal system
4.3 Attachment

The euroLINE 120 can be attached to the basic body with clamping elements or to the carriage via the 2 x 3 M5-threaded bores (see Figure 5).

![Attachment to the basic body with the help of clamping elements](image)

A  Type euroLINE 120 clamping element  
B  M5 threaded bores, 2 x 3 pieces  
(see Figure 6 and Figure 7, 18)

The installation area has to be a flat surface. Any deviations from an ideal flat plane directly affect the processing precision.
4.3.1 Installation of Actuators

The actuators (cylinders, pick-up modules, etc.) that are to be installed on the euroLINE 120 linear unit can be attached via the drilling pattern on the carriage.

The corresponding drilling templates are available for the two possible carriage sizes.

The position tolerance of the centering bores $7^H7$ is specified at $±0.01\text{mm}$.

---

Figure 6  euroLINE 120, standard carriage, length 165 mm

Figure 7  euroLINE 120, long carriage, length 263 mm
4.4 Wiring

There are a motor plug and an encoder plug at the terminal box:

Figure 8  Motor plug and encoder plug
A  Motor plug  B  Encoder plug
4.4.1 Motor Cable

![Motor cable with spring-TEC- and combicon plug](image)

**Figure 9** Motor cable with spring-TEC- and combicon plug

**Parts list for motor cable with spring-TEC plug (item no.: 1119851).**

<table>
<thead>
<tr>
<th>Drawing item</th>
<th>Article no.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1068946</td>
<td>Plug-in unit, type: PC5/9-ST1-7.62</td>
</tr>
<tr>
<td>20</td>
<td>733086</td>
<td>Copper adhesive type, conductive 0.09 x 19 mm</td>
</tr>
<tr>
<td>30</td>
<td>726875</td>
<td>Wire-end sleeve, yellow, type 1.0/8 yellow</td>
</tr>
<tr>
<td>40</td>
<td>730076</td>
<td>Shrink hose, black, CGPT 12.7/6.4-0</td>
</tr>
<tr>
<td>50</td>
<td>1017996</td>
<td>Cable marker, type: KMT-07323V-9</td>
</tr>
<tr>
<td>60</td>
<td>730790</td>
<td>Motor line 5 x 1.00 mm² shielded</td>
</tr>
<tr>
<td>70</td>
<td>1113957</td>
<td>Plug 915, press-on sleeve orange 9-pin, type: ESTA202NN00320500000</td>
</tr>
<tr>
<td>80</td>
<td>1113999</td>
<td>Contact sleeve Ø 1 mm, crimp area 0.5 – 1.5 mm², type : 60.251.11</td>
</tr>
</tbody>
</table>

![Motor cable connections](image)

**Figure 10** Motor cable connections
4.4.2 Encoder Cable

Figure 11 Encoder cable with spring-TEC- and SUB-D plug

Parts list for encoder cable (EnDAT) with spring-TEC plug (item no.: 1119854).

<table>
<thead>
<tr>
<th>Drawing item</th>
<th>Article no.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>725692</td>
<td>Pin strip Sub-D-15 solder cup</td>
</tr>
<tr>
<td>20</td>
<td>731798</td>
<td>Housing Sub-D-15 metallised</td>
</tr>
<tr>
<td>30</td>
<td>733964</td>
<td>Copper adhesive type, conductive 0.09 x 9 type: 1181</td>
</tr>
<tr>
<td>40</td>
<td>1017996</td>
<td>Cable marker, type: KMT-07323V-9</td>
</tr>
<tr>
<td>50</td>
<td>1023746</td>
<td>Cable EnDat 7 x 2 x 0.25 mm², C-UL orange, type: servoTEC</td>
</tr>
<tr>
<td>60</td>
<td>1113994</td>
<td>Plug 615, press-on sleeve green; 12-pin, type: ESTA002NN0032000100</td>
</tr>
<tr>
<td>70</td>
<td>1114000</td>
<td>Contact sleeve Ø 1mm, crimp area 0.5 – 0.75 mm², type: 60.252.11</td>
</tr>
</tbody>
</table>

Figure 12 Connections encoder cable
4.4.3 Cable Routing
For all moving cables, suitable cable routing has to be used to effectively prevent cable breaks. The minimum radius $r_{\text{min}}$ for cable routing chains is calculated for IEF-Werner cables according to the following formula:

$$r_{\text{min}} \geq 10 \times \text{cable diameter}$$

When different cables are used, EN 60204 must be observed. In addition, it must be ensured that a space reserve of 30% is kept free within the routing chains. A strain relief for the cables has to be attached at the outlet of the cable routing chain.

We recommend purchasing genuine cables and energy chains from IEF-Werner GmbH. Please contact us. We will gladly advise you.

4.4.4 Measuring System
Absolute measuring system EnDAT 2.2 (Heidenhain)

4.4.5 Temperature Sensor
PTC thermistor with the following characteristics:

![Chart PTC]

The resistance increases roughly linear with the temperature.

4.4.6 Installation Situation Measuring System

![Distance measuring tape to measuring head]

A Measuring tape  B Measuring head
4.5 Technical Data

4.5.1 Tightening Torques for Screw Connection [Nm]

<table>
<thead>
<tr>
<th>Strength class</th>
<th>M2.5</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
<th>M8</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.8</td>
<td>0.5</td>
<td>1.28</td>
<td>2.7</td>
<td>5.5</td>
<td>9.5</td>
<td>23</td>
</tr>
<tr>
<td>10.9</td>
<td>0.8</td>
<td>1.8</td>
<td>3.8</td>
<td>8</td>
<td>13</td>
<td>32</td>
</tr>
<tr>
<td>12.9</td>
<td>1.0</td>
<td>2.1</td>
<td>4.6</td>
<td>9.5</td>
<td>16</td>
<td>39</td>
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</table>

4.5.2 Technical Data of the Linear Unit euroLINE 120

<table>
<thead>
<tr>
<th>Designation</th>
<th>Unit</th>
<th>Type standard carriage 165 mm</th>
<th>Type long carriage 263 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>[mm]</td>
<td>329</td>
<td>377 325 3929</td>
</tr>
<tr>
<td>Stroke from</td>
<td>[mm]</td>
<td>114</td>
<td>162 210 3714</td>
</tr>
<tr>
<td>Stroke graduation</td>
<td>[mm]</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Basic weight basic body</td>
<td>[kg]</td>
<td></td>
<td>3.15</td>
</tr>
<tr>
<td>Weight basic body per 48 mm</td>
<td>[kg]</td>
<td></td>
<td>0.453</td>
</tr>
<tr>
<td>Measuring tape (bonded)</td>
<td></td>
<td></td>
<td>visual, steel</td>
</tr>
<tr>
<td>Pole separation</td>
<td>[mm]</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>Max. speed</td>
<td>[m/s]</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Rated feed force</td>
<td>[N]</td>
<td>120</td>
<td>240</td>
</tr>
<tr>
<td>Peak force</td>
<td>[N]</td>
<td>210</td>
<td>420</td>
</tr>
<tr>
<td>Rated current (at 20° ambience temperature)</td>
<td>[A]</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Peak current</td>
<td>[A]</td>
<td>6.2</td>
<td>12.4</td>
</tr>
<tr>
<td>Magnetic tightening force</td>
<td>[N]</td>
<td>500</td>
<td>900</td>
</tr>
<tr>
<td>Max. voltage (phase-phase)</td>
<td>[V/AC]</td>
<td></td>
<td>400</td>
</tr>
<tr>
<td>Connections (rotating)</td>
<td></td>
<td></td>
<td>Y-Tec</td>
</tr>
<tr>
<td>Measuring system (absolute)</td>
<td></td>
<td></td>
<td>EnDAT 2.2</td>
</tr>
<tr>
<td>Resolution measuring system,</td>
<td>[µm]</td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>Hopper lubrication nipple per guide carriage</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Weight carriage</td>
<td>[kg]</td>
<td>2.6</td>
<td>3.8</td>
</tr>
</tbody>
</table>
4.5.3 Type Plate

The type plates are attached in the following positions (carriage, basic body):

**Figure 15** Positions of the type plates

A Type plate at the carriage  
B Type plate at the basic body (B1 or B2)

**Figure 16** Type plates

A Size 120  
C Coil type: S1=Standard-, S2=Long carriage  
E Rated current (I_n)  
B Type measuring system  
D Supply voltage servo amplifier (U)  
F Peak current (I_max)
4.5.4 Load Information

![Torques Diagram]

**Table 17** Torques

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Standard carriage</th>
<th>Long carriage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. torque Mx (theoretic)</td>
<td>250 Nm</td>
<td>250 Nm</td>
</tr>
<tr>
<td>Max. torque My</td>
<td>180 Nm</td>
<td>180 Nm</td>
</tr>
<tr>
<td>Max. torque Mz</td>
<td>200 Nm</td>
<td>250 Nm</td>
</tr>
</tbody>
</table>
5 Compensation of encoder

If you install the first time a carriage with integrated measuring head and with a measuring tape, which is applied on the basic body, it should be done a so-called compensation of encoder. For this purpose the software “S2-Commander” has to be installed on your PC and the PC has to be connected via an interface with the servo amplifier.

5.1 Define angle encoder

Proceed as follows, to load the motor specific parameter setting inside the measuring head (encoder):

(1) Select the icon „Encoder“ in the icon line of the S2 Commander.

(2) Select the button “Auto detect”.

Note: The controller release must be switched off!
(3) Select the button "OK" in Motor identification window. Note: The motor shaft must turn freely!

Figure 20 Select button "OK"

The axis starts moving. The commutation (the automatically determination of the transducer angle) is running.

After successful commutation the following window will be displayed:

Figure 21 Displaying "Identification successful!"
(4) Select the button "OK" in the Motor identification window (Identification successful!)

![Figure 22](select_OK_button)

Select button "OK"

(5) Select the button "Save" in the Angle encoder settings window.

![Figure 23](select_save_button)

Select button "Save"
(6) Select the "OK" button in the Save to encoder window. 
Note: The power amplifier must be switched off!

![Select button "OK"](image)

The saving-process is displayed in an information window.

(7) Select the "OK" button in the Information window to confirm that the parameters have been saved.

![Select button "OK"](image)
5.2 Carry out homing run

(1) Select the icon „REF“ (homing position) in the symbol line of the S2 Commander.

![Select "REF" icon](image1.png)

Figure 26 Select "REF" icon

(2) Select the button “GO!” to start homing run.  
Note: The controller has to be enabled for this purpose!

![Select button "GO!"](image2.png)

Figure 27 Select button "GO!"

The homing run is carried out.
(3) After successful homing: Select the tab “settings” (Settings) and select the button “Save to encoder” (Save to encoder) to save the basic parameters/reference position into the encoder.

![Figure 28](image1.png) Select button “Save to encoder”

(4) Confirm the storage by selecting the “OK” button in the Save to encoder window.

![Figure 29](image2.png) Select button “OK”

(5) Confirm the message of homing run with the “Yes” button.

![Figure 30](image3.png) Select button “Yes”
(6) Select the button “OK” in the Information window to confirm that the parameters have been saved.

Figure 31  Select button “OK”
6 Maintenance

**WARNING**

Warning of dangerous electrical voltage.

The system must be powered down for all assembly, disassembly or repair work.
Non-observance of the safety provisions may cause death.

---

**NOTE**

Any repairs must only be performed by specialist personnel who have read and understood these original operating instructions.
Only use genuine spare parts, since IEF-Werner GmbH will not assume any warranty otherwise.

---

6.1 Maintenance of the Visual Measuring System

**NOTE**

Changes and repairs on this measuring system must only be performed by the manufacturer or persons authorised by him.

The manufacturer shall not be liable for any damage caused by non-authorised changes to the measuring system. Unauthorised actions cause all warranty claims to lapse.

---

The measuring system is generally maintenance-free.
The absolute length system used in the linear unit euroLINE 120 shows only slight contamination sensitivity.
Since the length system is integrated into the linear unit, regular cleaning is not necessary.
6.2 Lubrication of Guide Carriage

The guide carriages are equipped with long-time lubrication for a running output or 10,000 km in the factory. For a higher running output, we recommend regularly relubricating the guides. Relubrication takes place with the lubricant Dynalub by a manual surge press (IEF-Werner item no.: 1055123) using four lubrication nipples attached to the carriage.

![Lubrication of the module/guide carriages via lubrication nipples](Figure 32)

A  Hopper lubrication nipples (4 in total)
7 Repair

7.1 Precautions by replacing the carriage

⚠️ **WARNING**

Danger of crushing of limbs.
Due to strong magnetic pulls a risk of crushing of limbs (fingers) consists by replacing the carriage.

**NOTE**

When sliding the carriage off the guide system, the guide carriage can be damaged.

Remove the magnetic front plate before sliding the carriage off the guide rails. Otherwise the carriage might tilt and block due to the magnetic pulls.

---

**Figure 33** Replacing carriage

- **A** Carriage (complete with guide carriage and coil unit)
- **B** Front magnetic plate (shown removed)
- **C** End plate
7.2 Replacing the carriage

(1) Before sliding off the carriage please remove the magnet front plate (see 7.1 Precautions by replacing the carriage, page 37)

![Figure 34: Replacing carriage](image)

A Carriage  
B Front magnetic plate

(2) Gently pull off the defective carriage from the basic body.

![Figure 35: Replacing carriage](image)

A Carriage  
B Magnetic front plate  
C Basic body

(3) Slightly loosen the screws at the marked guide rail. The opposite guide rail must remain as it was aligned by IEF at the reference edge on one side.
Gently loosen the screws at the marked guide rail

D  Guide rail  E  Reference edge

Figure 36
(4) Now mounting the new carriage with the assistance of the reference edge.

![Figure 37: Mounting replaced carriage](image)

A Carriage  
B Magnetic plate  
C Basic body

(5) After inserting the new carriage, tighten gradually the screws which are loosened at the marked guide rail while moving the carriage back.

(6) Reinserting the taken out magnetic plate for mounting the carriage.

![Figure 38: Tighten the screws which are loosened, reinsert the magnetic plate](image)

A Carriage  
B Reinserted magnetic plate  
C Basic body  
D Guide rail
## Troubleshooting

<table>
<thead>
<tr>
<th>Interference</th>
<th>Reason</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased running noise</td>
<td>Nominal service life of guide carriage</td>
<td>Complete exchange of the guide carriages</td>
</tr>
<tr>
<td></td>
<td>exceeded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Torque load on guide carriage too high,</td>
<td>Complete exchange of the guide carriages</td>
</tr>
<tr>
<td></td>
<td>causing play in the guide carriage</td>
<td></td>
</tr>
<tr>
<td>Motor coil does not run “freely”</td>
<td>Replace complete carriage unit</td>
<td></td>
</tr>
<tr>
<td>and scrapes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error in power electronics or control unit</td>
<td>Check, if required, exchange the power</td>
<td></td>
</tr>
<tr>
<td></td>
<td>electronics, control</td>
<td></td>
</tr>
<tr>
<td>Linear drive unit does not move</td>
<td>Block from magnetic foreign parts in the</td>
<td>Remove foreign parts,</td>
</tr>
<tr>
<td></td>
<td>area of the magnets</td>
<td>Check motor coil for damage</td>
</tr>
<tr>
<td>Motor coil does not run “freely”</td>
<td>Replace complete carriage unit</td>
<td></td>
</tr>
<tr>
<td>and blocks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plugs loose</td>
<td>Connect clamps U, V, W</td>
<td></td>
</tr>
<tr>
<td>Encoder line defective</td>
<td>Replace encoder line</td>
<td></td>
</tr>
<tr>
<td>Measuring system defective</td>
<td>Check distance measuring head ↔ measuring</td>
<td>Replace complete carriage unit</td>
</tr>
<tr>
<td></td>
<td>tape; target = 0.15 mm +0.2/-0.1</td>
<td></td>
</tr>
<tr>
<td>Measuring tape contaminated /</td>
<td>Check components, replace if necessary</td>
<td></td>
</tr>
<tr>
<td>damaged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Position loss</td>
<td>Measuring system defective</td>
<td>Check distance measuring head ↔ measuring tape; target = 0.15 mm +0.2/-0.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace complete carriage unit</td>
</tr>
<tr>
<td>Measuring tape contaminated /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>damaged</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Parts Lists and Drawings

### euroLINE 120, Parts List TG1002844

<table>
<thead>
<tr>
<th>Drawing item</th>
<th>Article no.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10002845</td>
<td>Basic body, type: euroLINE 120</td>
</tr>
<tr>
<td>20</td>
<td>1125698</td>
<td>Carriage euroLINE, TM06, type: 120-S1-LIC4</td>
</tr>
<tr>
<td>21</td>
<td>1125943</td>
<td>Carriage euroLINE, TM12, type: 120-S2-LIC4</td>
</tr>
<tr>
<td>22</td>
<td>1308701</td>
<td>Carriage euroLINE, TM06, type: 120-S1-LIC411</td>
</tr>
<tr>
<td>23</td>
<td>1308703</td>
<td>Carriage euroLINE, TM12, type: 120-S2-LIC411</td>
</tr>
<tr>
<td>30</td>
<td>1125766</td>
<td>End-plate euroLINE 120</td>
</tr>
<tr>
<td>40</td>
<td>1125715</td>
<td>Clamping element, l = 120 mm, Typ: euroLINE 120</td>
</tr>
<tr>
<td>50</td>
<td>1114061</td>
<td>Magnetic plate TM 96 mm</td>
</tr>
<tr>
<td>55</td>
<td>1114060</td>
<td>Magnetic plate TM 144 mm</td>
</tr>
<tr>
<td>60</td>
<td>TG1002409</td>
<td>Ball rail guide, type: LM 120</td>
</tr>
<tr>
<td>70</td>
<td>626037</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762, type: M6 x 20 – 8.8</td>
</tr>
<tr>
<td>80</td>
<td>626114</td>
<td>Countersunk screw, galvanized, DIN 7991 / ISO 10624, Typ: M3 x 6 – 8.8</td>
</tr>
<tr>
<td>90</td>
<td>626070</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762 Typ: M4 x 20 – 8.8</td>
</tr>
<tr>
<td>95</td>
<td>1016023</td>
<td>Plastic cover caps for rail bores, type: 1605-10-80</td>
</tr>
<tr>
<td>100</td>
<td>627071</td>
<td>Cylindrical screw, galvanized, DIN 7984, type: M5 x 12 – 8.8</td>
</tr>
<tr>
<td>130</td>
<td>1121400</td>
<td>Measuring tape holder, 1 pcs. à 35 mm</td>
</tr>
<tr>
<td>130</td>
<td>1121400</td>
<td>Measuring tape holder, 1 pcs. à 120 mm</td>
</tr>
<tr>
<td>150</td>
<td>1121401</td>
<td>Mounting set</td>
</tr>
<tr>
<td>170</td>
<td>1120771</td>
<td>Rubber-metal buffer rework, type: M4 x 6</td>
</tr>
<tr>
<td>180</td>
<td>626176</td>
<td>Hex-socket set screw with flat point, galvanized, DIN 913 / ISO 4026 – M4 x5 – 45H</td>
</tr>
</tbody>
</table>
Figure 39 Exploded drawing TG1002844
9.2 euroLINE 120, Standard Carriage, Length = 165 mm, Item No.: 1308701

With measuring head LIC 4 → until June 2018 → IEF article no.: 1125698
With measuring head LIC 411 → from June 2018 upwards → IEF article no.: 1308701

<table>
<thead>
<tr>
<th>Drawing item</th>
<th>Article no.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1125692</td>
<td>Carriage plate TM06, type: euroLINE 120</td>
</tr>
<tr>
<td>30</td>
<td>1125687</td>
<td>Cover linear motor cable, type: euroLINE 120</td>
</tr>
<tr>
<td>40</td>
<td>1419917</td>
<td>Terminal box angle concealed socket, type: euroLINE 120 LIC 411</td>
</tr>
<tr>
<td>50</td>
<td>1113933</td>
<td>Angle concealed socket 615/915 Y-Tec</td>
</tr>
<tr>
<td>60</td>
<td>1029382</td>
<td>Ball carriage CS, No. R162912102, type: KWD-015-SNS-C2-P-1 S</td>
</tr>
<tr>
<td>80</td>
<td>1008664</td>
<td>Centering sleeve, type: ZHB-7</td>
</tr>
<tr>
<td>100</td>
<td>1114059</td>
<td>Coil unit, type: TM6</td>
</tr>
<tr>
<td>110</td>
<td>626061</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762, type: M4 x 16 – 8.8</td>
</tr>
<tr>
<td>120</td>
<td>626327</td>
<td>Cylindrical pin, DIN 6325 / ISO 8734, type: 5 m6 x 16 – A</td>
</tr>
<tr>
<td>130</td>
<td>626058</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762, type: M5 x 25 – 8.8</td>
</tr>
<tr>
<td>140</td>
<td>626057</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762, type: M5 x 20 – 8.8</td>
</tr>
<tr>
<td>150</td>
<td>626705</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762, type: M3 x 8 – 8.8</td>
</tr>
<tr>
<td>180</td>
<td>1601220</td>
<td>Measuring head with 1 meter cable, type: AK LIC 411 / EnDat 2.2</td>
</tr>
<tr>
<td>190</td>
<td>626707</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762, type: M3 x 12 – 8.8</td>
</tr>
<tr>
<td>200</td>
<td>1603360</td>
<td>Contact washer, steel, galvanized, type M3</td>
</tr>
<tr>
<td>210</td>
<td>726657</td>
<td>Crimp cable lug, (0.5 - 1) mm², red, type: M3</td>
</tr>
</tbody>
</table>
Figure 40  euroLINE 120, standard carriage, length 165 mm (1308701)
9.3 euroLINE 120, Long Carriage, Length = 263 mm, Item No.: 1308703

With measuring head LIC 4 → until June 2018 → IEF article no.: 1125943
With measuring head LIC 411 → from June 2018 upwards → IEF article no.: 1308703

<table>
<thead>
<tr>
<th>Drawing item</th>
<th>Article no.</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1125936</td>
<td>Carriage plate TM12, type: euroLINE 120</td>
</tr>
<tr>
<td>30</td>
<td>1125687</td>
<td>Cover linear motor cable, type: euroLINE 120</td>
</tr>
<tr>
<td>40</td>
<td>1419917</td>
<td>Terminal box angle concealed socket, type: euroLINE 120 LIC 411</td>
</tr>
<tr>
<td>50</td>
<td>1113933</td>
<td>Angle concealed socket 615/915 Y-Tec</td>
</tr>
<tr>
<td>60</td>
<td>1029382</td>
<td>Ball carriage CS, No. R162912102, type: KWD-015-SNS-C2-P-1 S</td>
</tr>
<tr>
<td>80</td>
<td>1008664</td>
<td>Centering sleeve, type: ZHB-7</td>
</tr>
<tr>
<td>90</td>
<td>627070</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762, type: M4 x 20 – 8.8</td>
</tr>
<tr>
<td>100</td>
<td>1114058</td>
<td>Coil unit, type: TM6</td>
</tr>
<tr>
<td>110</td>
<td>626061</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762, type: M4 x 16 – 8.8</td>
</tr>
<tr>
<td>120</td>
<td>626327</td>
<td>Cylindrical pin, DIN 6325 / ISO 8734, type: 5 m6 x 16 – A</td>
</tr>
<tr>
<td>130</td>
<td>626058</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762; type: M5 x 25 – 8.8</td>
</tr>
<tr>
<td>140</td>
<td>626057</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762; type: M5 x 20 – 8.8</td>
</tr>
<tr>
<td>150</td>
<td>626705</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762; type: M3 x 8 – 8.8</td>
</tr>
<tr>
<td>180</td>
<td>1601220</td>
<td>Measuring head with 1 meter cable, type: AK LIC 411 / EnDat 2.2</td>
</tr>
<tr>
<td>190</td>
<td>626707</td>
<td>Cylindrical screw, galvanized, DIN 912 / ISO 4762; type: M3 x 12 – 8.8</td>
</tr>
<tr>
<td>200</td>
<td>1603360</td>
<td>Contact washer, steel, galvanized, type M3</td>
</tr>
<tr>
<td>210</td>
<td>726657</td>
<td>Crimp cable lug, (0.5 - 1) mm², red, type: M3</td>
</tr>
</tbody>
</table>
Figure 41 euroLINE 120, long carriage, length 263 mm (1308703)

Schmiernippel an allen Führungswagen aussen montieren!
Mount grease nipples at the outside of all carriages
9.4 Drawing Accessories

9.4.1 Centering ring 1008664

![Diagram of Centering ring](image)

**Figure 42** Centering ring

9.4.2 Clamping element euroLINE 120

![Diagram of Clamping element](image)

**Figure 43** Clamping element (item no.: 1125715)

- A  Strip
- C  Threaded pin, zinc-plated M4 x 12
- B  Centering ring
- D  Clamping element (standard/cross installation)