The need to prevent static buildup in moving applications has been increasing in modern production equipment. There are two main reasons for this:

- **ESD**: avoidance of static buildup in manufacturing processes for electronic components or assemblies
- **ATEX**: prevention of static buildup in explosive environments

Measurements of the electrical surface leakage resistance for igus® e-chains® with the special material igumid GC were made already in 1992 by the igus® GmbH together with the PTB (Physikalisch-Technische-Bundesanstalt) in Braunschweig, supplemented by additional certifications in 1998 and 1999 according to DIN IEC 60093 and the guidelines for static electricity TRBS 2153 of the Federation of Trade Associations. In the course of further innovation, the material igumid ESD was certified by the PTB (Physikalisch-Technische-Bundesanstalt) in May 2002. The material igumid ESD combines in its properties the requirements of the ESD as well as ATEX criteria. In some mechanical requirements, the igumid ESD surpasses even the standard material igumid and has been tested with over 10 million cycles in the igus® technology center.

Your benefits with ESD products

- ESD material tested with over 10 million cycles for the highest requirements
- Snap-open e-chains® with mounting brackets and interior separation in ESD and ATEX version available from stock
- Standardised product - igumid ESD with PTB certificate
- Proven over years of use in ATEX areas
- Short delivery times: 24h, from stock
- 8:00 am to 8:00 pm - ordering and delivery service

In contrast to temporary conductive surface coatings or volatile antistatic agents, the additives used offer a long lasting and maintenance free conductivity. An e-chain® is not necessarily sufficient to ensure conductivity, if just the individual components exhibit conductivity, but the whole e-chain® from one end to the other must have a continuous conductivity. All products in this catalogue are optimised in this regard and the continuous conductivity is measured and documented prior to delivery by a 100% test. Only e-chains® that have passed this test are provided with the test seal and delivered. Colour of igumid ESD products: similar to RAL7015, slate-grey to secure differentiation from standard materials. (*Exception: cover zipper and triflex® R - here in black colour)

100% of the produced igus® ESD e-chains® are checked for their continuous conductivity from one end to the other.
Material igumid ESD...

Structural design

Both the material and the design play a vital part in ensuring safe electro-static discharge. The e-chains® from the E4.1 modular kit ensure a constant discharge because they have a positive connection of the chain links to one another. Using the “tongue and groove” design, the inner link engages with the outer link - thereby guaranteeing a good contact and discharge - even after several million cycles. The e-chains® from the E2/000 range ensure a safe discharge as the clearance between the pins and the bore of the links to each other is extremely low. Installation instructions with respect to ESD / ATEX and declaration of conformity ➤ from page 76.

igumid ESD material table

<table>
<thead>
<tr>
<th>Mechanical properties</th>
<th>Units of measure</th>
<th>igumid ESD</th>
<th>igumid ESD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield stress (dry/wet)</td>
<td>MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elongation at break (dry/wet)</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modulus of elasticity (tensile test)</td>
<td>MPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limit of elasticity (bending)</td>
<td>MPa</td>
<td>9,500</td>
<td></td>
</tr>
<tr>
<td>Bending strength</td>
<td>MPa</td>
<td>230</td>
<td></td>
</tr>
<tr>
<td>Shore-D-hardness</td>
<td>–</td>
<td>83</td>
<td></td>
</tr>
</tbody>
</table>

General properties

| Density | g/m³ | 1,2 |
|         |      |     |
| Moisture absorption 23/50 RF | % by weight | 1,9 |
| Maximum water absorption | % by weight | 7,3 |

Electrical properties

| Specific volume resistance | Ω/cm | <10¹ |
| Surface resistance ROA    | Ω    | <10¹ |

Important notice: using the special material in combination with reduced pin/bore clearance can lead to a higher rolling resistance compared to e-chain® in standard version - especially when using the e-chain® in countries with persistently high levels of humidity.

Applications ESD...

with igus® e-chains®

ESD application with igus® E2/000 e-chains® of the series 2400 in a centrifuge for de-oiling, drying, rinsing, coating and rust protection.

igus® ESD option of the system E2/000 in a tank car filling station. 100% ATEX safety must be ensured during the transport of gases.

Nothing suitable in the bearing range?

Many other products of the complete igus® e-chains® range are available as special designs also in ESD / ATEX versions. igus® will be happy to make an offer for your individually desired product in the required quantity, if technically possible. The significantly improved profitability, as well as the rapid availability of the bearing range - especially in the spare parts supply - should always constitute the first choice.

A little hint from the igus® plain bearings world: a huge range of conductive iglidur® plastic plain bearings, available from stock, can be found at ➤ www.igus.eu/F

Materials data

<table>
<thead>
<tr>
<th>Unit of measure</th>
<th>igumid ESD</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPa</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td></td>
</tr>
<tr>
<td>MPa</td>
<td></td>
</tr>
<tr>
<td>MPa</td>
<td>9,500</td>
</tr>
<tr>
<td>MPa</td>
<td>230</td>
</tr>
<tr>
<td>–</td>
<td>83</td>
</tr>
<tr>
<td>g/m³</td>
<td>1,2</td>
</tr>
<tr>
<td>% by weight</td>
<td>1,9</td>
</tr>
<tr>
<td>% by weight</td>
<td>7,3</td>
</tr>
<tr>
<td>Ω/cm</td>
<td>&lt;10¹</td>
</tr>
<tr>
<td>Ω</td>
<td>&lt;10¹</td>
</tr>
</tbody>
</table>

Thermal properties

| Lower operating temperature | °C / °F | -40°C / -40°F |
| Upper long-term application temp. | °C / °F | 80°C / 176°F |
| Upper short-term application temp. | °C / °F | 150°C / 302°F |

Material certificates

Fire resistance as per UL94 – HB
Silicon-free – ++
Halogen-free – ++
2002/95/EG (RoHS) – ++
2002/96/EG (WEEE) – ++
Colour according to RAL, approximately
ESD e-chains®, slate-grey ➤ RAL7015
Exception: lid zipper and triflex® R, black ➤ RAL9004

Material certificates

Fire resistance as per UL94 – HB
Silicon-free – ++
Halogen-free – ++
2002/95/EG (RoHS) – ++
2002/96/EG (WEEE) – ++
Colour according to RAL, approximately
ESD e-chains®, slate-grey ➤ RAL7015
Exception: lid zipper and triflex® R, black ➤ RAL9004

Important notice: using the special material in combination with reduced pin/bore clearance can lead to a higher rolling resistance compared to e-chain® in standard version - especially when using the e-chain® in countries with persistently high levels of humidity.

More information ➤ www.igus.eu/esd
**ESD & ATEX e-chains®**

### Legend
- Standard
- Suitable only to a limited extent
- Possible as option
- Especially suitable

### Technical details...

#### ESD e-chains® | Crossbars on a strip - zip-open along the outer radius

<table>
<thead>
<tr>
<th>Opening principle</th>
<th>Series / product</th>
<th>Inner height (h_i) [mm] + (se) [mm]</th>
<th>Inner width (a_i) [mm]</th>
<th>Outer height (h_o) [mm]</th>
<th>Outer width (a_o) [mm]</th>
<th>Bend radius (R) [mm]</th>
<th>Pitch</th>
<th>Unsupported fill weight (s_{lw}) [kg/m]</th>
<th>Unsupported length (A_{lw}) [m]</th>
<th>Long travel (L_{lw}) [m]</th>
<th>ESD separators</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>zipper - zip fastening e-chains®</td>
<td>07 10,3 ø 8 10 - 50 15 16,5 - 57 18 - 38 20 0,4 0,55 – –</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>09 15 ø 13 16 - 50 19,3 24,2 - 58,2 28 - 48 20 0,7 1,00 –</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### E2 micro - smallest inner heights and bend radii

<table>
<thead>
<tr>
<th>Opening principle</th>
<th>Series / product</th>
<th>Inner height (h_i) [mm] + (se) [mm]</th>
<th>Inner width (a_i) [mm]</th>
<th>Outer height (h_o) [mm]</th>
<th>Outer width (a_o) [mm]</th>
<th>Bend radius (R) [mm]</th>
<th>Pitch</th>
<th>Unsupported fill weight (s_{lw}) [kg/m]</th>
<th>Unsupported length (A_{lw}) [m]</th>
<th>Long travel (L_{lw}) [m]</th>
<th>ESD separators</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2 micro - smallest inner heights and bend radii</td>
<td>E2C.10 New* 10,6 ø 8 16 - 30 15 23,4 - 37,4 18 - 38 20 0,7 0,75 – –</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>E2C.15 New* 14,9 ø 12,5 16 - 30 19,3 23,8 - 37,8 28 - 48 20 1,25 1,30 –</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

#### E2/000 - allrounder for a wide range of applications

<table>
<thead>
<tr>
<th>Opening principle</th>
<th>Series / product</th>
<th>Inner height (h_i) [mm] + (se) [mm]</th>
<th>Inner width (a_i) [mm]</th>
<th>Outer height (h_o) [mm]</th>
<th>Outer width (a_o) [mm]</th>
<th>Bend radius (R) [mm]</th>
<th>Pitch</th>
<th>Unsupported fill weight (s_{lw}) [kg/m]</th>
<th>Unsupported length (A_{lw}) [m]</th>
<th>Long travel (L_{lw}) [m]</th>
<th>ESD separators</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2/000 - allrounder for a wide range of applications</td>
<td>1500 21 ø 18 15 - 80 28 28,5 - 93,5 38 - 145 33,3 2 1,90 75</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>2500 25 ø 23 25 - 125 35 41 - 141 55 - 175 46 5 2,25 100</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>2700 35 ø 32 50 - 125 50 66 - 141 63 - 150 56 8 2,50 120</td>
<td></td>
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<td></td>
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</tbody>
</table>

*New* in this catalogue

Available from stock. Delivery in 24h or today!*  
*Delivery time means time until shipping of goods (after technical release)

More information ►www.igus.eu/esd

igus® GmbH Cologne | Tel. +49 2203 9649-800  Fax -222 | info@igus.eu | www.igus.eu
### E4.1 - ONE e-chain® series for almost any application

**ESD e-chains® Crossbars every link - removable along the inner and outer radius**

<table>
<thead>
<tr>
<th>Series / product</th>
<th>Inner height hi [mm] from - to</th>
<th>Inner width Bi [mm]</th>
<th>Outer height ha [mm]</th>
<th>Bend radius R [mm] from - to</th>
<th>Pitch [mm]</th>
<th>Unsupported fill weight ≤ [kg/m]</th>
<th>Unsupported length FL [m]</th>
<th>Long travel ≤ [m]</th>
<th>ESD separators</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4.21</td>
<td>21</td>
<td>ø 18</td>
<td>30 - 80</td>
<td>28</td>
<td>44 - 94</td>
<td>48 - 100</td>
<td>30,5</td>
<td>4</td>
<td>2,5</td>
<td>120</td>
</tr>
<tr>
<td>E4.28</td>
<td>28</td>
<td>ø 25</td>
<td>40 - 125</td>
<td>42</td>
<td>60 - 145</td>
<td>55 - 125</td>
<td>46</td>
<td>10</td>
<td>3,0</td>
<td>200</td>
</tr>
<tr>
<td>E4.32</td>
<td>32</td>
<td>ø 28</td>
<td>50 - 200</td>
<td>54</td>
<td>73 - 223</td>
<td>63 - 250</td>
<td>56</td>
<td>15</td>
<td>3,3</td>
<td>200</td>
</tr>
<tr>
<td>E4.42</td>
<td>42</td>
<td>ø 38</td>
<td>50 - 200</td>
<td>64</td>
<td>76 - 226</td>
<td>75 - 250</td>
<td>67</td>
<td>37</td>
<td>4,0</td>
<td>300</td>
</tr>
<tr>
<td>E4.56</td>
<td>56</td>
<td>ø 50</td>
<td>75 - 300</td>
<td>84</td>
<td>109 - 334</td>
<td>135 - 250</td>
<td>91</td>
<td>62,5</td>
<td>5,0</td>
<td>400</td>
</tr>
<tr>
<td>E4.80</td>
<td>80</td>
<td>ø 74</td>
<td>75 - 300</td>
<td>108</td>
<td>125 - 350</td>
<td>200 - 300</td>
<td>111</td>
<td>80</td>
<td>6,2</td>
<td>400</td>
</tr>
</tbody>
</table>

### E4/light - light, strong and cost effective

**ESD e-chains® Crossbars every link - removable along the inner and outer radius**

<table>
<thead>
<tr>
<th>Series / product</th>
<th>Inner height hi [mm] from - to</th>
<th>Inner width Bi [mm]</th>
<th>Outer height ha [mm]</th>
<th>Bend radius R [mm] from - to</th>
<th>Pitch [mm]</th>
<th>Unsupported fill weight ≤ [kg/m]</th>
<th>Unsupported length FL [m]</th>
<th>Long travel ≤ [m]</th>
<th>ESD separators</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>14240</td>
<td>62</td>
<td>ø 56</td>
<td>50 - 200</td>
<td>84</td>
<td>76 - 226</td>
<td>150 - 250</td>
<td>91</td>
<td>40</td>
<td>4,0</td>
<td>150</td>
</tr>
<tr>
<td>15050</td>
<td>80</td>
<td>ø 74</td>
<td>75 - 300</td>
<td>108</td>
<td>106 - 330</td>
<td>150 - 250</td>
<td>91</td>
<td>55</td>
<td>4,6</td>
<td>250</td>
</tr>
</tbody>
</table>

### triflex® R - multi-axis movement e.g. for robots

**ESD e-tubes TRC Fully enclosed design, non openable**

<table>
<thead>
<tr>
<th>Opening principle</th>
<th>Series / product</th>
<th>Inner height hi [mm]</th>
<th>Inner width Bi [mm]</th>
<th>Outer height ha [mm]</th>
<th>Bend radius R [mm] from - to</th>
<th>Pitch [mm]</th>
<th>Unsupported fill weight ≤ [kg/m]</th>
<th>Unsupported length FL [m]</th>
<th>Long travel ≤ [m]</th>
<th>ESD separators</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>New in this catalogue</td>
<td>TRC.40 New*</td>
<td>15/13</td>
<td>ø 13</td>
<td>15/13</td>
<td>ø 43</td>
<td>58</td>
<td>13,9</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>New in this catalogue</td>
<td>TRC.60 New*</td>
<td>22,5/19,5</td>
<td>ø 20,5</td>
<td>22,5/19,5</td>
<td>ø 65</td>
<td>87</td>
<td>20,4</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
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<tr>
<td>New in this catalogue</td>
<td>TRC.70 New*</td>
<td>28/24</td>
<td>ø 26</td>
<td>28/24</td>
<td>ø 81</td>
<td>110</td>
<td>25,6</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

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*New in this catalogue

Available from stock. Delivery in 24h or today!*  
*Delivery time means time until shipping of goods (after technical release)*

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8 More information ►www.igus.eu/esd

igus® GmbH Cologne | Tel. +49 2203 9649-800 Fax -222 | info@igus.eu | www.igus.eu 9
Zip fastening e-chains® zipper ESD

igus® “zipper” e-chains® deliver in terms of practicality and performance. The “zipper” function makes them a very useful product to reduce assembly time. The small pitch, the tough-elastic zipper-band, and the sturdy link work well in high acceleration environments. The igus® “zipper” series is one of the most popular e-chain® series in demanding applications.

- Zipper-like design for quick opening and closing of lids
- Zipper lids can be separated and joined at any chain link
- Small pitch for smooth running
- High accelerations: 100 m/s² and more
- Interior separation possible (Series 09)

Dynamic:
- High accelerations 100 m/s² and more are possible

Electrical conductive:
- ESD/ATEX versions with PTB certification
- igus® colour: slate-grey ≈ RAL7015 (according to RAL, approximately)

Exception cover: black ≈ RAL9004

Technical data

- Speed gliding / Acceleration gliding ≤ 10 [m/s] / ≤ 50 [m/s²]
- Speed FLg / Acceleration FLg ≤ 20 [m/s] / ≤ 200 [m/s²]
- Speed FLb / Acceleration FLb ≤ 3 [m/s] / ≤ 6 [m/s²]
- Material - permitted temperature °C, igumid ESD -40°C – +80°C
- Flammability class, igumid ESD VDE 0304 IIC UL94-HB

Note for load diagrams FLg / FLb values apply to standard e-chain® with material igumid G! The values can also be used for the assessment of applications of the e-chain® in special material ESD. If the respective maximum unsupported length exceeds 80%, the suitability of the e-chain® should be verified by a practice-oriented test: FLg = unsupported with straight upper run FLb = unsupported with permitted sag

Installation types, maximum travels

<table>
<thead>
<tr>
<th>Series</th>
<th>Unsupported</th>
<th>Vertical hanging</th>
<th>Vertical standing</th>
<th>Side mounted unsupported</th>
</tr>
</thead>
<tbody>
<tr>
<td>07</td>
<td>≤ 0,55 m</td>
<td>upon request</td>
<td>upon request</td>
<td>upon request</td>
</tr>
<tr>
<td>09</td>
<td>≤ 1,00 m</td>
<td>upon request</td>
<td>upon request</td>
<td>upon request</td>
</tr>
</tbody>
</table>
zipper ESD | Series 07 | Product range
Fast opening, small pitch, smooth running

zipper ESD | Series 07 | Crossbars on a strip - zip-open along the outer radius

ESD e-chains® | Bi | Ba | R | Weight
from stock | [mm] | [mm] | [mm] | [kg/m]
07. 10.R0.ESD | 10 | 16.5 | 018 | 028 | 038 | 0.14
07. 16.R0.ESD | 16 | 22.5 | 018 | 028 | 038 | 0.16
07. 20.R0.ESD | 20 | 27  | 018 | 028 | 038 | 0.17
07. 30.R0.ESD | 30 | 37  | 018 | 028 | 038 | 0.20
07. 40.R0.ESD | 40 | 47  | 018 | 028 | 038 | 0.23
07. 50.R0.ESD | 50 | 57  | 018 | 028 | 038 | 0.26

Supplement part no. with required radius (R). Example: 07.40.038.0.ESD

Dimensions

Inner height [mm] | 10.3
Pitch [mm/link] | 20
Links/m | 50
corresponds to [mm] | 1000
Chain length \( L_\text{K} = \frac{K}{6} + K \)

Drilling pattern part no. 060.10. - 060.20. = center bores only / Drilling pattern part no. 060.30. - 060.50. = only outer bores

Moving end

Fixed end

Part no. structure
060.012.PZ.ESD.A1
A1...A4

Possible installation orientations for assembled mounting brackets.
For the preassembled mode please add index A1...A4.

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set with tiewrap plate</th>
<th>Part no. full set without tiewrap plate</th>
<th>A</th>
<th>B</th>
<th>Number of teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>060.10. 12PZ.ESD</td>
<td>060.10. 12.ESD</td>
<td>–</td>
<td>16.5</td>
<td>1</td>
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<tr>
<td>16.</td>
<td>060.16. 12PZ.ESD</td>
<td>060.16. 12.ESD</td>
<td>–</td>
<td>22.5</td>
<td>2</td>
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<tr>
<td>20.</td>
<td>060.20. 12PZ.ESD</td>
<td>060.20. 12.ESD</td>
<td>–</td>
<td>27.0</td>
<td>2</td>
</tr>
<tr>
<td>30.</td>
<td>060.30. 12PZ.ESD</td>
<td>060.30. 12.ESD</td>
<td>22</td>
<td>37.0</td>
<td>3</td>
</tr>
<tr>
<td>40.</td>
<td>060.40. 12PZ.ESD</td>
<td>060.40. 12.ESD</td>
<td>32</td>
<td>47.0</td>
<td>4</td>
</tr>
<tr>
<td>50.</td>
<td>060.50. 12PZ.ESD</td>
<td>060.50. 12.ESD</td>
<td>42</td>
<td>57.0</td>
<td>5</td>
</tr>
</tbody>
</table>

The required clearance height: \( H_\text{K} = H + 10 \text{ mm} \) (with 0.2 kg/m fill weight)

More information ►www.igus.eu/07
**zipper ESD | Series 09 | Product range**

Fast opening, high accelerations

**zipper ESD | Series 09 | Crossbars on a strip - zip-open along the outer radius**

<table>
<thead>
<tr>
<th>ESD e-chains®</th>
<th>Bi</th>
<th>Ba</th>
<th>R available bend radii</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>from stock</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[kg/m]</td>
</tr>
<tr>
<td>09. 16 .R0.ESD</td>
<td>16</td>
<td>24.2</td>
<td>-</td>
<td>038</td>
</tr>
<tr>
<td>09. 20 .R0.ESD</td>
<td>20</td>
<td>28.2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>09. 30 .R0.ESD</td>
<td>30</td>
<td>38.2</td>
<td>028</td>
<td>038</td>
</tr>
<tr>
<td>09. 40 .R0.ESD</td>
<td>40</td>
<td>48.2</td>
<td>028</td>
<td>038</td>
</tr>
<tr>
<td>09. 50 .R0.ESD</td>
<td>50</td>
<td>58.2</td>
<td>028</td>
<td>038</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: 09.40.048.0.ESD

**Dimensions**

![Diagram](image)

Note: values apply to standard e-chains® with material igumid G!

Inner height [mm] = 15
Pitch [mm/link] = 20
Links/m = 50

corresponds to [mm] 1000
Chain length \( L_c = \frac{K}{S} + K \)

\( R \) 028 038 048

\( H \) 75 95 115

\( D \) 68 78 88

\( K \) 130 160 195

The required clearance height: \( H_r = H + 15 \) mm (with 0.3 kg/m fill weight)

**Moving end**

080...1(PZ)

<table>
<thead>
<tr>
<th>Width index of teeth</th>
<th>Part no. full set with tie-wrap plate</th>
<th>Part no. full set without tie-wrap plate</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>080.16.12PZ.ESD</td>
<td>080.16.12.ESD</td>
<td>080.16.12.ESD</td>
<td>2</td>
</tr>
<tr>
<td>080.20.12PZ.ESD</td>
<td>080.20.12.ESD</td>
<td>080.20.12.ESD</td>
<td>2</td>
</tr>
<tr>
<td>080.30.12PZ.ESD</td>
<td>080.30.12.ESD</td>
<td>080.30.12.ESD</td>
<td>3</td>
</tr>
<tr>
<td>080.40.12PZ.ESD</td>
<td>080.40.12.ESD</td>
<td>080.40.12.ESD</td>
<td>4</td>
</tr>
<tr>
<td>080.50.12PZ.ESD</td>
<td>080.50.12.ESD</td>
<td>080.50.12.ESD</td>
<td>5</td>
</tr>
</tbody>
</table>

Drilling pattern part no. 080.16. - 080.20. = center bore only / Drilling pattern part no. 080.30. - 080.50. = all bores

**ESD interior separation**

![Diagram](image)

- **ESD standard separator**
  For any application. In the standard configuration separators are assembled every 2\( ^{nd} \) e-chain® link. More interior separation elements available on request.

More information ➤ www.igus.eu/09
**Smallest inner heights and bend radii - E2 micro ESD**

The new generation of E2 micro is very small with low weight and therefore ideal for highly dynamic applications. E2 micro e-chains® are ideal for the smallest installation spaces. They provide an additional robust stop dog system for up to 25% longer unsupported travels as well as 100% higher fill weights (compared to identical igus® types). They are lightweight, robust and have a wide range of accessories, such as interior separation and mounting brackets.

**Typical industries and applications**
- Pick & place robots
- Semi-conductor machines
- Linear motors, actuators
- Measuring equipment
- Machine tools
- General mechanical engineering etc.

**Technical data**

- **Speed gliding / Acceleration gliding**
  - FLG ≤ 3 [m/s] / ≤ 10 [m/s²]
  - FLB ≤ 20 [m/s] / ≤ 200 [m/s²]

- **Material - permitted temperature °C, igumid ESD**
  - -40°C – +80°C

- **Flammability class, igumid ESD**
  - VDE 0304 IIC UL94 HB

**Installation types, maximum travels**

- **Series**
  - E2C.10
  - E2C.15

- **Unsupported length ≤ [m]**
  - E2C.10: 0,75 m
  - E2C.15: 1,30 m

**Available from stock. Delivery in 24h or today!*”

*Delivery time means time until shipping of goods (after technical release)
**E2 micro ESD | Series E2C.10 | Product range**

Next generation, strong, low noise, fast opening

*New in this catalogue*

---

**E2 micro ESD | Serie E2C.10 | One-piece, non snap-open**

<table>
<thead>
<tr>
<th>ESD e-chains®</th>
<th>Bi</th>
<th>Ba</th>
<th>R available bend radii</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>from stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2C.10. 16 .R0.ESD</td>
<td>16</td>
<td>23.4</td>
<td>018</td>
<td>028</td>
</tr>
<tr>
<td>E2C.10. 20 .R0.ESD</td>
<td>20</td>
<td>27.4</td>
<td>018</td>
<td>028</td>
</tr>
<tr>
<td>E2C.10. 30 .R0.ESD</td>
<td>30</td>
<td>37.4</td>
<td>018</td>
<td>028</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: E2C.10.20.038.0.ESD

---

**Dimensions**

<table>
<thead>
<tr>
<th>Width</th>
<th>Part no. full set with tiewrap plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Number of teeth</td>
<td></td>
</tr>
<tr>
<td>index</td>
<td>A1</td>
</tr>
</tbody>
</table>

Possible installation orientations for assembled mounting brackets.

For the preassembled mode please add index A1...A4.

---

**ESD interior separation**

For a simple vertical subdivision on e-chains®. Separators can be fitted anywhere in the e-chain® cross section. No snap-in option, freely movable. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

---

More information ➤ www.igus.eu/E2C.10

igus® GmbH Cologne | Tel. +49 2203 9649-800 Fax -222 | info@igus.eu | www.igus.eu
E2 micro ESD | Series E2C.15 | Product range
Next generation, strong, low noise, fast opening

New in this catalogue

E2 micro ESD | Serie E2C.15 | One-piece, non snap-open

ESD e-chains®
from stock

<table>
<thead>
<tr>
<th>Bi</th>
<th>Ba</th>
<th>R available bend radii</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[kg/m]</td>
</tr>
<tr>
<td>E2C.15. 16 .R0.ESD</td>
<td>16</td>
<td>23.8</td>
<td>028</td>
</tr>
<tr>
<td>E2C.15. 20 .R0.ESD</td>
<td>20</td>
<td>27.8</td>
<td>028</td>
</tr>
<tr>
<td>E2C.15. 30 .R0.ESD</td>
<td>30</td>
<td>37.8</td>
<td>028</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: E2C.15.20.038.0.ESD

Dimensions

Inner height [mm] 14.9
Pitch [mm/link] 20
Links/m 50 corresponds to [mm] 1000
Chain length \( L_C = \frac{S}{2} + K \)

Note: values apply to standard e-chains® with material igumid G!

E2 micro ESD | Series E2C.15 | Accessories
ESD mounting brackets, polymer one-piece | Pivoting

Moving end E2.150...3PZ

Fixed end E2.150...4PZ

Width

<table>
<thead>
<tr>
<th>Part no. full set</th>
<th>A</th>
<th>B</th>
<th>Number of teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2.150.16.3PZ.ESD</td>
<td>16</td>
<td>23.8</td>
<td>2</td>
</tr>
<tr>
<td>E2.150.20.3PZ.ESD</td>
<td>20</td>
<td>27.8</td>
<td>2</td>
</tr>
<tr>
<td>E2.150.30.3PZ.ESD</td>
<td>30</td>
<td>37.8</td>
<td>3</td>
</tr>
</tbody>
</table>

Part no. structure E2.150.30.3PZ.ESD.A1

A1 must be indicated on preassembled configurations
With strain relief tiewrap plates

Possible installation orientations for assembled mounting brackets.
For the preassembled mode please add index A1...A4.

ESD interior separation

ESD standard separator
For a simple vertical subdivision on e-chains®. Separators can be fitted anywhere in the e-chain® cross section. No snap-in option, freely movable. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

More information 🚦 www.igus.eu/E2C.15
Allrounder for a wide range of applications - E2/000 ESD

Series E2/000 is the fourth generation in this size. All past experiences went into this series: easy and versatile assembly combined with ruggedness - high strength paired with quieter motion - long cable life and many fixation options. The design is consistent within all E2/000 variations. It is the standard product for machine builders around the world.

Typical industries and applications
- Pick & place robots
- Semi-conductor machines
- Linear motors, actuators
- Measuring equipment
- Machine tools
- General mechanical engineering etc.

Universal: various mounting options, with and without strain relief

Long service life: lateral gliding surfaces

Easy to assemble: snap-open on left and right

High strength: large pin with high clamping force

Long unsupported lengths: due to a double, square stop dog

Keep order: Interior separation with ESD crossbar possible

Electrical conductive: ESD/ATEX versions with PTB certification

e-chain® colour: slate-grey = RAL7015 (according to RAL, approximately)

Available from stock. Delivery in 24h or today!*  
*Delivery time means time until shipping of goods (after technical release)

Discover the advantages ► www.igus.eu/best/E2000
ESD e-chains®

<table>
<thead>
<tr>
<th>Bi</th>
<th>Ba</th>
<th>R available bend radii</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[kg/m]</td>
</tr>
<tr>
<td>1500.015.R0.ESD</td>
<td>15</td>
<td>28.5</td>
<td>038 048</td>
</tr>
<tr>
<td>1500.025.R0.ESD</td>
<td>25</td>
<td>38.5</td>
<td>038 048</td>
</tr>
<tr>
<td>1500.038.R0.ESD</td>
<td>38</td>
<td>51.5</td>
<td>038 048</td>
</tr>
<tr>
<td>1500.050.R0.ESD</td>
<td>50</td>
<td>63.5</td>
<td>038 048</td>
</tr>
<tr>
<td>1500.068.R0.ESD</td>
<td>68</td>
<td>81.5</td>
<td>038 048</td>
</tr>
<tr>
<td>1500.080.R0.ESD</td>
<td>80</td>
<td>93.5</td>
<td>038 048</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: 1500.080.100.0.ESD

ESD standard separator

For any application, separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

Open E2/000 e-chains® in one go with the igus® e-chain® opener

- Reduce installation times from 33 to 2 seconds
- Open a long e-chain® section in one go

More information: www.igus.eu/E2opener

Open E2/000 e-chains® in one go with the igus® e-chain® opener

- Reduce installation times from 33 to 2 seconds
- Open a long e-chain® section in one go

More information: www.igus.eu/E2opener

The required clearance height: HF = H + 25 mm (with 0.5 kg/m fill weight)

Gliding applications | For long travels from 10 m to max. 75 m

LK = S/2 + K

In case of travels between 4 and 10 m we recommend a longer unsupported length.
ESD mounting bracket | Polymer pivoting | Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set with tiewrap plate</th>
<th>A [mm]</th>
<th>B [mm]</th>
<th>Number of teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>.015</td>
<td>15000..025,34PZB.ESD</td>
<td>12</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>.025</td>
<td>15000..035,34PZB.ESD</td>
<td>25</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>.050</td>
<td>15000..050,34PZB.ESD</td>
<td>37</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>.068</td>
<td>15000..068,34PZB.ESD</td>
<td>55</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>.080</td>
<td>15000..080,34PZB.ESD</td>
<td>67</td>
<td>60</td>
<td>8</td>
</tr>
</tbody>
</table>

Note: Mounting brackets not to assemble at the gable end.

Part no. structure
15000..080,34PZB.ESD.A1
A...must be indicated on preassembled configurations with strain relief tiewrap plates
Full set
Mounting bracket for selected width index

Possible installation orientations for assembled mounting brackets. For the preassembled mode please add index A1...A4.

Mounting bracket | Steel locking | Electrically conductive | Recommended for unsupported, vertical hanging, standing applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set Steel</th>
<th>Part no. full set Stainless steel AISI 1.4301</th>
<th>A [mm]</th>
<th>B [mm]</th>
<th>C [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.015</td>
<td>14000.12</td>
<td>14000.12.E</td>
<td>8</td>
<td>39</td>
<td>42</td>
</tr>
<tr>
<td>.025</td>
<td>14000.12</td>
<td>14000.12.E</td>
<td>18</td>
<td>49</td>
<td>52</td>
</tr>
<tr>
<td>.038</td>
<td>14000.12</td>
<td>14000.12.E</td>
<td>31</td>
<td>62</td>
<td>65</td>
</tr>
<tr>
<td>.050</td>
<td>14000.12</td>
<td>14000.12.E</td>
<td>43</td>
<td>74</td>
<td>77</td>
</tr>
<tr>
<td>.068</td>
<td>14000.12</td>
<td>14000.12.E</td>
<td>61</td>
<td>92</td>
<td>95</td>
</tr>
<tr>
<td>.080</td>
<td>14000.12</td>
<td>14000.12.E</td>
<td>73</td>
<td>104</td>
<td>107</td>
</tr>
</tbody>
</table>

*Pivoting without stop dog (360°). Screw-on area of the mounting brackets can be on the interior or exterior.

Possible installation orientations. Other installation angles ▶ see installation sketch.

Part no. structure
14000.12.E
Stainless steel option
Full set - 2 pieces each with pins / bores
Mounting bracket
E2/000 ESD | Series 2500 | Product range

E2/000 ESD | Series 2500 | Snap-open along outer radius from both sides

ESD e-chains®

<table>
<thead>
<tr>
<th>Bi [mm]</th>
<th>Ba [mm]</th>
<th>R available bend radii</th>
<th>Weight [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2500. 02 R0.0.ESD</td>
<td>25</td>
<td>41</td>
<td>055</td>
</tr>
<tr>
<td>2500. 03 R0.0.ESD</td>
<td>38</td>
<td>54</td>
<td>055</td>
</tr>
<tr>
<td>2500. 05 R0.0.ESD</td>
<td>57</td>
<td>73</td>
<td>055</td>
</tr>
<tr>
<td>2500. 07 R0.0.ESD</td>
<td>77</td>
<td>93</td>
<td>055</td>
</tr>
<tr>
<td>2500. 09 R0.0.ESD</td>
<td>89</td>
<td>105</td>
<td>055</td>
</tr>
<tr>
<td>2500. 10 R0.0.ESD</td>
<td>103</td>
<td>119</td>
<td>055</td>
</tr>
<tr>
<td>2500. 12 R0.0.ESD</td>
<td>125</td>
<td>141</td>
<td>055</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: 2500.02.055.0.ESD

ESD interior separation

ESD standard separator
For any application. Separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

Open E2/000 e-chains® in one go with the igus® e-chain® opener
- Reduce installation times from 33 to 2 seconds
- Open a long e-chain® section in one go
More information www.igus.eu/E2opener

E2/000 ESD | Series 2500 | Dimensions

Unsupported applications | Short travel

<table>
<thead>
<tr>
<th>FLG</th>
<th>FLB</th>
</tr>
</thead>
</table>

Note: values apply to standard e-chains® with material igumid G!

The required clearance height: HF = H + 25 mm (with 1.5 kg/m fill weight)

Gliding applications | For long travels from 10 m to max. 100 m

LK = S/2 + K

In case of travels between 4 and 10 m we recommend a longer unsupported length.

More information www.igus.eu/2500
### E2/000 ESD | Series 2500 | Accessories

**KMA mounting brackets | Attachment from any side | Pivoting**

#### ESD mounting bracket | KMA pivoting | Attachment from any side

Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set with tiewrap plate</th>
<th>A [mm]</th>
<th>B [mm]</th>
<th>Number of teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>.02.</td>
<td>24001.02.12ZB.ESD</td>
<td>36</td>
<td>44</td>
<td>2</td>
</tr>
<tr>
<td>.03.</td>
<td>24001.03.12ZB.ESD</td>
<td>49</td>
<td>57</td>
<td>4</td>
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<tr>
<td>.05.</td>
<td>24001.05.12ZB.ESD</td>
<td>68</td>
<td>76</td>
<td>6</td>
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<tr>
<td>.07.</td>
<td>24001.07.12ZB.ESD</td>
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<tr>
<td>.09.</td>
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<td>108</td>
<td>9</td>
</tr>
<tr>
<td>.10.</td>
<td>24001.10.12ZB.ESD</td>
<td>114</td>
<td>122</td>
<td>10</td>
</tr>
<tr>
<td>.12.</td>
<td>24001.12.12ZB.ESD</td>
<td>136</td>
<td>144</td>
<td>12</td>
</tr>
</tbody>
</table>

(KMA = Polymer Metal Mounting Bracket)

---

These attachment orientations are set automatically in the choice of the KMA mounting bracket. For the preassembled mode please add index A.

---

**Part no. structure**

24001.02.12ZB.ESD A

A...must be indicated on preassembled configurations

with strain relief tiewrap plates

Full set

Mounting bracket for selected width index

---

### E2/000 ESD | Series 2500 | Accessories

**Steel mounting brackets | Pivoting**

#### Mounting brackets | Steel pivoting | Electrically conductive

Recommended for unsupported, vertical hanging, standing applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set steel</th>
<th>Part no. full set stainless steel AISI 1.4301</th>
<th>A [mm]</th>
<th>B [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.02.</td>
<td>2000.32</td>
<td>2000.32.E</td>
<td>–</td>
<td>60</td>
</tr>
<tr>
<td>.03.</td>
<td>2000.32</td>
<td>2000.32.E</td>
<td>–</td>
<td>73</td>
</tr>
<tr>
<td>.05.</td>
<td>2000.32</td>
<td>2000.32.E</td>
<td>–</td>
<td>92</td>
</tr>
</tbody>
</table>

**Part no. structure**

2000.32.E

Stainless steel option

Full set - 2 pieces each with pins / bores

Mounting bracket

---

Possible installation orientations. Other installation angles ➤ see installation sketch.
**E2/000 ESD | Series 2700 | Product range**

Medium inner height, high strength

---

**E2/000 ESD | Serie 2700 | Snap-open along outer radius from both sides**

<table>
<thead>
<tr>
<th>ESD e-chains®</th>
<th>Bi [mm]</th>
<th>Ba [mm]</th>
<th>R [mm]</th>
<th>Weight [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>from stock</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2700.05 .R,0,ESD</td>
<td>50</td>
<td>66</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>2700.06 .R,0,ESD</td>
<td>65</td>
<td>81</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>2700.07 .R,0,ESD</td>
<td>75</td>
<td>91</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>2700.09 .R,0,ESD</td>
<td>90</td>
<td>106</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>2700.10 .R,0,ESD</td>
<td>100</td>
<td>116</td>
<td>–</td>
<td>075</td>
</tr>
<tr>
<td>2700.12 .R,0,ESD</td>
<td>125</td>
<td>141</td>
<td>–</td>
<td>075</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: 2700.12.100.0.ESD

**ESD interior separation**

ESD standard separator
- For any application, separator with a wide base for maximum holding strength in the e-chain®. Separators are mounted every 2nd chain link as standard. More interior separation elements available on request.

---

**ESD interior separation**

- ESD standard separator, slotted unassembled 35.1.ESD assembled 35.1.1.ESD

---

**Open E2/000 e-chains® in one go with the igus® e-chain® opener**
- Reduce installation times from 33 to 2 seconds
- Open a long e-chain® section in one go

More information ➤ [www.igus.eu/E2opener](http://www.igus.eu/E2opener)

---

**Open E2/000 ESD | Series 2700 | Snap-open along outer radius from both sides**

**ESD e-chains® from stock**

- Bi [mm]
- Ba [mm]
- R [mm]
- Weight [kg/m]

---

**ESD standard separator**

For any application, separator with a wide base for maximum holding strength in the e-chain®. Separators are mounted every 2nd chain link as standard. More interior separation elements available on request.

---

**Supplement part no. with required radius (R). Example: 2700.12.100.0.ESD**

---

**Unsupervised applications | Short travel**

- K:
- FLG:
- FLB:

---

**Gliding applications | For long travels from 10 m to max. 120 m**

- LK:
- FL:
- FLG:
- FLB:

---

**Inner height [mm]: 35**

- Pitch [mm/link]: 56
- Links/m: 18
- Corresponds to [mm]: 1008
- Chain length: L0 = (S/2 + K)

---

**Unsupported length FLG / FLB [m]**

- Travel S [m]

---

**Total guide trough length**

- Guide trough with glide bar
- Guide trough without glide bar

---

**Moving end**

- Fixed end

---

**Unsupported applications**

- Short travel

---

**Flat guide without glide bar**

- Guide trough with glide bar

---

**The required clearance height: HF = H + 35 mm (with 2.0 kg/m fill weight)**

---

**For long travels from 10 m to max. 120 m**

- In case of travels between 5 and 10 m we recommend a longer unsupported length.

---

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---

More information ➤ [www.igus.eu/2700](http://www.igus.eu/2700)
**E2/000 ESD Series 2700**

**Accessories**

KMA mounting brackets | Attachment from any side | Pivoting

**ESD mounting bracket | KMA pivoting | Attachment from any side**

Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set KMA with C-profile</th>
<th>Part no. full set KMA without C-profile</th>
<th>A [mm]</th>
<th>B [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.05</td>
<td>26001.05.12.C.ESD</td>
<td>26001.05.12.ESD</td>
<td>58</td>
<td>69</td>
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<tr>
<td>.06</td>
<td>26001.06.12.C.ESD</td>
<td>26001.06.12.ESD</td>
<td>73</td>
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<tr>
<td>.07</td>
<td>26001.07.12.C.ESD</td>
<td>26001.07.12.ESD</td>
<td>83</td>
<td>94</td>
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<tr>
<td>.09</td>
<td>26001.09.12.C.ESD</td>
<td>26001.09.12.ESD</td>
<td>98</td>
<td>109</td>
</tr>
<tr>
<td>.10</td>
<td>26001.10.12.C.ESD</td>
<td>26001.10.12.ESD</td>
<td>106</td>
<td>119</td>
</tr>
</tbody>
</table>

(KMA = Polymer Metal Mounting Bracket)

These attachment orientations are set automatically in the choice of the KMA mounting bracket. For the preassembled mode please add index A.

**Mounting bracket | Steel locking | Electrically conductive**

Recommended for unsupported, vertical hanging, standing applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set steel</th>
<th>Part no. full set stainless steel AISI 1.4301</th>
<th>A [mm]</th>
<th>B [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.05</td>
<td>260.12</td>
<td>260.12.E</td>
<td>37</td>
<td>83</td>
</tr>
<tr>
<td>.06</td>
<td>260.12</td>
<td>260.12.E</td>
<td>52</td>
<td>99</td>
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<td>.09</td>
<td>260.12</td>
<td>260.12.E</td>
<td>77</td>
<td>123</td>
</tr>
<tr>
<td>.10</td>
<td>260.12</td>
<td>260.12.E</td>
<td>87</td>
<td>133</td>
</tr>
<tr>
<td>.12</td>
<td>260.12</td>
<td>260.12.E</td>
<td>112</td>
<td>158</td>
</tr>
</tbody>
</table>

More information ➤ www.igus.eu/2700

igus® GmbH Cologne | Tel. +49 2203 9649-800 Fax -222 | info@igus.eu | www.igus.eu
**ONE e-chain® series for almost any application - E4.1 ESD**

The E4.1 system combines all the advantages of its three predecessors. E4.1 is the best igus® e-chain® in the product range. The E4.1 series is stronger with the same or smaller dimensions than its predecessors. Almost all accessories and mounting dimensions are identical. With the E4.1, the service life of your application can be increased with lower costs.

- "Tongue and groove" design for high lateral stability, high tensile force on long travels and for large unsupported lengths
- Well suited for side-mounted applications
- Noise-reducing "brakes" and noise dampening pads as an option
- Outer and inner links for quick assembly, with or without pretension

**Typical industries and applications**
- Pick & place robots
- Semi-conductor machines
- Linear motors, actuators
- Measuring equipment
- Machine tools
- General mechanical engineering etc.

**Installation types, maximum travels**

<table>
<thead>
<tr>
<th>Series</th>
<th>Unsupported length</th>
<th>Gliding</th>
<th>Vertical hanging</th>
<th>Vertical standing</th>
<th>Side mounted</th>
<th>Rotary</th>
<th>Zip-Zag</th>
<th>Unsupported length lower run</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4.21</td>
<td>≤ 2.5 m</td>
<td>≤ 120 m</td>
<td>≤ 40 m</td>
<td>≤ 3.0 m</td>
<td>≤ 1.0 m</td>
<td>with rework</td>
<td>upon request</td>
<td>upon request</td>
</tr>
<tr>
<td>E4.28</td>
<td>≤ 2.5 m</td>
<td>≤ 200 m</td>
<td>≤ 80 m</td>
<td>≤ 5.0 m</td>
<td>≤ 1.5 m</td>
<td>with rework</td>
<td>upon request</td>
<td>upon request</td>
</tr>
<tr>
<td>E4.32</td>
<td>≤ 3.3 m</td>
<td>≤ 200 m</td>
<td>≤ 80 m</td>
<td>≤ 5.0 m</td>
<td>≤ 1.5 m</td>
<td>with rework</td>
<td>upon request</td>
<td>upon request</td>
</tr>
<tr>
<td>E4.42</td>
<td>≤ 4.0 m</td>
<td>≤ 300 m</td>
<td>≤ 100 m</td>
<td>≤ 6.0 m</td>
<td>≤ 2.0 m</td>
<td>with rework</td>
<td>upon request</td>
<td>upon request</td>
</tr>
<tr>
<td>E4.56</td>
<td>≤ 5.0 m</td>
<td>≤ 400 m</td>
<td>≤ 100 m</td>
<td>≤ 6.0 m</td>
<td>≤ 2.5 m</td>
<td>with rework</td>
<td>upon request</td>
<td>upon request</td>
</tr>
<tr>
<td>E4.80</td>
<td>≤ 6.2 m</td>
<td>≤ 400 m</td>
<td>≤ 120 m</td>
<td>≤ 6.0 m</td>
<td>≤ 3.0 m</td>
<td>with rework</td>
<td>upon request</td>
<td>upon request</td>
</tr>
</tbody>
</table>

**Technical data**

- Speed gliding / Acceleration gliding
  - ≤ 10 [m/s] / ≤ 50 [m/s²]
- Speed FLG / Acceleration FLG
  - ≤ 20 [m/s] / ≤ 200 [m/s²]
- Speed FLB / Acceleration FLB
  - ≤ 3 [m/s] / ≤ 6 [m/s²]
- Material - permitted temperature °C, igumid ESD
  - -40°C – +80°C
- Flammability class, igumid ESD
  - VDE 0304 IIC UL94-HB

Note for load diagrams: FLG / FLB values apply to standard e-chains® with material igumid G. The values can also be used for the assessment of applications of the e-chain® in special material ESD. If the respective maximum unsupported length exceeds 80%, the suitability of the e-chain® should be verified by a practice-oriented test. FLG = unsupported with straight upper run. FLB = unsupported with permitted sag.
E4.1 ESD | Series E4.21 | Product range
Stable due to “tongue and groove” design, small inner height

E4.1 ESD | Series E4.21 | Crossbars every link (removable along the inner and outer radius)

<table>
<thead>
<tr>
<th>ESD e-chains®</th>
<th>Bi [mm]</th>
<th>Ba [mm]</th>
<th>R [mm]</th>
<th>Weight [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4.21.030.R0.ESD</td>
<td>30</td>
<td>44</td>
<td>048</td>
<td>063</td>
</tr>
<tr>
<td>E4.21.040.R0.ESD</td>
<td>40</td>
<td>54</td>
<td>048</td>
<td>063</td>
</tr>
<tr>
<td>E4.21.050.R0.ESD</td>
<td>50</td>
<td>64</td>
<td>048</td>
<td>063</td>
</tr>
<tr>
<td>E4.21.060.R0.ESD</td>
<td>60</td>
<td>74</td>
<td>048</td>
<td>063</td>
</tr>
<tr>
<td>E4.21.070.R0.ESD</td>
<td>70</td>
<td>84</td>
<td>048</td>
<td>063</td>
</tr>
<tr>
<td>E4.21.080.R0.ESD</td>
<td>80</td>
<td>94</td>
<td>048</td>
<td>063</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: E4.21.070.100.0.ESD

ESD interior separation

The E4 e-chain® opener reduces assembly time
● e-chain® opener tools for convenient opening and closing of system E4 e-chains®
● Simple opening and closing of chain links
● Even in difficult to access area
● Significant assembly time reduction

The E4 e-chain® opener

ESD standard separator
For any application. Separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

The required clearance height: HF = H + 30 mm (with 1.5 kg/m fill weight)

Gliding applications | For long travels from 10 m to max. 120 m

LK = S/2 + K

Note: we recommend the project planning of such a system to be installed by our technicians.
In case of travels between 4 and 10 m we recommend a longer unsupported length.

R | 048 | 063 | 075 | 100
|---|---|---|---|
H | 124 | 154 | 178 | 228
D | 108 | 123 | 135 | 160
K | 215 | 260 | 300 | 380

The required clearance height: HF = H + 30 mm (with 1.5 kg/m fill weight)

Note: values apply to standard e-chains® with material igumid® G!
E4.1 ESD | Series E4.21 | Accessories
KMA mounting brackets | Attachment from any side | Pivoting

ESD mounting bracket | KMA pivoting | Attachment from any side
Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set</th>
<th>Bi [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.040</td>
<td>E4.210.040.1.12.ESD</td>
<td>40</td>
</tr>
<tr>
<td>.050</td>
<td>E4.210.050.1.12.ESD</td>
<td>50</td>
</tr>
<tr>
<td>.060</td>
<td>E4.210.060.1.12.ESD</td>
<td>60</td>
</tr>
<tr>
<td>.070</td>
<td>E4.210.070.1.12.ESD</td>
<td>70</td>
</tr>
<tr>
<td>.080</td>
<td>E4.210.080.1.12.ESD</td>
<td>80</td>
</tr>
</tbody>
</table>

(KMA = Polymer Metal Mounting Bracket)

Special mounting bracket feature - E4.21
● Special design of the counterbore as a hexagon allows
● the inlay of the M4 nut or the hexagon screw head

Note: series E4.21 always needs to end with an inner link (odd number of links). For the preassembled mode please add index A.
E4.1 ESD | Series E4.28 | Product range
Stable due to “tongue and groove” design, small inner height

E4.1 ESD | Series E4.28 | Crossbars every link (removable along the inner and outer radius)

ESD e-chains®

<table>
<thead>
<tr>
<th>Bi [mm]</th>
<th>Ba [mm]</th>
<th>R available bend radii</th>
<th>Weight [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4.28.040, R0, ESD</td>
<td>40</td>
<td>60</td>
<td>055</td>
</tr>
<tr>
<td>E4.28.050, R0, ESD</td>
<td>50</td>
<td>70</td>
<td>055</td>
</tr>
<tr>
<td>E4.28.062, R0, ESD</td>
<td>62</td>
<td>82</td>
<td>055</td>
</tr>
<tr>
<td>E4.28.070, R0, ESD</td>
<td>70</td>
<td>90</td>
<td>055</td>
</tr>
<tr>
<td>E4.28.075, R0, ESD</td>
<td>75</td>
<td>95</td>
<td>055</td>
</tr>
<tr>
<td>E4.28.087, R0, ESD</td>
<td>87</td>
<td>107</td>
<td>055</td>
</tr>
<tr>
<td>E4.28.100, R0, ESD</td>
<td>100</td>
<td>120</td>
<td>055</td>
</tr>
<tr>
<td>E4.28.125, R0, ESD</td>
<td>125</td>
<td>145</td>
<td>055</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: E4.28.100, R0, ESD

ESD interior separation

ESD standard separator
For any application. Separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

The E4 e-chain® opener reduces assembly time
- e-chain® opener tools for convenient opening and closing of system E4 e-chains®
- Simple opening and closing of chain links
- Even in difficult to access area
- Significant assembly time reduction
More information | www.igus.eu/E4savetime

E4.1 ESD | Series E4.28 | Dimensions

Unsupported applications | Short travel

<table>
<thead>
<tr>
<th>R</th>
<th>055</th>
<th>063</th>
<th>075</th>
<th>100</th>
<th>125</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>152</td>
<td>168</td>
<td>192</td>
<td>242</td>
<td>292</td>
</tr>
<tr>
<td>D</td>
<td>145</td>
<td>153</td>
<td>165</td>
<td>190</td>
<td>215</td>
</tr>
<tr>
<td>K</td>
<td>265</td>
<td>290</td>
<td>330</td>
<td>410</td>
<td>485</td>
</tr>
</tbody>
</table>

The required clearance height: HF = H + 40 mm (with 1.0 kg/m fill weight)

Gliding applications | For long travels from 10 m to max. 200 m

Note: values apply to standard e-chains® with material igumid GI.

<table>
<thead>
<tr>
<th>Link/m</th>
<th>02</th>
<th>04</th>
<th>06</th>
<th>08</th>
<th>10</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLG</td>
<td>–</td>
<td>–</td>
<td>150</td>
<td>270</td>
<td>100</td>
<td>126</td>
</tr>
<tr>
<td>FLB</td>
<td>–</td>
<td>–</td>
<td>150</td>
<td>270</td>
<td>100</td>
<td>126</td>
</tr>
</tbody>
</table>

Total guide trough length

Note: we recommend the project planning of such a system to be installed by our technicians.
In case of travels between 5 and 10 m we recommend a longer unsupported length.

<table>
<thead>
<tr>
<th>R</th>
<th>055</th>
<th>063</th>
<th>075</th>
<th>100</th>
<th>125</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>110</td>
<td>126</td>
<td>150</td>
<td>158</td>
<td>158</td>
</tr>
<tr>
<td>D</td>
<td>122</td>
<td>130</td>
<td>142</td>
<td>350</td>
<td>490</td>
</tr>
<tr>
<td>K</td>
<td>265</td>
<td>290</td>
<td>330</td>
<td>598</td>
<td>782</td>
</tr>
<tr>
<td>ΔCL</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>150</td>
<td>270</td>
</tr>
</tbody>
</table>
E4.1 ESD | Series E4.28 | Accessories
KMA mounting brackets | Attachment from any side | Pivoting

ESD mounting bracket | KMA pivoting | Attachment from any side
Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set</th>
<th>Bi [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.040.</td>
<td>E4.280.040.12.ESD</td>
<td>40</td>
</tr>
<tr>
<td>.050.</td>
<td>E4.280.050.12.ESD</td>
<td>50</td>
</tr>
<tr>
<td>.062.</td>
<td>E4.280.062.12.ESD</td>
<td>62</td>
</tr>
<tr>
<td>.070.</td>
<td>E4.280.070.12.ESD</td>
<td>70</td>
</tr>
<tr>
<td>.075.</td>
<td>E4.280.075.12.ESD</td>
<td>75</td>
</tr>
<tr>
<td>.087.</td>
<td>E4.280.087.12.ESD</td>
<td>87</td>
</tr>
<tr>
<td>.100.</td>
<td>E4.280.100.12.ESD</td>
<td>100</td>
</tr>
<tr>
<td>.125.</td>
<td>E4.280.125.12.ESD</td>
<td>125</td>
</tr>
</tbody>
</table>

KMA = Polymide Metal Mounting Bracket

**Note**: The e-chains® E4.1 may end with an inner link as well as an outer link. At the moving end an outer side link should always form the first e-chain® link. Depending on an even or odd number of links please specify the index (for odd) or (for even). For the preassembled mode please add index A.

Part no. structure

- E4.280.100.12.ESD.A
  - A: must be indicated on preassembled configurations
  - Full set
  - Even numbers of links
  - Width index
  - Sets

More information | www.igus.eu/E4.28

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The E4 e-chain® opener reduces assembly time
- e-chain® opener tools for convenient opening and closing of system E4 e-chains
- Simple opening and closing of chain links
- Even in difficult to access area
- Significant assembly time reduction

More information: www.igus.eu/E4savetime

### Dimensions

#### Unsupported applications | Short travel

<table>
<thead>
<tr>
<th>R</th>
<th>063</th>
<th>075</th>
<th>100</th>
<th>125</th>
<th>200</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>180</td>
<td>204</td>
<td>254</td>
<td>304</td>
<td>454</td>
<td>554</td>
</tr>
<tr>
<td>D</td>
<td>174</td>
<td>186</td>
<td>211</td>
<td>236</td>
<td>311</td>
<td>361</td>
</tr>
<tr>
<td>K</td>
<td>310</td>
<td>350</td>
<td>430</td>
<td>505</td>
<td>745</td>
<td>900</td>
</tr>
</tbody>
</table>

The required clearance height: \( H_f = H + 40 \text{ mm} \) (with 2.0 kg/m fill weight)

#### Gliding applications | For long travels from 10 m to max. 200 m

\[ L_k = S/2 + K \]

- \( S/2 \) is offset fixed point
- \( S/2 \) is total guide trough length

Note: we recommend the project planning of such a system to be installed by our technicians.

In case of travels between 7 and 10 m we recommend a longer unsupported length.

More information: www.igus.eu/E4savetime

### Series E4.32 | Product range

Stable due to "tongue and groove" design, medium inner height

### Series E4.32 | Crossbars every link (removable along the inner and outer radius)

- ESD e-chains®
- \( B_l \) and \( B_a \) available bend radii
- Weight

<table>
<thead>
<tr>
<th>ESD e-chains®</th>
<th>( B_l )</th>
<th>( B_a )</th>
<th>( R ) available bend radii</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4.32.05,ESD</td>
<td>50</td>
<td>73</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>E4.32.06,ESD</td>
<td>68</td>
<td>91</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>E4.32.07,ESD</td>
<td>75</td>
<td>98</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>E4.32.08,ESD</td>
<td>87</td>
<td>110</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>E4.32.10,ESD</td>
<td>100</td>
<td>123</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>E4.32.15,ESD</td>
<td>150</td>
<td>173</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>E4.32.18,ESD</td>
<td>175</td>
<td>198</td>
<td>063</td>
<td>075</td>
</tr>
<tr>
<td>E4.32.20,ESD</td>
<td>200</td>
<td>223</td>
<td>063</td>
<td>075</td>
</tr>
</tbody>
</table>

- Weight: \( \approx 2.63 \text{ kg/m} \)
- \( R \) available bend radii: \( 063, 075, 100, 125, 200, 250 \text{ mm} \)

### ESD interior separation

- ESD standard separator, slotted:
  - Unassembled: E4.32.1,ESD
  - Assembled: E4.32.1.1,ESD

For any application, separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

More information: www.igus.eu/E4savetime

### ESD standard separator

For any application, separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

More information: www.igus.eu/E4savetime

Supplement part no. with required radius (\( R \)). Example: E4.32.10.100,ESD
**ESD mounting bracket | KMA pivoting | Attachment from any side**

**Recommended for unsupported and gliding applications**

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set KMA with C-profile</th>
<th>Part no. full set KMA without C-profile</th>
<th>Bi [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.05.</td>
<td>E4.320.05. 12.C.ESD</td>
<td>E4.320.05. 12.ESD</td>
<td>50</td>
</tr>
<tr>
<td>.06.</td>
<td>E4.320.06. 12.C.ESD</td>
<td>E4.320.06. 12.ESD</td>
<td>68</td>
</tr>
<tr>
<td>.07.</td>
<td>E4.320.07. 12.C.ESD</td>
<td>E4.320.07. 12.ESD</td>
<td>75</td>
</tr>
<tr>
<td>.10.</td>
<td>E4.320.10. 12.C.ESD</td>
<td>E4.320.10. 12.ESD</td>
<td>100</td>
</tr>
<tr>
<td>.15.</td>
<td>E4.320.15. 12.C.ESD</td>
<td>E4.320.15. 12.ESD</td>
<td>150</td>
</tr>
<tr>
<td>.18.</td>
<td>E4.320.18. 12.C.ESD</td>
<td>E4.320.18. 12.ESD</td>
<td>175</td>
</tr>
</tbody>
</table>

(KMA = Polymer Metal Mounting Bracket)

**Note:** The e-chains® E4.1 may end with an inner link as well as an outer link. At the moving end an outer side link should always form the first e-chain® link. Depending on an even or odd number of links please specify the index [1] for odd or [2] for even! For the preassembled mode please add index A.

**Part no. structure**

- [1] 12.C.ESD
- [2] 12.ESD

A must be indicated on preassembled configurations.

<table>
<thead>
<tr>
<th>Full set</th>
<th>Even numbers of links</th>
<th>Width index</th>
<th>Set No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[2]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
E4.1 ESD | Series E4.42 | Product range

Stable due to “tongue and groove” design, medium inner height

E4.1 ESD | Series E4.42 | Crossbars every link (removable along the inner and outer radius)

ESD e-chains

<table>
<thead>
<tr>
<th>Bi [mm]</th>
<th>Ba [mm]</th>
<th>R available bend radii</th>
<th>Weight [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4.42.05</td>
<td>50</td>
<td>76</td>
<td>075 100 150 200 250</td>
</tr>
<tr>
<td>E4.42.06</td>
<td>68</td>
<td>94</td>
<td>075 100 150 200 250</td>
</tr>
<tr>
<td>E4.42.07</td>
<td>75</td>
<td>101</td>
<td>075 100 150 200 250</td>
</tr>
<tr>
<td>E4.42.08</td>
<td>87</td>
<td>114</td>
<td>075 100 150 200 250</td>
</tr>
<tr>
<td>E4.42.09</td>
<td>100</td>
<td>126</td>
<td>075 100 150 200 250</td>
</tr>
<tr>
<td>E4.42.10</td>
<td>150</td>
<td>176</td>
<td>075 100 150 200 250</td>
</tr>
<tr>
<td>E4.42.11</td>
<td>175</td>
<td>201</td>
<td>075 100 150 200 250</td>
</tr>
<tr>
<td>E4.42.12</td>
<td>200</td>
<td>226</td>
<td>075 100 150 200 250</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: E4.42.10,0,0,ESD

ESD interior separation

ESD standard separator

For any application. Separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

The E4 e-chain® opener reduces assembly time

- e-chain® opener tools for convenient opening and closing of system E4 e-chains®
- Simple opening and closing of chain links
- Even in difficult to access area
- Significant assembly time reduction

More information → www.igus.eu/E4savetime

E4.1 ESD | Series E4.42 | Dimensions

Unsupported applications | Short travel

The E4 e-chain® opener reduces assembly time

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- Significant assembly time reduction

More information → www.igus.eu/E4savetime
**E4.1 ESD | Series E4.42 | Accessories**

KMA mounting brackets | Attachment from any side | Pivoting

**ESD mounting bracket | KMA pivoting | Attachment from any side**

Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set</th>
<th>Part no. full set</th>
<th>Bi [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KMA with C-profile</td>
<td>KMA without C-profile</td>
<td></td>
</tr>
<tr>
<td>.05</td>
<td>E4.420.05.12.ESD</td>
<td>E4.420.05.12.ESD</td>
<td>50</td>
</tr>
<tr>
<td>.06</td>
<td>E4.420.06.12.ESD</td>
<td>E4.420.06.12.ESD</td>
<td>60</td>
</tr>
<tr>
<td>.07</td>
<td>E4.420.07.12.ESD</td>
<td>E4.420.07.12.ESD</td>
<td>75</td>
</tr>
<tr>
<td>.08</td>
<td>E4.420.08.12.ESD</td>
<td>E4.420.08.12.ESD</td>
<td>87</td>
</tr>
<tr>
<td>.10</td>
<td>E4.420.10.12.ESD</td>
<td>E4.420.10.12.ESD</td>
<td>100</td>
</tr>
<tr>
<td>.15</td>
<td>E4.420.15.12.ESD</td>
<td>E4.420.15.12.ESD</td>
<td>150</td>
</tr>
<tr>
<td>.18</td>
<td>E4.420.18.12.ESD</td>
<td>E4.420.18.12.ESD</td>
<td>175</td>
</tr>
<tr>
<td>.20</td>
<td>E4.420.20.12.ESD</td>
<td>E4.420.20.12.ESD</td>
<td>200</td>
</tr>
</tbody>
</table>

(KMA = Polymer Metal Mounting Bracket)

**Note**: the e-chains® E4.1 may end with an inner link as well as an outer link. At the moving end an outer side link should always form the first e-chain® link. Depending on an even or odd number of links please specify the index [1] (for odd) or [2] (for even)! For the preassembled mode please add index A.

**Part no. structure**

- [A]. must be indicated on preassembled configurations
- [Full set]
- [Even numbers of links]
- [Width index]
- [Sets]

**E4.1 ESD | Application**

ATEX version of the igus® e-chainsystem®, series E4, harnessed with hydraulic hoses and igus® chainflex® cables

More information ▶️ www.igus.eu/E4.42

igus® GmbH Cologne | Tel. +49 2203 9649-800 Fax -222 | info@igus.eu | www.igus.eu
### E4.1 ESD | Series E4.56 | Product range

Stable due to “tongue and groove" design, large inner height

---

### E4.1 ESD | Series E4.56 | Crossbars every link (removable along the inner and outer radius)

**ESD e-chains®**

<table>
<thead>
<tr>
<th>Bi [mm]</th>
<th>Ba [mm]</th>
<th>R available bend radii [mm]</th>
<th>Weight [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>E4.56.07, R0.ESD</td>
<td>75</td>
<td>135</td>
<td>150</td>
</tr>
<tr>
<td>E4.56.12, R0.ESD</td>
<td>125</td>
<td>135</td>
<td>150</td>
</tr>
<tr>
<td>E4.56.15, R0.ESD</td>
<td>150</td>
<td>135</td>
<td>150</td>
</tr>
<tr>
<td>E4.56.20, R0.ESD</td>
<td>200</td>
<td>135</td>
<td>150</td>
</tr>
<tr>
<td>E4.56.25, R0.ESD</td>
<td>250</td>
<td>135</td>
<td>150</td>
</tr>
<tr>
<td>E4.56.30, R0.ESD</td>
<td>300</td>
<td>135</td>
<td>150</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: E4.56.15.150.0.ESD

---

### ESD interior separation

- **ESD standard separator**
  - For any application. Separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2\textsuperscript{nd} e-chain® link. More interior separation elements available on request.

---

The required clearance height:

\[ HF = H + 50 \text{ mm} \]  
(with 3.0 kg/m fill weight)

---

**E4.56 ESD**

- More information | www.igus.eu/E4.56

---

**Gliding applications | For long travels from 12 m to max. 400 m**

- **LK = S/2 + K**
- Fixed end
- Guide trough with glide bar
- Guide trough without glide bar
- Total guide trough length

**Note:** we recommend the project planning of such a system to be installed by our technicians.

In case of travels between 10 and 12 m we recommend a longer unsupported length.

---

**Unsupported applications | Short travel**

- **FLG** / FLB
- Moving end
- Fixed end
- Guide trough without glide bar
- Guide trough with glide bar
- Total guide trough length

**Note:** values apply to standard e-chains® with igumid G!

---

The required clearance height:

\[ HF = H + 50 \text{ mm} \]  
(with 3.0 kg/m fill weight)

---

**Unsupported length**

\[ \text{FLG} / \text{FLB} \]  
\[ \text{m} \]

**Travel**

\[ \text{S} \]  
\[ \text{m} \]

**Corresponds to**

\[ \text{Chain length} \]

<table>
<thead>
<tr>
<th>[ R ]</th>
<th>135</th>
<th>150</th>
<th>175</th>
<th>200</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ H_s ]</td>
<td>354</td>
<td>384</td>
<td>434</td>
<td>484</td>
<td>584</td>
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<tr>
<td>[ D ]</td>
<td>314</td>
<td>329</td>
<td>354</td>
<td>379</td>
<td>429</td>
</tr>
<tr>
<td>[ K ]</td>
<td>610</td>
<td>655</td>
<td>735</td>
<td>815</td>
<td>970</td>
</tr>
</tbody>
</table>

The required clearance height:

\[ HF = H + 50 \text{ mm} \]  
(with 3.0 kg/m fill weight)

---

** Unsupported applications**

- Short travel
- Moving end
- Fixed end
- Guide trough without glide bar
- Guide trough with glide bar
- Total guide trough length

**Note:** we recommend the project planning of such a system to be installed by our technicians.

In case of travels between 10 and 12 m we recommend a longer unsupported length.

---

**The E4 e-chain® opener reduces assembly time**

- e-chain® opener tools for convenient opening and closing of system E4 e-chains®
- Simple opening and closing of chain links
- Even in difficult to access area
- Significant assembly time reduction

More information | www.igus.eu/E4savetime
ESD mounting bracket | KMA pivoting | Attachment from any side
Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set KMA with C-profile</th>
<th>Part no. full set KMA without C-profile</th>
<th>Bi [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.07</td>
<td>E4.560.07 12.C.ESD</td>
<td>E4.560.07 12.ESD</td>
<td>75</td>
</tr>
<tr>
<td>.15</td>
<td>E4.560.15 12.C.ESD</td>
<td>E4.560.15 12.ESD</td>
<td>150</td>
</tr>
<tr>
<td>.20</td>
<td>E4.560.20 12.C.ESD</td>
<td>E4.560.20 12.ESD</td>
<td>200</td>
</tr>
<tr>
<td>.30</td>
<td>E4.560.30 12.C.ESD</td>
<td>E4.560.30 12.ESD</td>
<td>300</td>
</tr>
</tbody>
</table>

*(KMA = Polymer Metal Mounting Bracket)*

**Note**: the e-chains® E4.1 may end with an inner link as well as an outer link. At the moving end an outer side link should always form the first e-chain® link. Depending on an even or odd number of links please specify the index [1] for odd or [2] for even! For the preassembled mode please add index A.  

**Part no. structure**:  
- Full set  
- Even numbers of links  
- Width index  
- Sets  

More information ➤ www.igus.eu/E4.56
E4.1 ESD Series E4.80
Product range
Stable due to “tongue and groove” design, new very large inner height

E4.80 Igus®
GmbH  Cologne  Tel. +49 2203 9649-800  Fax -222  info@igus.eu  www.igus.eu

E4.1 ESD Series E4.80 Crossbars every link (removable along the inner and outer radius)

E4.1 ESD Series E4.80 Dimensions

Unsupported applications | Short travel

Unsusptected applications | Short travel

The required clearance height: \( H_F = H + 60 \text{ mm} \) (with 3.0 kg/m fill weight)

Gliding applications | For long travels from 12 m to max. 400 m

Note: we recommend the project planning of such a system to be installed by our technicians.
In case of travels between 10 and 12 m we recommend a longer unsupported length.

More information | www.igus.eu/E4savetime
ESD mounting bracket | KMA pivoting | Attachment from any side
Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set KMA with C-profile</th>
<th>Part no. full set KMA without C-profile</th>
<th>BI [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.07</td>
<td>E4.800.07 12.C.ESD</td>
<td>E4.800.07 12.ESD</td>
<td>75</td>
</tr>
<tr>
<td>.12</td>
<td>E4.800.12 12.C.ESD</td>
<td>E4.800.12 12.ESD</td>
<td>125</td>
</tr>
<tr>
<td>.15</td>
<td>E4.800.15 12.C.ESD</td>
<td>E4.800.15 12.ESD</td>
<td>150</td>
</tr>
<tr>
<td>.20</td>
<td>E4.800.20 12.C.ESD</td>
<td>E4.800.20 12.ESD</td>
<td>200</td>
</tr>
<tr>
<td>.25</td>
<td>E4.800.25 12.C.ESD</td>
<td>E4.800.25 12.ESD</td>
<td>250</td>
</tr>
<tr>
<td>.30</td>
<td>E4.800.30 12.C.ESD</td>
<td>E4.800.30 12.ESD</td>
<td>300</td>
</tr>
</tbody>
</table>

(KMA = Polymer Metal Mounting Bracket)

Note: the e-chains® E4.1 may end with an inner link as well as an outer link. At the moving end an outer side link should always form the first e-chain® link. Depending on an even or odd number of links please specify the index 1 (for odd) or 2 (for even)! For the preassembled mode please add index A.

Part no. structure

A. must be indicated on preassembled configurations

- Full set
- Even numbers of links
- Width index
- Sets
Light, strong and cost effective - E4/light ESD

E4/light - weight reduction, a larger interior space, and a reduced price besides a compromise in thickness. The system E4/light features appear in two places: a reduced thickness of the side links (for all types), and a thinner crossbar for series 14240. E4/light e-chains® represent solutions with an optimum price/performance ratio for many industries. Especially for short travels, hanging and small standing designs. E4/light types are often the first choice.

Typical industries and applications
- Pick & place robots
- Semi-conductor machines
- Linear motors, actuators
- Measuring equipment
- Machine tools
- General mechanical engineering, etc.

Technical data
- Speed gliding / Acceleration gliding: ≤ 10 [m/s] / ≤ 50 [m/s²]
- Speed FLg / Acceleration FLg: ≤ 20 [m/s] / ≤ 200 [m/s²]
- Speed FLb / Acceleration FLb: ≤ 3 [m/s] / ≤ 6 [m/s²]
- Material - permitted temperature °C, igumid ESD: -40°C – +80°C
- Flammability class, igumid ESD: VDE 0304 IIC UL94-HB

Note for load diagrams FLg / FLb: values apply to standard e-chain® with material igumid G! The values can also be used for the assessment of applications of the e-chain® in special material ESD. If the respective maximum unsupported length exceeds 80%, the suitability of the e-chain® should be verified by a practice-oriented test. FLg = unsupported with straight upper run FLb = unsupported with permitted sag

Installation types, maximum travels

<table>
<thead>
<tr>
<th>Series</th>
<th>Unsupported</th>
<th>Gliding</th>
<th>Vertical hanging</th>
<th>Vertical standing</th>
<th>Side mounted unsupported</th>
<th>Rotary</th>
<th>Zig-Zag</th>
<th>Unsupported length lower run</th>
</tr>
</thead>
<tbody>
<tr>
<td>14240</td>
<td>≤ 4,0 m</td>
<td>≤ 150 m</td>
<td>≤ 80 m</td>
<td>≤ 6,0 m</td>
<td>≤ 2,0 m</td>
<td>upon request</td>
<td>upon request</td>
<td>upon request</td>
</tr>
<tr>
<td>15050</td>
<td>≤ 4,6 m</td>
<td>≤ 250 m</td>
<td>≤ 100 m</td>
<td>≤ 6,0 m</td>
<td>≤ 2,0 m</td>
<td>upon request</td>
<td>upon request</td>
<td>upon request</td>
</tr>
</tbody>
</table>
**E4/light ESD | Series 14240 | Product range**

"Light Design", large inner height

---

**E4/light ESD | Series 14240 | Dimensions**

**Unsupported applications | Short travel**

<table>
<thead>
<tr>
<th>R</th>
<th>150</th>
<th>200</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td>H₂</td>
<td>384</td>
<td>484</td>
<td>584</td>
</tr>
<tr>
<td>D</td>
<td>329</td>
<td>379</td>
<td>429</td>
</tr>
<tr>
<td>K</td>
<td>655</td>
<td>815</td>
<td>970</td>
</tr>
</tbody>
</table>

The required clearance height: \( H_{\text{F}} = H + 50 \text{ mm} \) (with 2.0 kg/m fill weight)

**Gliding applications | For long travels from 12 m to max. 250 m**

**The E4 e-chain® opener reduces assembly time**

- e-chain® opener tools for convenient opening and closing of system E4 e-chains®
- Simple opening and closing of chain links
- Even in difficult to access area
- Significant assembly time reduction

More information: [www.igus.eu/E4savetime](http://www.igus.eu/E4savetime)

---

**ESD interior separation**

**ESD standard separator**

For any application. Separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

Supplement part no. with required radius (R). Example: 14240.10.150.0.ESD

**E4/light ESD | Series 14240 | Crossbars every link** (removable along the inner and outer radius)

---

E4/light ESD | Series 14240 | Accessories
KMA mounting brackets | Attachment from any side | Pivoting

ESD mounting bracket | KMA pivoting | Attachment from any side
Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set KMA with C-profile</th>
<th>Part no. full set KMA without C-profile</th>
<th>Bi [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.05.</td>
<td>143400.05.12.C.ESD</td>
<td>143400.05.12.ESD</td>
<td>60</td>
</tr>
<tr>
<td>.06.</td>
<td>143400.06.12.C.ESD</td>
<td>143400.06.12.ESD</td>
<td>68</td>
</tr>
<tr>
<td>.10.</td>
<td>143400.10.12.C.ESD</td>
<td>143400.10.12.ESD</td>
<td>100</td>
</tr>
<tr>
<td>.15.</td>
<td>143400.15.12.C.ESD</td>
<td>143400.15.12.ESD</td>
<td>150</td>
</tr>
<tr>
<td>.18.</td>
<td>143400.18.12.C.ESD</td>
<td>143400.18.12.ESD</td>
<td>175</td>
</tr>
<tr>
<td>.20.</td>
<td>143400.20.12.C.ESD</td>
<td>143400.20.12.ESD</td>
<td>200</td>
</tr>
</tbody>
</table>

(KMA = Polymer Metal Mounting Bracket)

More information ►www.igus.eu/14240

These attachment orientations are set automatically in the choice of the KMA mounting bracket. For the preassembled mode please add index A.
### E4/light ESD | Series 15050 | Crossbars every link (removable along the inner and outer radius)

**ESD e-chains®**

<table>
<thead>
<tr>
<th>Bi [mm]</th>
<th>Ba [mm]</th>
<th>R [mm]</th>
<th>Weight [kg/m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>15050, 07.R0.ESD</td>
<td>75</td>
<td>105</td>
<td>150</td>
</tr>
<tr>
<td>15050, 12.R0.ESD</td>
<td>125</td>
<td>155</td>
<td>150</td>
</tr>
<tr>
<td>15050, 15.R0.ESD</td>
<td>150</td>
<td>180</td>
<td>150</td>
</tr>
<tr>
<td>15050, 20.R0.ESD</td>
<td>200</td>
<td>230</td>
<td>150</td>
</tr>
<tr>
<td>15050, 25.R0.ESD</td>
<td>250</td>
<td>280</td>
<td>150</td>
</tr>
<tr>
<td>15050, 30.R0.ESD</td>
<td>300</td>
<td>330</td>
<td>150</td>
</tr>
</tbody>
</table>

Supplement part no. with required radius (R). Example: 15050.20,150.0.ESD

### ESD interior separation

**ESD standard separator**

For any application. Separator with a wide base for maximum holding strength in the e-chain®. As standard separators are assembled every 2nd e-chain® link. More interior separation elements available on request.

**The E4 e-chain® opener reduces assembly time**

- e-chain® opener tools for convenient opening and closing of system E4 e-chains®
- Simple opening and closing of chain links
- Even in difficult to access areas
- Significant assembly time reduction

More information [www.igus.eu/E4savetime](http://www.igus.eu/E4savetime)

---

### E4/light ESD | Series 15050 | Dimensions

#### Unsupported applications | Short travel

- **R** 150 | 200 | 250
- **H** 408 | 508 | 608
- **D** 341 | 391 | 441
- **K** 655 | 815 | 970

The required clearance height: **H** = **H** + 60 mm (with 3.0 kg/m fill weight)

#### Gliding applications | For long travels from 12 m to max. 250 m

- **S/2**
- **D**
- **K**
- **A CL**

Note: we recommend the project planning of such a system to be installed by our technicians.

In case of travels between 9 and 12 m we recommend a longer unsupported length.
E4/light ESD | Series 15050 | Accessories
KMA mounting brackets | Attachment from any side | Pivoting

Fixed end
150500...2
Moving end
150500...1
Frontal view
of KMA

ESD mounting bracket | KMA pivoting | Attachment from any side
Recommended for unsupported and gliding applications

<table>
<thead>
<tr>
<th>Width index</th>
<th>Part no. full set KMA with C-profile</th>
<th>Part no. full set KMA without C-profile</th>
<th>Bi [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>.07.</td>
<td>150500.07.12.C.ESD</td>
<td>150500.07.12.ESD</td>
<td>75</td>
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<tr>
<td>.12.</td>
<td>150500.12.12.ESD</td>
<td>150500.12.ESD</td>
<td>125</td>
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<td>.15.</td>
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<td>.25.</td>
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<td>250</td>
</tr>
<tr>
<td>.30.</td>
<td>150500.30.12.ESD</td>
<td>150500.30.ESD</td>
<td>300</td>
</tr>
</tbody>
</table>

(KMA = Polymere Metal Mounting Bracket)

These attachment orientations are set automatically in the choice of the KMA mounting bracket. For the preassembled mode please add index A.

Part no. structure
150500-20.12.ESD.A
A, must be indicated on preassembled configurations

Mounting brackets | Steel pivoting | Electrically conductive
Recommended for unsupported, vertical hanging, standing applications

Part no. | Mounting bracket
--- | ---
15050.12 | Full mounting set (both sides)
2 parts each with pin / bore
15050.12.E | Stainless steel - full mounting set (both sides)
2 parts each with pin / bore

Stainless steel version available. Please add the index E! (Material stainless steel: AISI 1.4301)

Part no. structure
15050-12.E
Stainless steel option
Full set - 2 pieces each with pin / bore
Mounting bracket

Possible installation orientations. Other installation angles ➤ see installation sketch
Multi-axis movement enclosed and chip-repellent - triflex® R TRC ESD

- Approximately ±10° twist per e-chain® link
- High tensile strength of the ball-and-socket joint
- Fibre rod option for partial directional control and reinforcement
- No support elements e.g. steel cables, spring suspensions etc. are necessary
- Diverse range of accessories
- Optional retraction systems reliably guide multi-axis e-chains® with a minimum of space along the robot arm and dependably prevent loop formation
- TRC - secure, closed and chip-resistant
- Smooth and robust exterior against interfering edges
- High torsional strength
- Easy to shorten and lengthen

Typical industries and applications
- Axis 3 and 6 on robots
- Multi-axis machine tools
- Wet and cold cells
- Painting applications and ESD
- Sand and dust exposure
- Linear motors
- General mechanical engineering etc.

TRC.40 New* 15 13 13 11 43 58 13,9 72 74
TRC.60 New* 22,5 19,5 20,5 17,5 65 87 20,4 49 74
TRC.70 New* 28 24 26 22 81 110 25,6 39 74

*New in this catalogue
triflex® R ESD | Series TRC | Product range
Robotic applications, closed, chip-resistant
New in this catalogue

[Image of cable design]

**triflex® R TRC | Series TRC | Fully enclosed design, non openable**

<table>
<thead>
<tr>
<th>ESD e-chains®</th>
<th>Bi 1</th>
<th>Bi 2</th>
<th>Ba</th>
<th>R</th>
<th>d1</th>
<th>d2</th>
<th>Pitch</th>
<th>Links/m</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
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<td>15</td>
<td>13</td>
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<td>058</td>
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<tr>
<td>TRC. 60.087.0</td>
<td>22.5</td>
<td>19.5</td>
<td>65</td>
<td>087</td>
<td>20.5</td>
<td>17.5</td>
<td>20.4</td>
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<td>0.86</td>
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<td>TRC. 70.110.0</td>
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<td>24</td>
<td>81</td>
<td>110</td>
<td>26</td>
<td>22</td>
<td>25.6</td>
<td>39</td>
<td>1.32</td>
</tr>
</tbody>
</table>

**Dimensions**

[Images of dimensions for TRC.40, TRC.60, TRC.70]

**ESD mounting brackets | Standard fixation onto the robot/machine**

<table>
<thead>
<tr>
<th>Ø</th>
<th>Part no.</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<td>126</td>
<td>126</td>
<td>ø122,6</td>
<td>ø32</td>
<td>40</td>
<td>60</td>
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<tr>
<td>TRC</td>
<td>TRC.60.XX</td>
<td>126</td>
<td>126</td>
<td>ø122,6</td>
<td>ø32</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>TRC</td>
<td>TRC.70.XX</td>
<td>126</td>
<td>126</td>
<td>ø122,6</td>
<td>ø32</td>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

### ESD mounting brackets
- Standard ESD mounting bracket with strain relief

### Standard fixation onto the robot/machine
- Moving end: TR.XX.01
- Fixed end: TR.XX.01

### More information
- [www.igus.eu/triflexR](http://www.igus.eu/triflexR)

### Accessory Information
- ESD e-chains® from stock
- Standard ESD mounting bracket with strain relief
- Strain reliefs are possible on the fixed end and/or moving end.
- Standard: through holes in Ø F - 1) option: with threaded bushings, steel, M6/M8

---

**igus® GmbH Cologne | Tel. +49 2203 9649-800  Fax -222 | info@igus.eu | www.igus.eu**
ESD&ATEX...

Operation instructions

Supplement to installation instructions and catalogue information for igus® ESD e-chains® - classification: II 2 GD

1. Technical data see catalogue information

2. General safety information

These additional operating instructions apply to explosion protected versions of our e-chains® of the type “ESD” in colour grey (similar to RAL 7015). They supplement the installation instructions for the standard e-chains® and the catalogue information. The information in these instructions relates only to data impacting on explosion protection. The technical information in the installation instructions for the standard e-chains® and the category information still apply unchanged unless these Instructions explicitly exclude or replace the relevant information. Required documentation and other documents are filed with the following institute pursuant to the ATEX Directive: Physikalisch-Technische Bundesanstalt (PTB) Braunschweig and Berlin Bundesallee 100 38116 Braunschweig/Germany

3. Assembly, removal and installation

Please follow the information in the installation instructions for the standard e-chains® and the catalogue information on assembly, removal and installation for troublefree operation. igus® ESD e-chains® must be grounded with appropriate measures in accordance with drawing number: 18392.2 in order to discharge any electrostatic charges occurring. Assembly, installation, commissioning and maintenance may be performed only by “personnel trained in explosion protection”. Please also note the corresponding national safety regulations and the relevant national regulations in respect of explosion protection during installation and operation.

4. Commissioning

Before commissioning the system, check that the system has been installed correctly in accordance with the installation instructions for the standard e-chains® and the catalogue information. Correct grounding must be checked in particular in the case of ESD e-chains®.

5. Maintenance

igus® e-chains® are maintenance free*. Correct grounding of the e-chains® must be inspected at regular intervals.

(*In case of large projects a customised maintenance plans can become an issue and will be created if necessary)

Mounting brackets (moving end and fixed end) electrically conductive (e.g. ESD material or metal) e-chain® ESD material

Electrically conductive base surface or guide troughs electrically conductive (i.e. metal) e-chain® ESD material

Connection of an igus® ESD e-chain® in accordance with ATEX Directive 94/9/EC

EC Declaration of Conformity

Document no.: QM-O-419-B
Manufacturer: igus® GmbH • Spicher Str. 1a • 51147 Cologne
Description of product: igus® ESD e-chains®

Description of product:

ESD e-chains® (non-electrical components) used for dynamic guidance of energy conductors such as lines and hoses with defined bending radii and travel parameters.

The conformity rating was performed on the basis of ATEX Directive 94/9/EC according to part no. 8 (1) b) ii). The corresponding documents are filed at the following institute in compliance with the ATEX Directive:

Physikalisch-Technische Bundesanstalt (PTB) Braunschweig and Berlin Bundesallee 100 • 38116 Braunschweig/Germany

Investigations required after classification II 2 GD in accordance with the standards and regulations listed below were conducted and verified by the PTB: Cenelec TR 50404:2003 (previously: DIN 53482/VDE0303/Part 3, verified by the PTB) TRBS 2153

Marking:

II 2 GD - special colour of the ESD e-chain® colour: grey (similar to RAL 7015)

The Declaration of Conformity refers only to conception and manufacture of the devices described above according to ATEX Directive 94/9/EC in compliance with the Harmonised Standard DIN EN 13463 – 1 (2009).

The related operating instructions contain important safety instructions for positioning and commissioning of igus® ESD e-chains® according to the ATEX Directive.

We hereby declare that igus® ESD e-chains® fulfill the requirements of the directive specified above.

igus®, Cologne, Germany 06.February 2012

Chief Executive Officer
Addresses

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Cologne
Shanghai
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Head of Department
Phone +49-2203-9649-146
ereder@igus.de

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- India
- Indonesia
- Iran
- Ireland
- Israel
- Italy
- Japan
- Jordan
- Kuwait
- Latvia
- Lebanon
- Lithuania
- Luxembourg
- Malaysia
- Martinique
- Mexico
- Morocco
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- New Zealand
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- Panama
- Peru
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- Poland
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- Slovakia
- Slovenia
- South Africa
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- Spain
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