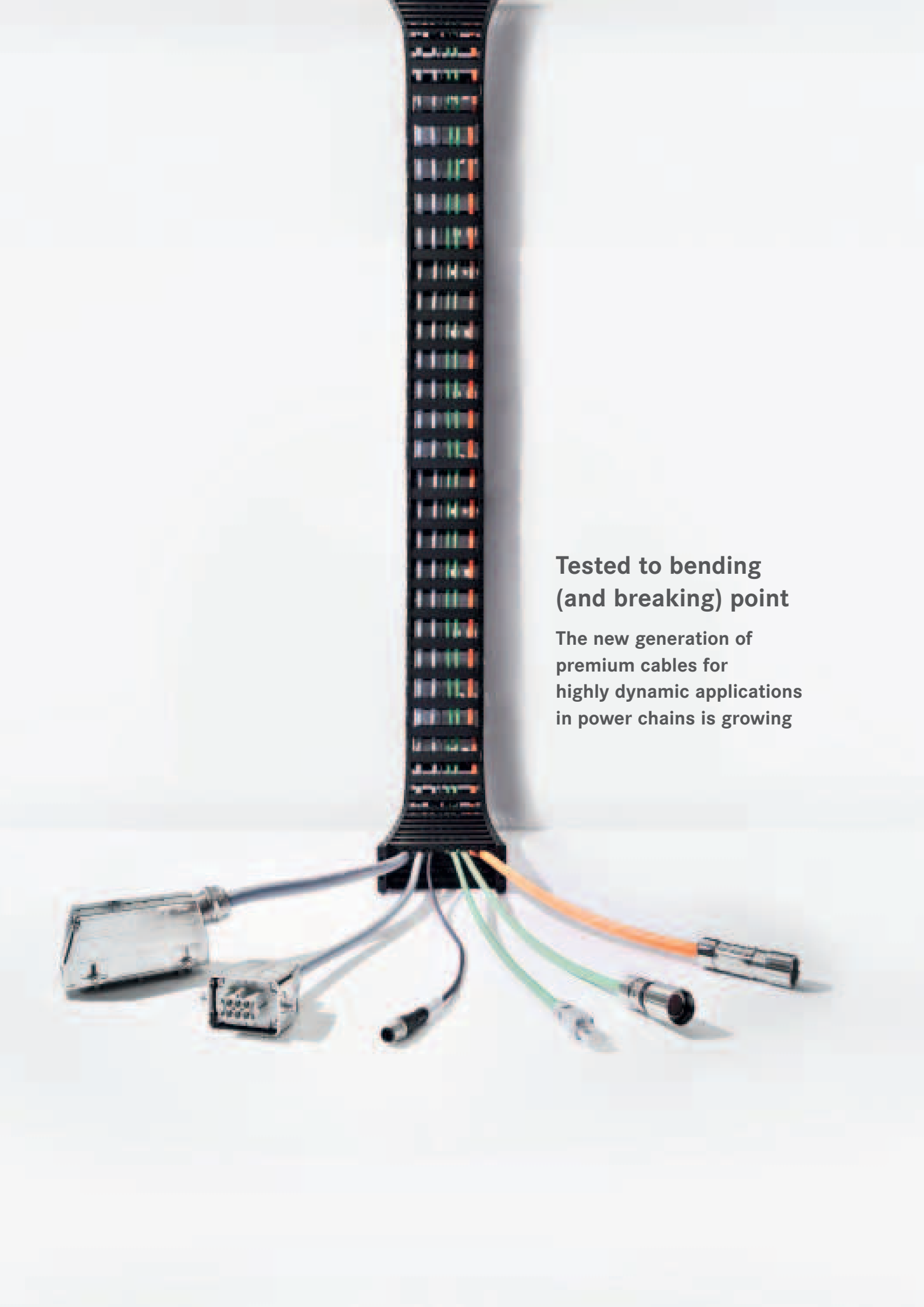


THE WORLD OF LAPP

Cables for power chains



LAPP GROUP



**Tested to bending
(and breaking) point**

The new generation of
premium cables for
highly dynamic applications
in power chains is growing



ÖLFLEX® SERVO FD/CHAIN

- New premium cables for servo and power chain applications replace eight ÖLFLEX® servo cables
- Fewer articles, lower storage costs, better performance, more dynamic
- Attractive price and, and, and...

The family is growing

As an accompaniment to the established ÖLFLEX® SERVO FD 796 CP servo cable, Lapp now presents the unshielded version ÖLFLEX® SERVO FD 796 P, the 4 and 5-core connecting cable ÖLFLEX® CHAIN 896 P, and the resolver & encoder cable ÖLFLEX® SERVO FD 798 CP.

These new family members steal the show thanks to their ability to make fast position changes in power chains with acceleration capability of up to 50 m/s², speeds of up to 5 m/s and travel distances of up to 100 metres. This means that they work noticeably faster and more efficiently than the power chain cables that have been in use up to now. They are the perfect addition to complete the range of highly dynamic servo and connecting cables. The proportional run-up and braking times of this family of cables can be reduced by up to 96% thanks to their excellent acceleration capability.

In short, the new premium cables save time and enable facilities to operate with improved productivity, as well as offering longer service life, taking up less space and

weighing less. The new premium cables were developed by the Lapp Group in Stuttgart. Thanks to low-capacitance polyolefin insulation, they offer lower EMC-effective leakage currents while simultaneously providing extremely high dielectric and electrical strength. 796 P and 798 CP are halogen-free, completely flame-retardant and have been granted key approvals such as UL and CSA. VDE registration for the power cables is currently in progress.

Some time ago, Lapp invested in new power chain cable testing facilities at its in-house test centre, so that it could permanently guarantee the required quality standards. At these facilities, cables are subjected to highly dynamic alternate bending loads. Not only that, but the new testing facilities enable travel speeds of up to 10 m/s and acceleration rates of up to 100 m/s².

Further information (including ordering information) and support for placing product orders can be found at:

www.lappkabel.de



Power and control cables

Power chain applications · SERVO applications - power drive systems, approved

New

ÖLFLEX® SERVO FD 796 P

LAPP KABEL STUTTGART ÖLFLEX® SERVO FD 796 P CE

Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard = fewer part varieties = cost savings
- The advantage: the modified design of the control core pairs means the longitudinal voltage drop is lower; it also permits considerably higher operating voltages in the auxiliary circuits
- To substitute 3 ÖLFLEX® SERVO FD product lines: -750 P/-755 P/-795 P (with control pair)

Application range

- Power drive systems in automation engineering
- Connecting cable between servo controller and motor
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines

Product features

- Dynamic performance in power chains: Acceleration up to 50 m/s². Travel speeds up to 5 m/s. Travel distances up to 100 m.
- Low-capacitance design
- Halogen-free materials

- Flame retardancy: UL/CSA: VW-1, FT 1 IEC/EN: 60332-1-2
- Oil-resistant

Approvals (Norm references)



- For use in power chains: Please comply with the assembly guidelines listed in Appendix T3
- Minimum bending radius for flexible use: After consulting, in particular cases, usage at bending factor smaller 7,5 x outer diameter is possible.

Design

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- According to P/N individual design: Power cores with one or with two control pair(s), twisted together in short lay length
- Non-woven wrapping
- PUR outer sheath, black (RAL 9005)



Info

- New high-end version! For very dynamic motion sequences
- Slim = less space required
- Unshielded version of ÖLFLEX® SERVO FD 796 CP with control pair(s)

Technical data



Core identification code
Power: black cores with marking U/L1/C/L+; V/L2; W/L3/D /L- and 1 green-yellow core
Designs with one pair of control cores: black; white
two pairs of control cores: black with white numbers: 5, 6, 7, 8
0,34 mm²: WH/BN/GN/YE



Approvals
VDE - reg submitted
UL AWM Style 20234
CSA AWM I/II, A/B 1000 V 80° FT 1



Specific insulation resistance
> 20 GOhm x cm



Conductor stranding
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6



Minimum bending radius
For flexible use:
7.5 x outer diameter
Fixed installation: 4 x outer diameter



Nominal voltage
IEC U₀/U: 600/1000V
UL & CSA: 1000 V



Test voltage
Core/Core: 4 kV
Core/Screen: 4 kV



Protective conductor
G = with GN-YE protective conductor



Temperature range
Flexing: -40°C to +80°C
Fixed installation: -50°C to +80°C

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SERVO FD 796 P				
0025319	4 G 1,5 + (2 x 1,5)	11.7	99.0	217
0025320	4 G 2,5 + (2 x 1,5)	13.1	134.0	270
0025321	4 G 4 + (2 x 1,5)	14.2	195.0	333
0025322	4 G 6 + (2 x 1,5)	16.0	272.0	403
0025323	4 G 10 + (2 x 1,5)	18.4	425.0	581
0025324	4 G 16 + (2 x 1,5)	22.1	656.0	887
0025326	4 G 0,75 + 2 x (2 x 0,34)	10.9	54.0	143
0025327	4 G 1,5 + 2 x (2 x 0,75)	12.3	103.0	209
0025328	4 G 2,5 + 2 x (2 x 1,0)	14.3	152.0	306
0025312	4 G 4 + 2 x (2 x 1,0)	15.4	218.0	381
0025329	4 G 4 + (2 x 1,0) + (2 x 1,5)	15.6	231.0	388
0025330	4 G 6 + (2 x 1,0) + (2 x 1,5)	17.1	308.0	460

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® SERVO FD 796 CP

Accessories

- Protective Cable Conduit Systems and Cable Carrier Systems
- Circular connectors

At a glance – Comparison of product features

ÖLFLEX® SERVO FD .. <> .. Discontinued products/article numbers U.I Lapp GmbH Stuttgart Main catalogue 2012/13 Catalogue no. 91120006 (German); 9112007 (international)				→ ÖLFLEX® SERVO FD/CHAIN	Substitute
..750 P	..755 P	..785 P	..795 P DESINA®	Product features	..796 P/..896 P
		■		Nominal voltage 0.6/1 kV (AC) for power cores and control cores	● ■
		■		Increased cross-sections for control cores	● ■
	●	●	●	Low-capacitance core insulation	●
			●	UL/CSA AWM certification	●
				VDE registration/certification*	●
●	●	●	●	Polyurethane sheath	●
				Hi.Dyn. version	●
	●	●	●	Travel distance of up to 100 m	●
	●	●	●	Flexible at temperatures as low as -40	●
	●	●	●	Halogen-free	●
●	●	●	●	Flame-retardant	●
●	●	●	●	Oil-resistant	●

● = fulfilled, ■ = without control cores, *applied for

Article numbers for re-coding

ÖLFLEX® SERVO FD .. <> .. Discontinued products/article numbers U.I Lapp GmbH Stuttgart Main catalogue 2012/13 Catalogue no. 91120006 (German); 9112007 (international)				→ ÖLFLEX® SERVO FD/CHAIN	Substitute			
..750 P	..755 P	..785 P	..795 P DESINA®	Control unit, pair(s), number of cores x mm ²	Power, number of cores x mm ²	Control unit, pair(s), number of cores x mm ²	..796 P/..896 P	
Art. no.	Art. no.	Art. no.	Art. no.				Art. no.	
	0036601		3028268	2 x 1.0	4 G 1.5	2 x 1.5	0025319	Increase in cross-section of control core pair
	0036602		3028269	2 x 1.0	4 G 2.5	2 x 1.5	0025320	
	0036603		3028270	2 x 1.0	4 G 4	2 x 1.5	0025321	
	0036604		3028271	2 x 1.0	4 G 6	2 x 1.5	0025322	
	0036605		3028272	2 x 1.0	4 G 10	2 x 1.5	0025323	
	0036606			2 x 1.5	4 G 16	2 x 1.5	0025324	
Product range ..796 P	0036240			2 x 2 x 0.34	4 G 0.75	2 x 2 x 0.34	0025326	
	0036245	0036350		2 x 2 x 0.75	4 G 1.5	2 x 2 x 0.75	0025327	
	0036250	0036351		2 x 2 x 0.75	4 G 2.5	2 x 2 x 1.0	0025328	
					4 G 4	2 x 2 x 1.0	0025312	Increase in cross-section of control core pairs
	0036251			2 x 0.75 + 2 x 1.0	4 G 4	2 x 1 + 2 x 1.5	0025329	
	0036252	0036353		2 x 0.75 + 2 x 1.0	4 G 6	2 x 1 + 2 x 1.5	0025330	

The following articles have been removed from the range: 0036253 (4G10+2x0.75+2x1.0), 0036608 (4G35+2x1.5)

Power and control cables

Power chain applications · Harsh conditions, approved

New

ÖLFLEX® CHAIN 896 P

LAPP KABEL STUTTGART ÖLFLEX® CHAIN 896 P CE

Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard = fewer part varieties = cost savings
- Various applications
- Also suitable for mobile outdoor use
- To substitute 2 ÖLFLEX® SERVO FD product lines: -785 P/-795 P (without control pair)

Application range

- Applications in automation engineering
- Power circuits in industrial machines
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines

Product features

- Dynamic performance in power chains: Acceleration up to 50 m/s². Travel speeds up to 5 m/s. Travel distances up to 100 m.
- Low-capacitance design

- Flame retardancy: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Oil-resistant
- Halogen-free materials

Approvals (Norm references)



- For travel distances up to 100 m (horizontal)
- For use in power chains: Please comply with the assembly guidelines listed in Appendix T3
- Minimum bending radius for flexible use: After consulting, in particular cases, usage at bending factor smaller 7,5 x outer diameter is possible.

Design

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- Non-woven wrapping
- PUR outer sheath, black (RAL 9005)



Info

- New high-end version! For very dynamic motion sequences
- Multiple certifications
- MUD res. according to IEC61892-4 Annex D

Technical data

Core identification code
Black with white numbers acc. to VDE 0293

Approvals
VDE - reg submitted
UL AWM Style 20234
CSA AWM I/II, A/B 1000 V 80° FT 1

Specific insulation resistance
> 20 GOhm x cm

Conductor stranding
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

Minimum bending radius
For flexible use:
7,5 x outer diameter (≤16 mm²)
10 x outer diameter (>16 mm²)
Fixed installation:
4 x outer diameter

Nominal voltage
IEC U₀/U: 600/1000V
UL & CSA: 1000 V

Test voltage
4000 V

Protective conductor
G = with GN-YE protective conductor
X = without protective conductor

Temperature range
Flexing: -40°C to +80°C
Fixed installation: -50°C to +80°C

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® CHAIN 896 P				
1023229	4 G 1.5	9.6	58.0	120
1023230	5 G 1.5	10.0	72.0	143
1023238	4 G 2.5	11.0	96.0	174
1023239	5 G 2.5	12.0	120.0	210
1023245	4 G 4	12.5	154.0	242
1023246	5 G 4	13.7	192.0	316
1023248	4 G 6	14.3	231.0	335
1023249	5 G 6	15.7	288.0	439
1023250	4 G 10	17.0	384.0	503
1023251	5 G 10	18.9	480.0	663
1023252	4 G 16	21.2	615.0	810
1023253	5 G 16	23.8	768.0	1065
1023254	4 G 25	25.9	960.0	1254
1023255	5 G 25	29.0	1,200.0	1582

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100kg. Refer to Appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths. Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® FD 855 P
- ÖLFLEX® CHAIN 879
- ÖLFLEX® SERVO FD 796 P

Accessories

- Protective Cable Conduit Systems and Cable Carrier Systems

At a glance – Comparison of product features

ÖLFLEX® SERVO FD .. < > .. Discontinued products/article numbers U.I Lapp GmbH Stuttgart Main catalogue 2012/13 Catalogue no. 91120006 (German); 9112007 (international)				ÖLFLEX® SERVO FD/CHAIN	Substitute
..750 P	..755 P	..785 P	..795 P DESINA®	Product features	..796 P/..896 P
		■		Nominal voltage 0.6/1 kV (AC) for power cores and control cores	● ■
		■		Increased cross-sections for control cores	● ■
	●	●	●	Low-capacitance core insulation	●
			●	UL/CSA AWM certification	●
				VDE registration/certification*	●
●	●	●	●	Polyurethane sheath	●
				Hi.Dyn. version	●
	●	●	●	Travel distance of up to 100 m	●
	●	●	●	Flexible at temperatures as low as -40	●
	●	●	●	Halogen-free	●
●	●	●	●	Flame-retardant	●
●	●	●	●	Oil-resistant	●

● = fulfilled, ■ = without control cores, *applied for

Article numbers for re-coding

ÖLFLEX® SERVO FD .. < > .. Discontinued products/article numbers U.I Lapp GmbH Stuttgart Main catalogue 2012/13 Catalogue no. 91120006 (German); 9112007 (international)				ÖLFLEX® SERVO FD/CHAIN	Substitute		
..750 P	..755 P	..785 P	..795 P DESINA®	Control unit, pair(s), number of cores x mm ²	Power, number of cores x mm ²	Control unit, pair(s), number of cores x mm ²	..796 P/ ..896 P
Art. no.	Art. no.	Art. no.	Art. no.				Art. no.
		0036380			4 G 1.5		1023229
		0036650			5 G 1.5		1023230
		0036381	3028277		4 G 2.5		1023238
		0036651			5 G 2.5		1023239
		0036382	3028278		4 G 4		1023245
		0036652			5 G 4		1023246
		0036383	3028279		4 G 6		1023248
		0036653			5 G 6		1023249
		0036384			4 G 10		1023250
					5 G 10		1023251
		0036385	3028281		4 G 16		1023252
		0036655			5 G 16		1023253
			3028282		4 G 25		1023254
		0036656			5 G 25		1023255

The following article has been removed from the range: 3028283 (4G35)

Power and control cables

Power chain applications · SERVO applications - power drive systems, approved

New

ÖLFLEX® SERVO FD 798 CP

Encoder and resolver cables, DESINA® green

LAPP KABEL STUFGART ÖLFLEX® SERVO FD 798 CP

Benefits

- Thin, optimised for weight and volume
- Total screening prevents/reduces interference from neighbouring cables
- Also suitable for mobile outdoor use
- Suitable for use with encoders & resolvers from leading manufacturers
- To substitute 4 ÖLFLEX® SERVO FD product lines: -760 CP/-760 CP DESINA®/-770 CP, -770 CP DESINA®.

Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and speed generators
- In power chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines

Product features

- Dynamic performance in power chains: Acceleration up to 50 m/s². Travel speeds up to 5 m/s. Travel distances up to 100 m.
- Abrasion and cut-resistant
- Halogen-free materials

- Flame retardancy: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Oil-resistant

Approvals (Norm references)



- For travel distances up to 100 m (horizontal)
- For use in power chains: Please comply with the assembly guidelines listed in Appendix T3
- DESINA®-compliant

Design

- Fine-wire or extra-fine wire, tinned-copper conductor
- Core insulation: polypropylene (PP)
- Cores (or core pairs) twisted in layers or bundles
- Refer to data sheet for more details
- Non-woven wrapping
- PUR outer sheath, green (RAL 6018)



Info

- New high-end version! For very dynamic motion sequences
- Multiple certifications
- MUD res. according to IEC61892-4 Annex D

Technical data



Core identification code
Details see datasheet ÖLFLEX® SERVO FD 798 CP



Approvals
UL AWM Style 20236
CSA AWM IA/B; IIA/B FT 1, C22.2 No. 210-05



Specific insulation resistance
> 20 GOhm x cm



Conductor stranding
Fine wire or extra-fine wire



Minimum bending radius
Flexible use: 7.5 x outer diameter
Fixed installation:
4 x outer diameter



Nominal voltage
IEC: 30 V
UL & CSA: 30 V



Test voltage
Core/core: 1500 V rms
Core/screen: 750 V rms



Temperature range
Flexing: -40°C to +80°C
Fixed installation: -50°C to +80°C

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SERVO FD 798 CP				
0036910	4 x 2 x 0,34 + 4 x 0,5	8.9	79.0	125
0036911	3 x (2 x 0,14) + 2 x (0,5)	8.9	70.0	120
0036912	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5	8.8	68.0	110
0036913	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5 + 4 x 0,22	9.4	80.0	130
0036914	9 x 0,5	8.8	71.0	110
0036915	4 x 2 x 0,25 + 2 x 1,0	8.8	63.0	109
0036916	6 x 2 x 0,25 + 2 x 0,5	10.3	67.0	121
0036917	10 x 0,14 + 2 x 0,5	7.7	41.0	82
0036918	10 x 0,14 + 4 x 0,5	8.1	54.0	98
0036920	4 x 2 x 0,14 + 4 x 0,5	8.2	51.0	95
0036921	4 x 2 x 0,25	7.6	38.0	75
0036923	8 x 2 x 0,18	7.8	51.0	85
0036924	4 x 2 x 0,18	6.4	30.0	52
0036926	12 x 0,22	6.9	44.0	73
0036927	4 x 2 x 0,25 + 2 x 0,5	8.5	62.0	98
0036928	2 x 2 x 0,14 + 2 x (2 x 0,14) + 4 x 0,5 + (4 x 0,14)	9.1	79.0	135
0036929	2 x (2 x 0,25) + 2 x 0,5	8.7	46.0	98
0036930	2 x 2 x 0,25 + 2 x 0,5	7.3	38.0	72

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100kg. Refer to Appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

DESINA® is a registered trademark of the German Machine Tool Builders' Association

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- SERVO cables in acc. to SIEMENS® Standard 6FX 8PLUS

Accessories

- Circular connectors
- SILVYN® CHAIN cable protection and guiding systems

At a glance – Comparison of product features

ÖLFLEX® SERVO FD .. <> .. Discontinued products/article numbers U.I. Lapp GmbH Stgt. Main catalogue 2012/13 Catalogue no. 91120006 (German); 9112007 (international)				ÖLFLEX® SERVO FD...	Substitute
..760 CP	..760 CP DESINA®	..770 CP	..770 CP DESINA®	Product features	..798 CP
				Tinned stranded copper wire	●
				Low-capacitance, low-attenuation core insulation	●
●	●	●	●	Minimum bending radius for dynamic use 12 x D	●
				Minimum bending radius for dynamic use 7.5 x D	●
				UL/CSA AWM certification	●
●	●	●	●	Polyurethane sheath	●
				Hi. Dyn. version	●
●	●	●	●	Travel distance of up to 100 m	●
	●		●	DESINA®-compliant	●
●	●	●	●	Halogen-free	●
●	●	●	●	Flame-retardant	●
●	●	●	●	Oil-resistant	●
	●		●	Sheath colour: Green (RAL 6018)	●
●		●		Sheath colour: Grey (RAL 7001)	on request

● = fulfilled

Article numbers for re-coding

ÖLFLEX® SERVO FD .. <> .. Discontinued products/article numbers U.I. Lapp GmbH Stgt. Main catalogue 2012/13 Catalogue no. 91120006 (German); 9112007 (international)				ÖLFLEX® SERVO FD ..	Substitute	In addition: High Dyn. alternative to: signal cables for rotary encoders, resolvers, etc.			
..760 CP	..760 CP DESINA®	..770 CP	..770 CP DESINA®	Structure, number of cores and nominal conductor cross-sections	..798 CP	Servo cable in acc. with Siemens® FX8PLUS standard	Servo cable in acc. with Bosch Rexroth® INK (Indramat) standard	Servocable in acc. with Lenze® standard	Special encoder/resolver cables
Art. no.	Art. no.	Art. no.	Art. no.		Art. no.	Art. no.	Art. no.	Art. no.	Art. no.
			0036642	4 x 2 x 0.34 + 4 x 0.5	0036910	00277111			
		0036268		3 x (2 x 0.14) + 2 x (0.5)	0036911	00277121*		7072516*	70388719*
				3 x (2 x 0.14) + 4 x 0.14 + 2 x 0.5	0036912	00277131			
		0036269	0036641	3 x (2 x 0.14) + 4 x 0.14 + 2 x 0.5 + 4 x 0.22	0036913	00277141			
0036260	0036760			9 x 0.5	0036914		7072402		
		0036270		4 x 2 x 0.25 + 2 x 1	0036915		7072400		
		0036280		6 x 2 x 0.25 + 2 x 0.5	0036916				
		0036275		10 x 0.14 + 2 x 0.5	0036917				
		0036277		10 x 0.14 + 4 x 0.5	0036918				
		0036281		4 x 2 x 0.14 + 4 x 0.5	0036920				70388718
			0036901	4 x 2 x 0.25	0036921				
				8 x 2 x 0.18	0036923	00277101			
				4 x 2 x 0.18	0036924	00277151			
				12 x 0.22	0036926	00277171			
				4 x 2 x 0.25 + 2 x 0.5	0036927		7072401		70388731*
			0036640	2 x 2 x 0.14 + 2 x (2 x 0.14) + 4 x 0.5 +(4 x 0.14)	0036928		7072414*		70388721*
				2 x (2 x 0.25) + 2 x 0.5	0036929		7072415		
				2 x 2 x 0.25 + 2 x 0.5	0036930		7072416		

The following product has been removed from the range: 0036278 (15 x 0.14 + 4 x 0.5); additional variants in preparation. Siemens®, Bosch Rexroth® and Lenze® are registered trademarks and are used here for comparison purposes only. *Minor differences in core identification code & design

ÖLFLEX®

UNITRONIC®

ETHERLINE®

HITRONIC®

EPIC®

SKINTOP®

SILVYN®

FLEXIMARK®



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