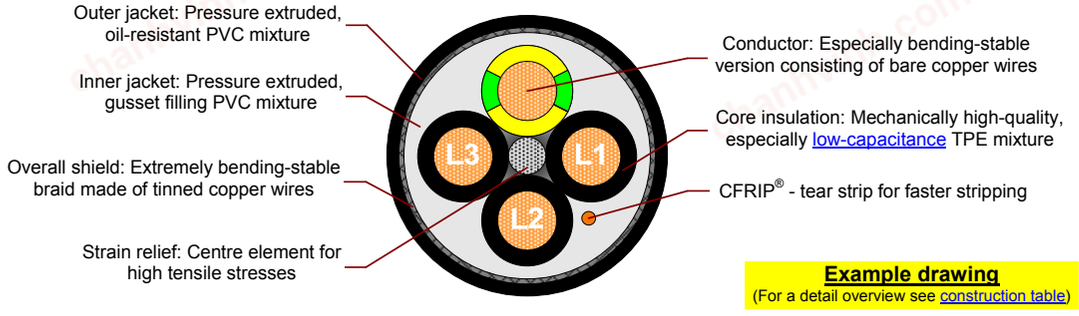
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Image exemplary

chainflex® cable works. CF31

PVC - e-chain® - power cable for high load requirements (class 5.5.2): shielded, oil-resistant as well as flame-retardant.



Example drawing
(For a detail overview see construction table)

Core design:

Conductor:
≤ 6 mm²: Fine-wire strand in especially bending-stable version consisting of bare copper wires (following DIN EN 60228).
≥ 10 mm²: Conductor strand in especially bending-stable version made of bare copper wires (following DIN EN 60228).

Core insulation: Mechanically high-quality, especially low-capacitance TPE mixture.

Core identification:
Mainly: 3 or 4 black cores with white printing & one core greenyellow:
1. core: U/L1/C/L+ **2. core:** V/L2 **3. core:** W/L3/D/L- **4. core:** 4/N
CF31.15.07: Black cores with white numerals 1 - 6 & one core greenyellow

Shield design:

Material: Extremely bending-stable braid made of tinned copper wires.

Shield coverage: **Linear:** approx. 70 % **Optical**: approx. 90 %

Jacket design:

Inner jacket: PVC mixture adapted to suit the requirements in e-chains®.

Outer jacket: Low-adhesion mixture on the basis of PVC (following DIN VDE 0281-13), abrasion- and bending-stable, adapted to suit the requirements in e-chains®.
- oil-resistant (following DIN EN 50363-4-1)
- flame-retardant (according to IEC 60332-1-2, CEI 20-35, VW-1, FT-1)
- silicon-free (following PV 3.10.7 - status 1992)
- lead-free (following 2011/65/EU (RoHS-II))
- clean room ISO class 2 (according to DIN ISO 14644-1 tested by IPA)
- UV-resistance: Medium

Colour outer jacket: Jet Black (similar to RAL 9005)

Cable marking (White):
„00000 m“* igus chainflex CF31.--.--① ----② 600/1000V E310776
cRUus AWM Style 2570 VW-1 AWM I/II A/B 80°C 1000V FT-1 EAC/CTP
CE RoHS-II conform www.igus.de +++ chainflex cable works +++

***Length printing:** Not calibrated. Only intended as an orientation aid.*
① / ②: Cable identification according to part no. (see technical table for details).
Ex.: CF31.15.04: ⇒ …igus chainflex CF31.15.04 (4G1,5)C 600/1000V…

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Subject to misprints and errors. Technical modifications are possible at any time.
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Image exemplary

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PVC - e-chain® - power cable for high load requirements (class 5.5.2): shielded, oil-resistant as well as flame-retardant.

General mechanical values:
(for individual details see technical table)

Guaranteed lifetime for this series according to the "chainflex® guarantee club" conditions (see chainflex® catalogue and www.igus.eu/chainflex-guarantee)				
Double strokes*		**5 million**	**7,5 million**	**10 million**
Temperature (from/to) [°C]	**Travel distance (TD)**	Min. bending radius for e-chain® use [Factor multiplied by outer diameter (d)] (Ex.: CF31.15.04 at 20°C: 7,5 x 10,5 mm ➔ Min. bending radius 78,75 mm)		
+5✦ / +15	≤ 100 m	10,0	11,0	12,0
+15 / +60		7,5	8,5	9,5
+60 / +70		10,0	11,0	12,0

✱: Minimum guarantee lifetime of the cable under the specified conditions. ✦: -5 °C at ≤ 50.000 strokes (following DIN EN 60811)
The installation of the cable is recommended within the middle temperature range.

Temperature range	-20 °C ←	+5 °C ←	+15 °C ←→ +60 °C	→ +70 °C
Min. bending radius for fixed installation	7,5 x d	6,8 x d	4,0 x d	6,8 x d
Torsion (at 1 m cable length)	---	±0 °	±30 °	±0 °

General electrical values:
(for individual details see technical table)

Nominal voltage: 600 / 1000 V (following DIN VDE 0250)
Test voltage: 4 kV (following VDE 0281-2)
Certifications: cℛUus: (E310776: Style 10492 & 2570, 1000 V / 80 °C)
Guidelines: CE, NFPA (following 79-2012 chapter 12.9), EAC & TR (CTP)

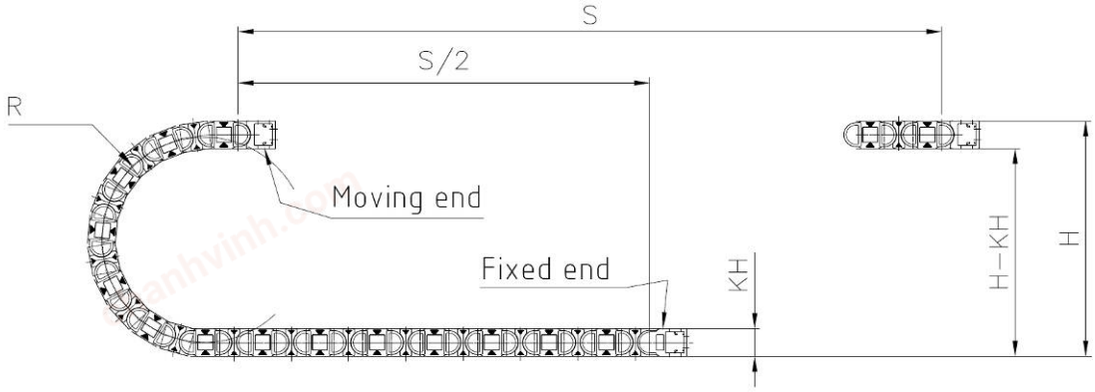
Dynamic values:
Max. speed in e-chain® use:** **Unsupported:** v = 10 m / s **Gliding (up to 100 m):** v = 5 m / s

Max. acceleration in e-chain® use:** a = 80 m / s²

** *These values are based on specific applications or tests. They do not represent the limit of what is technically feasible.*

Typical lab test setup for this cable group:

Test bending radius R: approx. 75 - 300 mm
Test travel S: approx. 1 - 15 m
Test period: min. 2 - 4 million double strokes
Test speed: approx. 0,5 - 2 m / s
Test acceleration: approx. 0,5 - 1,5 m / s²



e-chain® - power cable for high load requirements:

- for areas of application of low oil influence
- for unsupported travel distances and up to 100 m in gliding applications
- CE, RoHS-II, cℛUus, NFPA, EAC & TR (CTP)

Typical application areas:
Preferably indoor applications, but also outdoor ones at temperatures > 5 °C.
Storage and retrieval units for high-bay warehouses, machining units / packaging machines, quick handling, indoor cranes.

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CF31

PVC - e-chain® - power cable for high load requirements (class 5.5.2): shielded, oil-resistant as well as flame-retardant.

Technical tables:

Mechanical values:

① Part no.	② Number of cores & nominal cross section [mm²]***	External diameter (d)**** [max. mm]	Copper index [kg / km]	Weight [kg / km]
CF31.15.04	(4G1,5)C	10,5	94	168
CF31.15.07	(7G1,5)C	13,0	153	268
CF31.25.04	(4G2,5)C	12,0	142	233
CF31.25.05	(5G2,5)C	13,0	174	295
CF31.40.04	(4G4,0)C	13,5	217	345
CF31.40.05	(5G4,0)C	15,0	281	424
CF31.60.04	(4G6,0)C	16,0	318	488
CF31.60.05	(5G6,0)C	18,0	385	598
CF31.100.04	(4G10,0)C	20,5	539	833
CF31.100.05	(5G10,0)C	22,5	687	954
CF31.160.04	(4G16,0)C	23,5	823	1127
CF31.250.04	(4G25,0)C	28,5	1254	1718
CF31.350.04	(4G35,0)C	32,5	1716	2298
CF31.500.04	(4G50,0)C	37,5	2420	3173
CF31.700.04	(4G70,0)C	43,0	3454	4085

*** *G ⇒ Cable contains a greenyellow core.*
**** *External diameters are maximum values and may tend toward lower tolerance limits.*

Electrical values (resistance & max. load):

Nominal cross section [mm²]	Conductor resistance [approx. Ω / km] at 20 °C	Max. current rating [A] at 30 °C♦
(following)	DIN EN 50289-1-2	DIN VDE 0298-4
1,5	13,3	21
2,5	7,98	30
4,0	4,95	41
6,0	3,3	53
10,0	1,91	74
16,0	1,21	99
25,0	0,78	131
35,0	0,554	162
50,0	0,386	202
70,0	0,272	250

♦ *The max. current rating depends on factors such as the individual environmental conditions and the type of installation.*

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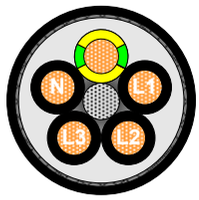
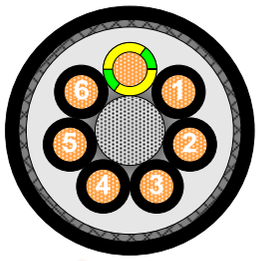
PVC - e-chain® - power cable for high load requirements (class 5.5.2): shielded, oil-resistant as well as flame-retardant.

Electrical values (capacitance):

Part no.	core / core	core / shield
	capacitance [approx. pF / m]♦♦	
CF31.15.04	100	150
CF31.15.07	100	150
CF31.25.04	100	160
CF31.25.05	100	160
CF31.40.04	110	190
CF31.40.05	110	190
CF31.60.04	110	190
CF31.60.05	110	190
CF31.100.04	140	210
CF31.100.05	140	210
CF31.160.04	170	260
CF31.250.04	170	260
CF31.350.04	170	260
CF31.500.04	180	270
CF31.700.04	200	290

♦♦ *Theoretically calculated values.*

Construction table:

Part no. / No. of cores	Cable construction	Part no. / No. of cores	Cable construction
CF31.XX.04 / 4		CF31.XX.05 / 5	
CF31.XX.07 / 7			

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Head of Business Unit chainflex® cables RR Date 1. Nov. 2014 igus checked
Head of R+D chainflex® cables MG Dr. Borsberg igus checked
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