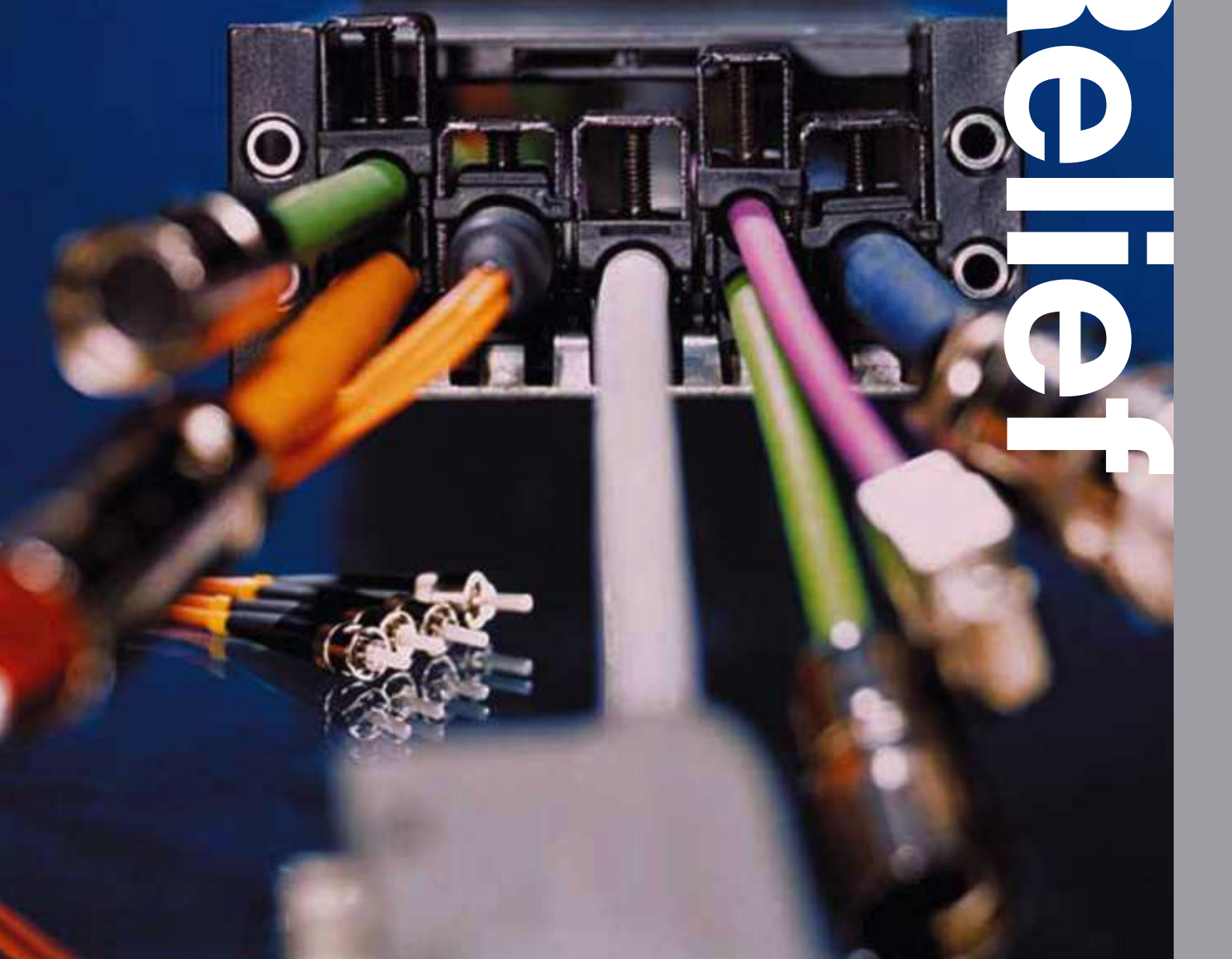


# Strain Relief



## Overview Strain Relief System



**Chainfix steel clamps and Chainfix stainless-steel clamps** – Max. pull forces, adjustable with hexagon socket

► Page 428



**Chainfix clips** – High pull forces, plug-in Modular snap-on strain relief device

► Page 430



**Chainfix Nugget** – Strain relief for small space and cables up to 20 mm o.d.

► Page 432



**Strain relief separator** – With integrated teeth

► Page 432



**Tiewrap plates** – For cable tiewrap universal, bolted or clip-on

► Page 433



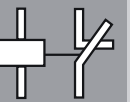
**Chainfix-tiewrap plates** – For strain relief with cable tiewraps for C-profile, clip-on

► Page 434



**igus® Blocks** – Special strain relief for hoses. A Modular, space-saving system

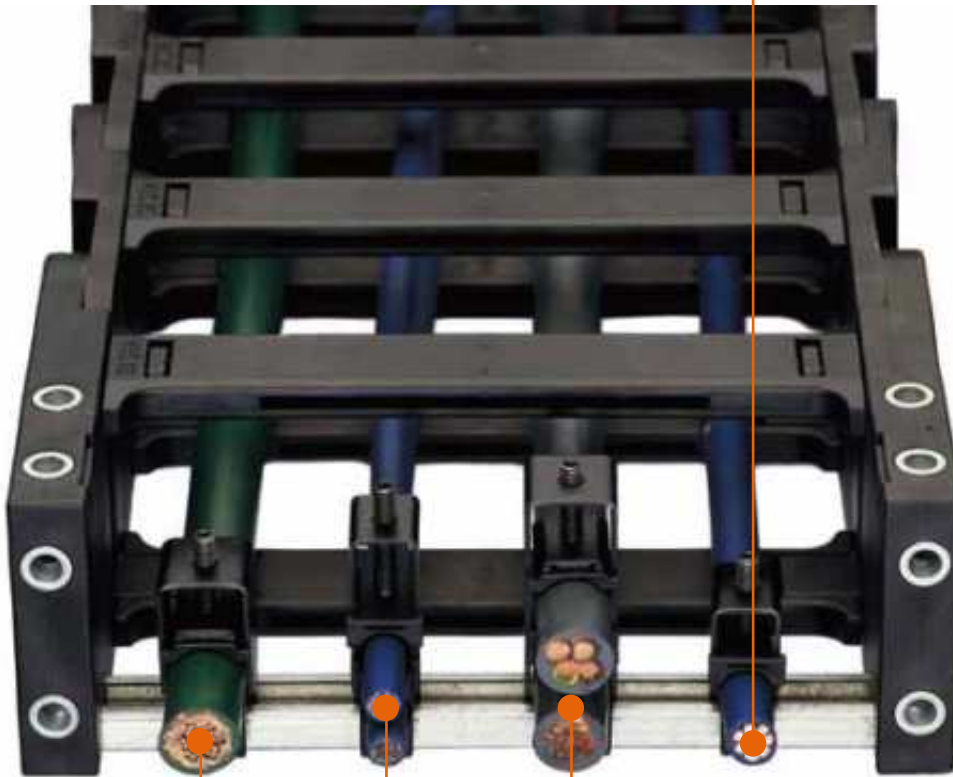
► Page 435



Reduced overall height

Space-saving

Long-term durability for dynamic application



Suitable for integration in the igus® connection element KMA (German abbr. = plastic-metal connection elements)

High tensile strength due to ribbed plastic troughs

For one cable, or for two or three cables on top of one another

Black painted or stainless steel from stock

### Strain relief devices for Energy Chains® with igus® strap clips and igus® press-fit elements

The principle of the strap clips has proved to be extremely reliable as a strain relief device for igus® Energy Chain Systems®.

**Important improvements** are characteristic features of the igus® own "Chainfix" product series:

- igus® Chainfix reduces the overall height due to optimum housing height
- Long-term durability for dynamic applications due to improved press-fit elements.
- Suitability for integration in the KMA connection element.
  - Space-saving and time-saving assembly
  - Possibility of delivery for complete systems with cables and assembled strain relief device.
- Improved foot for facilitated installation on the C profile.

Ideally, the cables must be fastened at both ends of the Energy Chains®. The cables must, however, at least be fastened to the moving mounting bracket of the Energy Chains®.

#### Characteristic features of the igus® Chainfix strap clips

- Optimized height due to newly developed housing.
- Improved foot for facilitated installation on the C profile.
- Good visual effects due to black housing body and black threaded setscrews.
- Easy to assemble due to setscrews that are screwed using an Allen key.

#### Characteristic features of the igus® press-fit elements

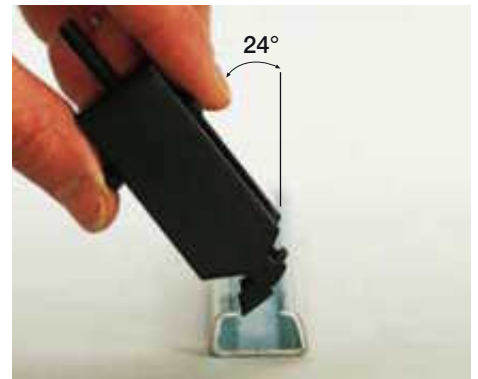
- Long supporting surface improves the stability of the strap clip.
- High inherent rigidity increases the operating safety.
- Integrated ribs prevent the cable from detaching itself from the strain relief device.

#### Overall height

When the Energy Chains® glide along on themselves in the case of long distances of travel, the screw heads of the strain relief device at the fixed point of the chain must possess a separating distance of at least 10 mm to the top edge of the Energy Chains®. Our newly developed clip housing with setscrews **reduce the overall height by as much as 15 mm** compared with conventional strap clips.



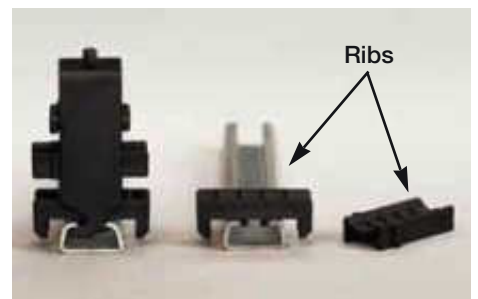
KMA connection element with integrated C profile and Chainfix



Easy installation of the strap clip due to improved foot



Reduced overall height due to setscrew and optimum housing height



New pressure trough, mating trough and press trough with ribs for better long-term durability

## Chainfix test results

### Three times higher tensile strength than with standard-type strap clips

- ❶ Standard-type strap clip made of hot-galvanized steel, double trough and press trough made of impact-resistant plastic (Art. no. CF14.1.Z, standard elements)
- ❷ Strap clip as described above, double trough and press trough made of igumid G (Art. no. CFY14.1)
- ❸ Strap clip "Chainfix", mating trough and press trough made of igumid G (Art. no. CFX14.1)

**Results:** Strain relief element ❶ saddle clamps loosen at 1.000 N of pull force. The resulting diagonal position of the saddle clamp distorts the screw. Strain relief element ❷ saddle clamps loosen at 1.750 N of pull force. The improved igumid G saddle clamps attempt to hold the cable, causing the outer jacket to "peel." Strain relief element (igus® Chainfix system) ❸ saddle clamps loosen and slant 5° at 1.750 N. At 2.500 N of pull force, the cable jacket bunches up behind the clamp and, at 3.500 N of pull force, the clamps loosen completely and the cable becomes inoperative.

**Final result: The tensile strength of the strap clip "Chainfix" developed by igus® is three times higher than the tensile strength of standard-type strain relief devices.**

#### Delivery program elements of the Chainfix strain relief devices:

- Chainfix strap clip with setscrew and press trough, double trough, mating trough ● C profile

**Materials:** igus® strap clip: black painted steel ● Setscrew: black steel ● igus® strap clip stainless steel\*: bare-metal, material 1.4301 ● Setscrew: bare-metal, material 1.4301 ● Press trough, double trough and mating trough: igumid G

### Tensile strength test example with cable Ø 10.5 mm

- Tiewrap plate 2070ZB with a cable tiewrap

**Result:** Tensile strength 290 N

- Chainfix clip CFC-12-M

**Result:** Tensile strength 350 N

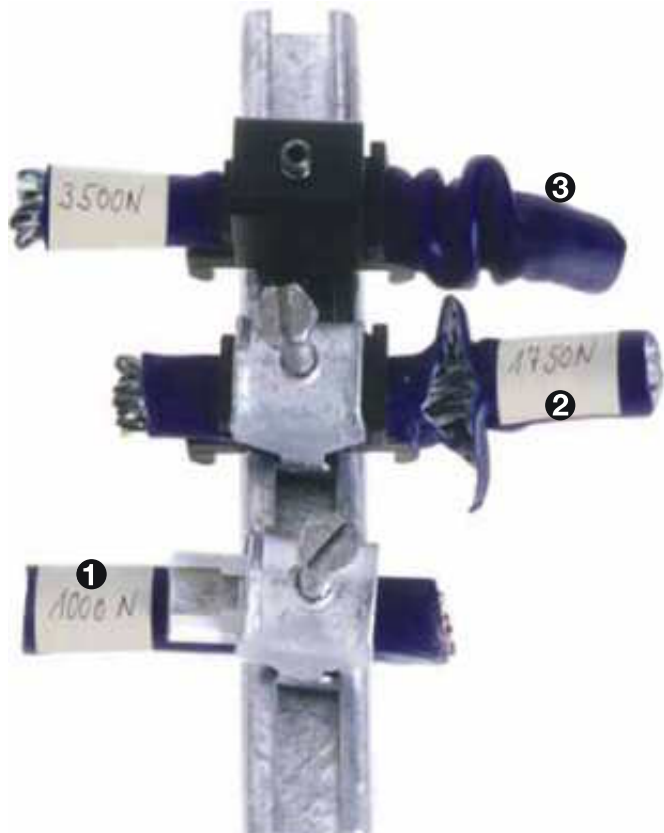
### Pull force test for igus® tiewrap plates with cable tiewraps

**Results:** Two tiewraps are more stable than one tiewrap.

If one cable tiewrap is used, the **breaking force is (approx.) 350 N**. If the cable is secured with two cable tiewraps, the **breaking force increases to 830 N**, i.e. pull force resistance more than doubles when using two cable tiewraps.

#### Technical data:

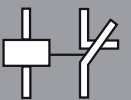
- Tiewrap plates: 2100.ZB/3100.ZB
- Cable: CF1.07.12
- Cable tiewraps: CFB.001



Strain relief devices

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Tel. Fax



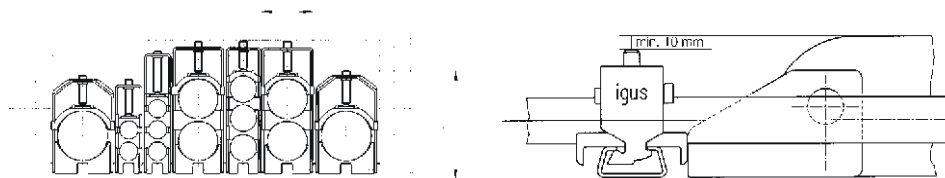
## igus® Chainfix Strain Relief



If the E-Chains® glide on themselves over long travels, the screw heads of the strain relief must be at least 10 mm away from the upper edge of the E-Chains® at the fixed end of the chain.

This restriction means that the strain relief elements described here may possibly not be able to be used on the fixed end of long E-Chains®.

Please note our clamps developed specifically for a low overall height. In the case of unsupported E-Chains®, the strain relief elements may be used with no problems.



The dimensions given for H in the tables are based on the maximum cable diameter. The use of thinner cables can result in deviating dimensions.



Improved housing foot clamp for easy fit into profile rail



Setscrew and reduced optimal housing height for use in long/ gliding travel applications



When using Chainfix clamps on C-Profile in the mounting bracket for Series 280, 2828, 290, 2928, R770, R7728 and a shortened mating trough must be used. The Part No. for this is: CFX...K (add letter "K" to the above Part No.)

\* Material stainless steel: 1.4301

### Single clamp housing, including top/bottom saddle clamps



Steel clamp Part No.	Stainless steel clamp Part No.	ø [mm]	B	H
CFX12.1	CFX12.1.E	06 – 12	16	58
CFX14.1	CFX14.1.E	12 – 14	18	50
CFX16.1	CFX16.1.E	14 – 16	20	52
CFX18.1	CFX18.1.E	16 – 18	22	54
CFX20.1	CFX20.1.E	18 – 20	24	56
CFX22.1	CFX22.1.E	20 – 22	26	58
CFX26.1	CFX26.1.E	22 – 26	30	67
CFX30.1	CFX30.1.E	26 – 30	34	71
CFX34.1	CFX34.1.E	30 – 34	38	75
CFX38.1	CFX38.1.E	34 – 38	42	79
CFX42.1	CFX42.1.E	38 – 42	46	83

### Double clamp housing, including top/bottom saddle clamps and one stacker saddle clamp



Steel clamp Part No.	Stainless steel clamp Part No.	ø [mm]	B	H
CFX12.2	CFX12.2.E	06 – 12	16	72
CFX14.2	CFX14.2.E	12 – 14	18	74
CFX16.2	CFX16.2.E	14 – 16	20	78
CFX18.2	CFX18.2.E	16 – 18	22	82
CFX20.2	CFX20.2.E	18 – 20	24	86
CFX22.2	CFX22.2.E	20 – 22	26	90
CFX26.2	CFX26.2.E	22 – 26	30	109
CFX30.2	CFX30.2.E	26 – 30	34	117
CFX34.2	CFX34.2.E	30 – 34	38	125

### Triple clamp housing, including top/bottom saddle clamps and two stacker saddle clamps



Steel clamp Part No.	Stainless steel clamp Part No.	ø [mm]	B	H
CFX12.3	–	06 – 12	16	100
CFX14.3	–	12 – 14	18	96
CFX16.3	–	14 – 16	20	102
CFX18.3	–	16 – 18	22	108
CFX20.3	–	18 – 20	24	114
CFX22.3	–	20 – 22	26	120

Bottom saddle clamps for single/double/triple clamp housings as separate part or insertion into C-profile

Part No.	ø [mm]
CG12	06 – 12
CG14	12 – 14
CG16	14 – 16
CG18	16 – 18
CG20	18 – 20
CG22	20 – 22
CG26	22 – 26
CG30	26 – 30
CG34	30 – 34
CG38	34 – 38
CG42	38 – 42

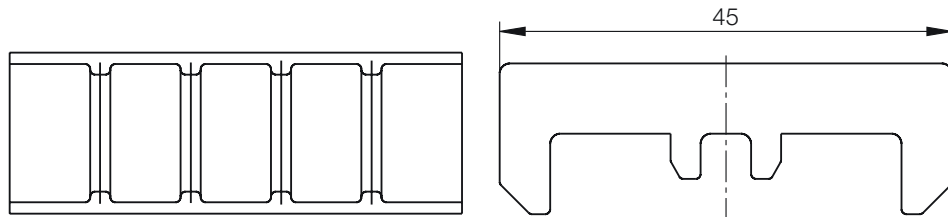


Stainless steel\* C profile for all clamps, also for assembly in the KMA connection element Series: 280, 2828, 28, 380, 3838, 38, 400, 4040, 40, 140, 142 and 5050, 50, 150,

**Part No. CF92.42 ..... E**

(specify length in mm)

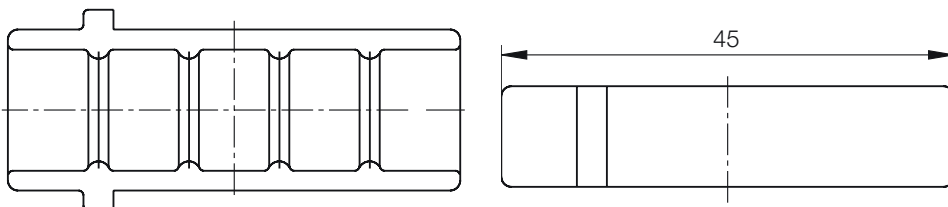
**Material:** stainless steel\*



Ribbed strain relief saddle clamps withstands increased pull forces for long-term durability

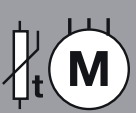
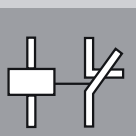
Stacker saddle clamps for double/triple clamp housings for placement between stacked cables

Part No.	ø [mm]
CD12	06 – 12
CD14	12 – 14
CD16	14 – 16
CD18	16 – 18
CD20	18 – 20
CD22	20 – 22
CD26	22 – 26
CD30	26 – 30
CD34	30 – 34



Strain relief devices

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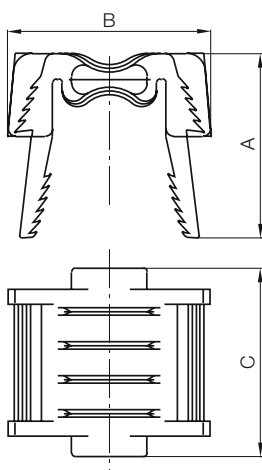
For the following  
E-Chains®:

**Chainfix Clip for C-profile:**

For all KMA mounting brackets  
with C-profile-option!

**Chainfix Clip for crossbars:**

For most E4 and  
E6 E-Chains®



## Chainfix – Snap on Solutions

### Chainfix Clip – Modular snap-on strain relief device

Available for all igus® E-ChainSystems® with C-profiles and also suitable for assembly in the KMA mounting brackets and Clip-on strain relief for crossbars

**Characteristic features:** ● Series of clamps and bottom parts made of plastic for cable diameters ranging from 4 mm to 24 mm ● Quick assembly without any tools ● 2 and 3 layers on top of one another possible ● Each layer can be detached and changed later on ● High tensile forces in case of single-layer installation, decreasing with the number of layers



ø Leitung [mm]	Part No. Clamps	Part No. Bottom Part	A [mm]	B [mm]	C [mm]
04 - 08 mm	CFC-08-M	CFC-08-C	13.0	14.5	30
08 - 12 mm	CFC-12-M	CFC-12-C	24.0	23.7	36
12 - 16 mm	CFC-16-M	CFC-16-C	32.1	32.4	42
16 - 20 mm	CFC-20-M	CFC-20-C	39.1	43.2	45
20 - 24 mm	CFC-24-M	CFC-24-C	50.0	54.0	50



For the following  
E-Chains®:

For all KMA mounting brackets  
with C-profile-option!

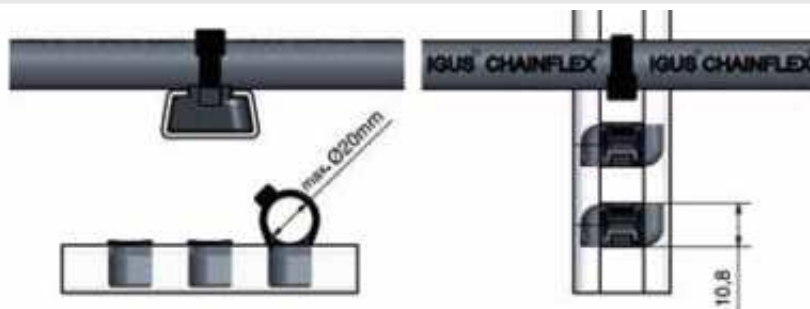


### Chainfix Nugget

**Characteristic features:** ● Very small strain relief for the fixation of cables up to diameter of 20 mm ●

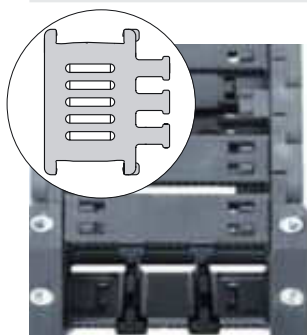
**Use:** ● Accessory for all KMA with integrated c-profile ● Easy to assemble, without any screws and tools ● Adjustable to every E-Chain® filling ● Very small space requirement ● Easy strain relief due to fixation with pre-assembled cable strap

Part No.	ø Leitung max. [mm]	Breite [mm]
CFN.20	20	10.8



For the following  
E-Chains®:

For more details  
see table!



### Strain relief separator

**Characteristic features:** ● Separator with integrated strain relief for the use in the first or last chain link

● **Use:** ● Individual part for the manufacturing of switchgear cabinets or for the assembly of machines ● Accessory for igus® E-ChainSystems® ● Easy to assemble without any screws

Part No.	Number of teeth	For Series
T2103.Z	2	210
E6.29.02Z	2	E6.29
2020.Z	2	2400/2500
262.Z	3	2600/2700

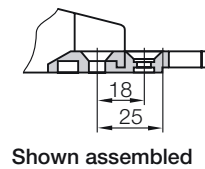
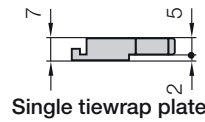
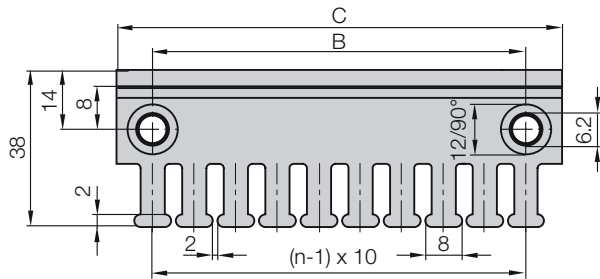


## Option 1: Chainfix tiewrap plates as individual parts

**Characteristic features:** ● As individual component screwed on KMA (plastic metal mounting brackets)  
 ● Can be plugged in the mounting brackets ● **Use:** ● Individual part for the manufacturing of switch-gear cabinets or for the assembly of machines ● Accessory for igus® E-ChainSystems®



### Series 2000 – Tiewrap plate as individual part



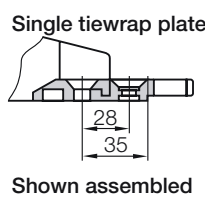
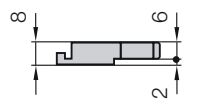
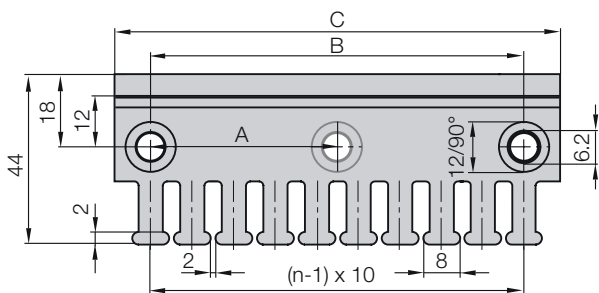
For the following E-Chains®:

- Easy Chain® Series:**
  - E200/Z200
- System E2/000 Series:**
  - 2400/2500/2450
  - 2600/2700/2650
  - 255
- System E4 Series:**
  - 220

Tiewrap plate	n Number of teeth	Dim. C [mm]	Dim. B [mm]	Center bore (- = no / + = yes)
2020.ZB	3	30	15	-
2030.ZB	4	40	20	-
2040.ZB	5	50	30	-
2050.ZB	6	60	40	-
2070.ZB	8	80	60	-
2090.ZB (= 2030.ZB + 2040.ZB)	9	90	-	-
2100.ZB	10	100	80	-
2125.ZB (= 2050.ZB + 2050.ZB)	12	120	-	-

Cable tiewraps (100-piece bag)	Width x length [mm]	Max. Ø	Pull force resistance
CFB.001	4.8 x 150	36	222 N

### Series 3000 – Tiewrap plate as individual part



For the following E-Chains®:

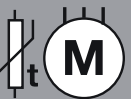
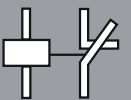
- Easy Chain® Series:**
  - E26/Z26
  - E300/Z300
- System E2/000 Series:**
  - 2600/2700/2650
  - 3400/3500/3450
- System E4 Series:**
  - 280/290
  - 380/390
  - 400/410
  - 2828/2928
  - 3838/3938
  - 4040/4140
  - 1640

Tiewrap plate	n Number of teeth	Dim. C [mm]	Dim. B [mm]	Center bore (- = no / + = yes)
3050.ZB	05	50	30	-
3075.ZB	07	75	55	-
3100.ZB	10	100	80	-
3115.ZB	11	115	95	-
3125.ZB	12	125	105	-
3150.ZB	15	150	130	-
3175.ZB	17	175	155	-
3200.ZB	20	200	180	+
3225.ZB	22	225	205	+
3250.ZB	25	250	230	+

Cable tiewraps (100-piece bag)	Width x length [mm]	Max. Ø	Pull force resistance
CFB.001	4.8 x 150	36	222N

Strain relief devices

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For the following  
E-Chains®:

For all mounting brackets with  
C-Profil-option



## Chainfix Tiewrap Plates

### Option 2: Tiewrap plates with clip-on connection for the C-profile

**Characteristic features:** ● Can be plugged into the KMA c-profile ● Easy solvable with screwdriver ● Easy to assemble without any screws. Easy solvable with screwdriver nevertheless safe stop ● **Use:** ● Individual part for the manufacturing of switchgear cabinets or for the assembly of machines ● Accessory for igus® E-ChainSystems® ● For all E-Chains® with KMA and integrated C-profile

Part No.	Width [mm]	Number of teeth
3050.ZC	50	5
3075.ZC	75	7



For the following  
E-Chains®:

System E2/000 Series:

For more details see table!



### Option 3: Clip-on tiewrap plates for opening or fixed crossbars

**Characteristic features:** ● Can be plugged on the fixed crossbars ● In case of many harnessed cables with strain relief "over two floors" ● If the KMA is too small for the c-profile ● Easy to assemble without any screws ● **Use:** ● Individual part for the manufacturing of switchgear cabinets or for the assembly of machines ● Accessory for igus® E-ChainSystems®

Part No.	Width [mm]	Number of teeth	For Series
fixed crossbar			
2050.Z	60	6	2600/2700
3050.Z	50	5	3400/3500
Part No.	Width [mm]	Number of teeth	For Series
opening crossbar			
3035.ZS	35	3	3400/3500
3050.ZS	50	5	3400/3500
3075.ZS	75	7	3400/3500
3850.ZS	48	5	2828/280/38/3838/380/E6.62/142/14240
4550.ZS	48	5	4040/400/50/5050/E6.80/140/14040/ 15050
4575.ZS	74	7	4040/400/50/5050/E6.80/140/14040/ 15050



For the following  
E-Tubes:

System E2 Tubes Series:

● R58 ● R68



### Option 4: Integrated strain relief for E2 Tubes - Series R

**Characteristic features:** ● Strain relief disappears completely in the E-Tube ● Easy to assemble without any screws ● **Use:** ● Individual part for the manufacturing of switchgear cabinets or for the assembly of machines ● Accessory for igus® E-ChainSystems®

Part No.	Width [mm]	Number of teeth	For Series
3050.Z	50	6	R68
3075.Z	75	7	R68
5850.Z	47	4	R58

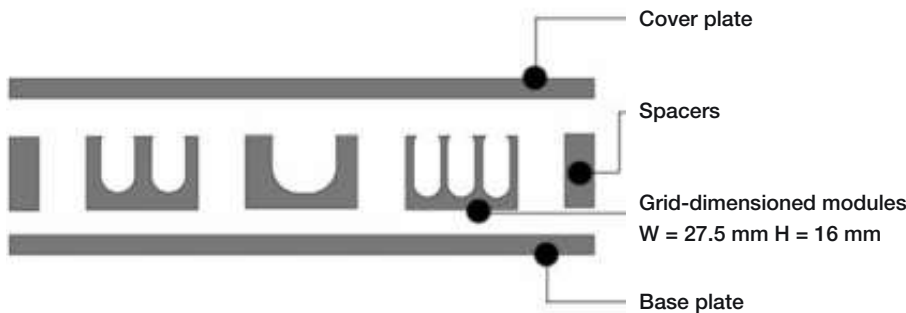


## igus® Strain Relief Block for Small Hoses and Cables

- Modular system for great adaptability
- No hose damage
- Easy installation - pressing the hose into the locating notch provides reliable fastening without hardware
- Hoses and cables can be installed together in the same E-Chain®
- Accommodation of hose diameters from 4.3 to 14 mm

## The Modular Elements of the igus® Strain Relief Block for Hoses

The modules accommodate hoses from 4.3 to 14 mm, 3 x 4.3 mm hoses can be fitted on top of each in one module CFS 4.3 and 2 hoses can be fitted directly on top of each other in one notch using module CFS 6. The modules have a width of 27.5 mm, are inserted into the base plate and then fastened in position with M4 countersunk-head screws. The exception is module CFS 55.9 which offers the capacity for 5 x 9 mm hoses with twice the width. The base plate and cover plate are available in widths ranging from 75 to 240 mm. The height of the spacers and modules is 16 mm. Several layers can be installed directly above one another.



Part No.	Hose	Number	Width
Strain Relief Block	Ø [mm]	of hoses	[mm]
CFS 4.3	4.3	4 - 12	27.5
CFS 6	6.0	3 - 6	27.5
CFS 9	9.0	2	27.5
CFS 55.9	9.0	5	55.0
CFS 10	10.0	2	27.5
CFS 14	14.0	1	27.5

Part No.	Width
Base plate	[mm]
CFSU	75.0
CFSU	102.5
CFSU	130.0
CFSU	185.0
CFSU	212.0
CFSU	240.0
Part No.	Width
Spacer	Ø [mm]
CFSD	16.0
CFSD	12.0

Part No.	Width
Cover plate	[mm]
CFSP	75.0
CFSP	102.5
CFSP	130.0
CFSP	185.0
CFSP	212.0
CFSP	240.0

Strain relief devices

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