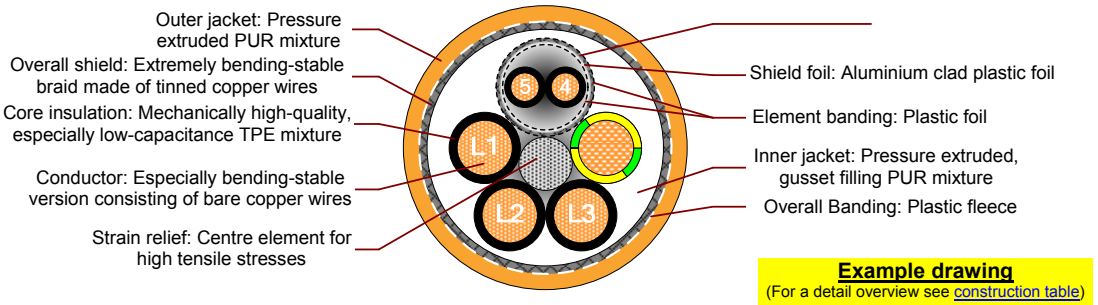
chainflex® cable works.

CF27.D

PUR - e-chain® - servo cable for maximum load requirements (class 6.5.3): shielded, oil- and coolant-resistant, notch-resistant, hydrolysis- and microbe-resistant, PVC- and halogen-free as well as flame-retardant.



Example drawing
(For a detail overview see construction table)

Core design:

Conductor:
≤ 2,5 mm²: Fine-wire strand in especially bending-stable version consisting of bare copper wires (following DIN EN 60228).
≥ 4 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:
Energy cores: 3 Black cores with white printing & one core greenyellow
1st Core: U/L1/C/L+ 2nd Core: V/L2 3rd Core: W/L3/D/L-
1 signal pair:
1st signal pair: Black cores with white numerals 4 & 5
2 signal pairs:
1st signal pair: Black cores with white numerals 5 & 6
2nd signal pair: Black cores with white numerals 7 & 8
1 signal triple:
1st signal triple: Black cores with white numerals 1, 2 & 3
1 star quad:
1st star quad: yellow, black, red & white

Shield design:

Material: Extremely bending-stable braid made of tinned copper wires.
Shield coverage: **Linear:** approx. 70 % **Optical**: approx. 90 %

Jacket design:

Inner jacket: PUR mixture adapted to suit the requirements in e-chains®.
Outer jacket: Low-adhesion mixture on the basis of PUR (following DIN VDE 0281-10), highly abrasion- and bending-stable, adapted to suit the requirements in e-chains®.

- oil-resistant (following DIN EN 50363-10-2)
- flame-retardant (following IEC 60332-1-2, CEI 20-35, VW-1 & FT-1)
- coolant-resistant
- PVC- and halogen-free (following DIN EN 50267-2-1)
- hydrolysis- and microbe-resistant
- MUD-resistant (following NEK 606 - status 2009)
- silicon-free (following PV 3.10.7 - status 1992)
- lead-free (following 2011/65/EU (RoHS-II))
- clean room ISO class 1 (following DIN ISO 14644-1 tested by IPA)
- UV-resistance: Medium

Colour outer jacket: Pastel orange (similar to RAL 2003)
Cable marking (Black):

„00000 m“* igus chainflex CF27.-.-.-.-.D① -----② 600/1000V E310776
cRUus AWM Style 20234 VW-1 AWM I/II A/B 80°C 1000V FT-1 DESINA
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.: CF27.15.15.02.01.D: ⇒ … igus chainflex CF27.15.15.02.01.D (4G1,5+(2x1,5)C)C 600/1000V …

Date	Author
23 Jul. 2014	D. Borsberg

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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.: CF27.07.04.D at 20°C: 7,5 x 9,5 mm ➔ Min. bending radius 71,25 mm)		
-20 / -10	≤ 100 m	10,0	11,0	12,0
-10 / +70		7,5	8,5	9,5
+70 / +80		10,0	11,0	12,0

**: Minimum guarantee lifetime of the cable under the specified conditions.*
The installation of the cable is recommended within the middle temperature range.

Temperature range	**-40 °C ←**	**-20 °C ←**	**-10 °C ←→ +70 °C**	**→ +80 °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 & 20234, 1000 V / 80 °C)
- GL type approval certificate: No. 61 938-14 HH

Guidelines: CE, DESINA, NFPA (following 79-2012 chapter 12.9), EAC & TR (CTP)

+++ chainflex® cable works +++

igus® chainflex® CF27.D

Image exemplary

www.igus.de

Image exemplary

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Dynamic values:

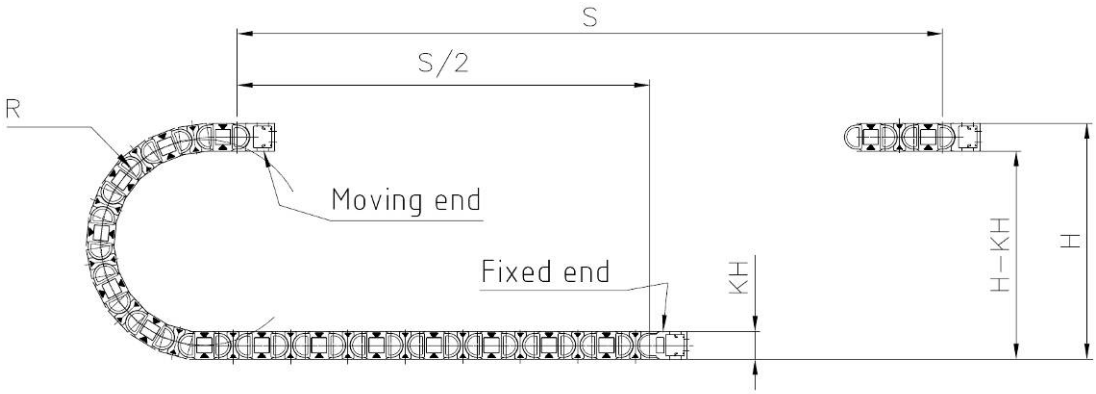
Max. speed in e-chain® use:** **Unsupported:** v = 10 m / s **Gliding (up to 100 m):** v = 5 m / s

Max. acceleration in e-chain® use:** a = 80 m / s^2

** *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. 63 - 250 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 / s^2



e-chain® - servo cable for maximum load requirements:

- highly abrasion-stable
- almost unlimited resistance to oil
- for unsupported travel distances and up to 100 m in gliding applications
- CE, RoHS-II, DESINA, cULus, GL type approval certificate, NFPA, EAC & TR (CTP)

Typical application areas:
Indoor and outdoor applications without direct sun radiation.
Storage and retrieval units for high-bay warehouses, machining units/machine tools, quick handling, clean room, semiconductor insertion, indoor cranes, low-temperature applications.

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Image exemplary

chainflex® cable works.

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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]
1 signal pair				
CF27.07.05.02.01.D	(4G0,75+(2x0,5)C)C	11,5	95	175
CF27.15.10.02.01.D	(4G1,5+(2x1,0)C)C	12,5	130	226
CF27.15.15.02.01.D	(4G1,5+(2x1,5)C)C	13,0	144	260
CF27.25.10.02.01.D	(4G2,5+(2x1,0)C)C	14,0	184	297
CF27.25.15.02.01.D	(4G2,5+(2x1,5)C)C	14,5	199	325
CF27.40.10.02.01.D	(4G4,0+(2x1,0)C)C	15,5	242	384
CF27.40.15.02.01.D	(4G4,0+(2x1,5)C)C	16,0	257	402
CF27.60.10.02.01.D	(4G6,0+(2x1,0)C)C	17,5	333	521
CF27.60.15.02.01.D	(4G6,0+(2x1,5)C)C	17,5	357	580
CF27.100.15.02.01.D	(4G10,0+(2x1,5)C)C	21,5	540	900
CF27.160.15.02.01.D	(4G16,0+(2x1,5)C)C	24,5	716	1150
CF27.250.15.02.01.D	(4G25,0+(2x1,5)C)C	28,5	1140	1523
CF27.350.15.02.01.D	(4G35,0+(2x1,5)C)C	32,5	1560	2079
2 signal pairs				
CF27.07.03.02.02.D	(4G0,75+2x(2x0,34)C)C	12,5	105	206
CF27.10.07.02.02.D	(4G1,0+2x(2x0,75)C)C	13,5	152	265
CF27.15.07.02.02.D	(4G1,5+2x(2x0,75)C)C	14,0	175	300
CF27.25.15.02.02.D	(4G2,5+2x(2x1,5)C)C	16,5	265	412
CF27.40.15.02.02.D	(4G4,0+2x(2x1,5)C)C	18,0	314	485
CF27.60.15.02.02.D	(4G6,0+2x(2x1,5)C)C	20,0	410	643
CF27.100.15.02.02.D	(4G10,0+2x(2x1,5)C)C	23,5	594	1000
CF27.160.15.02.02.D	(4G16,0+2x(2x1,5)C)C	26,0	790	1250
CF27.250.15.02.02.D	(4G25,0+2x(2x1,5)C)C	31,0	1200	1890
CF27.350.15.02.02.D	(4G35,0+2x(2x1,5)C)C	33,5	1597	2150
1 star quad				
CF27.15.05.04.D	(4G1,5+(4x0,5)C)C	13,0	142	310
CF27.25.05.04.D	(4G2,5+(4x0,5)C)C	14,5	199	348
CF27.40.05.04.D	(4G4,0+(4x0,5)C)C	16,0	256	480
CF27.60.05.04.D	(4G6,0+(4x0,5)C)C	17,5	371	550
Without signal cores				
CF27.07.04.D	(4G0,75)C	9,5	52	113
CF27.10.04.D	(4G1,0)C	10,0	62	126
CF27.15.04.D	(4G1,5)C	10,5	86	163
CF27.25.04.D	(4G2,5)C	12,5	140	260
CF27.500.04.D	(4G50,0)C	37,0	2230	3200

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

Image exemplary

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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
0,34	57	7
0,5	39	10
0,75	26	14
1,0	19,5	17
1,5	13,3	21
2,5	8	30
4,0	4,45	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

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

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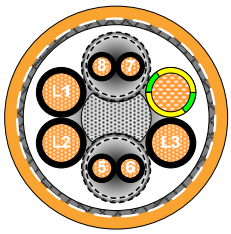
Construction table:

Part no. No. of cores	Cable construction	Part no. No. of cores	Cable construction
CF27.XX.XX.02.01.D 4+2		CF27.XX.XX.02.02.D 4+2x2	
CF27.XX.XX.04.D 4+4		CF27.XX.04.D 4