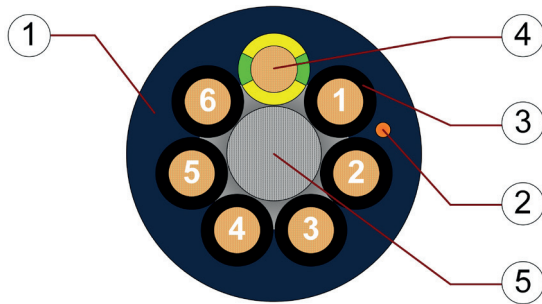


Data sheet

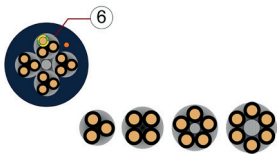
chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant






1. Outer jacket: Pressure extruded, gusset-filling, halogen-free TPE mixture
2. CFRIP: Tear strip for faster cable stripping
3. Core insulation: Mechanically high-quality TPE mixture
4. Conductor: Stranded conductor in especially bend-resistant version consisting of bare copper wires
5. Strain relief: Tensile stress-resistant centre element
6. 12 cores or more: Bundles with optimised pitch length and pitch direction




Example image
For detailed overview please see design table

Cable structure

- 
Conductor Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228).
- 
Core insulation Mechanically high-quality TPE mixture.
- 
Core structure

Number of cores < 12: Cores wound in a layer with short pitch length.

Number of cores ≥ 12: Cores wound in bundles which are then wound around a high tensile strength centre element, all with optimised short pitch lengths and directions. Especially low-torsion structure.
- 
Core identification

Cores < 0.75 mm²: Colour code in accordance with DIN 47100.

Cores ≥ 0.75 mm²: Black cores with white numbers, one green-yellow core.



CF9.02.03.INI: brown, blue, black

CF9.03.04.INI: brown, blue, black, white

CF9.03.05.INI: brown, blue, black, white, green-yellow

CF9.03.16.07.03.INI:

0.34 mm²: violet/red/grey/red-blue, green/grey-pink/white-green/white-yellow, white-grey/black/yellow-brown/brown-green, white/yellow/pink/grey-brown

0.75 mm²: blue/green-yellow/brown
- 
Outer jacket Low-adhesion, extremely abrasion-resistant and highly flexible TPE mixture, adapted to suit the requirements in e-chains®. Colour: Steel-blue (similar to RAL 5011) Printing: white
- 
CFRIP® Strip cables faster: a tear strip is moulded into the outer jacket Video ► www.igus.eu/CFRIP

„00000 m*** igus chainflex CF9.--① -----② 300/500V EAC 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).
 Example: ... chainflex ... CF9.02.08 ... 8x0.25 ... 300 V/500 V ...









Data sheet

chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant

Dynamic information

	Bend radius	e-chain® linear flexible fixed	minimum 5 x d minimum 4 x d minimum 3 x d
	Temperature	e-chain® linear flexible fixed	-35 °C up to +100 °C -50 °C up to +100 °C (following DIN EN 60811-504) -55 °C up to +100 °C (following DIN EN 50305)
	v max.	unsupported gliding	10 m/s 6 m/s
	a max.		100 m/s ²
	Travel distance		Unsupported travel distances and up to 400 m for gliding applications, Class 6
	Torsion		± 90°, with 1 m cable length, Class 2



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

Guaranteed service life according to guarantee conditions

Double strokes	5 million	7.5 million	10 million
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	6.8	7.5	8.5
-25/+90	5	6	7
+90/+100	6.8	7.5	8.5

Minimum guaranteed service life of the cable under the specified conditions.
The installation of the cable is recommended within the middle temperature range.

Electrical information

	Nominal voltage	300/500 V (following DIN VDE 0298-3)
	Testing voltage	2000 V (following DIN EN 50395)

Example image



Data sheet









chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant



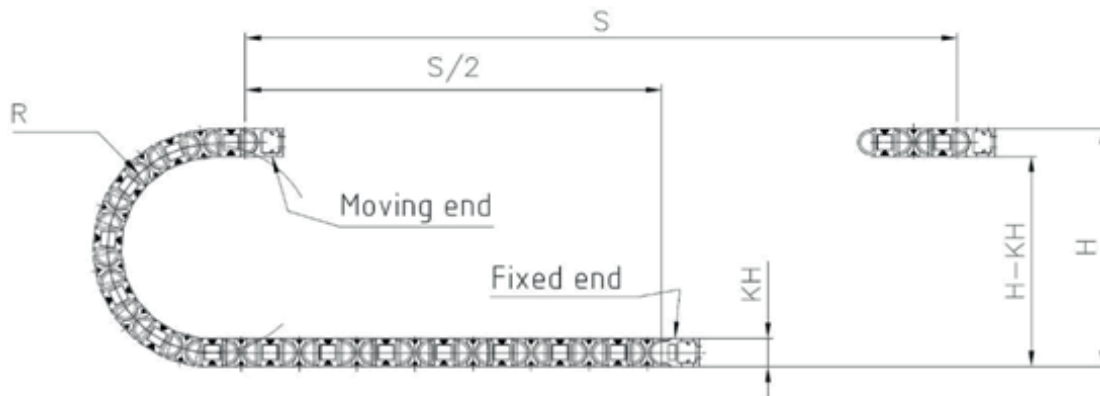
Properties and approvals

	UV resistance	High
	Oil resistance	Oil resistant (following DIN EN 60811-404), bio-oil resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4
	Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	Halogen-free	Following DIN EN 60754
	EAC	Certificate No. RU C-DE.ME77.B.01254 (TR ZU)
	Lead-free	Following 2011/65/EC (RoHS-II)
	Clean room	According to ISO Class 1, material/cable tested by IPA according to DIN EN ISO standard 14644-1
	CE	Following 2014/35/EU



Typical lab test setup for this cable series

Test bend radius R	approx. 18 - 125 mm
Test travel S	approx. 1 - 15 m
Test duration	minimum 2 - 4 million double strokes
Test speed	approx. 0.5 - 2 m / s
Test acceleration	approx. 0.5 - 1.5 m / s ²



Example image
igus® chainflex® CF9



Data sheet

chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant

Typical application areas

- For heaviest duty applications, Class 7
- Unsupported travel distances and up to 400 m and more for gliding applications, Class 6
- Almost unlimited resistance to oil, also with bio-oils, Class 4
- Torsion $\pm 90^\circ$, with 1 m cable length, Class 2
- Indoor and outdoor applications, UV-resistant
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Clean room, semiconductor insertion, outdoor cranes, low temperature applications



Data sheet

chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant

Technical tables:

Mechanical information

Part No.	Number of cores and conductor nominal cross section [mm ²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
CF9.02.02	2x0.25	4.5	5	18
CF9.02.03.INI	3x0.25	4.5	8	21
CF9.02.06	6x0.25	5.5	15	36
CF9.02.07	7x0.25	6.5	18	43
CF9.02.08	8x0.25	6.5	20	49
CF9.02.12	12x0.25	8.0	30	71
CF9.02.18	18x0.25	9.5	45	102
CF9.02.20	20x0.25	9.5	50	109
CF9.02.25	25x0.25	11.0	63	141
CF9.03.04.INI	4x0.34	5.0	14	31
CF9.03.05.INI	5x0.34	5.5	17	37
CF9.03.06	6x0.34	6.0	21	44
CF9.03.08	8x0.34	7.0	28	58
CF9.03.16.07.03.INI	16x0.34+3x0.75	11.0	77	154
CF9.05.02	2x0.5	5.0	10	26
CF9.05.03	3x0.5	5.0	15	31
CF9.05.04	4x0.5	5.5	20	39
CF9.05.05	5x0.5	6.0	25	47
CF9.05.07	7x0.5	7.0	35	64
CF9.05.12	12x0.5	10.0	60	117
CF9.05.18	18x0.5	11.5	90	172
CF9.05.25	25x0.5	13.0	124	227
CF9.05.36	36x0.5	15.5	178	322
CF9.07.04	4G0.75	6.0	30	54
CF9.07.05	5G0.75	6.5	38	66
CF9.07.07	7G0.75	8.0	53	91
CF9.07.12	12G0.75	11.0	90	165
CF9.07.20	20G0.75	13.5	149	257
CF9.07.25	25G0.75	14.5	186	317
CF9.10.03	3G1.0	6.0	30	52
CF9.10.04	4G1.0	6.5	40	67
CF9.10.05	5G1.0	7.5	50	81
CF9.10.12	12G1.0	12.0	119	206
CF9.10.18	18G1.0	14.5	178	302
CF9.10.25	25G1.0	17.0	248	433

Note: The given outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core x = without earth core



Data sheet

chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant



Part No.	Number of cores and conductor nominal cross section [mm ²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
CF9.15.02	2x1.5	6.5	30	55
CF9.15.04	4G1.5	7.5	61	87
CF9.15.05	5G1.5	8.0	76	105
CF9.15.07 ¹⁷⁾	7G1.5	9.5	107	144
CF9.15.12	12G1.5	13.5	179	278
CF9.15.18	18G1.5	16.5	268	395
CF9.15.25	25G1.5	20.0	371	607
CF9.15.36	36G1.5	23.5	530	798
CF9.25.04	4G2.5	9.0	100	152
CF9.25.05	5G2.5	10.0	124	197
CF9.25.07 ¹⁷⁾	7G2.5	12.0	176	245
CF9.25.12	12G2.5	17.5	297	515
CF9.25.16	16G2.5	19.5	396	687
CF9.25.18 ⁷⁾	18G2.5	23.0	445	830
CF9.25.25	25G2.5	24.5	612	1011
CF9.40.04	4G4.0	10.5	159	218
CF9.60.04	4G6.0	12.5	238	315
CF9.60.05	5G6.0	13.5	297	390
CF9.100.04	4G10.0	16.5	396	553
CF9.160.04	4G16.0	18.0	495	685

¹⁷⁾ When using the cables with "7 G 1.5 mm²" and "7 G 2.5 mm²" minimum bend radius must be 17.5 x d with gliding travel distance ≥ 5 m.

⁷⁾ Nominal voltage 600/1000 V

Note: The given outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core x = without earth core



Example image
igus® chainflex® CF9

Data sheet

chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant



Example image

Electrical information

Conductor nominal cross section [mm ²]	Maximum conductor resistance at 20 °C (following DIN EN 50289-1-2) [Ω/km]	Maximum current rating at 30 °C (following DIN VDE 0298-4) [A]
0.25	79.0	5
0.34	57.0	7
0.5	39.0	10
0.75	26.0	14
1	19.5	17
1.5	13.3	21
2.5	8.0	30
4	4.95	41
6	3.3	53
10	1.91	74
16	1.21	99

The final maximum current rating depends among other things on the ambient conditions, the type of the installation and the number of loaded cores.



Data sheet

chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant



Design table

Part No.	Number of cores	Core design	Part No.	Number of cores	Core design
CF9.XX.16.XX.03.INI	4x4x0.34 +3x0.75		CF9.XX.05.INI	5	
CF9.XX.02	2		CF9.XX.05	5	
CF9.XX.03.INI	3		CF9.XX.06	6	
CF9.XX.03	3		CF9.XX.07	7	
CF9.XX.04.INI	4		CF9.XX.08	8	
CF9.XX.04	4		CF9.XX.12	4x3	



Example image

igus® chainflex® CF9

Data sheet

chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant



Part No.	Number of cores	Core design	Part No.	Number of cores	Core design
CF9.XX.16	4x4		CF9.XX.25	5x5	
CF9.XX.18	6x3		CF9.XX.36	6x6	
CF9.XX.20	5x4				



Example image
igus® chainflex® CF9

Data sheet

chainflex® CF9



Control cable (Class 7.6.4.2) ● For heaviest duty applications ● TPE outer jacket ● Oil and bio-oil resistant ● PVC and halogen-free ● Low-temperature-flexible ● Hydrolysis and microbe-resistant

Colour code in accordance with DIN 47100.

Conductor no.	Colours according to DIN ISO 47100	Conductor no.	Colours according to DIN ISO 47100	Conductor no.	Colours according to DIN ISO 47100
1	white	22	brown-blue	43	blue-black
2	brown	23	white-red	44	red-black
3	green	24	brown-red	45	white-brown-black
4	yellow	25	white-black	46	yellow-green-black
5	grey	26	brown-black	47	grey-pink-black
6	pink	27	grey-green	48	red-blue-black
7	blue	28	yellow-grey	49	white-green-black
8	red	29	pink-green	50	brown-green-black
9	black	30	yellow-pink	51	white-yellow-black
10	violet	31	green-blue	52	yellow-brown-black
11	grey-pink	32	yellow-blue	53	white-grey-black
12	red-blue	33	green-red	54	grey-brown-black
13	white-green	34	yellow-red	55	white-pink-black
14	brown-green	35	green-black	56	pink-brown-black
15	white-yellow	36	yellow-black	57	white-blue-black
16	brown-yellow	37	grey-blue	58	brown-blue-black
17	white-grey	38	pink-blue	59	white-red-black
18	brown-grey	39	grey-red	60	brown-red-black
19	white-pink	40	pink-red	61	black-white
20	white-brown	41	grey-black		
21	white-blue	42	pink-black		



Example image









Control cable | TPE | chainflex® CF9







36 10 million
Double strokes guaranteed**5 x d**
Bend radius, e-chain®**400 m**
Travel distance, e-chain®

- For heaviest duty applications
- TPE outer jacket
- Oil and bio-oil resistant
- PVC and halogen-free
- Low-temperature-flexible
- Hydrolysis and microbe-resistant

Dynamic information

	Bend radius	e-chain® linear	minimum 5 x d
		flexible	minimum 4 x d
		fixed	minimum 3 x d
	Temperature	e-chain® linear	-35 °C up to +100 °C
		flexible	-50 °C up to +100 °C (following DIN EN 60811-504)
		fixed	-55 °C up to +100 °C (following DIN EN 50305)
	v max.	unsupported	10 m/s
		gliding	6 m/s
	a max.		100 m/s ²
	Travel distance		Unsupported travel distances and up to 400 m and more for gliding applications, Class 6
	Torsion		± 90°, with 1 m cable length, Class 2

Cable structure

	Conductor	Stranded conductor in especially bending-resistant version consisting of bare copper wires (following DIN EN 60228).
	Core insulation	Mechanically high-quality TPE mixture.
	Core structure	Number of cores < 12: Cores wound in a layer with short pitch length. Number of cores ≥ 12: Cores wound in bundles which are then wound around a high tensile strength centre element, all with optimised short pitch lengths and directions. Especially low-torsion structure.
	Core identification	Cores < 0.75 mm²: Colour code in accordance with DIN 47100. Cores ≥ 0.75 mm²: Black cores with white numbers, one green-yellow core. CF9.02.03.INI: brown, blue, black CF9.03.04.INI: brown, blue, black, white CF9.03.05.INI: brown, blue, black, white, green-yellow CF9.03.16.07.03.INI: 0.34 mm²: violet/red/grey/red-blue, green/grey-pink/white-green/white-yellow, white-grey/black/yellow-brown/brown-green, white/yellow/pink/grey-brown 0.75 mm²: blue/green-yellow/brown
	Outer jacket	Low-adhesion, extremely abrasion-resistant and highly flexible TPE mixture, adapted to suit the requirements in e-chains®. Colour: Steel-blue (similar to RAL 5011)
	CFRIP®	Strip cables faster: a tear strip is moulded into the outer jacket Video ► www.igus.co.uk/CFRIP



Example image

Basic requirements
Travel distance
Oil resistance
Torsion



low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	7	≥ 400 m
none	1	2	3	4	highest			
none	1	2	3	±180°				

Class 7.6.4.2

Electrical information

	Nominal voltage	300/500 V (following DIN VDE 0298-3)
	Testing voltage	2000 V (following DIN EN 50395)

Properties and approvals

	UV resistance	High
	Oil resistance	Oil resistant (following DIN EN 60811-404), bio-oil resistant (following VDMA 24568 with Plantocut 8 S-MB tested by DEA), Class 4
	Silicone-free	Free from silicone which can affect paint adhesion (following PV 3.10.7 – status 1992)
	Halogen-free	Following DIN EN 60754
	EAC	Certificate No. RU C-DE.ME77.B.01254 (TR ZU)
	Lead-free	Following 2011/65/EC (RoHS-II)
	Clean room	According to ISO Class 1, material/cable tested by IPA according to DIN EN ISO standard 14644-1
	CE	Following 2014/35/EU

Guaranteed service life (details see page 22-23)

Double strokes*	5 million	7.5 million	10 million
Temperature, from/to [°C]	R min. [factor x d]	R min. [factor x d]	R min. [factor x d]
-35/-25	6.8	7.5	8.5
-25/+90	5	6	7
+90/+100	6.8	7.5	8.5

* Higher number of double strokes? Service life calculation online ► www.igus.co.uk/chainflexlife

Typical application areas

- For heaviest duty applications
- Unsupported travel distances and up to 400 m and more for gliding applications
- Almost unlimited resistance to oil, also with bio-oils
- Torsion ± 90°, with 1 m cable length, Class 2
- Indoor and outdoor applications, UV-resistant
- Storage and retrieval units for high-bay warehouses, Machining units/machine tools, quick handling, Clean room, semiconductor insertion, outdoor cranes, low temperature applications



chainflex® CF9 for outdoor crane systems. e-chain®: Series E4/00

Control cable | TPE | chainflex® CF9

Strip cables 50% faster

Class 7.6.4.2

Basic requirements
Travel distance
Oil resistance
Torsion

low	1	2	3	4	5	6	7	highest
unsupported	1	2	3	4	5	6	7	≥ 400 m
none	1	2	3	4	highest			
none	1	2	3	±180°				

igus® chainflex® CF9


Example image

Part No.	Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
CF9.02.02	2x0.25	4.5	5	18
CF9.02.03.INI	3x0.25	4.5	8	21
CF9.02.06	6x0.25	5.5	15	36
CF9.02.07	7x0.25	6.5	18	43
CF9.02.08	8x0.25	6.5	20	49
CF9.02.12	12x0.25	8.0	30	71
CF9.02.18	18x0.25	9.5	45	102
CF9.02.20	20x0.25	9.5	50	109
CF9.02.25	25x0.25	11.0	63	141
CF9.03.04.INI	4x0.34	5.0	14	31
CF9.03.05.INI	5x0.34	5.5	17	37
CF9.03.06	6x0.34	6.0	21	44
CF9.03.08	8x0.34	7.0	28	58
CF9.03.16.07.03.INI	16x0.34+3x0.75	11.0	77	154
CF9.05.02	2x0.5	5.0	10	26
CF9.05.03	3x0.5	5.0	15	31
CF9.05.04	4x0.5	5.5	20	39
CF9.05.05	5x0.5	6.0	25	47
CF9.05.07	7x0.5	7.0	35	64
CF9.05.12	12x0.5	10.0	60	117
CF9.05.18	18x0.5	11.5	90	172
CF9.05.25	25x0.5	13.0	124	227
CF9.05.36	36x0.5	15.5	178	322
CF9.07.04	4G0.75	6.0	30	54
CF9.07.05	5G0.75	6.5	38	66
CF9.07.07	7G0.75	8.0	53	91
CF9.07.12	12G0.75	11.0	90	165
CF9.07.20	20G0.75	13.5	149	257
CF9.07.25	25G0.75	14.5	186	317
CF9.10.03	3G1.0	6.0	30	52
CF9.10.04	4G1.0	6.5	40	67
CF9.10.05	5G1.0	7.5	50	81
CF9.10.12	12G1.0	12.0	119	206
CF9.10.18	18G1.0	14.5	178	302
CF9.10.25	25G1.0	17.0	248	433


Note: The given outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core x = without earth core

Part No.	Number of cores and conductor nominal cross section [mm²]	Outer diameter (d) max. [mm]	Copper index [kg/km]	Weight [kg/km]
CF9.15.02	2x1.5	6.5	30	55
CF9.15.04	4G1.5	7.5	61	87
CF9.15.05	5G1.5	8.0	76	105
CF9.15.07 ¹⁷⁾	7G1.5	9.5	107	144
CF9.15.12	12G1.5	13.5	179	278
CF9.15.18	18G1.5	16.5	268	395
CF9.15.25	25G1.5	20.0	371	607
CF9.15.36	36G1.5	23.5	530	798
CF9.25.04	4G2.5	9.0	100	152
CF9.25.05	5G2.5	10.0	124	197
CF9.25.07 ¹⁷⁾	7G2.5	12.0	176	245
CF9.25.12	12G2.5	17.5	297	515
CF9.25.16	16G2.5	19.5	396	687
CF9.25.18 ⁷⁾	18G2.5	23.0	445	830
CF9.25.25	25G2.5	24.5	612	1011
CF9.40.04	4G4.0	10.5	159	218
CF9.60.04	4G6.0	12.5	238	315
CF9.60.05	5G6.0	13.5	297	390
CF9.100.04	4G10.0	16.5	396	553
CF9.160.04	4G16.0	18.0	495	685

⁷⁾ Nominal voltage 600/1000 V
¹⁷⁾ When using the cables with "7 G 1.5 mm²" and "7 G 2.5 mm²" minimum bend radius must be 17.5 x d with gliding travel distance ≥ 5 m.
Note: The given outer diameters are maximum values and may tend toward lower tolerance limits.
G = with green-yellow earth core x = without earth core

 Order example: **CF9.25.04** – to your desired length (0.5 m steps)
CF9 chainflex® series .25 Code nominal cross section .04 Number of cores

 Online order ► www.chainflex.co.uk/CF9

 Delivery time 24hrs or today.
Delivery time means time until goods are shipped.

