



■ Connectivity Solutions

# Cable assemblies according to Allen-Bradley® standard 2090

# Efficiency in Automation

Cable • Connectivity • Cabinet • Control



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# Welcome to LÜTZE

## Cable Solutions



**Efficiency in Automation** - A reflection of our company philosophy

As an experienced specialist in automation technology, with solutions for flexible and high flexing cables, cable assemblies, interfaces, current control and cabinet wiring, we have had a focus on efficiency for many years.

## Connectivity Solutions



LÜTZE defines Efficiency in Automation as the use of sustainable products and solutions to further increase the performance of our products in our customers applications.

We realise this by using components for highly efficient control systems, products with above average life cycles and raising energy efficiency in control cabinets by means of the LSC wiring system.

## Cabinet Solutions



Efficiency in Automation reflects our efforts in striving for efficient working relationships with our customers: in a medium sized family owned company we have short communication channels and a high level of manufacturing competence.

The value of a product or a solution from LÜTZE is determined by its sustainable qualities. Every innovation will only be successful in the future if it has a long term positive effect. Therefore, we provide long lasting as well as highly efficient components.

## Control Solutions



Thus LÜTZE creates value through efficiency. LÜTZE provides answers and demonstrates how to handle resources responsibly, with our environment and our future in mind. **LÜTZE - Efficiency in Automation**

**For more information on our solutions, please visit [www.luetze.com](http://www.luetze.com)**

## Transportation Solutions





# Business Management: Sustainable and forw



## The future is blue

Sustainable enterprise means thinking and planning ahead, understanding and embedding the belief that long lasting success is more important than short-term profit maximisation.

This is an attitude that has existed within LÜTZE for quite some time. Economic and environmental responsibilities complement each other well and are reflected in the sustainable management and

product policy - and from now in the **SkyBLUE** campaign.

We manufacture our products in a resourceful and energy-conscious manner. We use long lasting, environmentally-friendly materials.

And our products, in turn, help our customers save energy and resources.

Good for everyone: for us, for the environment, for our customers a win-win-win situation.

# ard-looking

*„The competitiveness of our industry and of its suppliers depends quite substantially on how we succeed in developing practical results. The results that we produce together today, are our competitive advantages in the future.“*

*Udo Lütze,  
Member of the Executive Committee of  
the Green Carbody Innovation Alliance*



## Goods with real value

The value of a product or a solution from LÜTZE is determined by its sustainable qualities as well. Every innovation is only as successful in the future if it has a long-term positive effect. Therefore, we provide long lasting as well as highly efficient components.

We are incorporating the necessary knowledge and manufacturing competence in numerous joint projects with the objective of improving energy efficiency and

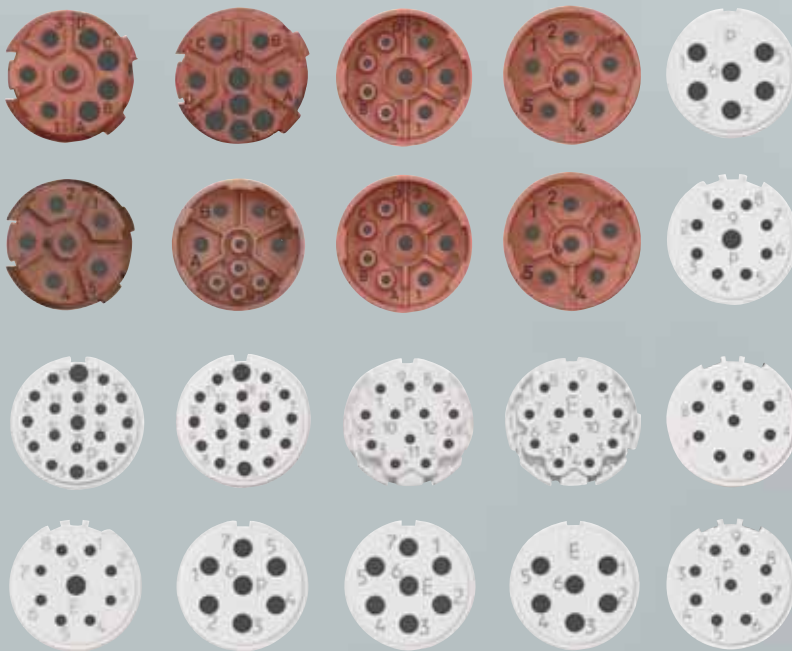
sustainable technologies and industries. Thus, LÜTZE provides answers and demonstrates how to handle resources responsibly, with our environment and our future in mind.



# RoHS



# Always the right connection **LÜTZE** cable assembly



## Standard assembly solutions

For ALLEN-BRADLEY or other systems, like SIEMENS, SEW, BOSCH REXROTH, LENZE, our Assemblies are 100 % compatible. For servo motors, encoder and feedback cables, for C-track or fixed installation, LÜTZE offers lots of solutions for highest requirements.

### Customized solutions:

Every system is different. Take advantage of our experience in cable assembly! Our experts can

document and provide solutions to your applications as they have access to more than 1.700 cables, plugs, strain reliefs and cable conduits.

### Preassembled cables for short-term needs:

Patch cable Cat5e or Cat6e for Ethernet connections or USB 3.0 cables for a serial interface and preassembled S7 plugs for SIEMENS SIMATIC.

# ction: lies

**Spiral cables for the highest mechanical stresses - manufactured according to your specifications, e.g. high-performance machines,**



lifting platforms and many other moving applications. Also suitable for outdoor use ideal for millions of cycles without failure!



## Advantages of LÜTZE „Tamper-proof“ connector

LÜTZE „Tamper-proof“ plastic moulded round connectors M23 for industrial use offer the user an economical and, at the same time, safe solution for the electrical connection of machines and systems.

The LÜTZE range offers varying numbers of terminations and cable lengths. That is numbers of terminations from 6 to 28 and ratings of up to 30 A at 630 V. Therefore robust, safe cabling is

available for numerous signal and power applications.

The integrated protection against kinking and the inner metal housing with 360° EMC shielding ensure the cable assemblies meet the requirements for the industrial sector - **they really are sealed as if potted!**

### Further advantages:

- Tamper-proof: unauthorised opening of the connector housing

and incorrect connection in the connector are therefore excluded

- 100 % compatible with ALLEN-BRADLEY, SIEMENS, SEW, BOSCH REXROTH, LENZE...
- Manufacture from a batch size of 1
- Available at short notice
- Protection class IP66/67

## Applications



LUTZE Servo Cable Assemblies in action: Power- and Feedback assembly connected to motor jacks with SpeedTec connector!



Wiring inside and on the cabinet: LUTZE cable assemblies are always system compatible and offer great flexibility.



# Applications



# Servomotor cables for fixed wiring

According to Allen-Bradley 2090 standard



## Application

- For Allen-Bradley standard
- Connecting lead especially for frequency converters and SERVO drives in machine and plant construction, transport and conveyor technology
- Conform with NFPA79 for tool machine wiring
- Very suitable for extreme operating conditions and high interference signals
- In dry, moist and wet rooms
- Especially for industrial environments in mechanical and system engineering

## Properties

- High active and passive interference resistance (EMC)
- Easy installation
- Largely resistant to mineral and vegetable-based cutting oils
- UV-resistant
- Silicone and talcum free
- RoHS compliant

## Technical data

UL approval	cULus
Nominal voltage	600 V UL TC 600 V UL MTW 600 V UL AWM 105 °C 1000 V WTTC
Voltage $U_0/U$	0.6/1 kV
Test voltage	4000 V
Insulation resistance	min. 500 M $\Omega$ x km
Temperature range	
fixed	-40 °C to +90 °C
Minimum bending radius	
fixed	D x 6
Approvals	UL TC-ER, UL/AWM/CE, UL MTW, WTTC UL AWM Style 20328, Class 1, Div. 2 per NEC Art. 336, 392, 501 C(UL) TC, CIC FT4, UL 1277 Oil Res I and II, RoHS

## Construction

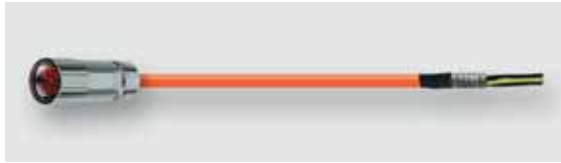
- AWG conductor
- Conductor insulation Special PVC/nylon
- Conductor marking Power wires: brown, black, blue
- Ground conductor green/yellow according to DIN EN 50334
- Control pair colour-coded black, white
- Control pair with foil taping and braided shield.
- Conductors twisted without mechanical stress, layer pitch optimised
- Braid from tinned copper wire, optical coverage  $\geq 85\%$
- Jacket special-TPE, matte, adhesion-free surface
- Jacket color orange RAL 2003

Part No.	Allen-Bradley designation	Length m	Number of strands/ cross-section	OD $\varnothing$ ca. mm
<b>Base cable SpeedTec</b>				
193966.1000	2090-CPWM7DF-16AAxx*	10.0	(4GAWG16)	10.5
193956.1000	2090-CPWM7DF-14AAxx*	10.0	(4GAWG14)	11.6
193352.1000	2090-CPWM7DF-12AAxx*	10.0	(4GAWG12)	13.1
193306.1000	2090-CPWM7DF-10AAxx*	10.0	(4GAWG10)	16.5
193353.1000	2090-CPWM7DF-08AAxx*	10.0	(4GAWG8)	21.0
193960.1000	2090-CPBM7DF-16AAxx*	10.0	(4GAWG16+(2xAWG18))	12.1
193990.1000	2090-CPBM7DF-14AAxx*	10.0	(4GAWG14+(2xAWG18))	12.8
193356.1000	2090-CPBM7DF-12AAxx*	10.0	(4GAWG12+(2xAWG18))	14.2
193962.1000	2090-CPBM7DF-10AAxx*	10.0	(4GAWG10+(2xAWG18))	18.1
193357.1000	2090-CPBM7DF-08AAxx*	10.0	(4GAWG8+(2xAWG18))	22.5
193961.1000	2090-CPBM7DF-06AAxx*	10.0	(4GAWG6+(2xAWG18))	24.6
193362.1000	2090-CPBM7DF-04AAxx*	10.0	(4GAWG4+(2xAWG18))	29.5
193369.1000	2090-CPBM7DF-02AAxx*	10.0	(4GAWG2+(2xAWG18))	34.1

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# Servomotor cables for C-tracks

## According to Allen-Bradley 2090 standard



### Application

- Servo cables for Allen Bradley drives
- Through optimized cable construction optimally suited for continuous flexing applications in C-tracks
- Very good resistance against aggressive coolants and lubricants
- Especially for industrial environments in machines and plants

### Properties

- High active and passive interference resistance (EMC)
- Silicone free
- RoHS compliant

### Technical data

UL approval	AWM 21223
Nominal voltage	1000 V 80 °C
Test voltage	4000 V
Temperature range	
moving	-25 °C to +80 °C
fixed	-40 °C to +80 °C
Minimum bending radius	
moving	D × 10
fixed	D × 6
Burning behavior	Flame-retardant according to VDE 0482 T 265-2, IEC 60332-1, UL 1581 section 1080 VW-1, CSA FT 1
Halogen free	according to DIN EN 50267-2-1

### Construction

- Bare copper wire, finest multi-strand according to DIN VDE 0295 class 6, IEC 60228 class 6
- Special TPE/HGI conductor insulation, UL qualified
- Conductor marking Power conductors black with numbered print U/L1/C/L+, V/L2, W/L3/D/L-
- Ground conductor green/yellow according to DIN EN 50334
- Control pair color-coded (bw, wb) or numbered (5/6/7/8)
- Control pair with braided shield and foil taping
- Conductors twisted without mechanical stress, layer pitch optimised
- Non-woven material over cable core
- Braid from tinned copper wire, optical coverage ≥ 85 %
- Outer jacket Full polyurethane jacket, matte, adhesion-free surface
- Jacket color orange RAL 2003

Part No.	Allen-Bradley designation	Length m	Number of strands/ cross-section	OD Ø ca. mm
<b>DIN thread</b>				
193951.1000	2090-XXNPMF-16Sxx*	10.0	(4G1.5+2x(2x0.75))	12.9
193950.1000	2090-XXNPMF-14Sxx*	10.0	(4G2.5+2x(2x1.0))	14.2

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# Servomotor cables for C-tracks

According to Allen-Bradley 2090 standard



## Application

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## Properties

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## Technical data

UL approval	AWM 21223
Nominal voltage	1000 V 80 °C
Test voltage	4000 V
Temperature range	
moving	-25 °C to +80 °C
fixed	-40 °C to +80 °C
Minimum bending radius	
moving	D x 10
fixed	D x 6
Burning behavior	Flame-retardant according to VDE 0482 T 265-2, IEC 60332-1, UL 1581 section 1080 VW-1, CSA FT 1
Halogen free	according to DIN EN 50267-2-1

## Construction

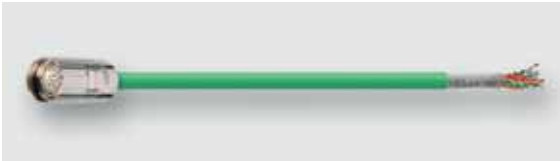
- Bare copper wire, finest multi-strand according to DIN VDE 0295 class 6, IEC 60228 class 6
- Special TPE/HGI conductor insulation, UL qualified
- Conductor marking Power conductors black with numbered print U/L1/C/L+, V/L2, W/L3/D/L-
- Ground conductor green/yellow according to DIN EN 50334
- Control pair color-coded (bw, wb) or numbered (5/6/7/8)
- Control pair with braided shield and foil taping
- Conductors twisted without mechanical stress, layer pitch optimised
- Non-woven material over cable core
- Braid from tinned copper wire, optical coverage ≥ 85 %
- Outer jacket Full polyurethane jacket, matte, adhesion-free surface
- Jacket color orange RAL 2003

Part No.	Allen-Bradley designation	Length m	Number of strands/ cross-section	OD Ø ca. mm
<b>Base cable SpeedTec</b>				
193309.1000	2090-CPWM7DF-16AFxx*	10.0	(4G1.5)	8.6
193307.1000	2090-CPWM7DF-10AFxx*	10.0	(4G6.0)	14.0
193989.1000	2090-CPBM7DF-10AFxx*	10.0	(4G6.0+(2x1.5))	16.1
193991.1000	2090-CPBM7DF-16AFxx*	10.0	(4G1.5+(2x1.5))	11.4
193308.1000	2090-CPWM7DF-14AFxx*	10.0	(4G2.5)	10.8
193957.1000	2090-CPBM7DF-14AFxx*	10.0	(4G2.5+(2x1.5))	12.9
193311.1000	2090-CPWM7DF-08AFxx*	10.0	(4G10)	17.6
193355.1000	2090-CPBM7DF-08AFxx*	10.0	(4G10+(2x1.5))	19.5
<b>DIN thread</b>				
193985.1000	2090-CPBM4DF-16AFxx*	10.0	(4G1.5+(2x1.5))	12.9
193303.1000	2090-CPWM4DF-16AFxx*	10.0	(4G1.5)	8.6
193983.1000	2090-CPBM4DF-14AFxx*	10.0	(4G2.5+(2x1.5))	14.2
193301.1000	2090-CPWM4DF-14AFxx*	10.0	(4G2.5)	10.8
<b>Extension SpeedTec</b>				
193996.1000	2090-CPBM7E7-16AFxx*	10.0	(4G1.5+(2x1.5))	11.4
193994.1000	2090-CPBM7E7-10AFxx*	10.0	(4G6.0+(2x1.5))	16.1
193360.1000	2090-CPBM7E7-14AFxx*	10.0	(4G2.5+(2x1.5))	12.9
193361.1000	2090-CPBM7E7-08AFxx*	10.0	(4G10+(2x1.5))	19.5

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# Signal cables for fixed wiring

## According to Allen-Bradley 2090 standard



Part No.	Allen-Bradley designation	Length m	Number of strands/ cross-section	OD Ø ca. mm
<b>Base cable SpeedTec</b>				
193959.1000	2090-CFBM7DF-CEAAxx*	10.0	(5x2xAWG22)	9.9
193358.1000	2090-CFBM7DD-CEAAxx*	10.0	(5x2xAWG22)	9.9
<b>DIN thread</b>				
193337.1000	2090-XXNFMF-Sxx*	10.0	(2xAWG16+2xAWG22 +6x2xAWG26)	13.6

### Application

- Feedback cables for Allen Bradley drives
- Conform with NFPA79 for tool machine wiring
- Very suitable for extreme operating conditions and high interference signals
- In dry, moist and wet rooms
- Especially for industrial environments in mechanical and system engineering

### Properties

- High active and passive interference resistance (EMC)
- Easy installation
- Specially developed TPE jacket for superior oil-resistance according to UL 1581
- Largely resistant to mineral and vegetable-based cutting oils
- UV-resistant
- Silicone and talcum-free
- RoHS compliant

### Technical data

Nominal voltage	300 V UL PLTC-ER 300 V UL CM 600 V UL AWM 90 °C
Test Voltage	1.5 kV
Temperature range	-30 °C to +105 °C (static -40 °C)
Minimum bending radius	min. D x 6, static
Burning behavior	Flame retardant per UL Vertical-Tray UL VW-1
Oil resistance	UL1581 4 days in Oil at 100 °C 60 days in Oil at 75 °C
Approvals	A1410001: UL PLTC-ER, meets NEC 725 and Class I Div. 2 A1410002: UL CM, meets NEC 800 Both: UL AWM Style 20626 CE RoHS REACH

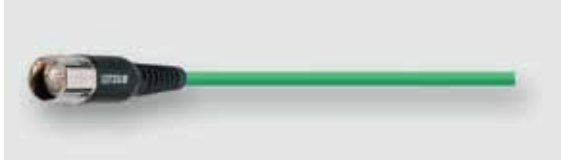
### Construction

- AWG conductor
- Flexible fine wire stranded bare copper conductors IEC 60228 class 6
- Conductor insulation Special PVC
- Conductor marking Conductors color-coded for specific system
- Aluminium laminated film shield, braid made of tinned copper wires, optical coverage approx. 85 %, drain wire
- Outer jacket Extremely oil-resistant TPE jacket
- Jacket color green RAL 6018

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# Signal cables for C-tracks

According to Allen-Bradley 2090 standard



## Application

- Servo feedback cables for Allen Bradley drives
- Through optimized cable construction optimally suited for continuous flexing applications in C-tracks
- Very good resistance against aggressive coolants and lubricants
- Especially for industrial environments in machines and plants

## Properties

- High active and passive interference resistance (EMC)
- Silicone free
- RoHS compliant

## Technical data

UL approval	AWM 21223
Nominal voltage	1000 V 80 °C
Temperature range	
moving	-25 °C to +80 °C
fixed	-40 °C to +80 °C
Minimum bending radius	
moving	D × 12
fixed	D × 6
Burning behavior	Flame-retardant according to VDE 0482 T 265-2, IEC 60332-1, UL 1581 section 1080 VW-1, CSA FT 1
Halogen free	according to DIN EN 50267-2-1

## Construction

- Bare copper wire, finest multi-strand according to DIN VDE 0295 class 6, IEC 60228 class 6
- Special TPE, UL certified
- Conductor marking Conductors color-coded for specific system
- Ground conductor green/yellow according to DIN EN 50334
- G = with green/yellow ground conductor, x = without ground conductor
- Conductors twisted without mechanical stress, layer pitch optimised
- Non-woven material over cable core
- Braid from tinned copper wire, optical coverage ≥ 85 %
- Outer jacket Full polyurethane jacket, matte, adhesion-free surface
- Jacket color green RAL 6018



Part No.	Allen-Bradley designation	Length m	Number of strands/ cross-section	OD Ø ca. mm
<b>Base cable SpeedTec</b>				
193977.1000	2090-CFBM7DF-CEAFxx*	10.0	(5x2xAWG22)	9.2
193958.1000	2090-CFBM7DF-CDAFxx*	10.0	(2xAWG16+2xAWG22 +6x2xAWG26)	10.8
193350.1000	2090-CFBM7DD-CEAFxx*	10.0	(5x2xAWG22)	9.2
<b>DIN thread</b>				
193973.1000	2090-CFBM4DF-CDAFxx*	10.0	(2xAWG16+2xAWG22 +6x2xAWG26)	10.8
<b>Extension SpeedTec</b>				
193979.1000	2090-CFBM7E7-CEAFxx*	10.0	(5x2xAWG22)	9.2
193978.1000	2090-CFBM7E7-CDAFxx*	10.0	(2xAWG16+2xAWG22 +6x2xAWG26)	10.8

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# Hybrid cables for C-tracks

## According to Allen-Bradley 2090 standard



Part No.	Allen-Bradley designation	Length m	Number of strands/cross-section	OD Ø ca. mm
<b>Base cable SpeedTec</b>				
193371.1000	2090-CSWM1DF-18AFxx*	10.0	(4G1.0+(2×AWG22))	11.8
193370.1000	2090-CSWM1DF-14AFxx*	10.0	(4G2.5+(2×AWG22))	14.0
193376.1000	2090-CSWM1DF-10AFxx*	10.0	(4G6+(2×AWG22))	17.8
193366.1000	2090-CSBM1DF-18AFxx*	10.0	(4G1.0+(2×0.75)+(2×AWG22))	11.8
193364.1000	2090-CSBM1DF-14AFxx*	10.0	(4G2.5+(2×1.0)+(2×AWG22))	14.0
193375.1000	2090-CSBM1DF-10AFxx*	10.0	(4G6+(2×1.0)+(2×AWG22))	17.8
<b>Extension SpeedTec</b>				
193373.1000	2090-CSBM1E1-18AFxx*	10.0	(4G1.0+(2×0.75)+(2×AWG22))	11.8
193374.1000	2090-CSBM1E1-14AFxx*	10.0	(4G2.5+(2×1.0)+(2×AWG22))	14.0

### Application

- Combined power supply cable with motor supply, brake and digital feedback especially for SERVO drives in machine and plant construction, transport and conveyor technology
- Through Full PUR jacket and TPE / HGI conductor insulation optimally suited for c-tracks, extremely harsh operating conditions and aggressive coolants and lubricants
- Especially for industrial environments in mechanical and system engineering

### Properties

- High active and passive interference resistance (EMC)
- Braided shield optimised for continuous flexible use
- Very good alternating bending strength
- Low adhesion, abrasion-resistant, nick-resistant, tear-propagation-resistant
- Hydrolysis-resistant, microbe-resistant, and rot-resistant
- Weathering, ozone and UV resistant (normal lighting conditions)
- Good resistance to use and salt water
- Excellent coolant and lubricant resistance
- Largely resistant to oils, greases, alcohol-free benzines and kerosene
- Halogen free
- Silicone and talcum free
- RoHS compliant

### Technical data

UL approval	AWM 21223
Nominal voltage	1000 V 80 °C
Test voltage	3000 V
Insulation resistance	min. 500 MΩ × km
Temperature range	
moving	-25 °C to +80 °C
fixed	-40 °C to +80 °C
Minimum bending radius	
moving	D × 7.5
fixed	D × 5
Burning behavior	Flame-retardant according to VDE 0482 T 265-2, DIN EN 50265-2, IEC 60332-1-2, UL 1581 section 1080 VW-1, CSA FT 1
Halogen free	according to DIN EN 50267-2-1

### Construction

- Bare copper braid, fine stranded according to DIN VDE 0295 class 6, IEC 60228 class 6
- Conductor insulation Polyolefin
- Conductor marking Power conductors black with numbered print U/L1/C/L+, V/L2, W/L3/D/L-
- Ground conductor green/yellow according to DIN EN 50334 G = with green/yellow ground conductor, x = without ground conductor
- Control pair color-coded (bw, wb), BUS element color-coded (bw, wb)
- Control pair and BUS element each with braided shield and foil taping
- Strands for the power supply, element brake and element BUS braided together
- Non-woven material over cable core
- Braid from tinned copper wire, optical coverage ≥ 85 %
- Jacket special-PUR, matt, adhesion-free surface
- Jacket color orange RAL 2003

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# TPE Motor cables - shielded - static

## LÜTZE SILFLEX® M (C) TPE POWER TRAY CABLE Supply line for Allen-Bradley and other Systems



### Application

- Shielded multi-conductor cable for motor and servo motor applications
- Cable design for harsh industrial environments and operating conditions with high noise levels
- Improved insulation design with additional conductor stress relief layer as a power distortion suppressant
- Compliant with NFPA 79 for machine tool wiring
- TC-ER for use with cable trays without conduit, which can reduce material and labor costs
- UL Type 1000V Flexible Motor Supply Cable for Motor/Power applications
- Dry, damp and wet locations

### Properties

- Conductor stress relief layer prevents premature cable failure and reduces corona effects, increasing reliability and lifetime
- Flexible design with Nylon for crush impact resistance per UL 1277 and easy installation
- Very round cable with small diameter
- Specially formulated TPE jacket for superior oil resistance per Oil Res I and II
- Resistant to many mineral and vegetable based cutting oils
- Non-wicking fillers
- Sunlight resistant
- Direct burial
- UL Type TC-Exposed Run
- Talc free and Silicone free

### Technical data

Nominal voltage      1000 V Flexible Motor Supply  
                                  1000 V WTTC  
                                  600 V UL TC  
                                  600 V UL MTW  
                                  600 V UL AWM 105 °C

Temperature range  
   moving                -5 °C to +90 °C  
   fixed                   -40 °C to +90 °C (105 °C)

Minimum bending radius  
   moving                D x 15  
   fixed                   D x 6

Approvals              UL Flexible Motor Supply Cable  
                                  UL Type WTTC 1000 V  
                                  UL Type TC-ER  
                                  MTW 600 V  
                                  UL AWM Style 20328  
                                  CE  
                                  RoHS  
                                  REACH  
                                  Class 1 Div. 2 per NEC  
                                  Art. 336, 392, 501  
                                  C(UL) TC and CIC FT4  
                                  UL 1277  
                                  Oil Res I and II

### Construction

- Bare E-copper wire, ASTM, AWG Class K
- Conductor insulation Isolationsstärkende Schicht, Spezial-PVC/ Nylon, THHN-THWN
- Braid from tinned copper wire, optical coverage ≥85%
- Strand color brown, black, blue Pair: black, white
- Ground conductor green/yellow
- Outer jacket Special TPE according to UL 1581
- Jacket color orange RAL 2003

Part No.	No. of conductors incl. ground	OD Ø ca. mm	OD Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
<b>Construction without signal strands</b>					
A3161604	AWG 16 (16/30) 4GAWG16	10.5	0.415	116.0	49
A3161404	AWG 14 (41/30) 4GAWG16	11.6	0.455	153.0	73
A3161204	AWG 12 (65/30) 4GAWG12	13.1	0.515	209.0	112
A3161004	AWG 10 (105/30) 4GAWG10	16.5	0.650	318.0	171
A3160804	AWG 8 (168/30) 4GAWG8	21.0	0.825	490.0	267
<b>Assembly with 1 signal pair</b>					
A3171604	AWG 16 (16/30) (4C/AWG16+1TSP AWG18)	12.1	0.478	152.0	69
A3171404	AWG 14 (41/30) (4C/AWG14+1TSP AWG18)	12.8	0.505	186.0	92
A3171204	AWG 12 (65/30) (4C/AWG12+1TSP AWG18)	14.2	0.560	256.0	131
A3171004	AWG 10 (105/30) (4C/AWG10+1TSP AWG18)	18.1	0.710	346.0	180
A3170804	AWG 8 (168/30) (4C/AWG8+1TSP AWG18)	22.5	0.885	550.0	282
A3170604	AWG 6 (266/30) (4C/AWG6+1TSP AWG18)	24.6	0.970	770.0	420
A3170404	AWG 4 (413/30) (4C/AWG4+1TSP AWG16)	29.5	1.160	1144.0	616
A3170204	AWG 2 (665/30) (4C/AWG2+1TSP AWG16)	34.1	1.340	1543.0	983

Allen-Bradley article designations are registered trademarks.  
 Specifications are subject to change without prior notice.



# PUR servo cables - C-track compatible - shielded

## LÜTZE SUPERFLEX® PLUS M (C) PUR SERVO 0.6/1 kV Supply line for Siemens and other systems For highest requirements



### Application

- Termination cable motor or motor/brake especially for frequency converters and SERVO drives in machine and plant construction, transport and conveyor technology
- Through optimized cable construction optimally suited for continuous flexing applications in C-tracks
- Very good resistance against aggressive coolants and lubricants
- Especially for industrial environments in mechanical and system engineering

### Properties

- High active and passive interference resistance (EMC)
- Braided shield optimised for continuous flexible use
- Very good alternating bending strength
- Low adhesion, abrasion-resistant, nick-resistant, tear-propagation-resistant
- Hydrolysis-resistant, microbe-resistant, and rot-resistant
- Weathering, ozone and UV resistant (normal lighting conditions)
- Good resistance to use and salt water
- Excellent coolant and lubricant resistance
- Largely resistant to oils, greases, alcohol-free benzines and kerosene
- Silicone free
- RoHS compliant

### Technical data

UL approval	AWM 21223
Nominal voltage	1000 V 80 °C
Voltage $U_0/U$	0.6/1 kV
Test voltage	4000 V
Insulation resistance	min. 500 MΩ × km
Temperature range	
moving	-25 °C to +80 °C
fixed	-40 °C to +80 °C
Minimum bending radius	
moving	D × 10
fixed	D × 6
Burning behavior	Flame-retardant according to VDE 0482 part 265-2, DIN EN 50265-2, IEC 60332-1, UL 1581 section 1080 VW-1, CSA FT 1
Halogen free	according to EN 50267-2-1

### Construction

- Bare copper wire, fine multi-strand according to DIN VDE 0295 class 6, IEC 60228 class 6
- Conductor insulation Special TPE, improved gliding quality
- Power conductors black with numbered print U/L1/C/L+, V/L2, W/L3/D/L-
- Ground conductor green/yellow according to DIN EN 50334  
G = with green/yellow ground conductor, x = without ground conductor
- Control pair color-coded (bk, wh)
- Control pair with braided shield and foil tape
- Conductors twisted without mechanical stress, layer pitch optimised
- Non-woven material over cable core
- Braid from tinned copper wire, optical coverage ≥ 85 %
- Jacket special-PUR, matte, adhesion-free surface
- Jacket color orange RAL 2003

Part No.	Number of strands/cross-section	SIEMENS designation	OD Ø ca. mm	Weight kg/100 m	Cu-Index kg/100 m
<b>Construction without signal strands</b>					
111879	(4G1.0)	-----*	7.4	10.8	6.5
111460	(4G1.5)	1BB11*	8.6	11.7	8.3
111461	(4G2.5)	1BB21*	10.8	17.3	13.0
111462	(4G4)	1BB31*	12.2	24.5	19.3
111463	(4G6)	1BB41*	14.0	36.5	27.5
111464	(4G10)	1BB51*	17.6	54.9	45.0
111465	(4G16)	1BB61*	21.2	84.9	72.0
111466	(4G25)	1BB25*	25.0	129.9	108.0
111467	(4G35)	1BB35*	28.8	169.2	152.4
111468	(4G50)	1BB50*	33.9	244.2	216.8
<b>Assembly with 1 signal pair</b>					
111420	(4G1.5+(2×1.5))	1BA11*	11.4	21.0	14.9
111421	(4G2.5+(2×1.5))	1BA21*	12.9	23.5	19.3
111422	(4G4+(2×1.5))	1BA31*	14.5	32.0	25.5
111423	(4G6+(2×1.5))	1BA41*	16.1	43.0	33.9
111424	(4G10+(2×1.5))	1BA51*	19.5	68.0	52.6
111425	(4G16+(2×1.5))	1BA61*	23.6	95.6	77.3
111426	(4G25+(2×1.5))	1BA25*	28.5	136.5	113.0
111427	(4G35+(2×1.5))	1BA35*	31.0	274.6	159.0
111428	(4G50+(2×1.5))	1BA50*	34.5	373.7	224.0

CE These products are in conformity with the EU Low Voltage Directive 2006/95/EC  
\*Siemens article designations are registered trademarks of Siemens AG see current catalogue

# TPE feedback cables - shielded - static

## Feedback cables for Allen-Bradley and other Systems



### Application

- Incremental encoder cable and resolver cable for tacho sensor, brake sensor, speed sensor
- Cable design for harsh industrial environments and operating conditions with high noise level
- UL listed and NFPA 79 compliant
- Dry, damp and wet locations

### Properties

- High active and passive interference resistance (EMC)
- Flexible for easy installation
- Specially formulated TPE jacket for superior oil resistance according to UL1581
- Resistant to many mineral & vegetable based cutting oils
- Non-wicking fillers
- Extended temperature range and premium durability
- Sunlight resistant
- Talc and Silicone free

### Technical data

Nominal voltage	600 V UL AWM 90 °C 300 V UL CM A1410001: 300 V UL PLTC-ER
Test voltage	1500 V
Temperature range	
moving	-5 °C to +90 °C
fixed	-40 °C to +90 °C (105 °C)
Minimum bending radius	
moving	D x 15
fixed	D x 6
Approvals	UL AWM Style 20626 UL CM, meets NEC 800 Oil Res I and II CE RoHS REACH A1410001: UL PLTC-ER, meets NEC 725 and Class I Div. 2

Part No.	Number of strands/cross-section/ strand colors	OD Ø ca. mm	OD Ø inches	Weight Lbs/Mft	Copper Lbs/Mft
A1410001	(5x2xAWG22) BK/BKWH, RD/RDWH, GN/GN- WH,GY/GYWH, OG/OGWH	9.9	0.390	102.0	40
A1410002	(2xAWG16+2xAWG22+6x2xAWG26) AWG 16: GY, GYWH AWG 22: OG, OGWH AWG 26: BK/BKWH, RD/RDWH, GN/ GNWH, BL/BLWH, BN/BNWH, YE/ YEWH	13.6	0.537	143.0	54

### Construction

- Bare E-copper wire, ASTM, AWG Class K
- Conductor insulation Special-PVC
- Color coded wires
- Shielded with foil tape, drain wire and tinned copper braid shield, optical coverage ≥ 85 %
- Spezial TPE jacket Bio oil resistant
- Jacket color green RAL 6018

Allen-Bradley article designations are registered trademarks.  
Specifications are subject to change without prior notice.

# PUR feedback cables - C-track compatible

## LÜTZE SUPERFLEX® PLUS (C) PUR FEEDBACK Feedback cables for Allen-Bradley and other systems For highest requirements in drive technology



### Application

- Incremental encoder cable, termination cable for tacho sensor, brake sensor, speed sensor
- Through optimized cable construction optimally suited for continuous flexing applications in C-tracks
- Very good resistance against aggressive coolants and lubricants
- Especially for industrial environments in mechanical and system engineering

### Properties

- High active and passive interference resistance (EMC)
- Braided shield optimised for continuous flexible use
- Very good alternating bending strength
- Low adhesion, abrasion-resistant, nick-resistant, tear-propagation-resistant
- Hydrolysis-resistant, microbe-resistant, and rot-resistant
- Weathering, ozone and UV resistant (normal lighting conditions)
- Good resistance to use and salt water
- Excellent coolant and lubricant resistance
- Largely resistant to oils, greases, alcohol-free benzines and kerosene
- Silicone free
- RoHS compliant

### Technical data

UL approval	AWM 21223
Nominal voltage	1000 V 80 °C
Test voltage	2000 V
Insulation resistance	min. 200 MΩ × km
Temperature range	
moving	-25 °C to +80 °C
fixed	-40 °C to +80 °C
Minimum bending radius	
moving	D × 10
fixed	D × 6
Burning behavior	Flame-retardant according to VDE 0482 part 265-2, DIN EN 50265-2, IEC 60332-1, UL 1581 section 1080 VW-1, CSA FT 1
Halogen free	according to EN 50267-2-1

### Construction

- Bare copper wire, finest multi-strand according to DIN VDE 0295 class 6, IEC 60228 class 6
- Conductor insulation Special-TPE
- Conductors color-coded for specific system
- Conductors twisted without mechanical stress, layer pitch optimised
- Non-woven material over cable core
- Braid from tinned copper wire, optical coverage ≥ 85 %
- Jacket special-PUR, matte, adhesion-free surface
- Jacket color green RAL 6018

Part No.	Number of strands/cross-section/ strand colors	OD Ø ca. mm	Weight kg/100 m	Cu-Index kg/100 m
<b>For Allen Bradley system (and similar)</b>				
111489	(2xAWG16+2xAWG22+6x2xAWG26) AWG 16: grey, white/grey AWG 22: orange, white/orange AWG 26: blackwhite/black, redwhite/red, greenwhite/green, bluewhite/blue, brownwhite/brown, greywhite/grey	10.8	18.0	12.0
111488	(5x2xAWG22) blackwhite/black, redwhite/red greenwhite/green, greywhite/grey, orangewhite/orange	9.2	10.7	5.4

CE These products are in conformity to the EC Low Voltage Directive 73/23/EWG or 93/68/EWG respectively

# PUR servo cables - C-track compatible - shielded

## LÜTZE SUPERFLEX® PLUS M (C) PUR HYBRID SERVO 0,6/1 kV combined power supply cable for servo motors with Hiperface DSL® interface For the highest of standards



### Application

- Combined power supply cable with motor supply, brake and digital feedback especially for SERVO drives in machine and plant construction, transport and conveyor technology
- Through Full PUR jacket and TPE / HGI conductor insulation optimally suited for c-tracks, extremely harsh operating conditions and aggressive coolants and lubricants
- Especially for industrial environments in mechanical and system engineering

### Properties

- High active and passive interference resistance (EMC)
- Braided shield optimised for continuous flexible use
- Very good alternating bending strength
- Low adhesion, abrasion-resistant, nick-resistant, tear-propagation-resistant
- Hydrolysis-resistant, microbe-resistant, and rot-resistant
- Weathering, ozone and UV resistant (normal lighting conditions)
- Good resistance to use and salt water
- Excellent coolant and lubricant resistance
- Largely resistant to oils, greases, alcohol-free benzines and kerosene
- Silicone free
- RoHS compliant

### Technical data

UL approval	AWM 21223
Nominal voltage	1000 V 80 °C
Voltage $U_0/U$	0.6/1 kV
Test voltage	3000 V
Insulation resistance	min. 500 M $\Omega$ x km
Temperature range	
moving	-25 °C to +80 °C
fixed	-40 °C to +80 °C
Minimum bending radius	
moving	D x 7.5
fixed	D x 5
Burning behavior	Flame-retardant according to VDE 0482 part 265-2, DIN EN 50265-2, IEC 60332-1, UL 1581 section 1080 VW-1, CSA FT 1
Halogen free	according to EN 50267-2-1

### Construction

- Bare copper braid in compliance with IEC 60228 Cl. 6 in Bare copper braid in compliance with IEC 60228 Cl. 6 in Bare copper braid in compliance with IEC 60228 Cl. 6
- Conductor insulation Special polyolefin mix
- Power conductors black with number print U/L1/C/L+, V/L2, W/L3/D/L-
- Ground conductor green/yellow according to DIN EN 50334 G = with green/yellow ground conductor, x = without ground conductor
- Control pair color-coded (bw, wb), BUS element color-coded (bw, wb)
- Control pair and BUS element each with braided shield and foil taping
- Strands for the power supply, element brake and element BUS braided together
- Non-woven material over cable core
- Braid from tinned copper wire, optical coverage  $\geq$  85 %
- PUR halogen free jacket
- Jacket color orange RAL 2003

Part No.	Number of strands/cross-section	OD $\varnothing$ ca. mm	Weight kg/100 m	Cu-Index kg/100 m
111598	(4G0.75+(2x0.34)+(2xAWG22))	11.8	21.1	13.3
111599	(4G1,0+(2x0,75)+(2xAWG22))	11.4	19.0	11.2
111600	(4G1,5+(2x0,75)+(2xAWG22))	13.2	25.2	16.0
111601	(4G2,5+(2x1,0)+(2xAWG22))	14.0	31.4	21.5
111602	(4G4+(2x1.0)+(2xAWG22))	15.8	40.8	28.8
111603	(4G6+(2x1.0)+(2xAWG22))	17.8	51.2	37.2
111604	(4G10+(2x1.5)+(2xAWG22))	21.0	77.9	57.3
111605	(4G16+(2x1.5)+(2xAWG22))	26.0	119.8	87.0

CE These products are in conformity with the EU Low Voltage Directive 2006/95/EC



# Cable Installation of static cables

## Proper handling and installation of static cables

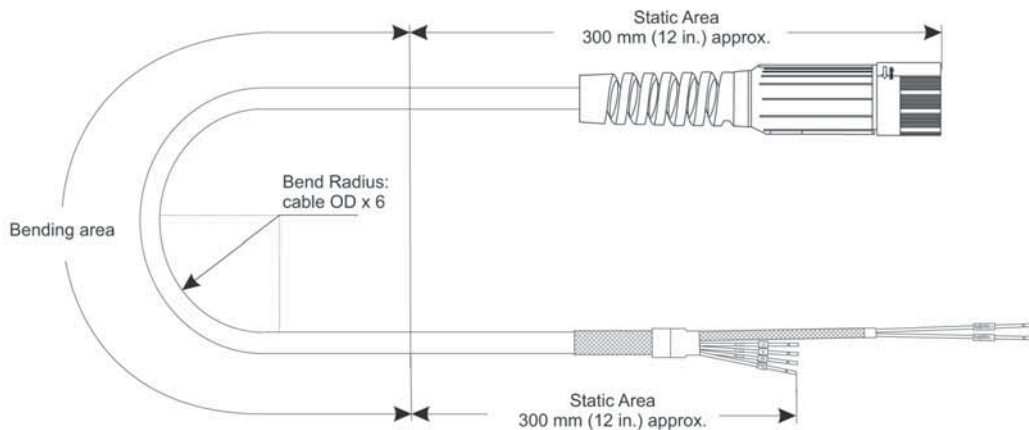
Installing the cable assembly:

1. The minimum bend radius for the utilized LÜTZE cable is 6 x cable OD.

NEC requirements may require a greater bend radius, see NEC article 300.34

2. Bending shall not occur within the static area (relaxation zone) in order to avoid strain on the connector or terminals.

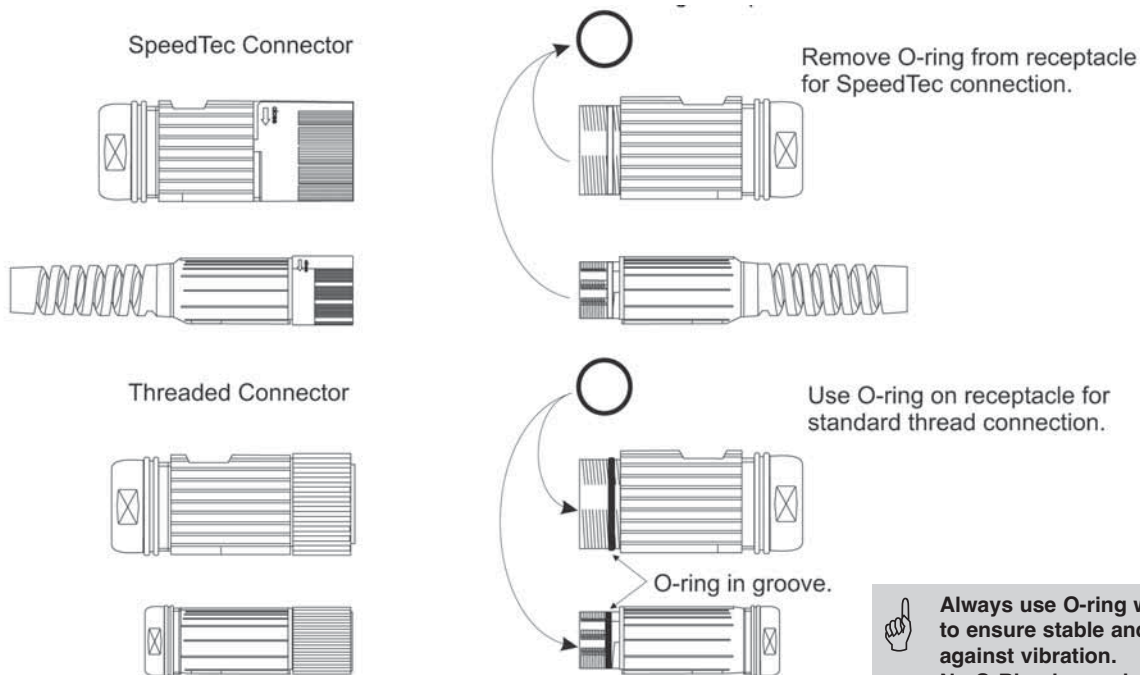
Do not bend the cable within the static area.



## Use of O-ring: Standard thread vs. SpeedTec

Remove O-ring on the motor receptacle when using a cable with a SpeedTec connector.

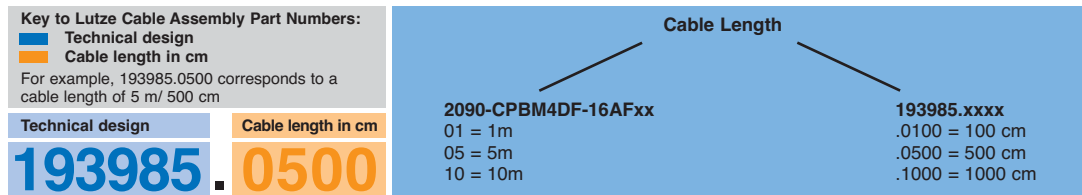
The connector type on the cable determines whether an O-ring is required on the receptacle.



**Always use O-ring with threaded connectors to ensure stable and secure connection against vibration. No O-Ring is required with SpeedTec connectors.**

# Key to LÜTZE Partnumber

The LÜTZE Partnumber consists of two blocks:



LÜTZE cable assemblies are fully compatible with Rockwell Allen-Bradley systems. Further information and downloads available at [www.luetze.com](http://www.luetze.com)

<b>Feedback</b>				
Speed Tec	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CFBM7DF-CEAAxx	193959.xxxx	A1410001	(5x2xAWG22)
	2090-CFBM7DD-CEAAxx	193358.xxxx	A1410001	(5x2xAWG22)
DIN thread	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-XXNFMF-Sxx	193337.xxxx	A1410002	(2XAWG16+2XAWG22+6X2XAWG26)

<b>Motor</b>				
Speed Tec	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CPWM7DF-16AAxx	193966.xxxx	A3161604	(4GAWG16)
	2090-CPWM7DF-14AAxx	193956.xxxx	A3161404	(4GAWG14)
	2090-CPWM7DF-12AAxx	193352.xxxx	A3161204	(4GAWG12)
	2090-CPWM7DF-10AAxx	193306.xxxx	A3161004	(4GAWG10)
	2090-CPWM7DF-08AFxx	193353.xxxx	A3160804	(4GAWG08)
Speed Tec	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CPBM7DF-16AAxx	193960.xxxx	A3171604	(4GAWG16 + (2xAWG18))
	2090-CPBM7DF-14AAxx	193990.xxxx	A3171404	(4GAWG14 + (2xAWG18))
	2090-CPBM7DF-12AAxx	193356.xxxx	A3171204	(4GAWG12 + (2xAWG18))
	2090-CPBM7DF-10AAxx	193962.xxxx	A3171004	(4GAWG10 + (2xAWG18))
	2090-CPBM7DF-08AAxx	193357.xxxx	A3170804	(4GAWG8 + (2xAWG18))
	2090-CPBM7DF-06AAxx	193961.xxxx	A3170604	(4GAWG6 + (2xAWG18))
	2090-CPBM7DF-04AAxx	193362.xxxx	A3170404	(4GAWG4 + (2xAWG18))
	2090-CPBM7DF-02AAxx	193369.xxxx	A3170204	(4GAWG2 + (2xAWG18))
DIN thread	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-XXNPMF-16Sxx	193951.1000	111271	(4G1,5+2x(2x0,75))
	2090-XXNPMF-14Sxx	193950.1000	111279	(4G2,5+2x(2x1,0))

# Cable Installation of flexing cables

## Proper handling and installation of flexing cables

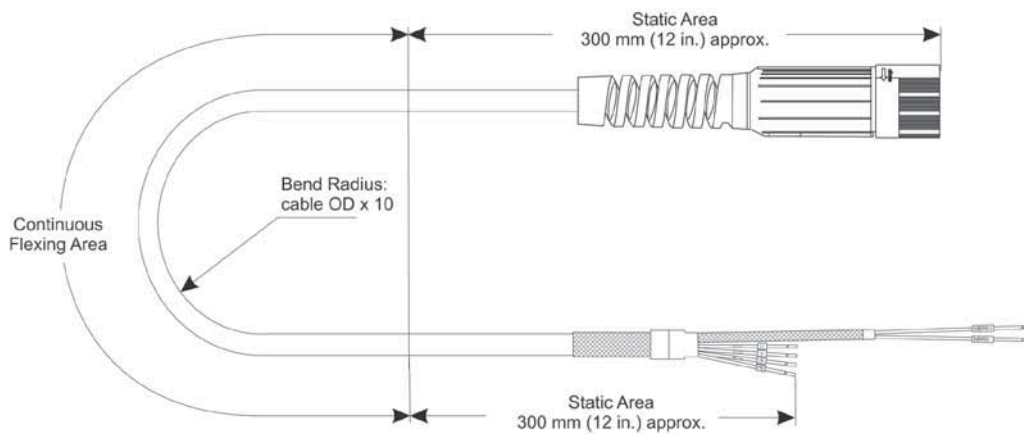
Continuous flexing cables require special handling and installation techniques. To ensure the longest possible life span for your cable assembly, it is important to follow installation procedures precisely.

1. Do not flex cable against original bend. If needed, let cable relax before installation.
2. Refrain from twisting the cable during installation and check that the cable is laying straight in the drag chain.
3. Allow for balanced weight distribution in the drag chain.

4. Use horizontal/vertical dividers to split the drag chain into separate cavities to avoid tangling of the cables.

Desired cavity size depends on cable diameter and should be adjusted to each application separately.

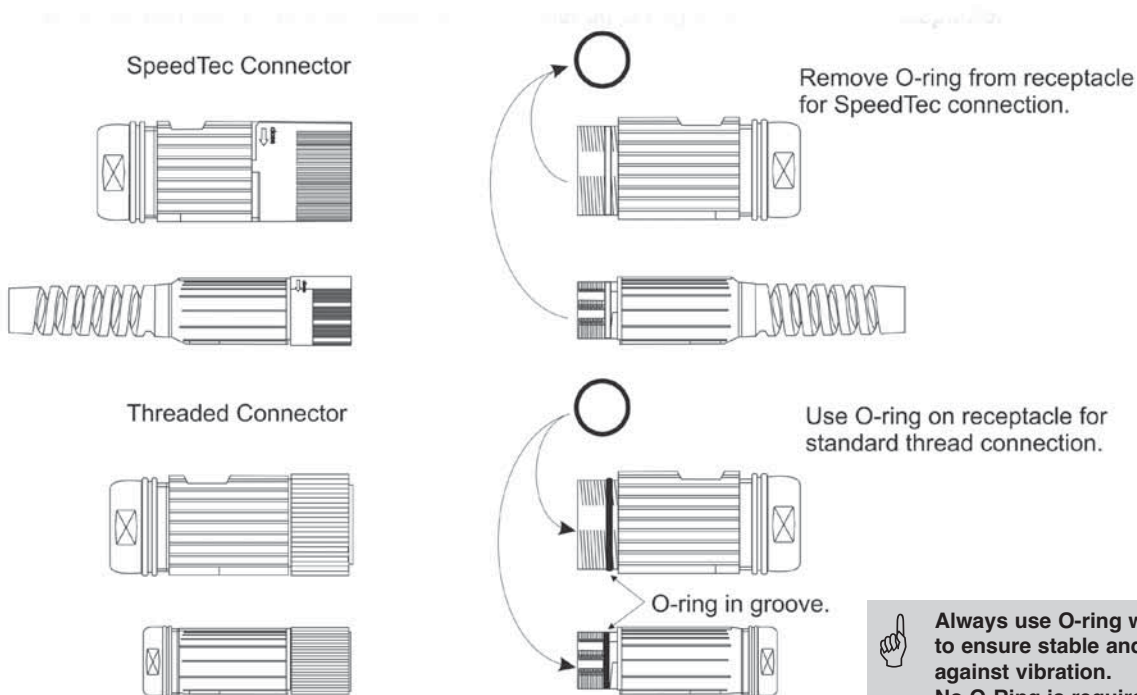
5. Observe minimum bend radius for optimal performance.
6. Ensure proper strain relief at both ends of the drag chain. Observe minimum Static Area lengths.



## Use of O-ring: Standard thread vs. SpeedTec

Remove O-ring on the motor receptacle when using a cable with a SpeedTec connector.

The connector type on the cable determines whether an O-ring is required on the receptacle.

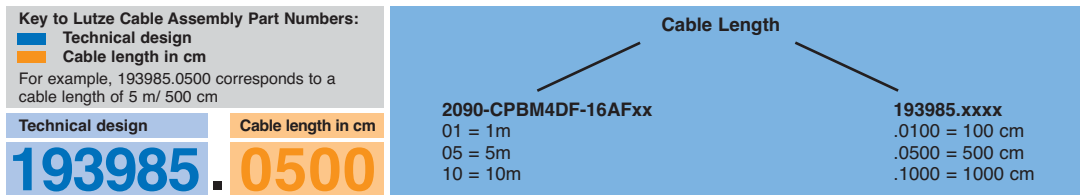


**Always use O-ring with threaded connectors to ensure stable and secure connection against vibration. No O-Ring is required with SpeedTec connectors.**



# Key to LÜTZE Partnumber

The LÜTZE Partnumber consists of two blocks:



LÜTZE cable assemblies are fully compatible with Rockwell Allen-Bradley systems. Further information and downloads available at [www.luetze.com](http://www.luetze.com)

Feedback				
Speed Tec	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CFBM7DF-CDAFxx	193958.xxxx	111489	(2XAWG16+2XAWG22+6X2XAWG26)
	2090-CFBM7DF-CEAFxx	193977.xxxx	111488	(5x2xAWG22)
	2090-CFBM7DD-CEAFxx	193350.xxxx	111488	(5x2xAWG22)
DIN thread	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CFBM4DF-CDAFxx	193973.xxxx	111489	(2XAWG16+2XAWG22+6X2XAWG26)
Extension	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CFBM7E7-CDAFxx	193978.xxxx	111489	(2XAWG16+2XAWG22+6X2XAWG26)
	2090-CFBM7E7-CEAFxx	193979.xxxx	111488	(5x2xAWG22)

Motor				
Speed Tec	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CPWM7DF-16AFxx	193309.xxxx	111460	(4G1,5)
	2090-CPWM7DF-14AFxx	193308.xxxx	111461	(4G2,5)
	2090-CPWM7DF-10AFxx	193307.xxxx	111463	(4G6)
	2090-CPWM7DF-08AFxx	193311.xxxx	111464	(4G10)
DIN thread	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CPWM4DF-16AFxx	193303.xxxx	111460	(4G1,5)
	2090-CPWM4DF-14AFxx	193301.xxxx	111461	(4G2,5)
Speed Tec	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CPBM7DF-16AFxx	193991.xxxx	111420	(4G1,5)+(2x1,5)
	2090-CPBM7DF-14AFxx	193957.xxxx	111421	(4G2,5)+(2x1,5)
	2090-CPBM7DF-10AFxx	193989.xxxx	111423	(4G6)+(2x1,5)
	2090-CPBM7DF-08AFxx	193355.xxxx	111424	(4G10)+(2x1,5)
DIN thread	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CPBM4DF-16AFxx	193985.xxxx	111420	(4G1,5)+(2x1,5)
	2090-CPBM4DF-14AFxx	193983.xxxx	111421	(4G2,5)+(2x1,5)
Extension	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CPBM7E7-16AFxx	193996.xxxx	111420	(4G1,5)+(2x1,5)
	2090-CPBM4E7-14AFxx	193360.xxxx	111421	(4G2,5)+(2x1,5)
	2090-CPBM7E7-10AFxx	193994.xxxx	111423	(4G6)+(2x1,5)
	2090-CPBM4E7-08AFxx	193361.xxxx	111424	(4G10)+(2x1,5)

Hybrid				
Speed Tec	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CSBM1DF-18AFxx	193366.xxxx	111599	(4G1,0+(2x0,75)+(2xAWG22))
	2090-CSWM1DF-18AFxx	193371.xxxx	111599	(4G1,0+(2x0,75)+(2xAWG22))
	2090-CSBM1DF-14AFxx	193364.xxxx	111601	(4G2,5+(2x1,0)+(2xAWG22))
	2090-CSWM1DF-14AFxx	193370.xxxx	111601	(4G2,5+(2x1,0)+(2xAWG22))
	2090-CSBM1DF-10AFxx	193375.xxxx	111603	(4G6+(2x1,0)+(2xAWG22))
	2090-CSWM1DF-10AFxx	193376.xxxx	111603	(4G6+(2x1,0)+(2xAWG22))
Extension	Allen Bradley Part. No.	LÜTZE Part. No.	LÜTZE Cable	Type
	2090-CSBM1E1-18AFxx	193373.xxxx	111599	(4G1,0+(2x0,75)+(2xAWG22))
	2090-CSBM1E1-14AFxx	193374.xxxx	111601	(4G2,5+(2x1,0)+(2xAWG22))



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