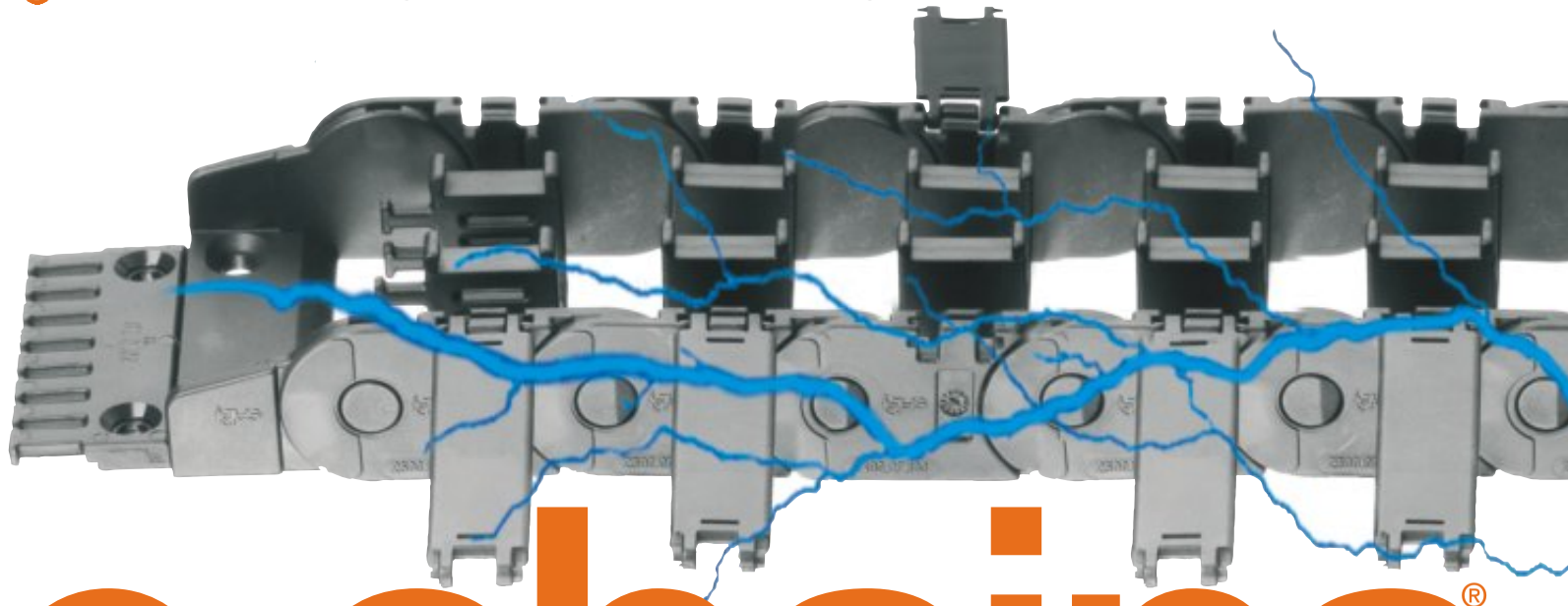
# esd.atex.

igus®.eu...e-chainsystems®...Product range...24h, from stock... 01.01.2012



# e.chains®

# ESD&ATEX...ig

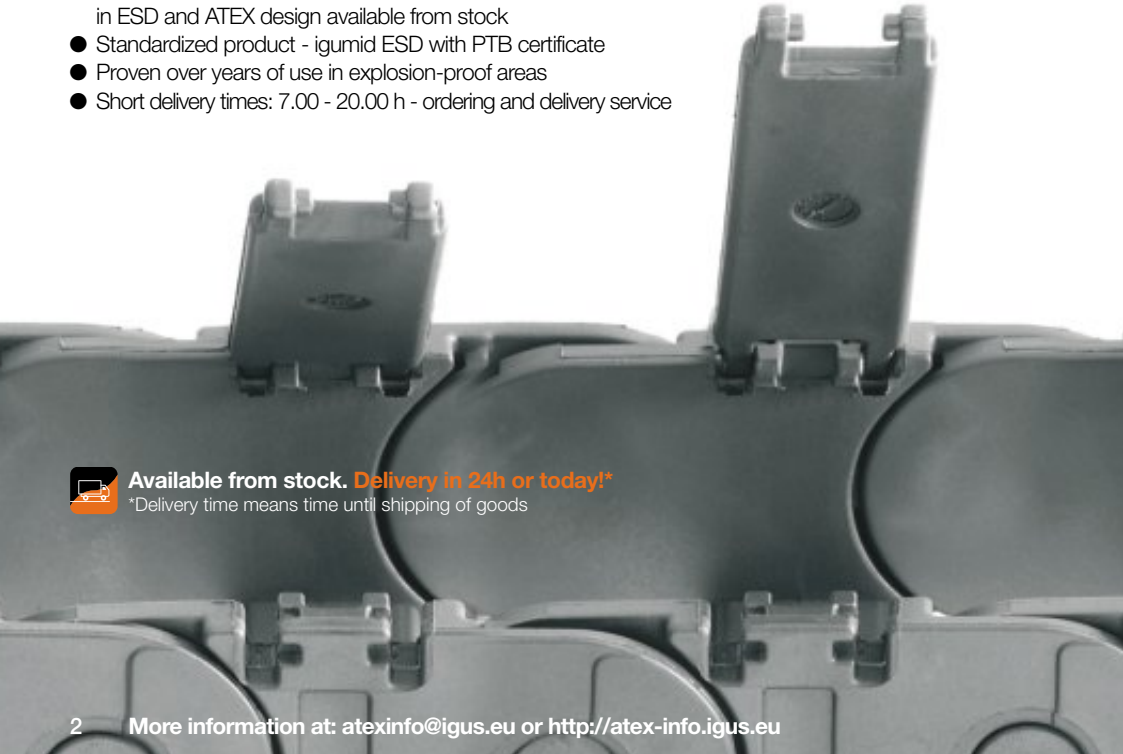
**In more and more applications in modern production facilities, the demands on the prevention of static charges are increasing. Essentially there are two reasons for this**

- **ESD** - Avoidance of static charges in the field of manufacturing processes of electronic components or assemblies
- **ATEX** - Prevention of explosive static charge in hazardous environment

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 53482 and the guidelines for static electricity "ZH1/200" 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 GLW 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 design available from stock
- Standardized product - igumid ESD with PTB certificate
- Proven over years of use in explosion-proof areas
- Short delivery times: 7.00 - 20.00 h - ordering and delivery service



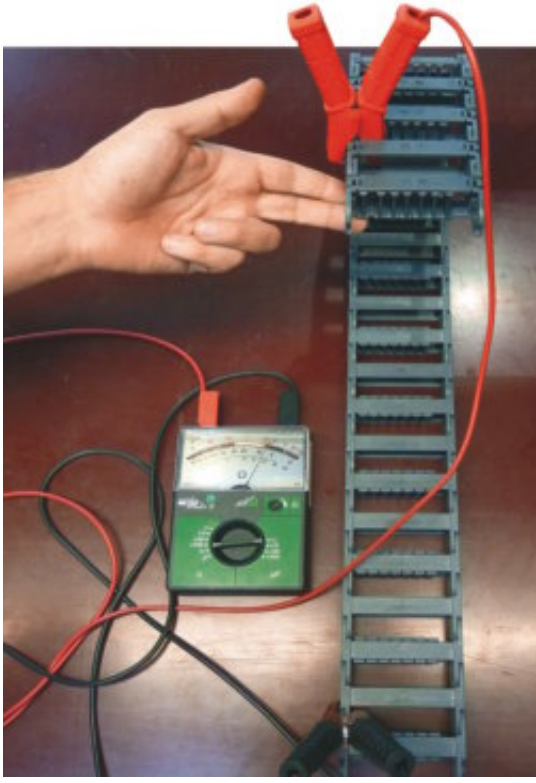
**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

# us®...e-chains®...

## Conductivity of igus® products from igumid ESD

In contrast to temporarily acting applied conductive surface coatings or volatile incorporated antistatic agents, the used additives grant a long lasting and maintenance-free conductivity. An e-chain® is not sufficient to ensure sufficient conductivity, if only the individual components exhibit conductivity, but the whole e-chain® from one to the other end must have a continuous conductivity. All products in this catalog are optimized 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. Color* of igumid ESD products: similar to RAL7015, slate-gray to secure distinguishability with standard materials.

(*Exception: Cover zipper e-chains® series 07/09 - here black in color)



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

# igumid...ESD...

## Structural design

Not only the material is important for a safe electrostatic discharge. The structural design is also crucial for a truly safe use. The e-chains® from the E4.1 modular kit ensure a permanently constant discharge because they have a positive connection of the chain links to one another. With the patented "tongue and groove", the inner plate engages the outer plate - thereby guaranteeing a 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 can be found on ► page 68/69 of this catalog.**

## igumid ESD materials data

| Materials data | Measurement | Values |
|---|---|---|
| igumid **ESD** | units | igumid **ESD** |
| **Mechanical properties** | | |
| Yield stress (dry/wet) | MPa | * |
| Elongation at break (dry/wet) | % | * |
| Modulus of elasticity (tensile test) | MPa | * |
| Elasticity limit (bending) | MPa | 9.500 |
| Bending strength | MPa | 230 |
| Shore hardness D | – | 83 |
| **General properties** | | |
| Density | g/m3 | 1,2 |
| Moisture absorption 23/50 RF | Wt.-% | 1,9 |
| Maximum water absorption | Wt.-% | 7,3 |
| **Electrical properties** | | |
| Specific contact resistance | Ω*cm | <10⁹ |
| Surface resistance ROA | Ω | <10⁹ |

| Materials data | Measurement | Values |
|---|---|---|
| igumid **ESD** | units | igumid **ESD** |
| **Thermal properties** | | |
| Lower operating temperature | °C | -40°C / -40°F |
| Upper long-term operating temperature | °C | 80°C / 176°F |
| Upper short-term operating temperature | °C | 150°C / 302°F |
| **Material evidence** | | |
| Fire behavior according to UL94 | – | HB |
| Silicon-free | – | Yes |
| Halogen-free | – | Yes |
| 2002/95/EG (RoHS) | – | Yes |
| 2002/96/EG (WEEE). | – | Yes |
| **Color** (RAL, approximately) | | |
| ESD e-chains® | slate-gray ■ ≈ RAL7015 | |
| Exception: Lid zipper Series 07/09 | black ■ ≈ RAL9004 | |

*Valuees upon request

**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.

## Nothing suitable in the bearing range?

Many other products of the complete igus® e-chains® range are also available as special design 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 tip 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/eu/F**

# Applications

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

# ESD&ATEX.....

**Legende**
- ● Standard
- ○ Suitable to a limited extent
- ▲ Options
- ■ Especially suitable
- * In preparation/upon request

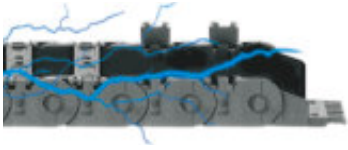
## zipper e-chains® - quick opening due to zipper-principle

**ESD** e-chains® - zip-open along outer radius

| Opening principle | Series / product | Inner height *hi* [mm] + ø cable max. | | Inner width *Bi* [mm] from - to | Outer height *ha* [mm] |
|---|---|---|---|---|---|
| | 07 | 10,3 | ø 8 | 10 - 50 | 15 |
| | 09 | 15 | ø 13 | 16 - 50 | 19,3 |

## E2/000 e-chains® - two-piece e-chains® - the E2 standard!

**ESD** e-chains® - snap-open along outer radius



| Opening principle | Series / product | Inner height *hi* [mm] + ø cable max. | | Inner width *Bi* [mm] from - to | Outer height *ha* [mm] |
|---|---|---|---|---|---|
| | 1500 | 21 | ø 18 | 15 - 80 | 28 |
| | 2500 | 25 | ø 23 | 25 - 125 | 35 |
| | 2700 | 35 | ø 32 | 50 - 125 | 50 |

## E4.1 - ONE e-chain® family for all applications

**ESD** e-chains® - crossbars every link - robust version- can be opened from both sides

| Opening principle | Series / product | Inner height *hi* [mm] + ø cable max. | | Inner width *Bi* [mm] from - to | Outer height *ha* [mm] |
|---|---|---|---|---|---|
| | E4.21 | 21 | ø 18 | 30 - 70 | 28 |
| | E4.28 | 28 | ø 25 | 40 - 125 | 42 |
| | E4.32 | 32 | ø 28 | 50 - 200 | 54 |
| | E4.42 | 42 | ø 38 | 50 - 200 | 64 |
| | E4.56 | 56 | ø 50 | 75 - 300 | 84 |
| | E4.80 | 80 | ø 74 | 75 - 300 | 108 |

## E4/light - specialty: light weight - low price, cost effective

**ESD** e-chains® - crossbars every link - light version - can be opened from both sides

| Opening principle | Series / product | Inner height *hi* [mm] + ø cable max. | | Inner width *Bi* [mm] from - to | Outer height *ha* [mm] |
|---|---|---|---|---|---|
| | 14240 | 62 | ø 56 | 50 - 200 | 84 |
| | 15050 | 80 | ø 74 | 75 - 300 | 108 |



**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

# . Product range.

| Outer width *Ba* [mm] from - to | Bending radius *R* [mm] von - bis | Pitch [mm] | Unsupported fill weight max [kg/m] | Unsupported length $FL_B$ max [m] | Long travel max [m] | Interior separation possiblities: Separators | Interior separation possiblities: Full width Shelves | Page |
|---|---|---|---|---|---|---|---|---|
| 16,5 - 57 | 18 - 38 | 20 | 0,4 | 0,55 | – | – | – | **10** |
| 24,2 - 58,2 | 28 - 48 | 20 | 0,7 | 1,0 | – | ● | ● | **14** |
| 28,5 - 93,5 | 38 - 145 | 33,3 | 2 | 1,75 | 75 | ● | ● | **20** |
| 41 - 141 | 55 - 175 | 46 | 5 | 2,25 | 100 | ● | ● | **24** |
| 66 - 141 | 63 - 150 | 56 | 8 | 2,75 | 120 | ● | ● | **28** |
| 44 - 84 | 48 - 100 | 30,5 | 4 | 2,5 | 120 | ● | ● | **34** |
| 60 - 145 | 55 - 125 | 46 | 10 | 2,5 | 200 | ● | ● | **38** |
| 73 - 223 | 63 - 250 | 56 | 15 | 3,3 | 200 | ● | – | **42** |
| 76 - 226 | 75 - 250 | 67 | 37 | 4,0 | 300 | ● | – | **46** |
| 109 - 334 | 135 - 250 | 91 | 62,5 | 5,0 | 400 | ● | – | **50** |
| 100 - 350 | 200 - 300 | 111 | 80 | 6,2 | 400 | ● | – | **54** |
| 76 - 226 | 150 - 250 | 91 | 40 | 4,0 | 150 | ● | – | **60** |
| 105 - 330 | 150 - 250 | 91 | 55 | 4,6 | 250 | ● | – | **64** |

# zipper ESD - zip fastening e-chains®

zipper e-chains® convince in 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 "zipper" Series is one of the most popular e-chain® Series in demanding applications.

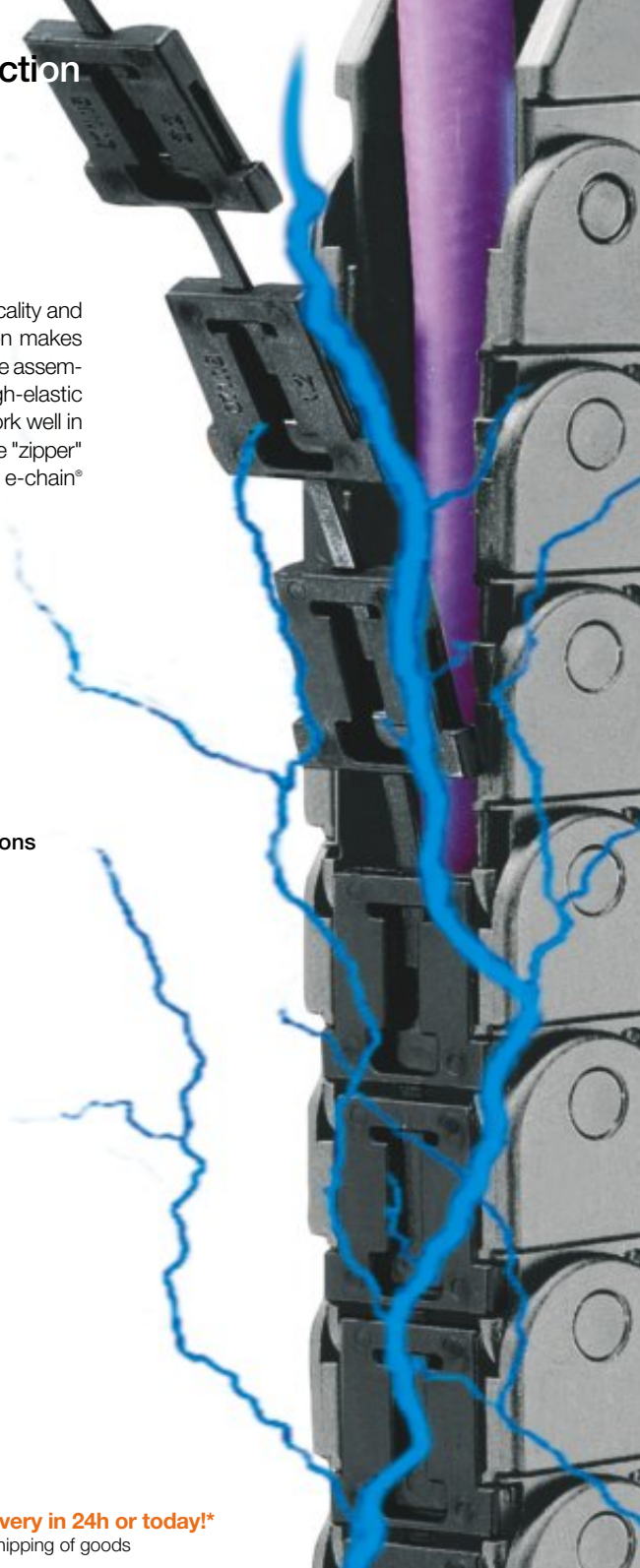
- zipper-like design for quick opening and closing of lids
- zipper lids can be separated and joined at each chain link
- Small pitch for low noise and smooth operation
- High accelerations: 100 m/s² and more are possible
- Interior separation possible for larger versions (Series 09)

**Typical industries and applications**

- Pick & place robots
- Semi-conductor machines
- Linear motors, actuators
- Measuring equipment
- Machine tools

iF-Design Award Winner

Fast Opening and Closing with "zipper"



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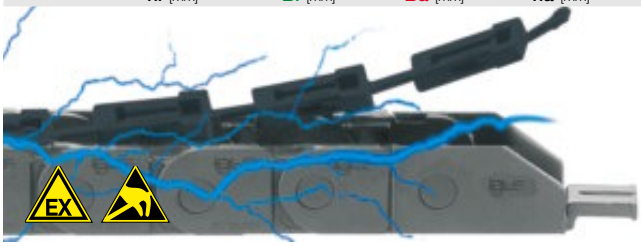
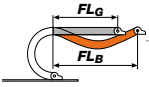
*Delivery time means time until shipping of goods




**zipper - two-piece ESD e-chains®**
zip-open along outer radius

| Series | Inner height *hi* [mm] | Inner width *Bi* [mm] | Outer width *Ba* [mm] | Outer height *ha* [mm] | Bending radius *R* [mm] | Unsupported length max. [m] | Page |
|---|---|---|---|---|---|---|---|
| **07** | 10,3 | 10 - 50 | 16,5 - 57 | 15,0 | 18 - 38 | 0,55 | **10** |
| **09** | 15,0 | 16 - 50 | 24,2 - 58,2 | 19,3 | 28 - 48 | 1,00 | **14** |

## Technical Data - zipper **ESD**



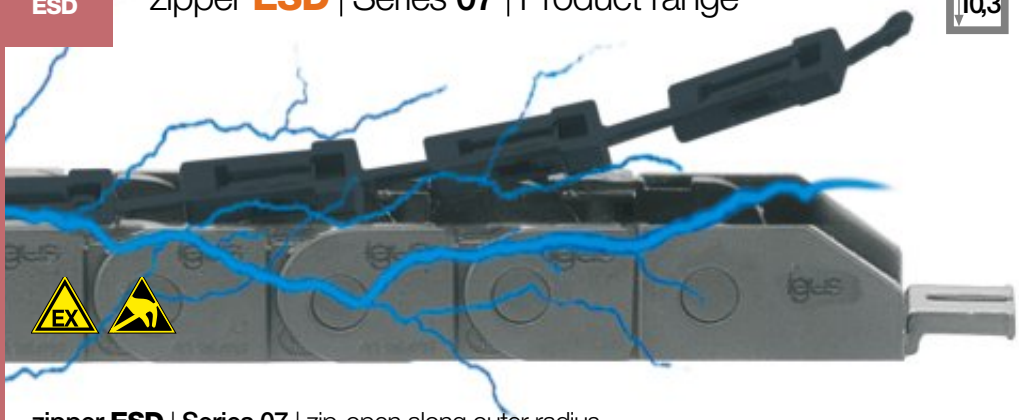

| | |
|---|---|
| Gliding speed / acceleration (maximum) | max. 10 [m/s] / max. 50 [m/s²] |
| Speed / acceleration $FL_G$ max. | max. 20 [m/s] / max. 200 [m/s²] |
| Speed / acceleration $FL_B$ max. | max. 3 [m/s] / max. 6 [m/s²] |
| Material - permitted temperature °C | igumid ESD / -40° up to +80° C |
| Flammability class, igumid ESD | VDE 0304 IIC UL94 HB |

$FL_G$ = with straight upper run $FL_B$ = with permitted sag

## Installation methods overview, maximum travels - zipper **ESD**

| e-chain® Series | Unsupported application | Vertical hanging | Vertical standing | Side mounted unsupported |
|---|---|---|---|---|
| 07 | ≤ 0,55 m | upon request | upon request | upon request |
| 09 | ≤ 1,0 m | upon request | upon request | upon request |

# zipper ESD | Series 07 | Product range



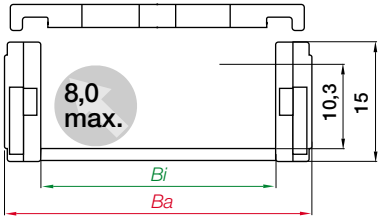

## zipper ESD | Series 07 | zip-open along outer radius

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | ESD Mounting brackets Polymer, one-piece from stock* |
|---|---|---|---|---|
| 07. 10 .R.0.ESD | 10 | 16,5 | \| 018 \| 028 \| 038 \| | 060.10. 12PZ.ESD |
| 07. 16 .R.0.ESD | 16 | 22,5 | \| 018 \| 028 \| 038 \| | 060.16. 12PZ.ESD |
| 07. 20 .R.0.ESD | 20 | 27 | \| 018 \| 028 \| 038 \| | 060.20. 12PZ.ESD |
| 07. 30 .R.0.ESD | 30 | 37 | \| 018 \| 028 \| 038 \| | 060.30. 12PZ.ESD |
| 07. 40 .R.0.ESD | 40 | 47 | \| 018 \| 028 \| 038 \| | 060.40. 12PZ.ESD |
| 07. 50 .R.0.ESD | 50 | 57 | \| 018 \| 028 \| 038 \| | 060.50. 12PZ.ESD |

Supplement Part No. with required radius *(R)* Example: **07.40.038.0.ESD**

### Order key
**07. 40. 038.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type

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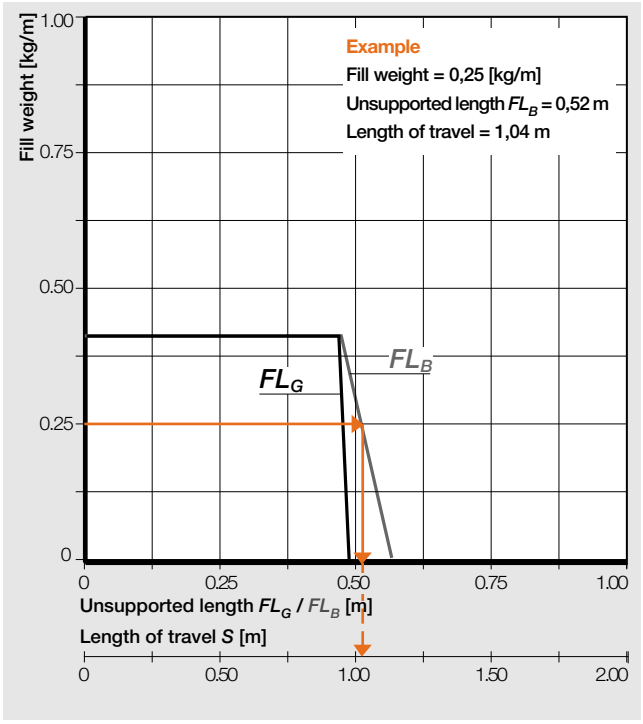
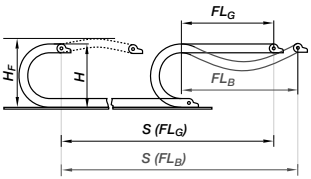
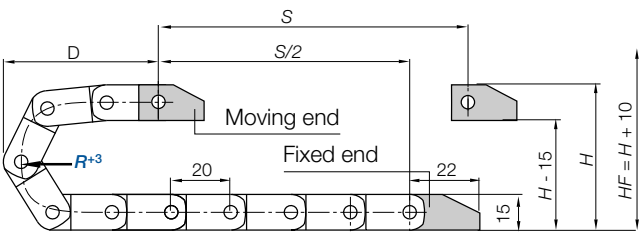



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ page 9

**Pitch** = 20 mm/link
**Links/m** = 50 (1000 mm)
**Chain length** = $S/2 + K$

| *R* | 018 | 028 | 038 |
|---|---|---|---|
| *H* | 51 | 71 | 91 |
| *D* | 56 | 66 | 76 |
| *K* | 100 | 130 | 160 |

The required clearance height: $H_F = H + 10$ mm (with 0,2 kg/m fill weight)

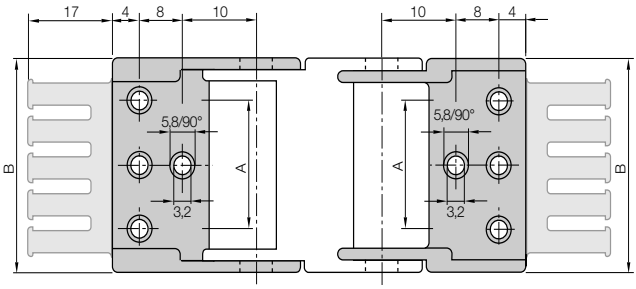
$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
*S* = Length of travel
*R* = Bending radius
*H* = Nominal clearance height
$H_F$ = Required clearance height
*D* = Overlength e-chain®, radius in final position
*K* = π • *R* + "safety"

# zipper ESD | Series 07 | Mounting brackets

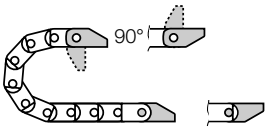
## One-piece mounting bracket

Moving end
060...1(PZ)

Fixed end
060...2(PZ)




Moving end




Fixed end

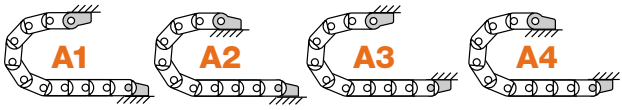
**060.16.12 - 060.20.12:** center bores only
**060.30.12 - 060.40.12:** bores (see figure above)

## ESD mounting bracket | Polymer locking, one-piece

Recommended for unsupported and gliding applications

| Width Index | Part No. ESD full set with tiewrap plates | Dim. A [mm] | Dim. B [mm] | Number of teeth |
|---|---|---|---|---|
| 10. ▶ | 060.10. 12PZ.ESD | – | 16,5 | 1 |
| 16. ▶ | 060.16. 12PZ.ESD | – | 22,5 | 2 |
| 20. ▶ | 060.20. 12PZ.ESD | – | 27,0 | 2 |
| 30. ▶ | 060.30. 12PZ.ESD | 22 | 37,0 | 3 |
| 40. ▶ | 060.40. 12PZ.ESD | 32 | 47,0 | 4 |
| 50. ▶ | 060.50. 12PZ.ESD | 42 | 57,0 | 5 |

- One-piece mounting bracket
- Available with or without strain relief tiewrap plates
- Corrosion-resistant
- Inner and outer attachment possible
- Various installation options on the fixed end and/or the moving end




Possible installation conditions: For the **preassembled** mode please add index **A1... A4** ▶ **e.g. 060.40.12PZ.A1.ESD**

**Part No. structure**

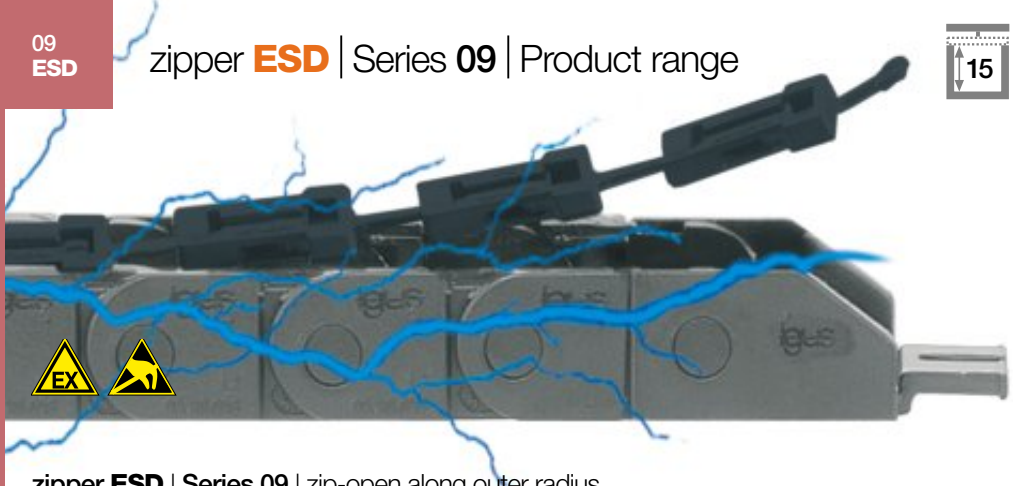
060.40.12PZA1.ESD

- Index: **ESD**
- A…must be indicated on preassembled configurations
- With integrated strain relief tiewrap plates
- **Full set = 12**
- Mounting brackets for selected width index

**Single-part order**

Mounting bracket **Moving end**
060.40.1PZA1.ESD (preass. + tiewrap plate)

Mounting bracket **Fixed end**
060.40.2PZA1.ESD (preass. + tiewrap plate)



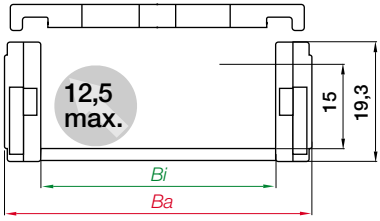

## zipper ESD | Series 09 | zip-open along outer radius

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | ESD Mounting brackets Polymer, one-piece from stock* |
|---|---|---|---|---|
| 09. 16 .R.0.ESD | 16 | 24,2 | \| – \| 038 \| – \| | 080.16. 12PZ.ESD |
| 09. 20 .R.0.ESD | 20 | 28,2 | \| – \| – \| 048 \| | 080.20. 12PZ.ESD |
| 09. 30 .R.0.ESD | 30 | 38,2 | \| 028 \| 038 \| 048 \| | 080.30. 12PZ.ESD |
| 09. 40 .R.0.ESD | 40 | 48,2 | \| 028 \| 038 \| 048 \| | 080.40. 12PZ.ESD |
| 09. 50 .R.0.ESD | 50 | 58,2 | \| 028 \| 038 \| 048 \| | 080.50. 12PZ.ESD |

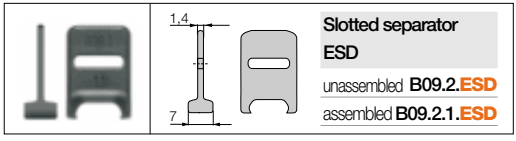
Supplement Part No. with required radius *(R)* Example: **09.40.048.0.ESD**

### Order key
**09. 40. 048.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type



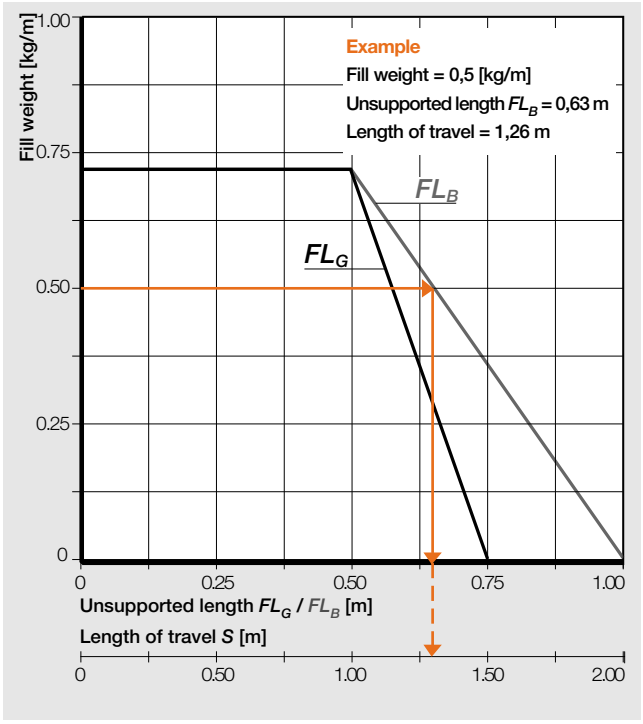

## zipper ESD | Series 09 | Interior separation | Standard

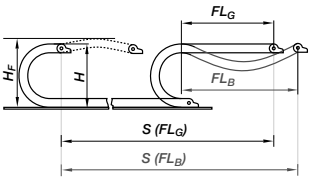



Slotted separator ESD
unassembled **B09.2.ESD**
assembled **B09.2.1.ESD**

### Standard separator ESD
For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

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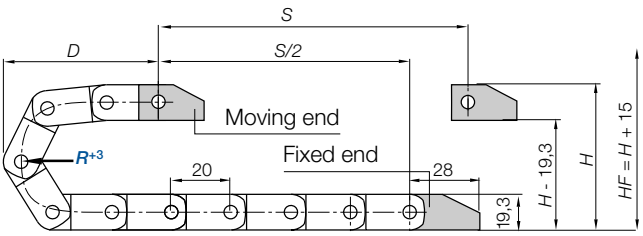
Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ page 9

**Pitch** = 20 mm/link
**Links/m** = 50 (1000 mm)
**Chain length** = $S/2 + K$

| R | 028 | 038 | 048 |
|---|---|---|---|
| H | 75 | 95 | 115 |
| D | 68 | 78 | 88 |
| K | 130 | 160 | 195 |

The required clearance height: $H_F = H + 15$ mm (with 0,3 kg/m fill weight)

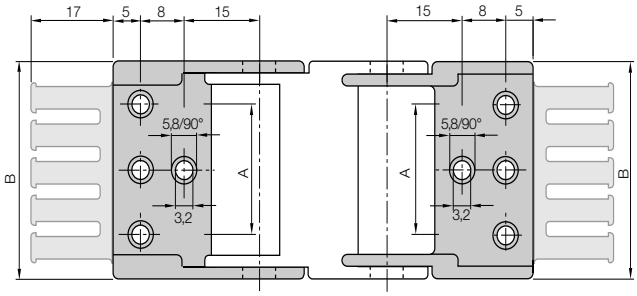
$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
S = Length of travel
R = Bending radius
H = Nominal clearance height
$H_F$ = Required clearance height
D = Overlength e-chain®, radius in final position
K = π • R + "safety"

# zipper ESD | Series 09 | Mounting brackets

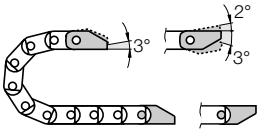
## One-piece mounting bracket

Moving end
080...1(PZ)

Fixed end
080...2(PZ)




Moving end




Fixed end

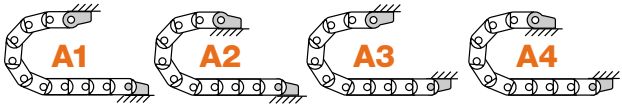
**080.16.12 - 080.20.12:** center bores only
**080.30.12 - 080.40.12:** bores (see figure above)

## ESD mounting bracket | Polymer locking, one-piece

Recommended for unsupported and gliding applications

| Width Index | Part No. ESD full set with tiewrap plates | Dim. A [mm] | Dim. B [mm] | Number of teeth |
|---|---|---|---|---|
| 16 ▶ | 080.16. 12PZ.ESD | – | 24,2 | 2 |
| 20 ▶ | 080.20. 12PZ.ESD | – | 28,2 | 2 |
| 30 ▶ | 080.30. 12PZ.ESD | 22 | 38,2 | 3 |
| 40 ▶ | 080.40. 12PZ.ESD | 32 | 48,2 | 4 |
| 50 ▶ | 080.50. 12PZ.ESD | 42 | 58,2 | 5 |

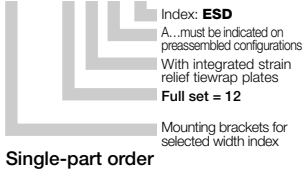
- One-piece mounting bracket
- Available with or without strain relief tiewrap plates
- Corrosion-resistant
- Inner and outer attachment possible
- Various installation options on the fixed end and/or the moving end




Possible installation conditions: For the **preassembled** mode please add index **A1... A4** ▶ **e.g. 080.40.12PZA1.ESD**

**Part No. structure**

080.40.12PZA1.ESD




**Single-part order**

Mounting bracket **Moving end**
080.40.1PZA1.ESD (preass. + tiewrap plate)

Mounting bracket **Fixed end**
080.40.2PZA1.ESD (preass. + tiewrap plate)

# E2/000 ESD with 2-piece link-design for a wide range of applications

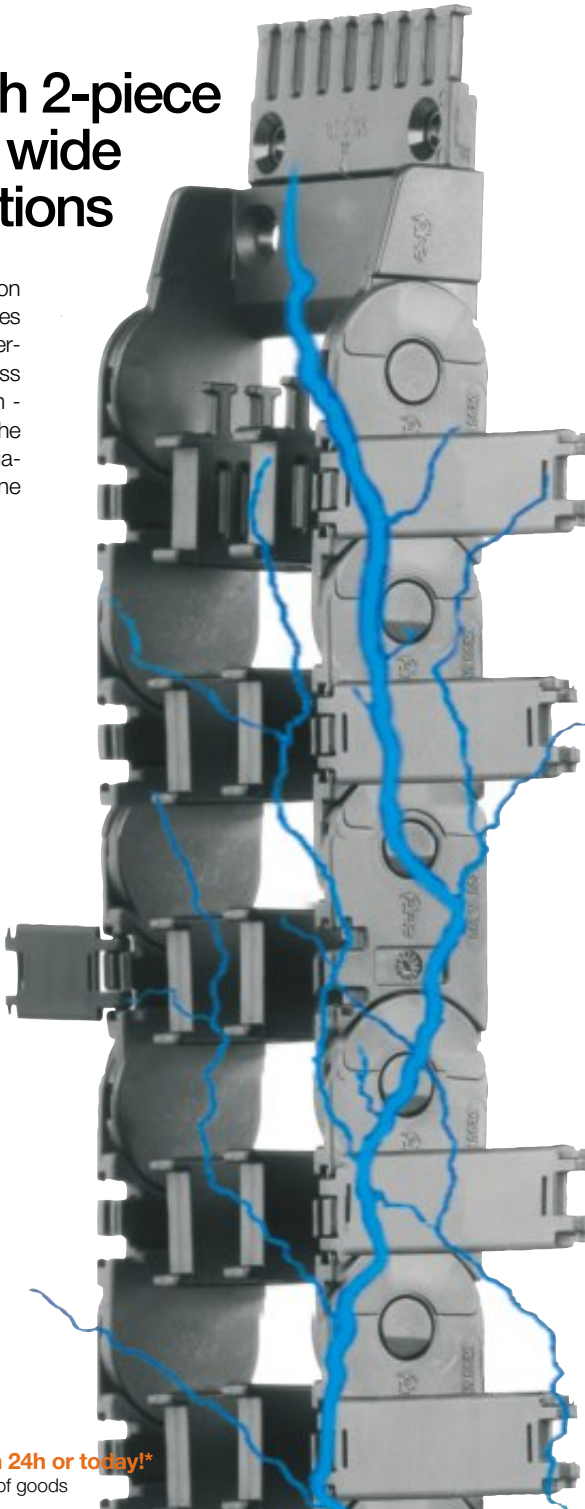
Die E2/000 Series is igus® fourth generation in this popular size range. All past experiences went into this Millenium Series: easy and versatile assembly combined with ruggedness - high stability paired with quieter motion - long cable life and many fixation options. The design is consistent within 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

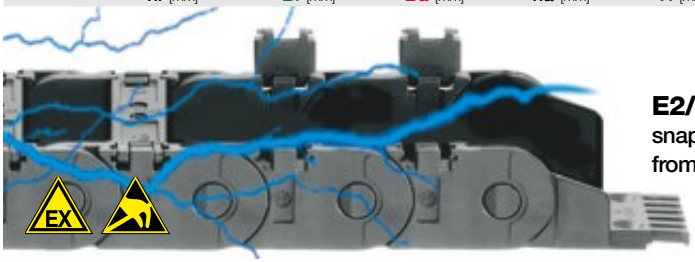
Electrically conductive ESD/ATEX version with PTB-certification upon request

System E2/000 - 2-piece link-design



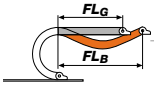
**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

| Series | Inner height *hi* [mm] | Inner width *Bi* [mm] | Outer width *Ba* [mm] | Outer height *ha* [mm] | Bending radius *R* [mm] | Unsupported length max. [m] | Page |
|---|---|---|---|---|---|---|---|
| **1500** | 21 | 15 - 80 | 28,5 - 93,5 | 28 | 38 - 145 | 1,75 | **20** |
| **2500** | 25 | 25 - 125 | 41,0 - 141,0 | 35 | 55 - 175 | 2,25 | **24** |
| **2700** | 35 | 50 - 125 | 66,0 - 141,0 | 50 | 63 - 150 | 2,75 | **28** |




**E2/000 ESD e-chains®**
snap-open along outer radius from both sides

## Technical Data - System E2/000 **ESD**




| | |
|---|---|
| Gliding speed / acceleration (maximum) | max. 10 [m/s] / max. 50 [m/s²] |
| Speed / acceleration $FL_G$ max. | max. 20 [m/s] / max. 200 [m/s²] |
| Speed / acceleration $FL_B$ max. | max. 3 [m/s] / max. 6 [m/s²] |
| Material - permitted temperature °C | igumid ESD / -40° up to +80° C |
| Flammability class, igumid ESD | VDE 0304 IIC UL94 HB |

$FL_G$ = with straight upper run  $FL_B$ = with permitted sag

## Installation methods overview, maximum travels - System E2/000 **ESD**

| e-chain® Series | Unsupported application | Gliding | Vertical hanging | Vertical standing | Side mounted unsupported | Circular | Zig-zag | Unsupported length lower run |
|---|---|---|---|---|---|---|---|---|
| **1500** | ≤ 1,75 m | ≤ 75 m | ≤ 20 m | ≤ 2,0 m | ≤ 0,7 m | with rework | upon request | upon request |
| **2500** | ≤ 2,25 m | ≤ 100 m | ≤ 40 m | ≤ 3,0 m | ≤ 1,0 m | with rework | upon request | upon request |
| **2700** | ≤ 2,75 m | ≤ 120 m | ≤ 50 m | ≤ 3,0 m | ≤ 1,0 m | with rework | upon request | upon request |

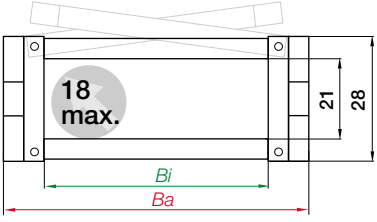

## ESD e-chains® | Series 1500 | snap-open along outer radius

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | KMA mounting brackets ESD pivoting, from stock** |
|---|---|---|---|---|
| 1500.015.R.0.ESD | 15 | 28,5 | 038 \| 048 \| – \| – \| – \| – \| | – |
| 1500.025.R.0.ESD | 25 | 38,5 | 038 \| 048 \| 075 \| – \| – \| – \| | 15000.025.34PZB.ESD |
| 1500.038.R.0.ESD | 38 | 51,5 | 038 \| 048 \| 075 \| – \| – \| – \| | 15000.038.34PZB.ESD |
| 1500.050.R.0.ESD | 50 | 63,5 | 038 \| 048 \| 075 \| 100 \| 125 \| – \| | 15000.050.34PZB.ESD |
| 1500.068.R.0.ESD | 68 | 81,5 | 038 \| 048 \| 075 \| 100 \| 125 \| 145 \| | 15000.068.34PZB.ESD |
| 1500.080.R.0.ESD | 80 | 93,5 | 038 \| 048 \| 075 \| 100 \| 125 \| 145 \| | 15000.080.34PZB.ESD |

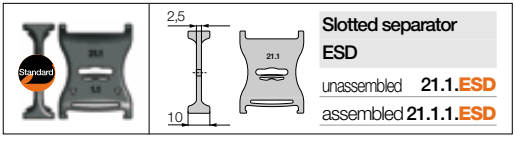
Supplement Part No. with required radius *(R)* Example: **1500.038.038.0.ESD**

### Order key
**1500. 038. 038.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## ESD e-chains® | Series 1500 | Interior separation | Standard



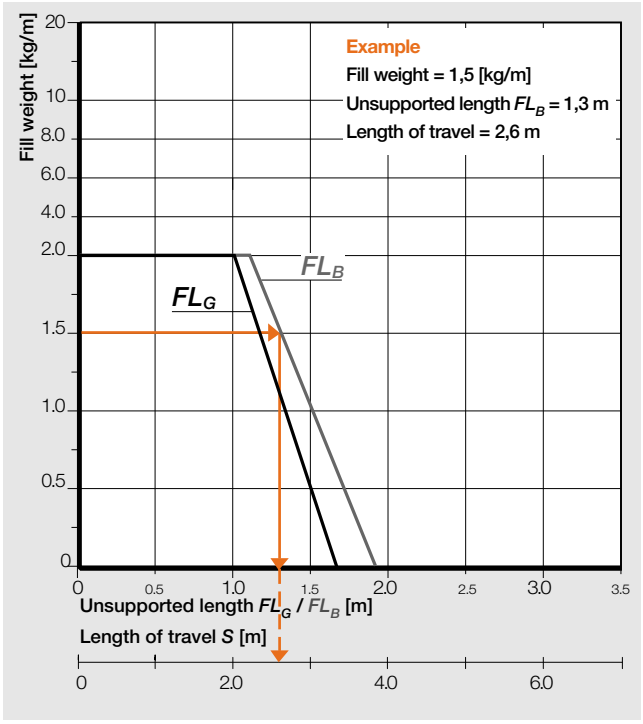

**Slotted separator ESD**

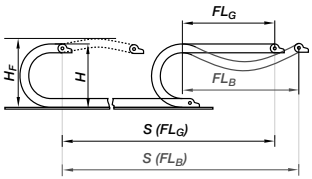
unassembled **21.1.ESD**

assembled **21.1.1.ESD**

### Standard separator ESD
For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

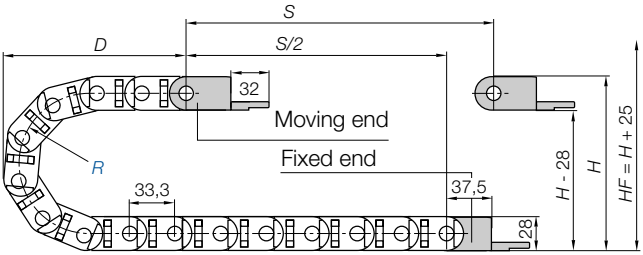



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 19**

**Pitch** = 33,3 mm/link
**Links/m** = 30 (1000 mm)
**kettenlänge** = $S/2 + K$

| ***R*** | **038** | **048** | **075** | **100** | **125** | **145** |
|---|---|---|---|---|---|---|
| ***H*** | 104 | 124 | 178 | 228 | 278 | 318 |
| ***D*** | 102 | 112 | 139 | 164 | 189 | 209 |
| ***K*** | 190 | 220 | 305 | 385 | 460 | 525 |

The required clearance height: $H_F = H + 25$ mm (with 0,5 kg/m fill weight)

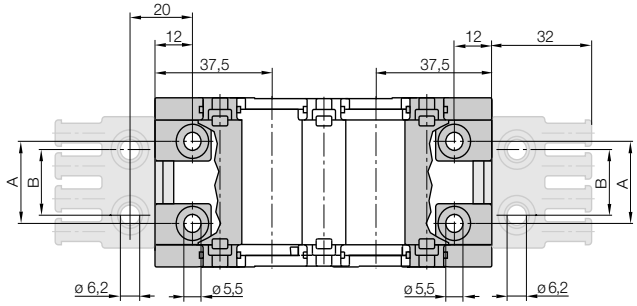
$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
$S$ = Length of travel
$R$ = Bending radius
$H$ = Nominal clearance height
$H_F$ = Required clearance height
$D$ = Overlength e-chain®, radius in final position
$K$ = $\pi \bullet R$ + "safety"

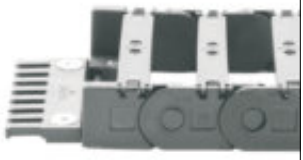
# E2/000 ESD | 1500 | KMA Mounting brackets pivoting

**For tight installation conditions**

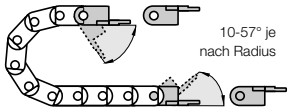
Moving end
15000...3PZ(B)

Fixed end
15000...4PZ(B)



Moving end



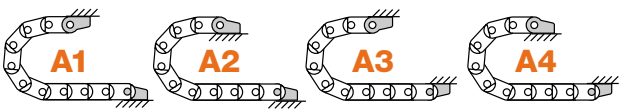

Fixed end

## ESD mounting bracket | Polymer pivoting

Recommended for unsupported and gliding applications

| Width Index | Part No. ESD full set with tiewrap plates | Dim. A [mm] | Dim. B [mm] | Number of teeth |
|---|---|---|---|---|
| .015. ▶ | – | – | – | – |
| .025. ▶ | 15000.025.34PZB.ESD | 12 | 15 | 3 |
| .038. ▶ | 15000.038.34PZB.ESD | 25 | 20 | 4 |
| .050. ▶ | 15000.050.34PZB.ESD | 37 | 30 | 5 |
| .068. ▶ | 15000.068.34PZB.ESD | 55 | 40 | 6 |
| .080. ▶ | 15000.080.34PZB.ESD | 67 | 60 | 8 |

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




Possible installation conditions: For the **preassembled** mode please add index **A1... A4** ▶ **e.g. 15000.038.34PZBA1.ESD**

- For tight installation conditions
- Strain relief with detachable tiewrap plates
- Variable traverse angle for flexible assembly
- Corrosion-resistant
- Various installation options on the fixed end and/or the moving end

**Part No. structure**

15000.038.34PZA1.ESD

- Index: **ESD**
- A…must be indicated on preassembled configurations
- With integrated strain relief tiewrap plates
- **Full set = 34**
- Mounting brackets for selected width index

**Single-part order**

Mounting bracket **Moving end**

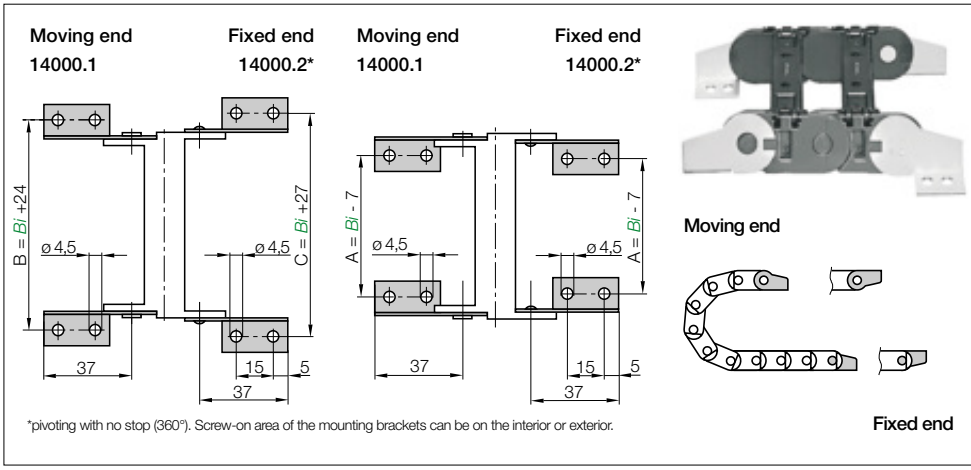
15000.038.4PZA1.ESD (preass. + tiewrap plate)

Mounting bracket **Fixed end**

15000.038.3PZA1.ESD (preass. + tiewrap plate)

# E2/000 **ESD** | **1500** | Steel Mounting brackets **locking**

**Electrically conductive**




*pivoting with no stop (360°). Screw-on area of the mounting brackets can be on the interior or exterior.

## Mounting bracket | Steel locking

Recommended for unsupported, vertical hanging and standing applications

| Width Index | Part No. full set | Part No. full set stainless steel** | Dim. A [mm] | Dim. B [mm] | Dim. C [mm] |
|---|---|---|---|---|---|
| .015. ▶ | **14000.12** | **14000.12.E** | 8 | 39 | 42 |
| .025. ▶ | **14000.12** | **14000.12.E** | 18 | 49 | 52 |
| .038. ▶ | **14000.12** | **14000.12.E** | 31 | 62 | 65 |
| .050. ▶ | **14000.12** | **14000.12.E** | 43 | 74 | 77 |
| .068. ▶ | **14000.12** | **14000.12.E** | 61 | 92 | 95 |
| .080. ▶ | **14000.12** | **14000.12.E** | 73 | 104 | 107 |

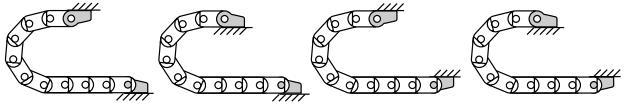
**Note:** By ordering steel mounting brackets in combination with an e-chain®, they will be delivered assembled!

- Locked connections
- One part (2-piece) for all e-chain® widths
- Electrically conductive
- Bolted connection outside of chain cross-section possible
- Stainless steel version available (**Material: stainless steel 1.4301)

**Part No. structure**

**14000. 12.E**

- Optional stainless steel
- **Full set,** 4 parts 2 with pin / 2 with bore
- Mounting bracket



Possible installation conditions - further installation angles ▶ installation sketch

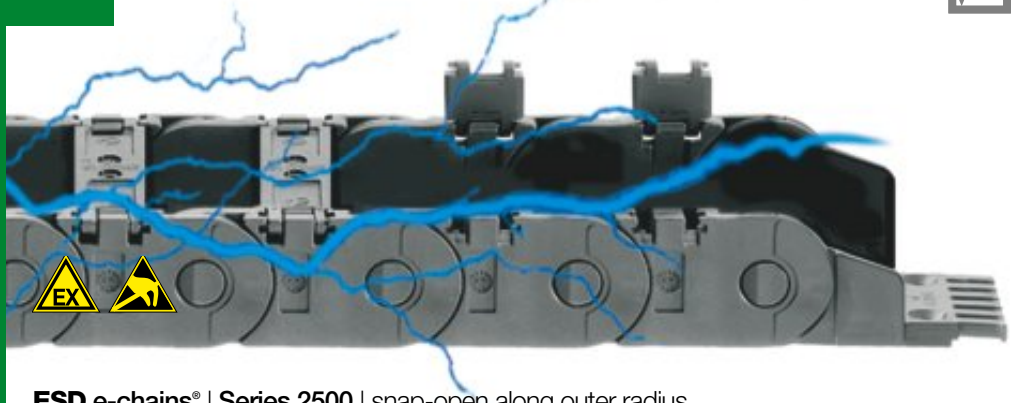
**Single-part order**

Mounting bracket **Moving end**

**14000. 1** (1 part left / right)

Mounting bracket **Fixed end**

**14000. 2** (1 part left / right)



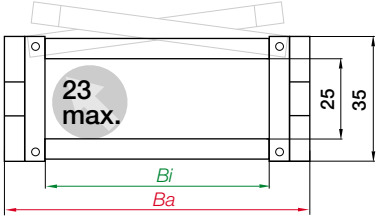

## ESD e-chains® | Series 2500 | snap-open along outer radius

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | ESD KMA pivoting Mounting brackets from stock* |
|---|---|---|---|---|
| 2500. 02 .R.0.ESD | 25 | 41 | \| 055 \| 075 \| 100 \| 125 \| 175 \| | 24001.02.12ZB.ESD |
| 2500. 03 .R.0.ESD | 38 | 54 | \| 055 \| 075 \| 100 \| 125 \| 175 \| | 24001.03.12ZB.ESD |
| 2500. 05 .R.0.ESD | 57 | 73 | \| 055 \| 075 \| 100 \| 125 \| 175 \| | 24001.05.12ZB.ESD |
| 2500. 07 .R.0.ESD | 77 | 93 | \| 055 \| 075 \| 100 \| 125 \| 175 \| | 24001.07.12ZB.ESD |
| 2500. 09 .R.0.ESD | 89 | 105 | \| 055 \| 075 \| 100 \| 125 \| 175 \| | 24001.09.12ZB.ESD |
| 2500. 10 .R.0.ESD | 103 | 119 | \| 055 \| 075 \| 100 \| 125 \| 175 \| | 24001.10.12ZB.ESD |
| 2500. 12 .R.0.ESD | 125 | 141 | \| 055 \| 075 \| 100 \| 125 \| 175 \| | 24001.12.12ZB.ESD |

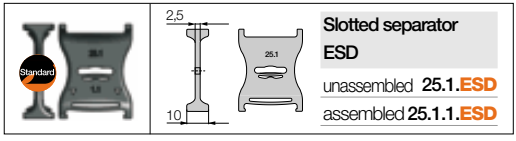
Supplement Part No. with required radius *(R)* Example: **2500.02.055.0.ESD**

### Order key
**2500. 02. 055.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## ESD e-chains® | Series 2500 | Interior separation | Standard




**Slotted separator ESD**

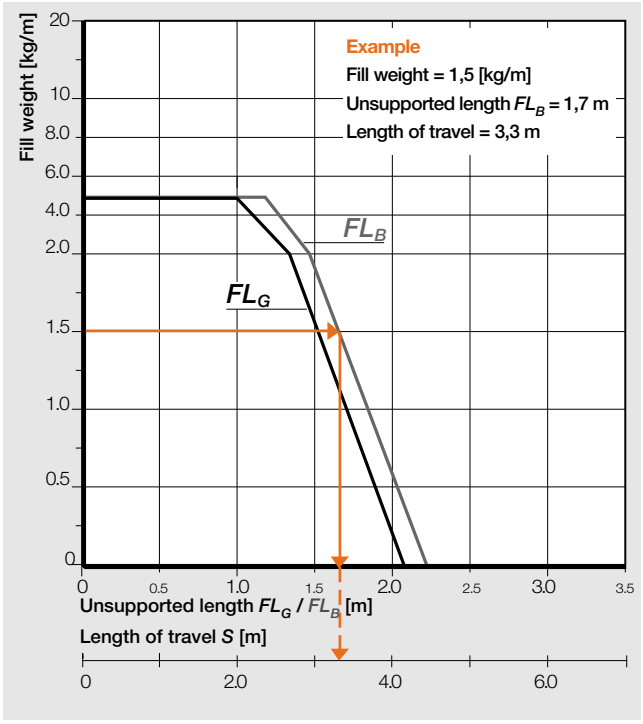
unassembled **25.1.ESD**

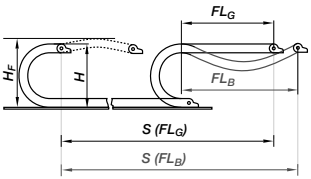
assembled **25.1.1.ESD**

### Standard separator ESD

For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

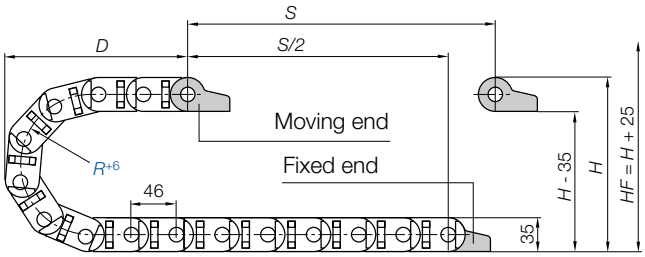



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 19**

**Pitch** = 46 mm/link
**Links/m** = 22 (1012 mm)
**Chain length** = $S/2 + K$

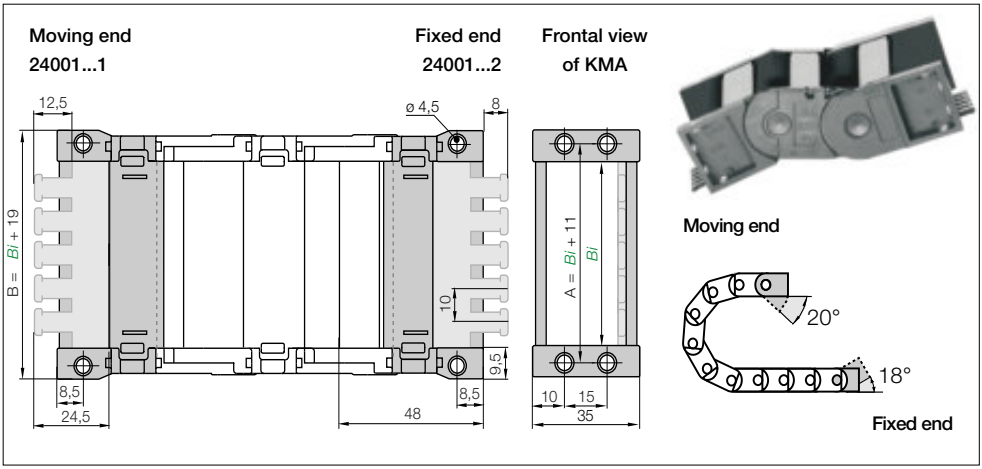
| ***R*** | **055*** | **075** | **100** | **125** | **175** |
|---|---|---|---|---|---|
| ***H*** | 145 | 185 | 235 | 285 | 385 |
| ***D*** | 142 | 162 | 187 | 212 | 262 |
| ***K*** | 265 | 330 | 410 | 485 | 645 |

The required clearance height: $H_F = H + 25$ mm (with 1,5 kg/m fill weight)

$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
$S$ = Length of travel
$R$ = Bending radius
$H$ = Nominal clearance height
$H_F$ = Required clearance height
$D$ = Overlength e-chain®, radius in final position
$K$ = $\pi \bullet R$ + "safety"

# E2/000 ESD | 2500 | KMA Mounting brackets pivoting

**For tight installation conditions, all-sides attachment**



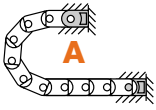

## ESD mounting bracket | KMA pivoting | All-sides attachment

Recommended for unsupported and gliding applications

| Width Index | Part No. ESD full set with tiewrap plates | Dim. A [mm] | Dim. B [mm] | Number of teeth |
|---|---|---|---|---|
| .02. ▶ | 24001.02.12ZB.ESD | 36 | 44 | 2 |
| .03. ▶ | 24001.03.12ZB.ESD | 49 | 57 | 4 |
| .05. ▶ | 24001.05.12ZB.ESD | 68 | 76 | 6 |
| .07. ▶ | 24001.07.12ZB.ESD | 88 | 86 | 7 |
| .09. ▶ | 24001.09.12ZB.ESD | 100 | 108 | 9 |
| .10. ▶ | 24001.10.12ZB.ESD | 114 | 122 | 10 |
| .12. ▶ | 24001.12.12ZB.ESD | 136 | 144 | 12 |

- Bolted connection outside of chain cross-section possible
- For tight installation conditions
- Universally mountable with attachment capability on all sides
- Pluggable strain relief tiewrap plate, adjustable to 3 heights
- Option: threaded sockets upon request

(KMA = Polymer Metal Mounting Bracket)




These attachment types are triggered automatically in the choice of the KMA mounting bracket. For the **preassembled** mode please add index **A** ▶ **e.g. 24001.02.12ZBA.ESD**

**Part No. structure**

24001.02.12ZBA.ESD

- Index: **ESD**
- A…must be indicated on preassembled configurations
- With integrated strain relief tiewrap plates **Full set = 12**
- Mounting brackets for selected width index

**Single-part order**

Mounting bracket **Moving end**

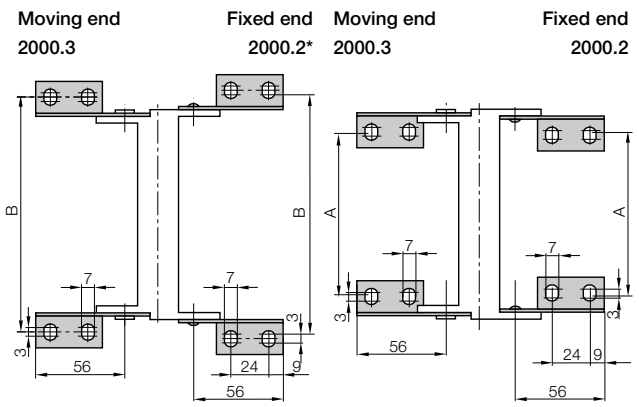
24001.02.1ZBA.ESD (preass. + tiewrap plate)

Mounting bracket **Fixed end**

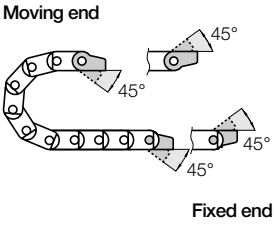
24001.02.2ZBA.ESD (preass. + tiewrap plate)

# E2/000 **ESD** | **2500** | Steel Mounting brackets **pivoting**

**Electrically conductive**




*pivoting with no stop (360°)




## Mounting bracket | Steel pivoting

Recommended for unsupported, vertical hanging and standing applications

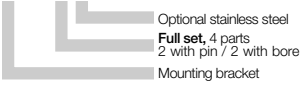
| Width Index | Part No. full set | Part No. full set stainless steel** | Dim. A [mm] | Dim. B [mm] |
|---|---|---|---|---|
| .02. ▶ | **2000.32** | **2000.32.E** | – | 60 |
| .03. ▶ | **2000.32** | **2000.32.E** | 25 | 73 |
| .05. ▶ | **2000.32** | **2000.32.E** | 44 | 92 |
| .07. ▶ | **2000.32** | **2000.32.E** | 64 | 112 |
| .09. ▶ | **2000.32** | **2000.32.E** | 76 | 124 |
| .10. ▶ | **2000.32** | **2000.32.E** | 90 | 138 |
| .12. ▶ | **2000.32** | **2000.32.E** | 112 | 160 |

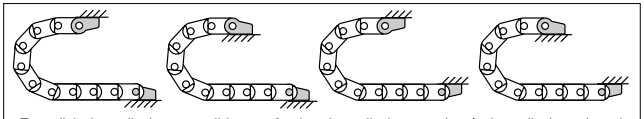
- For pivoting connections
- One part (two-piece) for all e-chain® widths
- Electrically conductive
- Bolted connection outside of chain cross-section possible
- Stainless steel version available (**Material: stainless steel 1.4301)

**Note:** By ordering steel mounting brackets in combination with an e-chain®, they will be delivered assembled!

**Part No. structure**

2000. 32.E



Possible installation conditions - further installation angles ▶ installation sketch

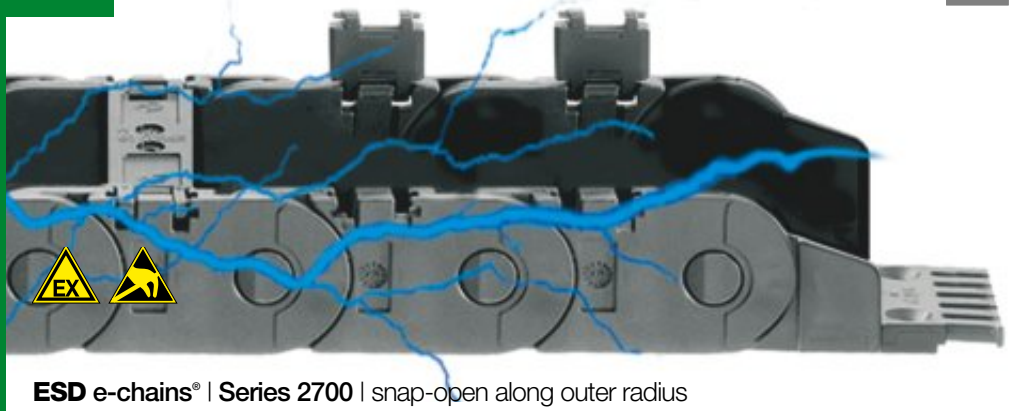
**Single-part order**

Mounting bracket **Moving end**

2020. 3 (1 part left / right)

Mounting bracket **Fixed end**

2020. 2 (1 part left / right)



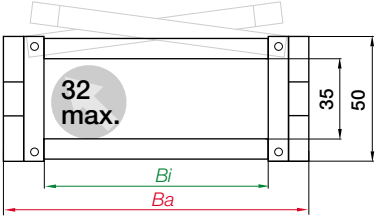

## ESD e-chains® | Series 2700 | snap-open along outer radius

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | KMA mounting brackets ESD pivoting, from stock** |
|---|---|---|---|---|
| 2700. 05 .R.0.ESD | 50 | 66 | 063 \| 075 \| – \| – \| – | 26001.05.12.C.ESD |
| 2700. 06 .R.0.ESD | 65 | 81 | – \| 075 \| 100 \| – \| – | 26001.06.12.C.ESD |
| 2700. 07 .R.0.ESD | 75 | 91 | 063 \| 075 \| 100 \| 125 \| 150 | 26001.07.12.C.ESD |
| 2700. 09 .R.0.ESD | 90 | 106 | 063 \| 075 \| 100 \| 125 \| 150 | 26001.09.12.C.ESD |
| 2700. 10 .R.0.ESD | 100 | 116 | – \| 075 \| 100 \| 125 \| 150 | 26001.10.12.C.ESD |
| 2700. 12 .R.0.ESD | 125 | 141 | – \| 075 \| 100 \| 125 \| 150 | 26001.12.12.C.ESD |

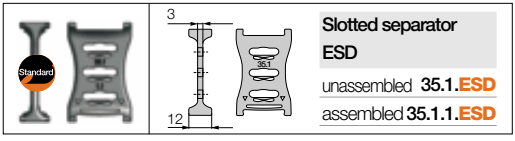
Supplement Part No. with required radius *(R)* Example: **2700.12.100.0.ESD**

### Order key
**2700. 12. 100.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## ESD e-chains® | Series 2700 | Interior separation | Standard




Slotted separator ESD

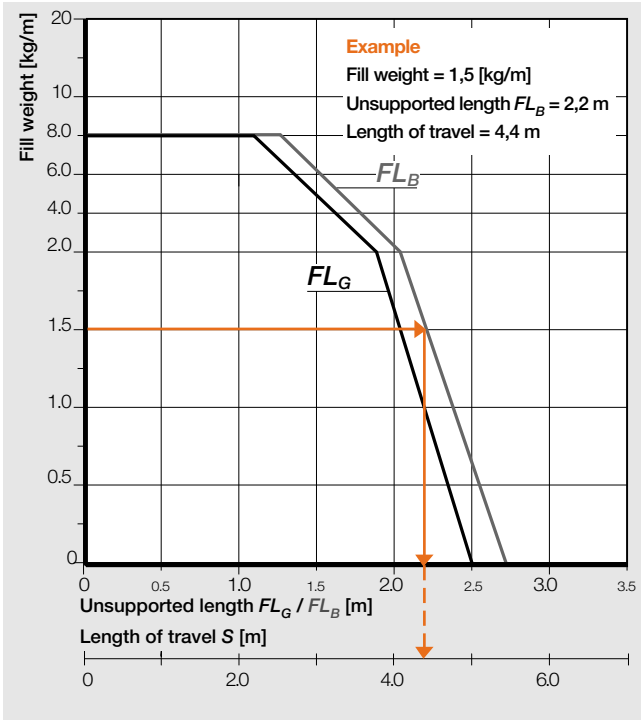
unassembled **35.1.ESD**

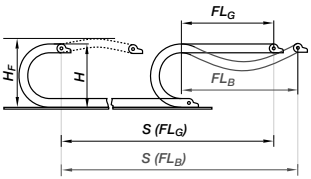
assembled **35.1.1.ESD**

### Standard separator ESD

For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

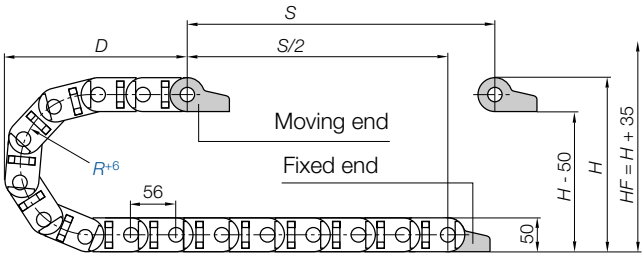



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 19**

**Pitch** = 56 mm/link
**Links/m** = 18 (1008 mm)
**Chain length** = $S/2 + K$

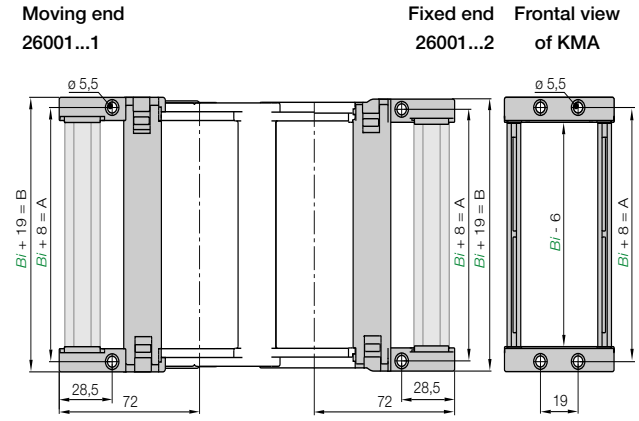
| ***R*** | **063** | **075** | **100** | **125** | **150** |
|---|---|---|---|---|---|
| ***H*** | 176 | 200 | 250 | 300 | 350 |
| ***D*** | 172 | 184 | 209 | 234 | 259 |
| ***K*** | 310 | 350 | 430 | 505 | 585 |

The required clearance height: $H_F = H + 35$ mm (with 2,0 kg/m fill weight)

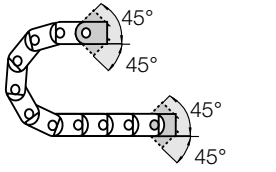
$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
$S$ = Length of travel
$R$ = Bending radius
$H$ = Nominal clearance height
$H_F$ = Required clearance height
$D$ = Overlength e-chain®, radius in final position
$K$ = $\pi \bullet R$ + "safety"

# E2/000 ESD | 2700 | KMA Mounting brackets pivoting

**For tight installation conditions, all-sides attachment**




Moving end




Fixed end

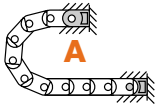
## ESD mounting bracket | KMA pivoting | All-sides attachment

Recommended for unsupported and gliding applications

| Width Index | Part No. ESD Full set with C-profile | Part No. ESD Full set without C-profile | Dim. A [mm] | Dim. B [mm] |
|---|---|---|---|---|
| 05. ▶ | 26001.05.12.C.ESD | 26001.05.12.ESD | 58 | 69 |
| 06. ▶ | 26001.06.12.C.ESD | 26001.06.12.ESD | 73 | 84 |
| 07. ▶ | 26001.07.12.C.ESD | 26001.07.12.ESD | 83 | 94 |
| 09. ▶ | 26001.09.12.C.ESD | 26001.09.12.ESD | 98 | 109 |
| 10. ▶ | 26001.10.12.C.ESD | 26001.10.12.ESD | 108 | 119 |
| 12. ▶ | 26001.12.12.C.ESD | 26001.12.12.ESD | 133 | 144 |

- Bolted connection outside of chain cross-section possible
- For tight installation conditions
- Universally mountable with attachment capability on all sides
- C-profile option
- Option: threaded sockets upon request

(KMA = Polymer Metal Mounting Bracket)




These attachment types are triggered automatically in the choice of the KMA mounting bracket. For the **preassembled** mode please add index **A** ▶ **e.g. 26001.12.12.C.A.ESD**

**Part No. structure**

26001.12.12.C.A.ESD

- Index: **ESD**
- A…must be indicated on preassembled configurations
- **Full set** with integrated C-profile
- Mounting brackets for selected width index

**Single-part order**

Mounting bracket **Moving end**

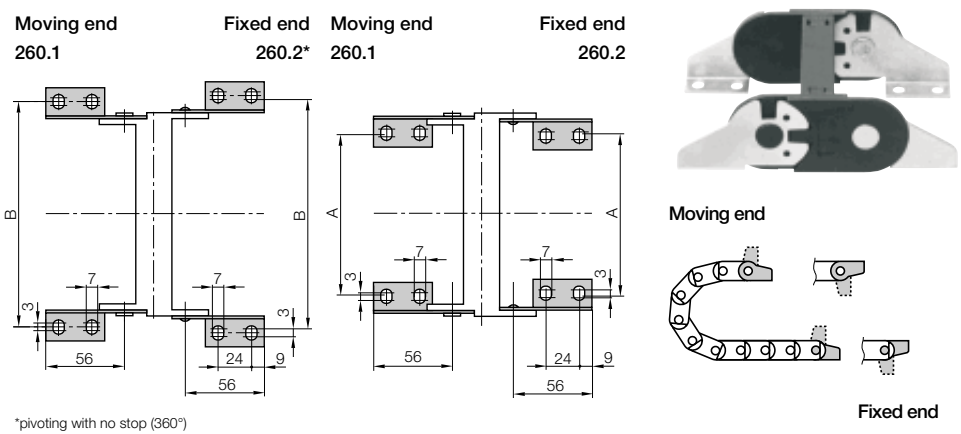
26001.12.1.C.A.ESD (preass. + tiewrap plate)

Mounting bracket **Fixed end**

26001.12.2.C.A.ESD (preass. + tiewrap plate)

# E2/000 **ESD** | **2700** | Steel Mounting brackets **pivoting**

**Electrically conductive**



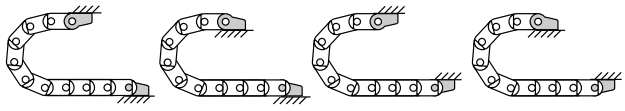

*pivoting with no stop (360°)

## Mounting bracket | Steel pivoting

Recommended for unsupported, vertical hanging and standing applications

| Width Index | Part No. full set | Part No. full set stainless steel** | Dim. A [mm] | Dim. B [mm] |
|---|---|---|---|---|
| 05. ▶ | 260.12 | 260.12.E | 37 | 83 |
| 06. ▶ | 260.12 | 260.12.E | 52 | 98 |
| 07. ▶ | 260.12 | 260.12.E | 62 | 108 |
| 09. ▶ | 260.12 | 260.12.E | 77 | 123 |
| 10. ▶ | 260.12 | 260.12.E | 87 | 133 |
| 12. ▶ | 260.12 | 260.12.E | 112 | 158 |

**Note:** By ordering steel mounting brackets in combination with an e-chain®, they will be delivered assembled!



Possible installation conditions - further installation angles ▶ installation sketch

- Locked connections
- One part (2-piece) for all e-chain® widths
- Electrically conductive
- Bolted connection outside of chain cross-section possible
- Stainless steel version available (**Material: stainless steel 1.4301)

**Part No. structure**

260. 12.E

- Optional stainless steel
- **Full set,** 4 parts 2 with pin / 2 with bore
- Mounting bracket

**Single-part order**

Mounting bracket **Moving end**

260. 1 (1 part left / right)

Mounting bracket **Fixed end**

260. 2 (1 part left / right)

# E4.1 ESD - ONE e-chain® for allmost all applications

Das E4.1-System combines all the advantages of its three predecessors. E4.1 profits from 25 years of igus® experience in 4-piece e-chains® and is the best igus® e-chain® in the product range. The E4.1 series is more stable with the same or smaller dimensions than their predecessors. Almost all accessory components and mounting dimensions are identical. With the E4.1, the service life of your application can be still increased with lower costs.

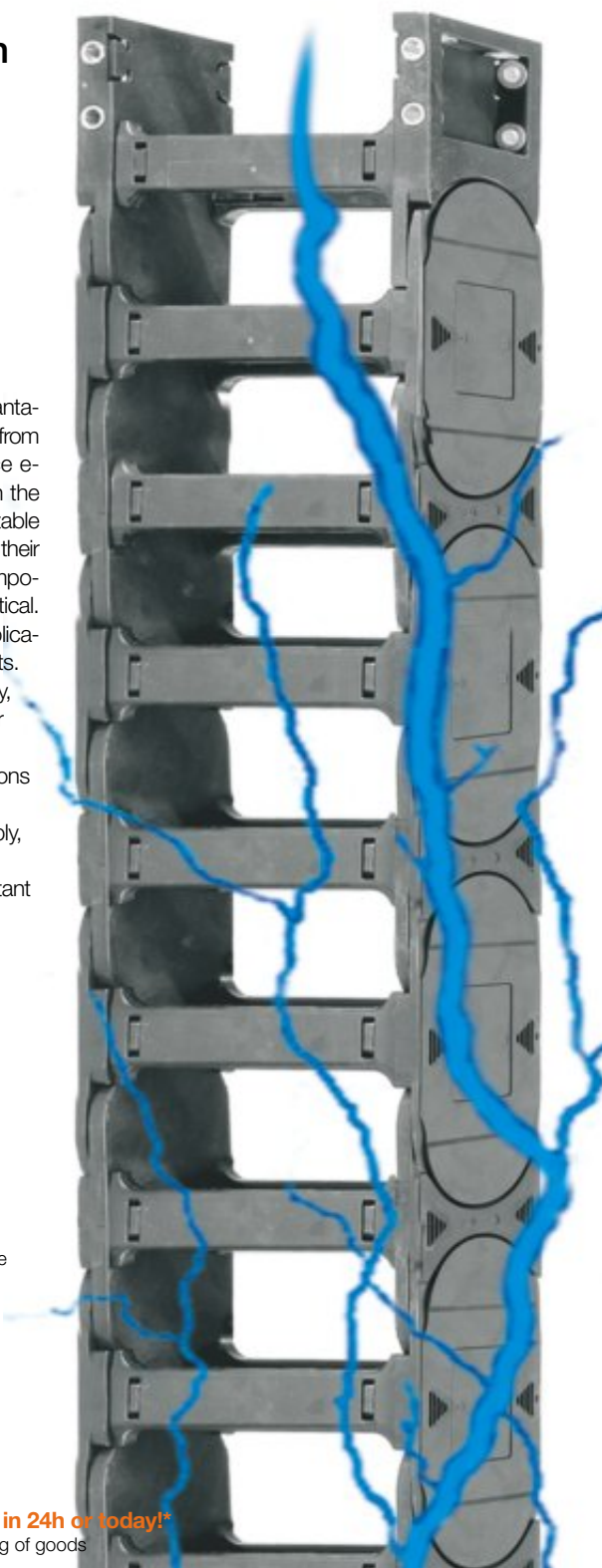
- Undercut design for ideal lateral stability, high shear force on long travels and for large unsupported lengths
- Well suited for side-mounted applications
- Noise dampening pads
- Outer and inner links for quick assembly, with or without pretension
- Dirt repellant, with smooth, wear-resistant surface and side wear pads

**Typical industries and applications**

- Pick & place robots
- Semi-conductor machines
- Linear motors, actuators
- Measuring equipment
- Machine tools

Clean-Room Cleanroom test upon request

EX ESD classification: Electrically conductive
ESD/ATEX version upon request

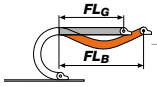


**Available from stock.** Delivery in 24h or today!*
*Delivery time means time until shipping of goods

| Series | Inner height *hi* [mm] | Inner width *Bi* [mm] | Outer width *Ba* [mm] | Outer height *ha* [mm] | Bending radius *R* [mm] | Unsupported length max. [m] | Page |
|---|---|---|---|---|---|---|---|
| **E4.21** | 21 | 30 - 70 | 44 - 84 | 28 | 048 - 100 | 2,50 | **34** |
| **E4.28** | 28 | 40 - 125 | 60 - 145 | 42 | 055 - 125 | 2,50 | **38** |
| **E4.32** | 32 | 50 - 200 | 73 - 223 | 54 | 063 - 250 | 3,30 | **42** |
| **E4.42** | 42 | 50 - 200 | 76 - 226 | 64 | 075 - 250 | 4,00 | **46** |
| **E4.56** | 56 | 75 - 300 | 109 - 334 | 84 | 135 - 250 | 5,00 | **50** |
| **E4.80** | 80 | 75 - 300 | 125 - 350 | 108 | 200 - 300 | 6,20 | **54** |


**ESD e-chains®**
**Crossbars every link**
for particulary demanding applications

## Technical Data - System E4.1 **ESD**

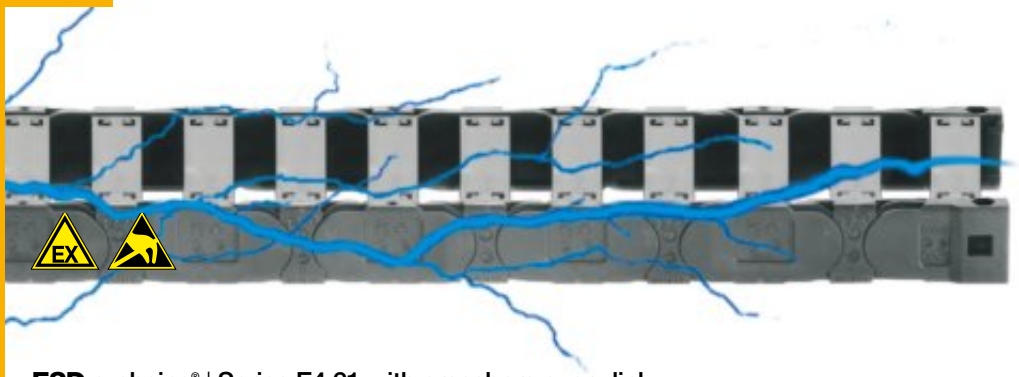



| | |
|---|---|
| Gliding speed / acceleration (maximum) | max. 10 [m/s] / max. 50 [m/s²] |
| Speed / acceleration $FL_G$ max. | max. 20 [m/s] / max. 200 [m/s²] |
| Speed / acceleration $FL_B$ max. | max. 3 [m/s] / max. 6 [m/s²] |
| Material - permitted temperature °C | igumid ESD / -40° up to +80° C |
| Flammability class, igumid ESD | VDE 0304 IIC UL94 HB |

$FL_G$ = with straight upper run  $FL_B$ = with permitted sag

## Installation methods overview, maximum travels - System E4.1 **ESD**

| e-chain® Series | Unsupported application | Gliding | Vertical hanging | Vertical standing | Side mounted unsupported | Circular | Zig-zag | Unsupported length lower run |
|---|---|---|---|---|---|---|---|---|
| **E4.21** | ≤ 2,5 m | ≤ 120 m | ≤ 40 m | ≤ 3,0 m | ≤ 1,0 m | with rework | upon request | upon request |
| **E4.28** | ≤ 2,5 m | ≤ 200 m | ≤ 80 m | ≤ 5,0 m | ≤ 1,2 m | with rework | upon request | upon request |
| **E4.32** | ≤ 3,3 m | ≤ 200 m | ≤ 80 m | ≤ 5,0 m | ≤ 1,5 m | with rework | upon request | upon request |
| **E4.42** | ≤ 4,0 m | ≤ 300 m | ≤ 100 m | ≤ 6,0 m | ≤ 2,0 m | with rework | upon request | upon request |
| **E4.56** | ≤ 5,0 m | ≤ 400 m | ≤ 100 m | ≤ 6,0 m | ≤ 2,5 m | with rework | upon request | upon request |
| **E4.80** | ≤ 6,2 m | ≤ 400 m | ≤ 120 m | ≤ 6,0 m | ≤ 3,0 m | with rework | upon request | upon request |



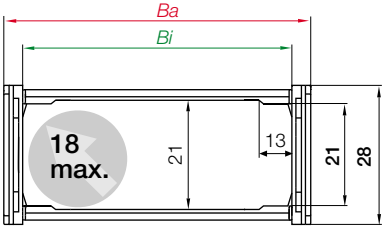

## ESD e-chains® | Series E4.21 with crossbars every link

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | KMA mounting brackets ESD pivoting, from stock** |
|---|---|---|---|---|
| E4.21.030.R.0.ESD | 30 | 44 | \| 048 \| 063 \| 075 \| 100 \| | E4.210.030.1.12.ESD |
| E4.21.040.R.0.ESD | 40 | 54 | \| 048 \| 063 \| 075 \| 100 \| | E4.210.040.1.12.ESD |
| E4.21.050.R.0.ESD | 50 | 64 | \| 048 \| 063 \| 075 \| 100 \| | E4.210.050.1.12.ESD |
| E4.21.060.R.0.ESD | 60 | 74 | \| 048 \| 063 \| 075 \| 100 \| | E4.210.060.1.12.ESD |
| E4.21.070.R.0.ESD | 70 | 84 | \| 048 \| 063 \| 075 \| 100 \| | E4.210.070.1.12.ESD |

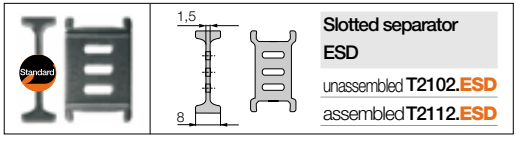
Supplement Part No. with required radius *(R)* Example: **E4.21.070.100.0.ESD**

### Order key
**E4.21. 070. 100.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## ESD e-chains® | Series E4.21 | Interior separation | Standard



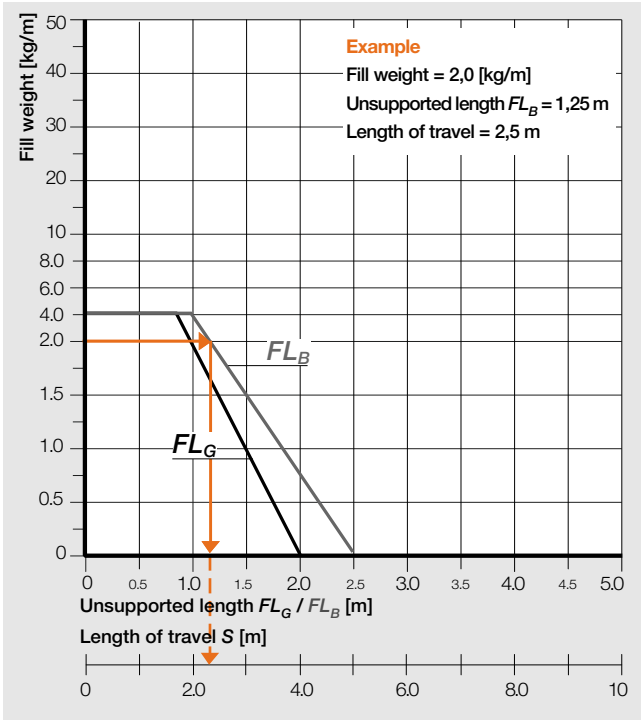

**Slotted separator ESD**

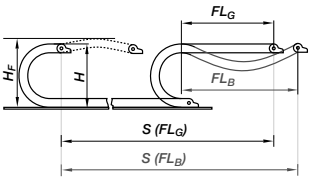
unassembled **T2102.ESD**

assembled **T2112.ESD**

### Standard separator ESD
For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

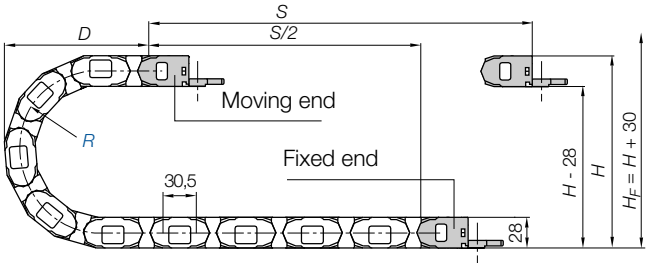



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 33**

**Pitch** = 30,5 mm/link
**Links/m** = 33 (1007 mm)
**Chain length** = $S/2 + K$

| ***R*** | **048** | **063** | **075** | **100** |
|---|---|---|---|---|
| ***H*** | 124 | 154 | 178 | 228 |
| ***D*** | 095 | 110 | 120 | 145 |
| ***K*** | 215 | 260 | 300 | 380 |

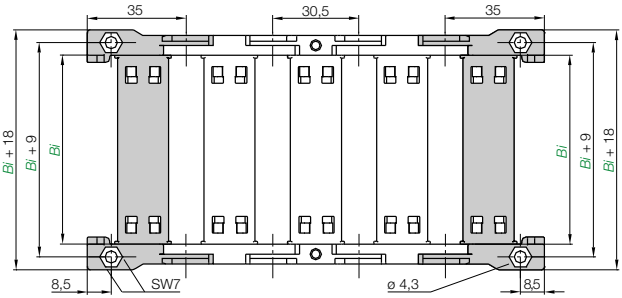
The required clearance height: $H_F = H + 30$ mm (with 1,5 kg/m fill weight)

$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
$S$ = Length of travel
$R$ = Bending radius
$H$ = Nominal clearance height
$H_F$ = Required clearance height
$D$ = Overlength e-chain®, radius in final position
$K$ = $\pi \bullet R$ + "safety"

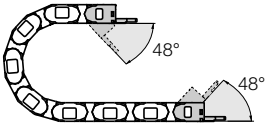
# E4.1 ESD | E4.21 | KMA Mounting brackets pivoting

Fixed end
E4.210...1.1

Moving end
E4.210...1.2




Moving end




Fixed end

## ESD mounting bracket | KMA pivoting

Recommended for unsupported and gliding applications

| Width Index | Part No. ESD full set pivoting | Bi [mm] |
|---|---|---|
| 030. ▶ | E4.210.030.1.12.ESD | 30 |
| 040. ▶ | E4.210.040.1.12.ESD | 40 |
| 050. ▶ | E4.210.050.1.12.ESD | 50 |
| 060. ▶ | E4.210.060.1.12.ESD | 60 |
| 070. ▶ | E4.210.070.1.12.ESD | 70 |

- For tight installation conditions
- Corrosion-resistant
- Option: threaded sockets upon request
  (KMA = Polymer Metal Mounting Bracket)

### Special feature mounting brackets: Series E4.21

- Mounting brackets with attachment points on all sides
  **Note: Series E4.21: mounting brackets always need to end with an inner plate (odd number of links)!**
- Special design of the counterbore as hexagon - the inlay of the nut (M4) and the counterboring of the hexagon socket head srew (M4), is consequently possible

**Part No. structure**

E4.210.070.1.12.ESD

- Index: **ESD**
- Full set
- odd
- Width index
- Series

**Single-part order**

Mounting bracket **Moving end**
E4.210.070.1.2.ESD (odd number of links)

Mounting bracket **Fixed end**
E4.210.070.1.1.ESD (odd number of links)

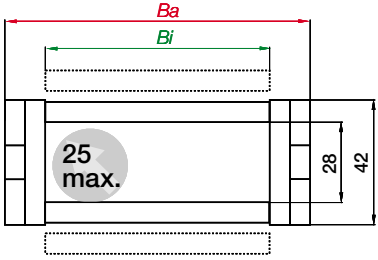
## ESD e-chains® | Series E4.28 with crossbars every link

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | KMA mounting brackets ESD pivoting, from stock** |
|---|---|---|---|---|
| E4.28.040.R.0.ESD | 40 | 60 | \| 055 \| 063 \| 075 \| 100 \| 125 \| | E4.280.040.*.12.ESD * Note: see |
| E4.28.050.R.0.ESD | 50 | 70 | \| 055 \| 063 \| 075 \| 100 \| 125 \| | E4.280.050.*.12.ESD mounting brackets |
| E4.28.062.R.0.ESD | 62 | 82 | \| 055 \| 063 \| 075 \| 100 \| 125 \| | E4.280.062.*.12.ESD |
| E4.28.070.R.0.ESD | 70 | 90 | \| 055 \| 063 \| 075 \| 100 \| 125 \| | E4.280.070.*.12.ESD |
| E4.28.075.R.0.ESD | 75 | 95 | \| 055 \| 063 \| 075 \| 100 \| 125 \| | E4.280.075.*.12.ESD |
| E4.28.087.R.0.ESD | 87 | 107 | \| 055 \| 063 \| 075 \| 100 \| 125 \| | E4.280.087.*.12.ESD |
| E4.28.100.R.0.ESD | 100 | 120 | \| 055 \| 063 \| 075 \| 100 \| 125 \| | E4.280.100.*.12.ESD |
| E4.28.125.R.0.ESD | 125 | 145 | \| 055 \| 063 \| 075 \| 100 \| 125 \| | E4.280.125.*.12.ESD |

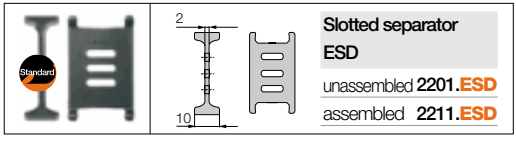
Supplement Part No. with required radius *(R)* Example: **E4.28.100.100.0.ESD**

### Order key
**E4.28. 100. 100.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## ESD e-chains® | Series E4.28 | Interior separation | Standard



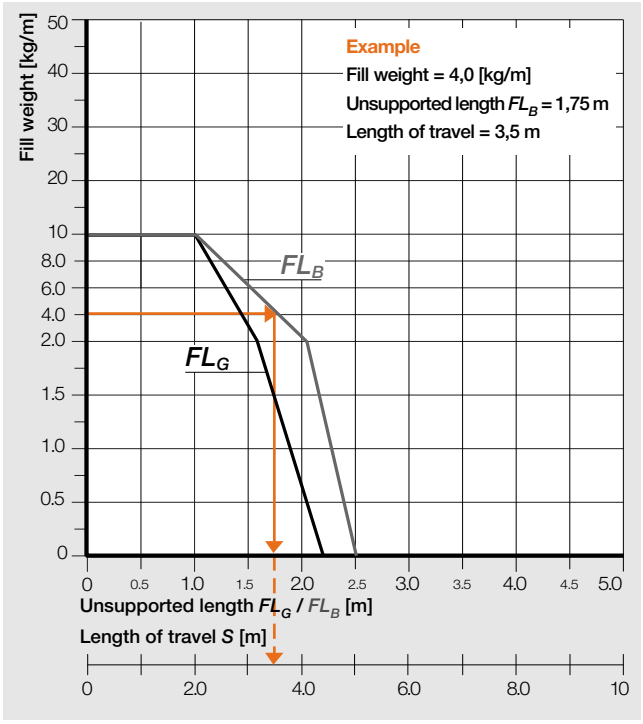

**Slotted separator ESD**

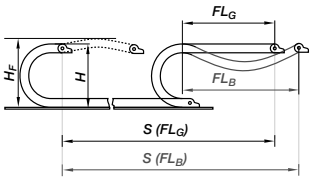
unassembled **2201.ESD**

assembled **2211.ESD**

### Standard separator ESD
For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

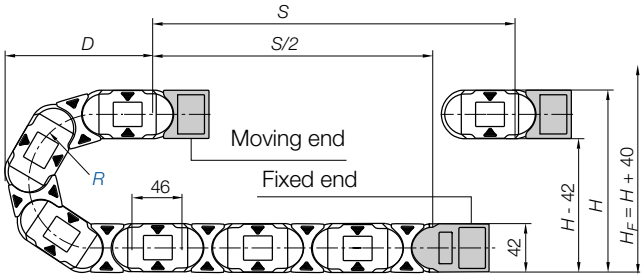



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 33**

**Pitch** = 46 mm/link
**Links/m** = 22 (1012 mm)
**Chain length** = $S/2 + K$

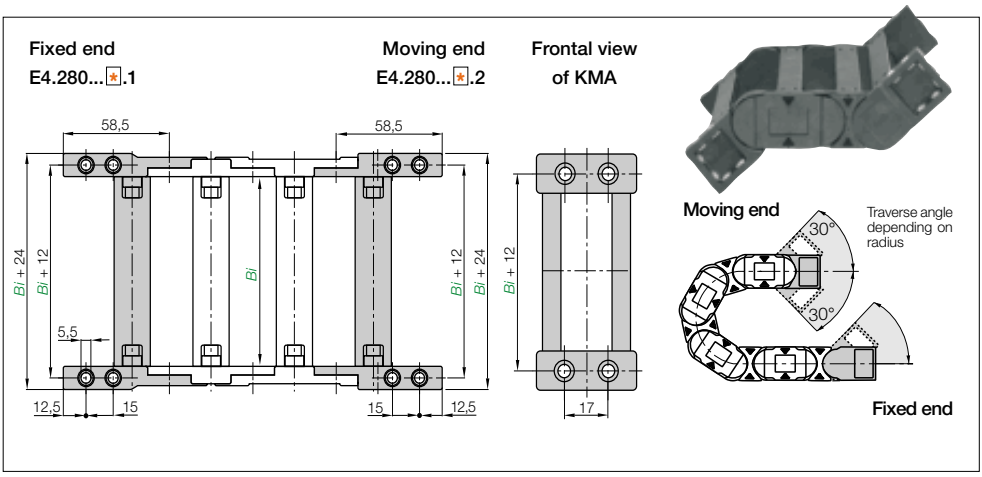
| ***R*** | **055** | **063** | **075** | **100** | **125** |
|---|---|---|---|---|---|
| ***H*** | 152 | 168 | 192 | 242 | 292 |
| ***D*** | 122 | 130 | 142 | 167 | 192 |
| ***K*** | 265 | 290 | 330 | 410 | 485 |

The required clearance height: $H_F = H + 40$ mm (with 3,0 kg/m fill weight)

$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
$S$ = Length of travel
$R$ = Bending radius
$H$ = Nominal clearance height
$H_F$ = Required clearance height
$D$ = Overlength e-chain®, radius in final position
$K$ = $\pi \bullet R$ + "safety"

# E4.1 ESD | E4.28 | KMA Mounting brackets pivoting

**For tight installation conditions, all-sides attachment**




## ESD mounting bracket | KMA pivoting | All-sides attachment

Recommended for unsupported and gliding applications

| Width Index | Part No. ESD Full set pivoting | Bi [mm] |
|---|---|---|
| 040. ▶ | E4.280.040.*.12.ESD | 40 |
| 050. ▶ | E4.280.050.*.12.ESD | 50 |
| 062. ▶ | E4.280.062.*.12.ESD | 62 |
| 070. ▶ | E4.280.070.*.12.ESD | 70 |
| 075. ▶ | E4.280.075.*.12.ESD | 75 |
| 087. ▶ | E4.280.087.*.12.ESD | 87 |
| 100. ▶ | E4.280.100.*.12.ESD | 100 |
| 125. ▶ | E4.280.125.*.12.ESD | 125 |

- Standard
- For tight installation conditions
- Corrosion-resistant
- Option: threaded sockets upon request
  (KMA = Polymer Metal Mounting Bracket)

**Part No. structure**

E4.280.100.2.12.ESD


**Single-part order**

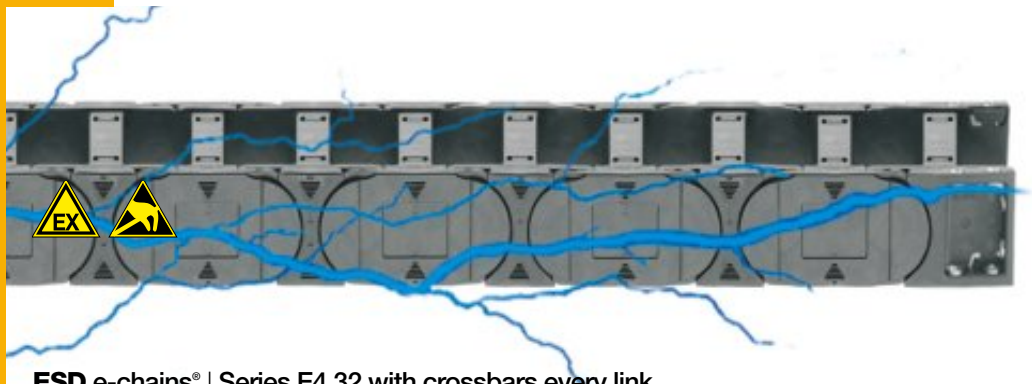
Mounting bracket **Moving end**

E4.280.100.2.2.ESD (odd number of links)

Mounting bracket **Fixed end**

E4.280.100.2.1.ESD (odd number of links)

**Note*:** The E4.1 System may end with either an inner or an outer side link. Keep in mind that an outer side link always forms the first e-chain® link at the moving end.
The Part Nos. depend on an even or odd numbers of links.
Please insert: Index 1 (for odd) or 2 (for even)!



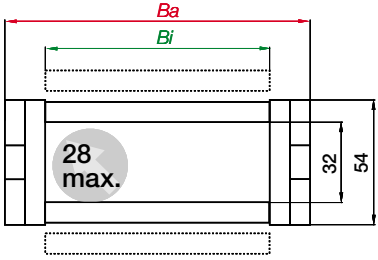

## ESD e-chains® | Series E4.32 with crossbars every link

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | KMA mounting brackets ESD pivoting, from stock** |
|---|---|---|---|---|
| E4.32.05.R.0.ESD | 50 | 73 | \| 063 \| 075 \| 100 \| 125 \| 200 \| 250 \| | E4.320.05.*.12.C.ESD * Note: see |
| E4.32.06.R.0.ESD | 68 | 91 | \| 063 \| 075 \| 100 \| 125 \| 200 \| 250 \| | E4.320.06.*.12.C.ESD mounting brackets |
| E4.32.07.R.0.ESD | 75 | 98 | \| 063 \| 075 \| 100 \| 125 \| 200 \| 250 \| | E4.320.07.*.12.C.ESD |
| E4.32.10.R.0.ESD | 100 | 123 | \| 063 \| 075 \| 100 \| 125 \| 200 \| 250 \| | E4.320.10.*.12.C.ESD |
| E4.32.15.R.0.ESD | 150 | 173 | \| 063 \| 075 \| 100 \| 125 \| 200 \| 250 \| | E4.320.15.*.12.C.ESD |
| E4.32.18.R.0.ESD | 175 | 198 | \| 063 \| 075 \| 100 \| 125 \| 200 \| 250 \| | E4.320.18.*.12.C.ESD |
| E4.32.20.R.0.ESD | 200 | 223 | \| 063 \| 075 \| 100 \| 125 \| 200 \| 250 \| | E4.320.20.*.12.C.ESD |

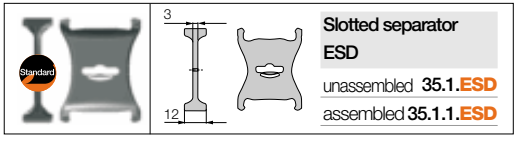
Supplement Part No. with required radius *(R)* Example: **E4.32.10.100.0.ESD**

### Order key
**E4.32. 10. 100.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type



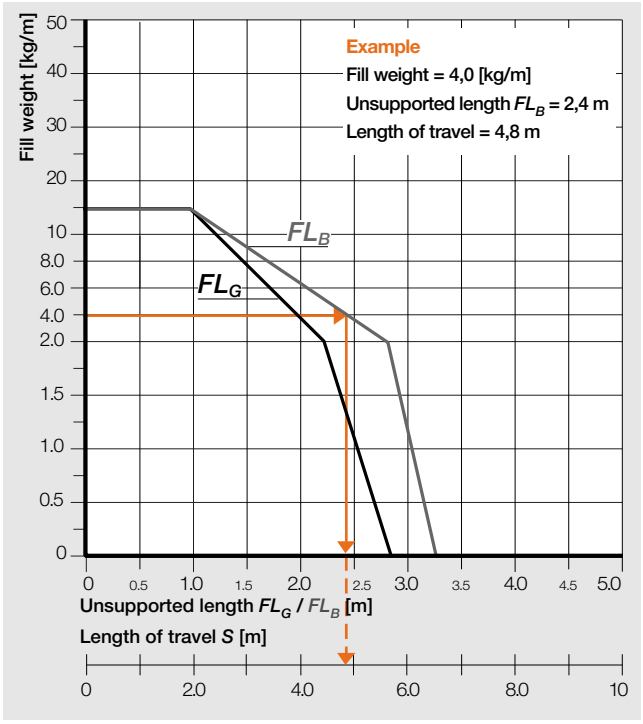

## ESD e-chains® | Series E4.32 | Interior separation | Standard

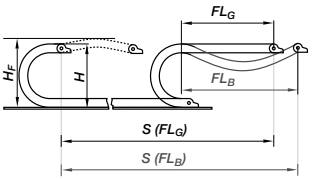



Slotted separator ESD
unassembled **35.1.ESD**
assembled **35.1.1.ESD**

### Standard separator ESD
For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods



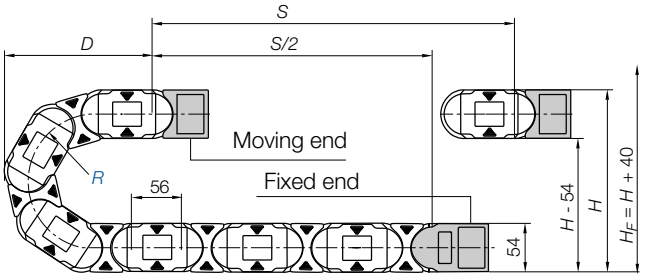




Standard

## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 33**

**Pitch** = 56 mm/link
**Links/m** = 18 (1008 mm)
**Chain length** = $S/2 + K$

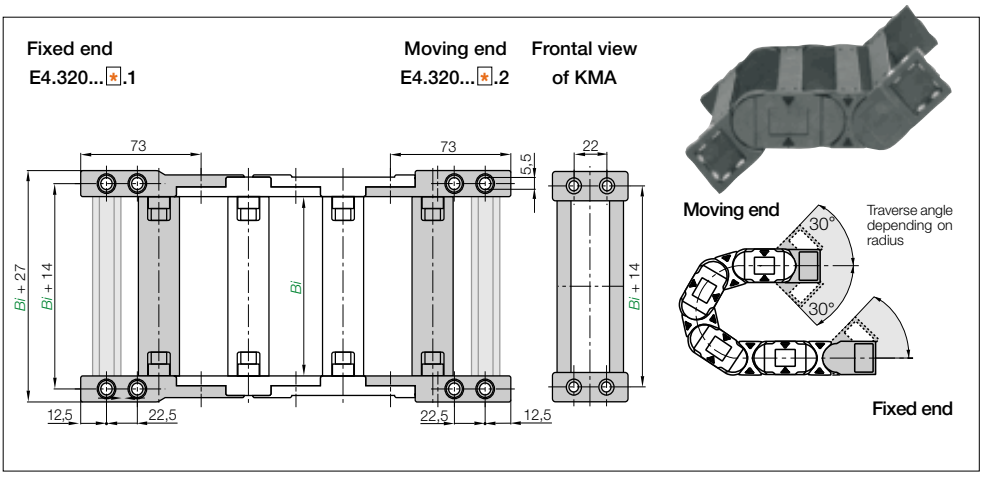
| ***R*** | **063** | **075** | **100** | **125** | **200** | **250** |
|---|---|---|---|---|---|---|
| ***H*** $^{+20}_{0}$ | 180 | 204 | 254 | 304 | 454 | 554 |
| ***D*** | 146 | 158 | 183 | 208 | 283 | 333 |
| ***K*** | 310 | 350 | 430 | 505 | 745 | 900 |

The required clearance height: $H_F = H + 40$ mm (with 2,0 kg/m fill weight)

$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
**S** = Length of travel
**R** = Bending radius
**H** = Nominal clearance height
$H_F$ = Required clearance height
**D** = Overlength e-chain®, radius in final position
**K** = $\pi \bullet R +$ "safety"

# E4.1 ESD | E4.32 | KMA Mounting brackets pivoting

**For tight installation conditions, all-sides attachment**




## ESD mounting bracket | KMA pivoting | All-sides attachment

Recommended for unsupported and gliding applications

| Width Index | Part No. full set ESD pivoting with C-profile | Part No. full set ESD pivoting without C-profile | Bi [mm] |
|---|---|---|---|
| 05. ▶ | E4.320.05.*.12.C.ESD | E4.320.05.*.12.ESD | 50 |
| 06. ▶ | E4.320.06.*.12.C.ESD | E4.320.06.*.12.ESD | 68 |
| 07. ▶ | E4.320.07.*.12.C.ESD | E4.320.07.*.12.ESD | 75 |
| 10. ▶ | E4.320.10.*.12.C.ESD | E4.320.10.*.12.ESD | 100 |
| 15. ▶ | E4.320.15.*.12.C.ESD | E4.320.15.*.12.ESD | 150 |
| 18. ▶ | E4.320.18.*.12.C.ESD | E4.320.18.*.12.ESD | 175 |
| 20. ▶ | E4.320.20.*.12.C.ESD | E4.320.20.*.12.ESD | 200 |

- Standard
- For tight installation conditions
- Option: integrated C-profile (Index .C)
- Corrosion-resistant
- Option: threaded sockets upon request

(KMA = Polymer Metal Mounting Bracket)

**Part No. structure**

E4.320.10.2.12.ESD




**Single-part order**

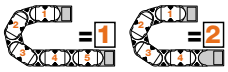
Mounting bracket **Moving end**

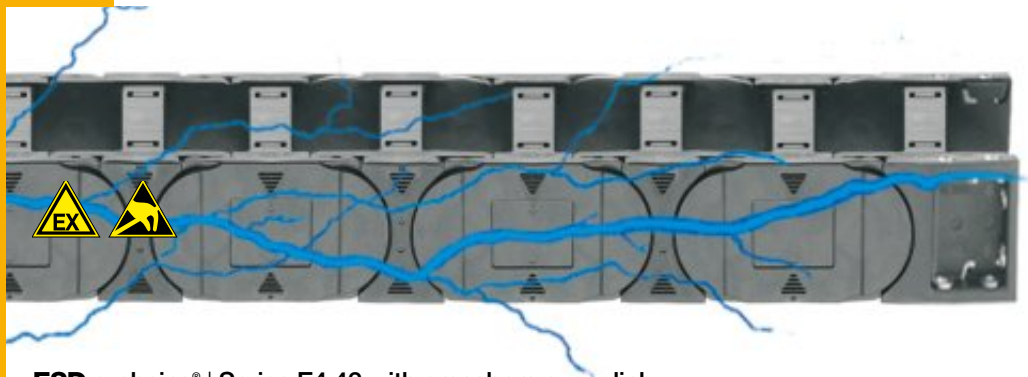
E4.320.10.2.2.ESD (odd number of links)

Mounting bracket **Fixed end**

E4.320.10.2.1.ESD (odd number of links)

**Note*:** The E4.1 System may end with either an inner or an outer side link. Keep in mind that an outer side link always forms the first e-chain® link at the moving end.
The Part Nos. depend on an even or odd numbers of links.
Please insert: Index 1 (for odd) or 2 (for even)!





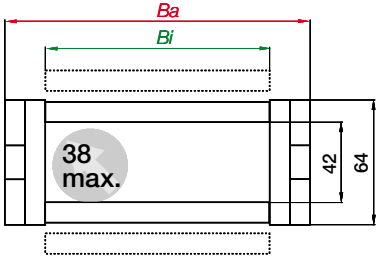

## ESD e-chains® | Series E4.42 with crossbars every link

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | KMA mounting brackets ESD pivoting, from stock** |
|---|---|---|---|---|
| E4.42.05 .R.0.ESD | 50 | 76 | \| 075 \| 100 \| 150 \| 200 \| 250 \| | E4.420.05 .*.12.C.ESD * Note: see |
| E4.42.087.R.0.ESD | 87 | 114 | \| 075 \| 100 \| 150 \| 200 \| 250 \| | E4.420.087.*.12.C.ESD mounting brackets |
| E4.42.10 .R.0.ESD | 100 | 126 | \| 075 \| 100 \| 150 \| 200 \| 250 \| | E4.420.10 .*.12.C.ESD |
| E4.42.15 .R.0.ESD | 150 | 176 | \| 075 \| 100 \| 150 \| 200 \| 250 \| | E4.420.15 .*.12.C.ESD |
| E4.42.18 .R.0.ESD | 175 | 201 | \| 075 \| 100 \| 150 \| 200 \| 250 \| | E4.420.18 .*.12.C.ESD |
| E4.42.20 .R.0.ESD | 200 | 226 | \| 075 \| 100 \| 150 \| 200 \| 250 \| | E4.420.20 .*.12.C.ESD |

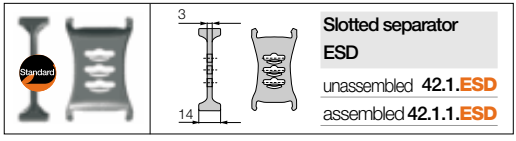
Supplement Part No. with required radius *(R)* Example: **E4.42.10.100.0.ESD**

**Order key**
**E4.42. 10. 100.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## ESD e-chains® | Series E4.42 | Interior separation | Standard

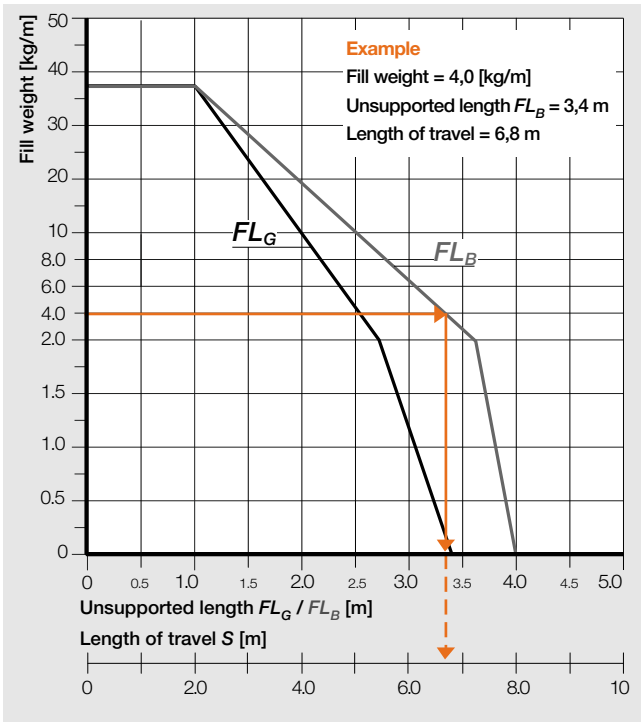


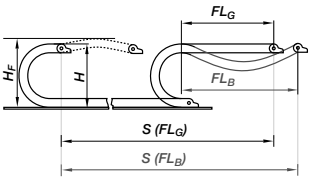

Slotted separator ESD
unassembled **42.1.ESD**
assembled **42.1.1.ESD**

### Standard separator ESD

For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

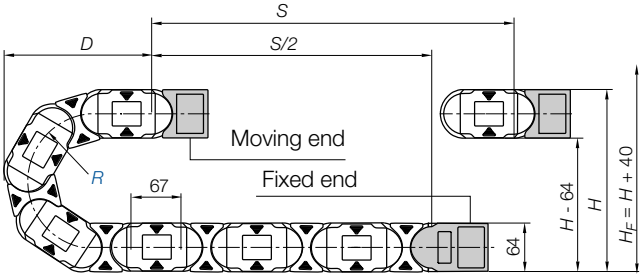



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 33**

**Pitch** = 67 mm/link
**Links/m** = 15 (1005 mm)
**Chain length** = $S/2 + K$

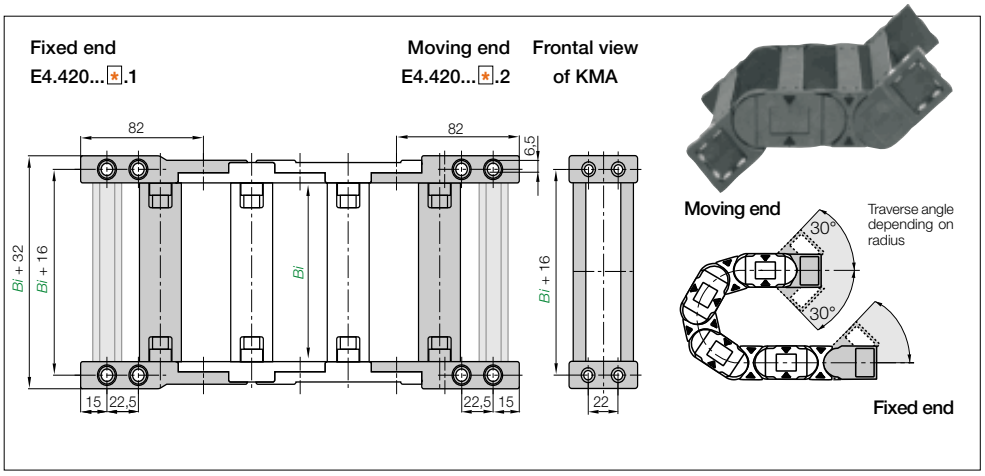
| ***R*** | **075** | **100** | **150** | **200** | **250** |
|---|---|---|---|---|---|
| $H\ ^{-0}_{+25}$ | 214 | 264 | 364 | 464 | 564 |
| ***D*** | 174 | 199 | 249 | 299 | 349 |
| ***K*** | 370 | 450 | 610 | 765 | 920 |

The required clearance height: $H_F = H + 40$ mm (with 3,0 kg/m fill weight)

$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
$S$ = Length of travel
$R$ = Bending radius
$H$ = Nominal clearance height
$H_F$ = Required clearance height
$D$ = Overlength e-chain®, radius in final position
$K$ = $\pi \bullet R$ + "safety"

# E4.1 ESD | E4.42 | KMA Mounting brackets pivoting

**For tight installation conditions, all-sides attachment**




## ESD mounting bracket | KMA pivoting | All-sides attachment

Recommended for unsupported and gliding applications

| Width Index | Part No. full set ESD pivoting with C-profile | Part No. full set ESD pivoting without C-profile | Bi [mm] |
|---|---|---|---|
| 05. ▶ | E4.420.05 .*.12.C.ESD | E4.420.05 .*.12.ESD | 50 |
| 087.▶ | E4.420.087.*.12.C.ESD | E4.420.087.*.12.ESD | 87 |
| 10. ▶ | E4.420.10 .*.12.C.ESD | E4.420.10 .*.12.ESD | 100 |
| 15. ▶ | E4.420.15 .*.12.C.ESD | E4.420.15 .*.12.ESD | 150 |
| 18. ▶ | E4.420.18 .*.12.C.ESD | E4.420.18 .*.12.ESD | 175 |
| 20. ▶ | E4.420.20 .*.12.C.ESD | E4.420.20 .*.12.ESD | 200 |

- Standard
- For tight installation conditions
- Option: integrated C-profile (Index .C)
- Corrosion-resistant
- Option: threaded sockets upon request

(KMA = Polymer Metal Mounting Bracket)

**Part No. structure**

E4.420.10.2.12.ESD




**Single-part order**

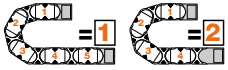
Mounting bracket **Moving end**

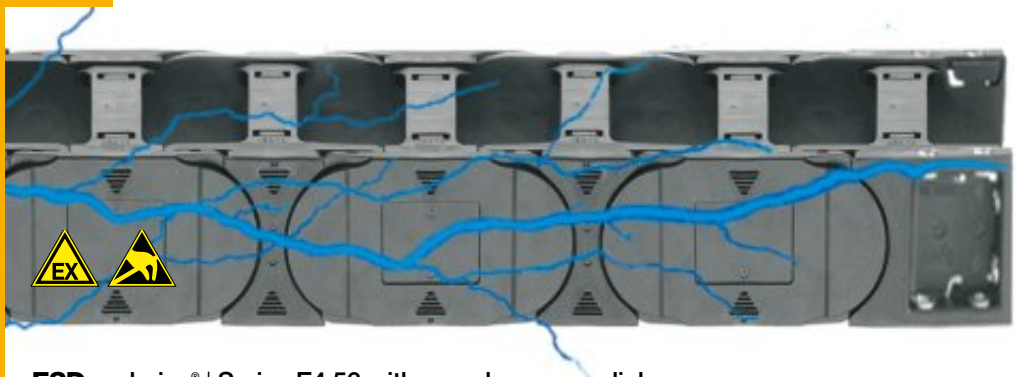
E4.420.10.2.2.ESD (odd number of links)

Mounting bracket **Fixed end**

E4.420.10.2.1.ESD (odd number of links)

**Note*:** The E4.1 System may end with either an inner or an outer side link. Keep in mind that an outer side link always forms the first e-chain® link at the moving end.
The Part Nos. depend on an even or odd numbers of links.
Please insert: Index 1 (for odd) or 2 (for even)!





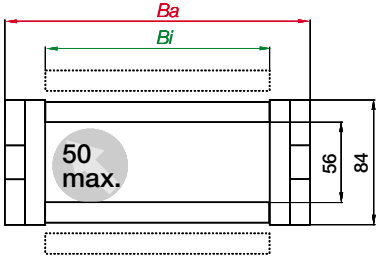
## ESD e-chains® | Series E4.56 with crossbars every link

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | KMA mounting brackets ESD pivoting, from stock** | |
|---|---|---|---|---|---|
| E4.56.07 .R.0.ESD | 75 | 109 | \| 135 \| 150 \| 175 \| 200 \| 250 \| | E4.560.07.*.12.C.ESD | * Note: see |
| E4.56.12 .R.0.ESD | 125 | 159 | \| 135 \| 150 \| 175 \| 200 \| 250 \| | E4.560.12.*.12.C.ESD | mounting brackets |
| E4.56.15 .R.0.ESD | 150 | 184 | \| 135 \| 150 \| 175 \| 200 \| 250 \| | E4.560.15.*.12.C.ESD | |
| E4.56.20 .R.0.ESD | 200 | 234 | \| 135 \| 150 \| 175 \| 200 \| 250 \| | E4.560.20.*.12.C.ESD | |
| E4.56.25 .R.0.ESD | 250 | 284 | \| 135 \| 150 \| 175 \| 200 \| 250 \| | E4.560.25.*.12.C.ESD | |
| E4.56.30 .R.0.ESD | 300 | 334 | \| 135 \| 150 \| 175 \| 200 \| 250 \| | E4.560.30.*.12.C.ESD | |

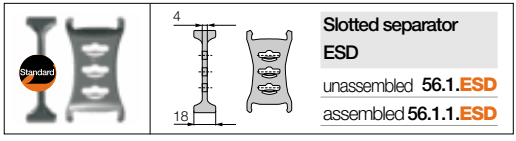
Supplement Part No. with required radius *(R)* Example: **E4.56.15.150.0.ESD**

**Order key**
**E4.56. 15. 150.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## ESD e-chains® | Series E4.56 | Interior separation | Standard

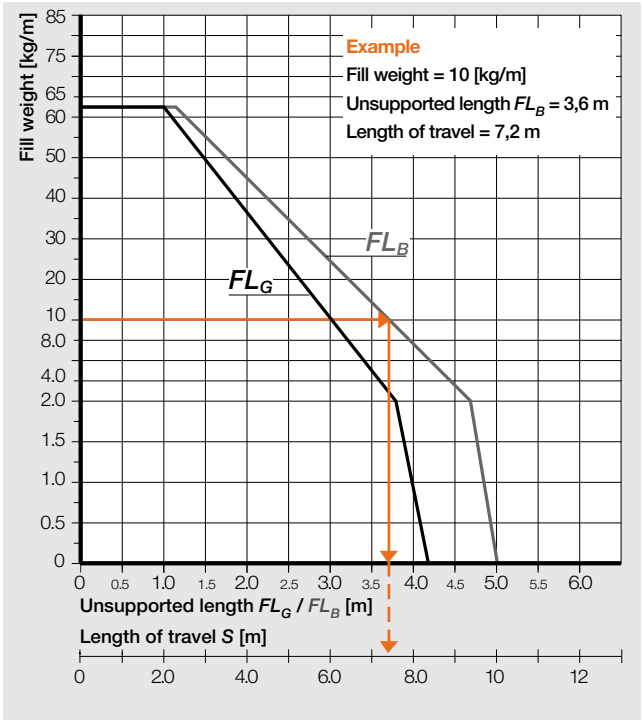


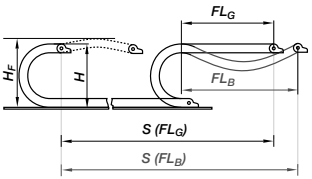

Slotted separator ESD
unassembled **56.1.ESD**
assembled **56.1.1.ESD**

### Standard separator ESD

For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

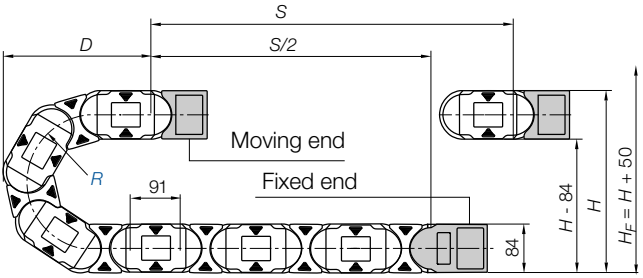



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 33**

**Pitch** = 91 mm/link
**Links/m** = 11 (1001 mm)
**Chain length** = $S/2 + K$

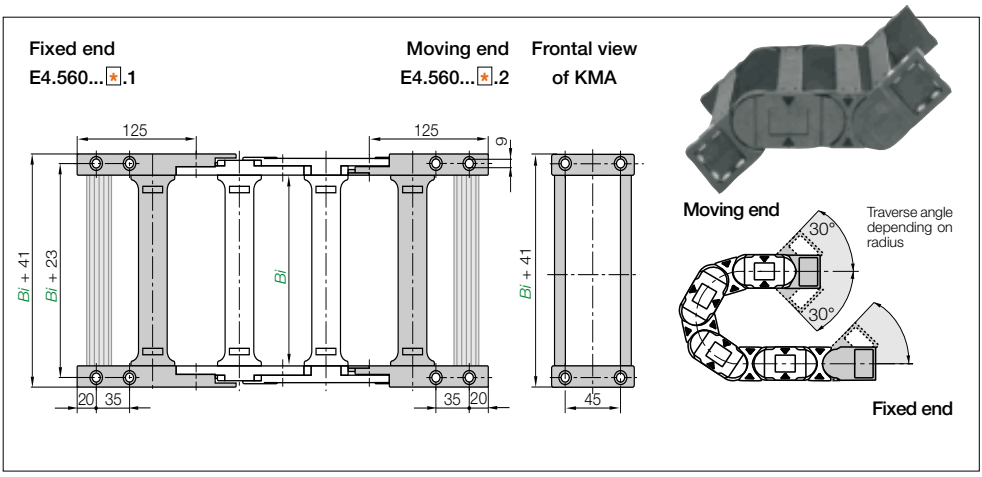
| ***R*** | **135** | **150** | **175** | **200** | **250** |
|---|---|---|---|---|---|
| $H_{+25}^{-0}$ | 354 | 384 | 434 | 484 | 584 |
| ***D*** | 268 | 283 | 308 | 333 | 383 |
| ***K*** | 610 | 655 | 735 | 815 | 970 |

The required clearance height: $H_F = H + 50$ mm (with 3,0 kg/m fill weight)

$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
***S*** = Length of travel
***R*** = Bending radius
***H*** = Nominal clearance height
$H_F$ = Required clearance height
***D*** = Overlength e-chain®, radius in final position
***K*** = $\pi \bullet R +$ "safety"

# E4.1 ESD | E4.56 | KMA Mounting brackets pivoting

**For tight installation conditions, all-sides attachment**




## ESD mounting bracket | KMA pivoting | All-sides attachment

Recommended for unsupported and gliding applications

| Width Index | Part No. full set ESD pivoting with C-profile | Part No. full set ESD pivoting without C-profile | *Bi* [mm] |
|---|---|---|---|
| 07. ▶ | E4.560.07.*.12.C.ESD | E4.560.07.*.12.ESD | 75 |
| 12. ▶ | E4.560.12.*.12.C.ESD | E4.560.12.*.12.ESD | 125 |
| 15. ▶ | E4.560.15.*.12.C.ESD | E4.560.15.*.12.ESD | 150 |
| 20. ▶ | E4.560.20.*.12.C.ESD | E4.560.20.*.12.ESD | 200 |
| 25. ▶ | E4.560.25.*.12.C.ESD | E4.560.25.*.12.ESD | 250 |
| 30. ▶ | E4.560.30.*.12.C.ESD | E4.560.30.*.12.ESD | 300 |

- Standard
- For tight installation conditions
- Option: integrated C-profile (Index .C)
- Corrosion-resistant
- Option: threaded sockets upon request

(KMA = Polymer Metal Mounting Bracket)

**Part No. structure**

E4.560.15.2.12.ESD




**Single-part order**

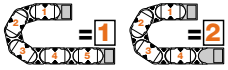
Mounting bracket **Moving end**

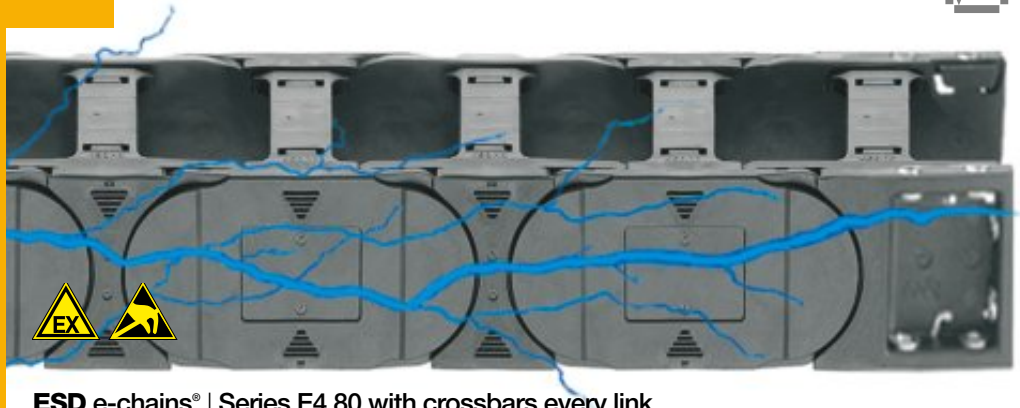
E4.560.15.2.2.ESD (odd number of links)

Mounting bracket **Fixed end**

E4.560.15.2.1.ESD (odd number of links)

**Note*:** The E4.1 System may end with either an inner or an outer side link. Keep in mind that an outer side link always forms the first e-chain® link at the moving end.
The Part Nos. depend on an even or odd numbers of links.
Please insert: Index 1 (for odd) or 2 (for even)!





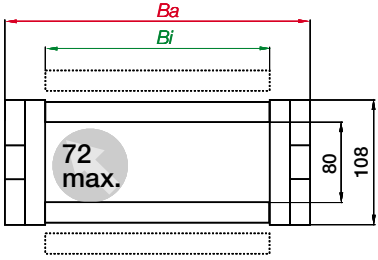

## ESD e-chains® | Series E4.80 with crossbars every link

| ESD e-chains® from stock* | Bi [mm] | Ba [mm] | R Bending radii [mm] | KMA mounting brackets ESD pivoting, from stock** | |
|---|---|---|---|---|---|
| E4.80.07.R.0.ESD | 75 | 125 | \| 200 \| 250 \| 300 \| | E4.800.07.*.12.C.ESD | * Note: see |
| E4.80.12.R.0.ESD | 125 | 175 | \| 200 \| 250 \| 300 \| | E4.800.12.*.12.C.ESD | mounting brackets |
| E4.80.15.R.0.ESD | 150 | 200 | \| 200 \| 250 \| 300 \| | E4.800.15.*.12.C.ESD | |
| E4.80.20.R.0.ESD | 200 | 250 | \| 200 \| 250 \| 300 \| | E4.800.20.*.12.C.ESD | |
| E4.80.25.R.0.ESD | 250 | 300 | \| 200 \| 250 \| 300 \| | E4.800.25.*.12.C.ESD | |
| E4.80.30.R.0.ESD | 300 | 350 | \| 200 \| 250 \| 300 \| | E4.800.30.*.12.C.ESD | |

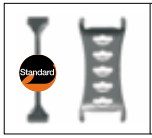
Supplement Part No. with required radius *(R)* Example: **E4.80.15.250.0.ESD**

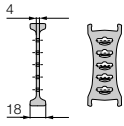
### Order key
**E4.80. 15. 250.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## ESD e-chains® | Series E4.80 | Interior separation | Standard



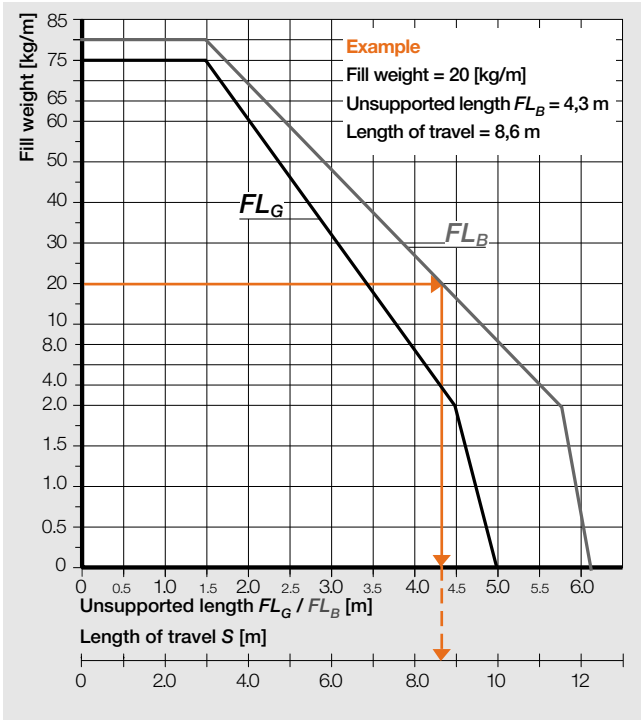

Slotted separator ESD

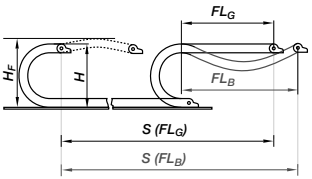
unassembled **80.1.ESD**

assembled **80.1.1.ESD**

### Standard separator ESD
For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

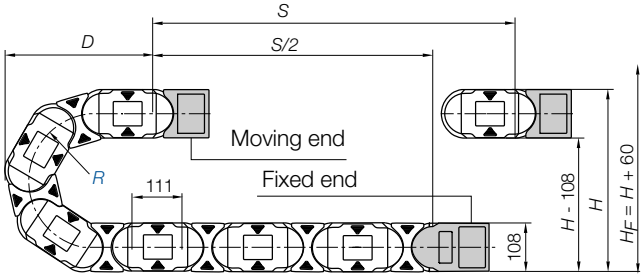



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 33**

**Pitch** = 111 mm/link
**Links/m** = 9 (999 mm)
**Chain length** = $S/2 + K$

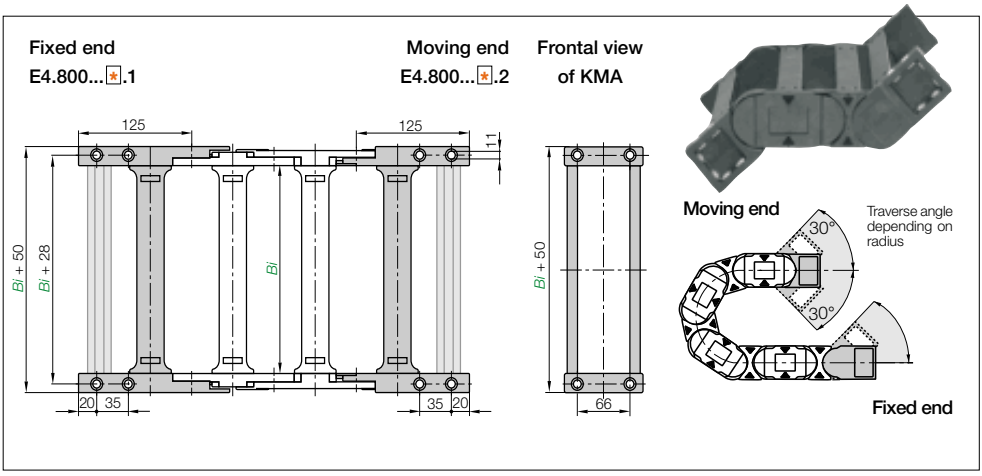
| ***R*** | **200** | **250** | **300** |
|---|---|---|---|
| $H^{-0}_{+25}$ | 508 | 608 | 708 |
| ***D*** | 365 | 415 | 465 |
| ***K*** | 855 | 1010 | 1165 |

The required clearance height: $H_F = H + 60$ mm (with 3,0 kg/m fill weight)

$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
$S$ = Length of travel
$R$ = Bending radius
$H$ = Nominal clearance height
$H_F$ = Required clearance height
$D$ = Overlength e-chain®, radius in final position
$K$ = $\pi \bullet R$ + "safety"

# E4.1 ESD | E4.80 | KMA Mounting brackets pivoting

**For tight installation conditions, all-sides attachment**




## ESD mounting bracket | KMA pivoting | All-sides attachment

Recommended for unsupported and gliding applications

| Width Index | Part No. full set ESD pivoting with C-profile | Part No. full set ESD pivoting without C-profile | Bi [mm] |
|---|---|---|---|
| 07. ▶ | E4.800.07.*.12.C.ESD | E4.800.07.*.12.ESD | 75 |
| 12. ▶ | E4.800.12.*.12.C.ESD | E4.800.12.*.12.ESD | 125 |
| 15. ▶ | E4.800.15.*.12.C.ESD | E4.800.15.*.12.ESD | 150 |
| 20. ▶ | E4.800.20.*.12.C.ESD | E4.800.20.*.12.ESD | 200 |
| 25. ▶ | E4.800.25.*.12.C.ESD | E4.800.25.*.12.ESD | 250 |
| 30. ▶ | E4.800.30.*.12.C.ESD | E4.800.30.*.12.ESD | 300 |

- Standard
- For tight installation conditions
- Option: integrated C-profile (Index .C)
- Corrosion-resistant
- Option: threaded sockets upon request

(KMA = Polymer Metal Mounting Bracket)

**Part No. structure**

E4.800.15.2.12.ESD

- Index: **ESD**
- Full set
- odd
- Width index
- Series

**Single-part order**

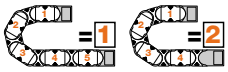
Mounting bracket **Moving end**

E4.800.15.2.2.ESD (odd number of links)

Mounting bracket **Fixed end**

E4.800.15.2.1.ESD (odd number of links)

**Note*:** The E4.1 System may end with either an inner or an outer side link. Keep in mind that an outer side link always forms the first e-chain® link at the moving end.
The Part Nos. depend on an even or odd numbers of links.
Please insert: Index 1 (for odd) or 2 (for even)!



# E4/light ESD - light, stable and cost-effective

E4/light - Weight reduction, a large interior space and price reduction result as well as a compromise in strength. The "light" features appear in two places: A reduced thickness of the side links (for all types), and a thinner crossbar (Serie14240). E4/light e-chains® erzielen E4/light e-chains® achieve optimum price-performance solutions for many industries. Especially for unsupported short travels, hanging and short standing designs. E4/light types are often first choice.

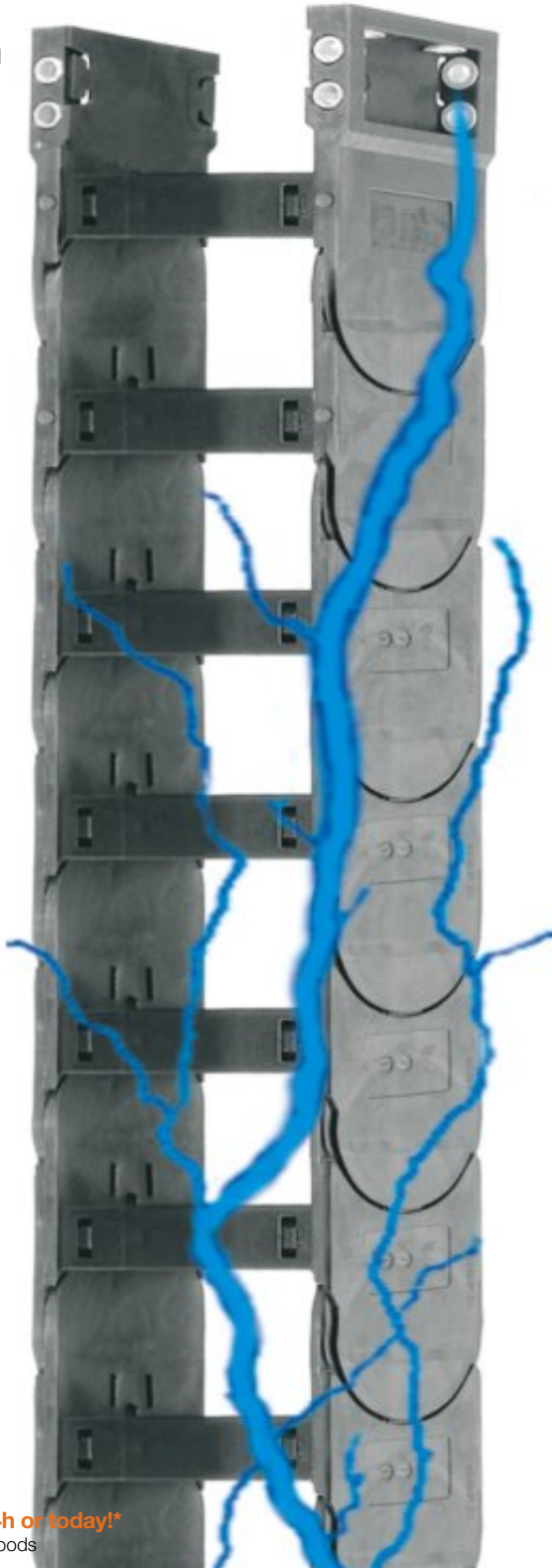
**Typical industries and applications**

- Pick & place robots
- Semi-conductor machines
- Linear motors, actuators
- Measuring equipment
- Machine tools


Special equipment: Electrically conductive ESD/ATEX version upon request

Side-mounted - unsupported

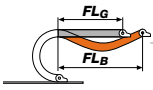
High torsional rigidity



**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

| Series | Inner height *hi* [mm] | Inner width *Bi* [mm] | Outer width *Ba* [mm] | Outer height *ha* [mm] | Bending radius *R* [mm] | Unsupported length max. [m] | Page |
|---|---|---|---|---|---|---|---|
|  **ESD e-chains® Crossbars every link** for particulary demanding applications | | | | | | | |
| **14240** | 62 | 50 - 200 | 76 - 226 | 84 | 150 - 250 | 4,0 | **60** |
| **15050** | 80 | 75 - 300 | 105 - 330 | 108 | 150 - 250 | 4,6 | **64** |

## Technical Data - System E4/light **ESD**

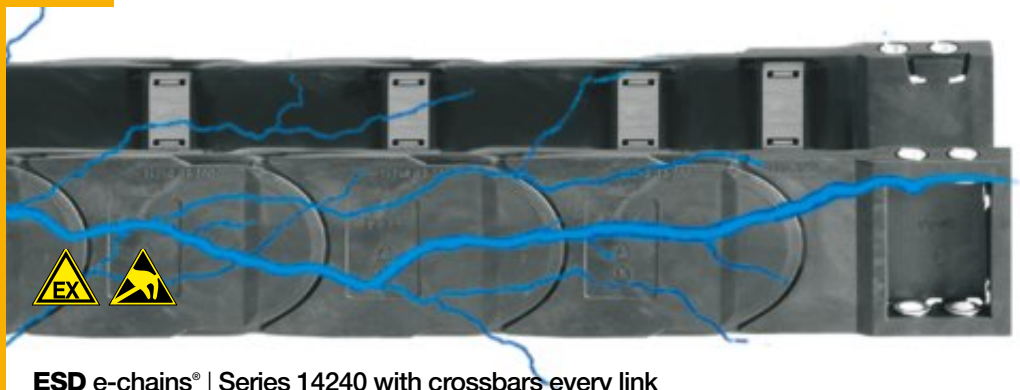



| | |
|---|---|
| Gliding speed / acceleration (maximum) | max. 10 [m/s] / max. 50 [m/s²] |
| Speed / acceleration $FL_G$ max. | max. 20 [m/s] / max. 200 [m/s²] |
| Speed / acceleration $FL_B$ max. | max. 3 [m/s] / max. 6 [m/s²] |
| Material - permitted temperature °C | igumid ESD / -40° up to +80° C |
| Flammability class, igumid ESD | VDE 0304 IIC UL94 HB |

$FL_G$ = with straight upper run $FL_B$ = with permitted sag

## Installation methods overview, maximum travels - System E4/light **ESD**

| | Unsupported application | Gliding | Vertical hanging | Vertical standing | Side mounted unsupported | Circular | Zig-zag | Unsupported length lower run |
|---|---|---|---|---|---|---|---|---|
| 14240 | ≤ 4,0 m | ≤ 150 m | ≤ 80 m | ≤ 6,0 m | ≤ 2,0 m | with rework | upon request | upon request |
| 15050 | ≤ 4,6 m | ≤ 250 m | ≤ 100 m | ≤ 6,0 m | ≤ 2,0 m | with rework | upon request | upon request |



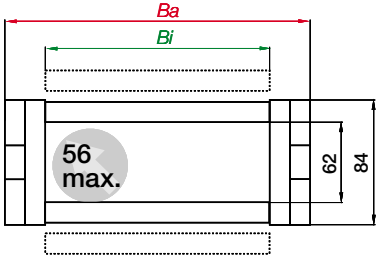

## **ESD** e-chains® | Series 14240 with crossbars every link

| **ESD** e-chains® from stock* | *Bi* [mm] | *Ba* [mm] | *R* Bending radii [mm] | KMA mounting brackets **ESD** pivoting, from stock** | |
|---|---|---|---|---|---|
| 14240.05.*R*.0.ESD | 50 | 76 | \| 150 \| 200 \| 250 \| | 143400.05.*.12.C.ESD | * Note: see |
| 14240.06.*R*.0.ESD | 68 | 94 | \| 150 \| 200 \| 250 \| | 143400.06.*.12.C.ESD | mounting brackets |
| 14240.10.*R*.0.ESD | 100 | 126 | \| 150 \| 200 \| 250 \| | 143400.10.*.12.C.ESD | |
| 14240.15.*R*.0.ESD | 150 | 176 | \| 150 \| 200 \| 250 \| | 143400.15.*.12.C.ESD | |
| 14240.18.*R*.0.ESD | 175 | 201 | \| 150 \| 200 \| 250 \| | 143400.18.*.12.C.ESD | |
| 14240.20.*R*.0.ESD | 200 | 226 | \| 150 \| 200 \| 250 \| | 143400.20.*.12.C.ESD | |

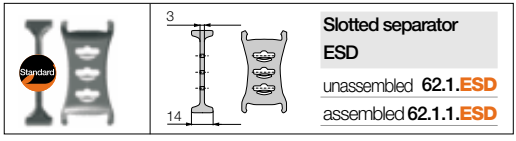
Supplement Part No. with required radius *(R)* Example: **14240.10.150.0.ESD**

**Order key**
**14240. 10. 150.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## **ESD** e-chains® | Series 14240 | Interior separation | **Standard**

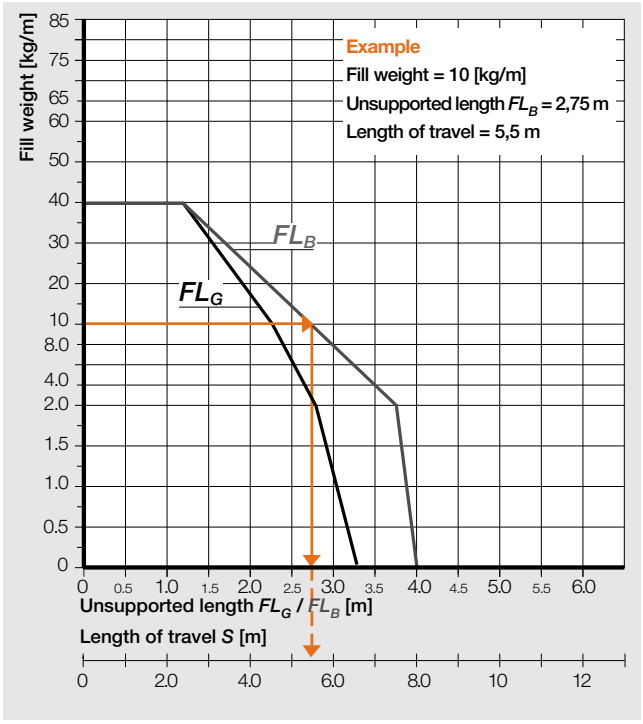


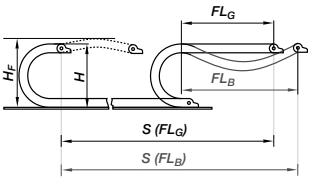

**Slotted separator ESD**
unassembled **62.1.ESD**
assembled **62.1.1.ESD**

### Standard separator **ESD**

For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

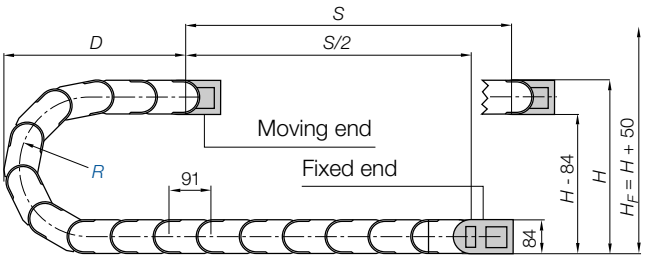



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 59**

**Pitch** = 91 mm/link
**Links/m** = 11 (1001 mm)
**Chain length** = $S/2 + K$

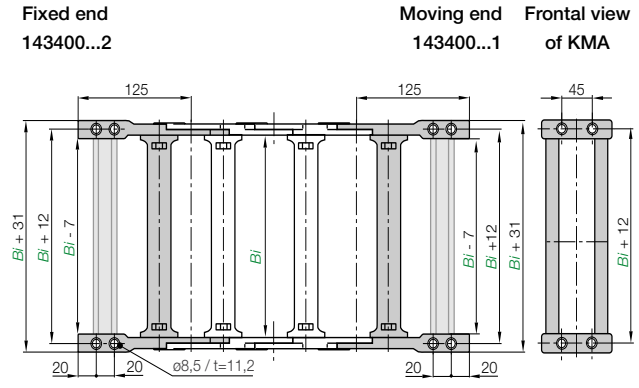
| ***R*** | **150** | **200** | **250** |
|---|---|---|---|
| $H^{0}_{+25}$ | 385 | 485 | 585 |
| ***D*** | 285 | 335 | 385 |
| ***K*** | 750 | 900 | 1050 |

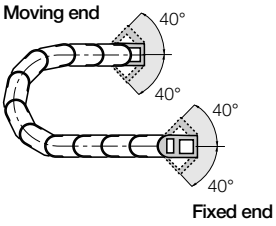
The required clearance height: $H_F = H + 50$ mm (with 2,0 kg/m fill weight)

$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
$S$ = Length of travel
$R$ = Bending radius
$H$ = Nominal clearance height
$H_F$ = Required clearance height
$D$ = Overlength e-chain®, radius in final position
$K$ = $\pi \bullet R$ + "safety"

# E4/light ESD | 14240 | KMA Mounting brackets pivoting

**For tight installation conditions, all-sides attachment**




## ESD mounting bracket | KMA pivoting | All-sides attachment

Recommended for unsupported and gliding applications

| Width Index | Part No. full set ESD pivoting with C-profile | Part No. full set ESD pivoting without C-profile | *Bi* [mm] |
|---|---|---|---|
| 05. ▶ | 143400.05.12.C.ESD | 143400.05.12.ESD | 50 |
| 06. ▶ | 143400.06.12.C.ESD | 143400.06.12.ESD | 68 |
| 10. ▶ | 143400.10.12.C.ESD | 143400.10.12.ESD | 100 |
| 15. ▶ | 143400.15.12.C.ESD | 143400.15.12.ESD | 150 |
| 18. ▶ | 143400.18.12.C.ESD | 143400.18.12.ESD | 175 |
| 20. ▶ | 143400.20.12.C.ESD | 143400.20.12.ESD | 200 |

- Standard
- For tight installation conditions
- Option: integrated C-profile (Index .C)
- Corrosion-resistant
- Option: threaded sockets upon request

(KMA = Polymer Metal Mounting Bracket)

**Part No. structure**

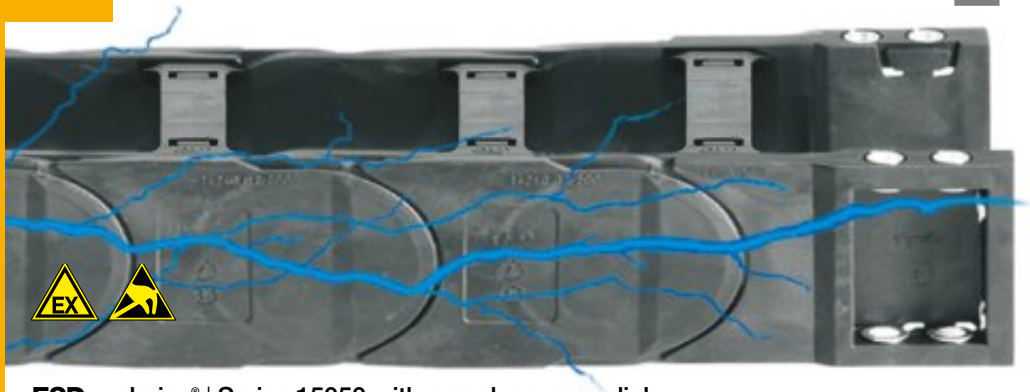
143400.10.12.C.ESD




**Single-part order**

Mounting bracket **Moving end**
143400.10.2.ESD

Mounting bracket **Fixed end**
143400.10.1.ESD



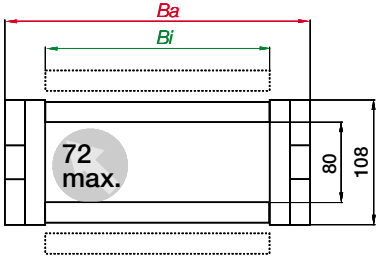

## **ESD** e-chains® | Series 15050 with crossbars every link

| **ESD** e-chains® from stock* | *Bi* [mm] | *Ba* [mm] | *R* Bending radii [mm] | KMA mounting brackets **ESD** pivoting, from stock** | |
|---|---|---|---|---|---|
| 15050.07.*R*.0.**ESD** | 75 | 105 | \| 150 \| 200 \| 250 \| | 150500.07.*.12.C.**ESD** | * Note: see |
| 15050.12.*R*.0.**ESD** | 125 | 155 | \| 150 \| 200 \| 250 \| | 150500.12.*.12.C.**ESD** | mounting brackets |
| 15050.15.*R*.0.**ESD** | 150 | 180 | \| 150 \| 200 \| 250 \| | 150500.15.*.12.C.**ESD** | |
| 15050.20.*R*.0.**ESD** | 200 | 230 | \| 150 \| 200 \| 250 \| | 150500.20.*.12.C.**ESD** | |
| 15050.25.*R*.0.**ESD** | 250 | 280 | \| 150 \| 200 \| 250 \| | 150500.25.*.12.C.**ESD** | |
| 15050.30.*R*.0.**ESD** | 300 | 330 | \| 150 \| 200 \| 250 \| | 150500.30.*.12.C.**ESD** | |

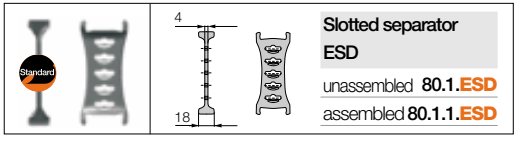
Supplement Part No. with required radius *(R)* Example: **15050.20.150.0.ESD**

**Order key**
**15050. 20. 150.0.ESD**

- Index: **ESD**, color grey
- Bending radius ***R***
- Width index (depends on *Bi*)
- Series / Type




## **ESD** e-chains® | Series 15050 | Interior separation | **Standard**

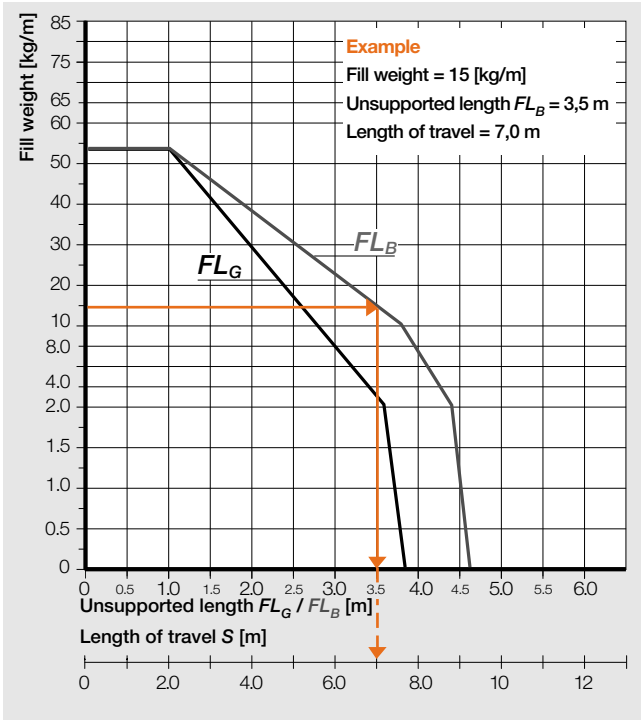


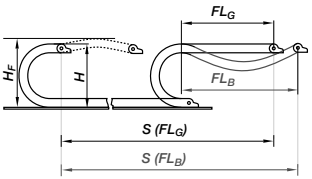

Slotted separator ESD
unassembled **80.1.ESD**
assembled **80.1.1.ESD**

### Standard separator **ESD**

For all applications. Maximum locking strength and safe standing in e-chains®. In the standard configuration separators are assembled every 2nd e-chain® link! More interior separators upon request.

**Available from stock. Delivery in 24h or today!***
*Delivery time means time until shipping of goods

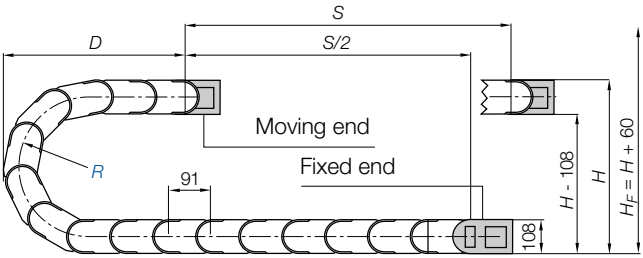



## Unsupported applications

Unsupported e-chains® feature positive camber over short travels. This must be accounted for when specifying the clearance height $H_F$. Please consult igus® if space is particularly restricted.

The diagrams for unsupported length are applicable for the standard e-chains® in the igumid GLW material. The values can also be used for the assessment of e-chain® applications 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.




## Technical Data

Speed, material, temperature and flammability class ▶ **page 59**

**Pitch** = 91 mm/link
**Links/m** = 11 (1001 mm)
**Chain length** = $S/2 + K$

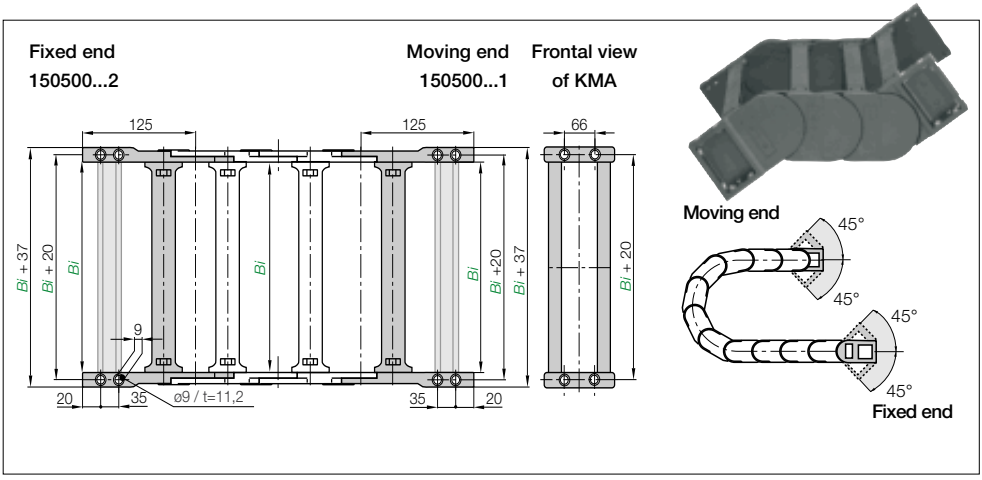
| ***R*** | **150** | **200** | **250** |
|---|---|---|---|
| $H^{-0}_{+25}$ | 410 | 510 | 610 |
| ***D*** | 300 | 350 | 400 |
| ***K*** | 750 | 900 | 1050 |

The required clearance height: $H_F = H + 60$ mm (with 3,0 kg/m fill weight)

$FL_G$ = with straight upper run
$FL_B$ = with permitted sag
***S*** = Length of travel
***R*** = Bending radius
***H*** = Nominal clearance height
$H_F$ = Required clearance height
***D*** = Overlength e-chain®, radius in final position
***K*** = $\pi \bullet R +$ "safety"

# E4/light ESD | 15050 | KMA Mounting brackets pivoting

**For tight installation conditions, all-sides attachment**




## ESD mounting bracket | KMA pivoting | All-sides attachment

Recommended for unsupported and gliding applications

| Width Index | Part No. full set **ESD** pivoting with C-profile | Part No. full set **ESD** pivoting without C-profile | *Bi* [mm] |
|---|---|---|---|
| 07. ▶ | 150500.07.12.C.ESD | 150500.07.12.ESD | 75 |
| 12. ▶ | 150500.12.12.C.ESD | 150500.12.12.ESD | 125 |
| 15. ▶ | 150500.15.12.C.ESD | 150500.15.12.ESD | 150 |
| 20. ▶ | 150500.20.12.C.ESD | 150500.20.12.ESD | 200 |
| 25. ▶ | 150500.25.12.C.ESD | 150500.25.12.ESD | 250 |
| 30. ▶ | 150500.30.12.C.ESD | 150500.30.12.ESD | 300 |

- Standard
- For tight installation conditions
- Option: integrated C-profile (Index .C)
- Corrosion-resistant
- Option: threaded sockets upon request
  (KMA = Polymer Metal Mounting Bracket)

**Part No. structure**

150500.20.12.C.ESD



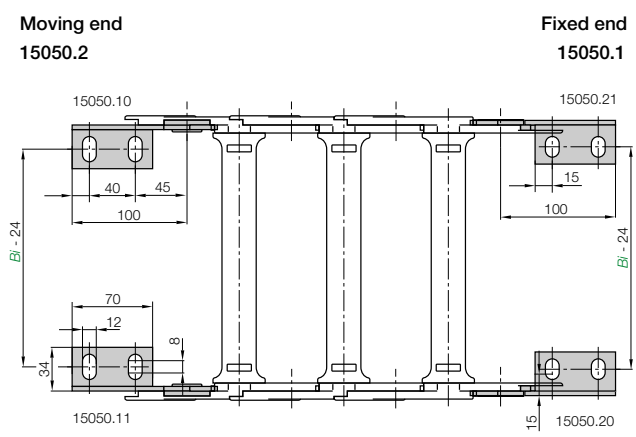

**Single-part order**

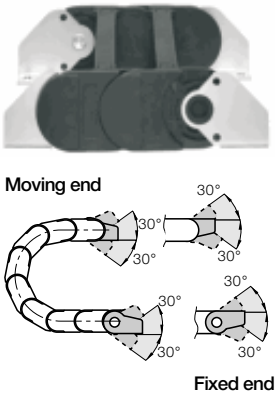
Mounting bracket **Moving end**
150500.20.2.ESD

Mounting bracket **Fixed end**
150500.20.1.ESD

# E4/light ESD | 15050 | Steel Mounting brackets pivoting

**Electrically conductive**



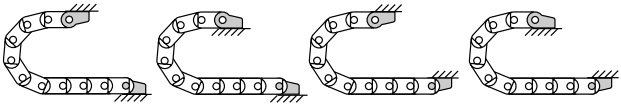

## Mounting bracket | Steel pivoting

Recommended for unsupported, vertical hanging and standing applications

| Part No. | Mounting bracket |
|---|---|
| **15050.12** | Full attachment set (both sides) for e-chain®, 4 parts, 2 with pin / 2 with bore |
| **15050.12.E** | Stainless steel - full attachment set (both sides) for e-chain®, 4 parts, 2 with pin / 2 with bore |
| **15050.2** | Mounting bracket set **Moving end.** 2 parts: 1 part left, 1 part right |
| **15050.1** | Mounting bracket set **Fixed end.** 2 parts: 1 part left, 1 part right |

**Note:** By ordering steel mounting brackets in combination with an e-chain®, they will be delivered assembled!

- For pivoting connections
- Secure connection
- One part (two-piece) for all e-chain® widths
- Electrically conductive
- Stainless steel version available - please add index **.E**
  (Material: stainless steel 1.4301)



Possible installation conditions - further installation angles ▶ installation sketch

# ESD&ATEX...Ope

## Supplement to installation instructions and catalog information for igus® ESD e-chains® – classification: Ex II 2 GD

### 1. Technical Data see catalog information

### 2. General safety information

These additional Operating Instructions apply to the explosion-protected versions of our e-chains® of Type "ESD" in color gray (similar to RAL 7015). They supplement the Installation Instructions for the standard e-chains® and the catalog 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

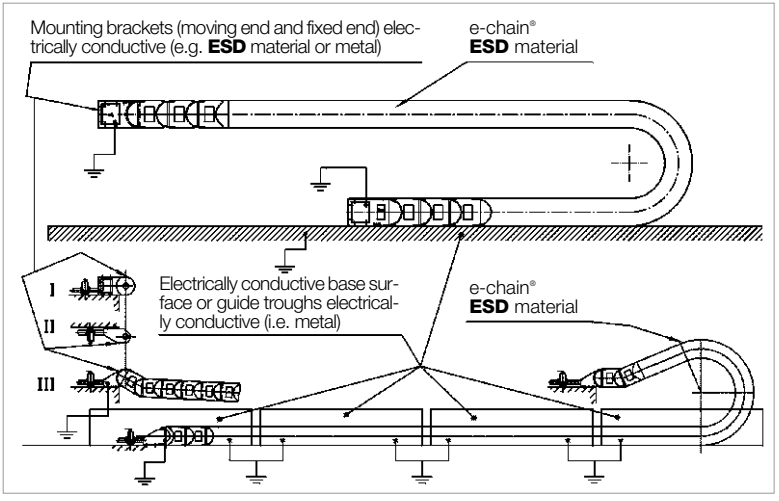
Please follow the information in the Installation Instructions for the standard e-chains® and the catalog information on assembly, removal and installation for trouble-free operation. igus® ESD e-chains® must be grounded with appropriate measures in accordance with drawing number: 18392.2 in order to 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 assembly 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 catalog 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 customized maintenance plans can become an issue and will be created if necessary )




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

# rating Instructions

## EC-Declaration of Conformity

**Document-No.:** QM-0-419-A
**Manufacturer:** igus® GmbH • Spicher Str. 1a • 51147 Köln
**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 Art. 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 und Berlin • Bundesallee 100 • D-38116 Braunschweig, Germany**

Investigations required after classification Ex 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), **BGR 132:2003 and ZH1/200**

**Kennzeichnung:** Ex II 2 GD - Special color of the ESD e-chain®
color: gray (similar to RAL 7015)

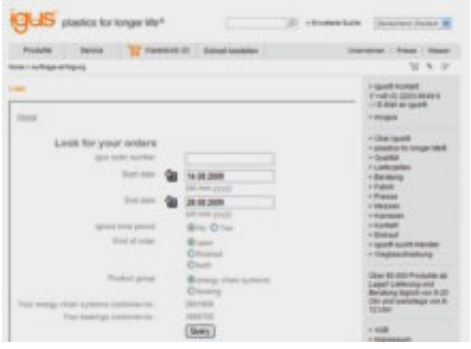
The Declaration of Conformity refers only to conception and manufacture of the devices described above according to ATEX Directive 94/9/EC in compliance with the Harmonized Standard DIN EN 13463 – 1 (2002).
The related Operating Instructions contain important safety instructions for positioning and commissioning 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, 27 May 2003

Chief Executive Officer

# igus®...service





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- Order confirmation via post, fax or e-mail as required
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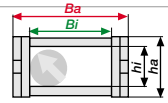
**QuickLink - igus® e-chains® on the Internet!**
**Go online and make use of all advantages at** www.igus.eu or every product in this catalog, there is a special QuickLink or direct online pointer to further useful details, data and facts. These include:

- Application videos and pictures
- Assembly instructions
- 3D-CAD files, DXF data
- Comparisons and selection aids
- Online configuration tools
- Online wizard for calculations of service life
- PDF-data and other formats for download: ePlan-Download

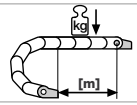
## 1 Dimensioning e-chains®

Determine the size of the e-chain® based on the specified installation space of your machine and/or of the selected filling (such as the number of cables/outer diameter of cable).



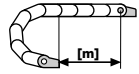

## 2 Determine fill weight

Determine fill weight of (cables and/or media hoses) in [kg/m] using chainflex® Quick Selectionor manufacturer specification.



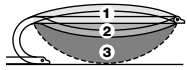

## 3 Determine length of travel

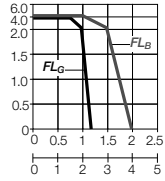
Compare the fill weight calculated in (point ❷) to the maximum fill weight of the selected e-chain® and check suitability for "unsupported application".




## 4 Unsupported length

The maximum unsupported length initially depends on the fill weight and the e-chain® selected. At the same time, there are three different levels of unsupported length: ❶ ***FL*$_G$ - Recommended Range of Application** ❷ ***FL*$_B$ - Permitted Sag** ❸ **Critical Sag: Should never be operative installation!** Twice the value of the unsupported length determines the maximum travel in the "unsupported" type of operation. For evaluation the weight of the cables to be carried must be known, then an exact evaluation can be made using a diagram on the introductory page of the selected product. You will find the values for ***FL*$_G$** and ***FL*$_B$** in table form on the following pages of this chapter and for each Series in the catalog. They are necessary for: ●Finding the fill weight and length of travel for the appropriate e-chain® ● Identifying the maximum load of the e-chain® used.



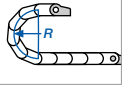

**If there is suitability for "unsupported straight", then the selection follows the following criteria:**

## 5

**Opening Principle** - The quick selection gives you an overview of the type offilling potential of the e-chain®.

## 6

Determine the possible **Bending Radius *R*** [mm] of the e-chain® with respect to the cable diameter.




## 7

**Interior separation is possible with…**

Separators | Full-width shelves | Shelves

## 8

The **price index** gives you the possibility of making price comparisons of similar sizes within the igus® range

**Low** | **Medium** | **Highest**

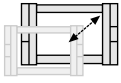
## 9

**Additional criteria -** for the appropriate selection of your e-chains® such as pitch, permissible temperatures etc. are available under quick selection.

**The following options are available if there is no possibility of self-supporting e-chain® application:**

## A

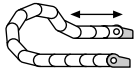
**You can choose the next and more stable e-chain®,** that can be operated "unsupported".



**or**

## B

**You can design your application to be "gliding".**



**You can contact us directly or fax us your e-chain® requests! We will respond immediately!**

**e-chain® Part No:** _____ . _____ . _____

Alternative e-chain®-dimensions:

***hi*:** _____ ***Bi*:** _____ ***ha*:** _____ ***Ba*:** _____

Fill weight: _____ kg/m

Length of travel: _____ m

Your Phone: _____

Your Fax: _____

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**Fax** (+49) 0 22 03 - 96 49-222

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MAT0071824.20, Issue 12/2011

plastics