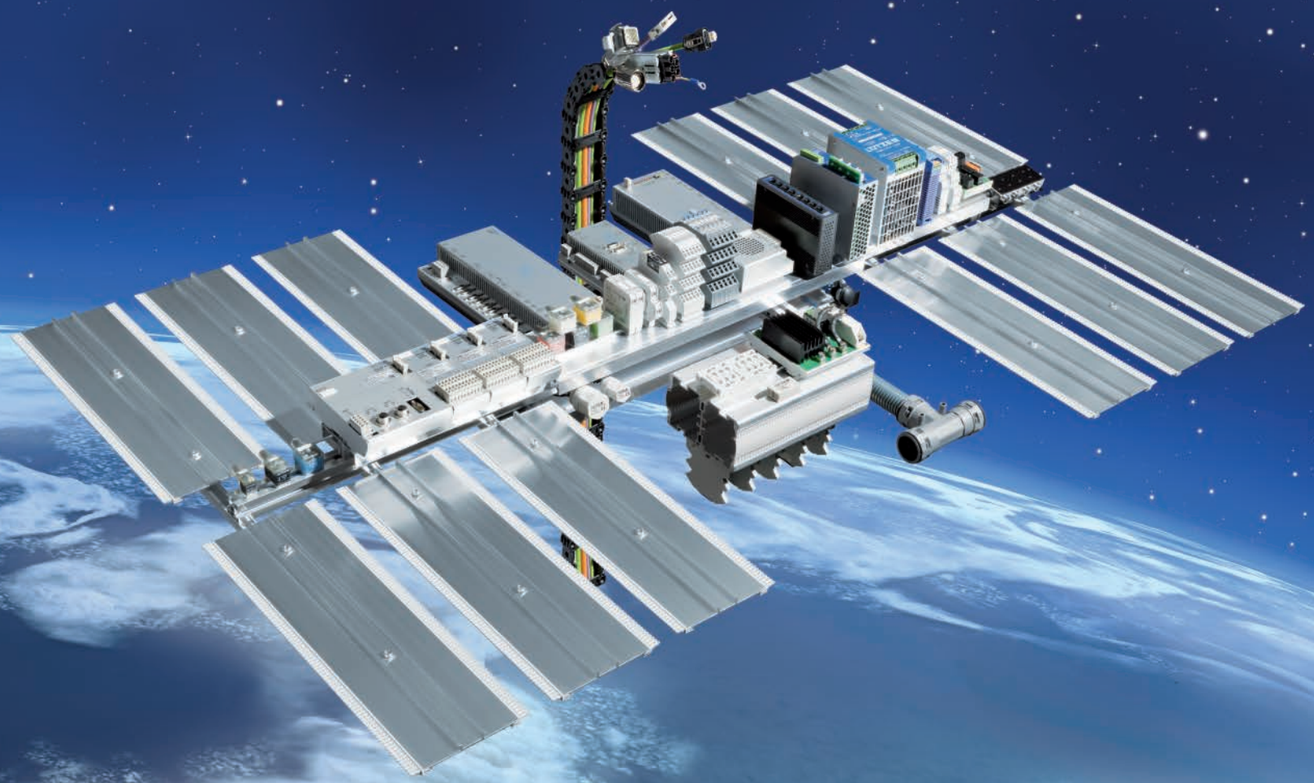
Connectivity Solutions

Cable assemblies according to Allen-Bradley® standard 2090

LUTZE
SYSTEMATIC TECHNOLOGY

Efficiency in Automation

Cable • Connectivity • Cabinet • Control



Cable Solutions

Connectivity Solutions

Cabinet Solutions

Control Solutions

Welcome to LUTZE

LUTZE has been developing and manufacturing electronic and electrical engineering solutions for controls and installations for more than 50 years. Our basic concept as a system supplier for factory automation is to provide a comprehensive and well-matched product range.

LUTZE Servo cable assemblies according to ALLEN BRADLEY®.

LUTZE has a long standing reputation as a manufacturer of factory automation cables. These high performance cables are now available preassembled to connect your ALLEN BRADLEY® servo drive systems.

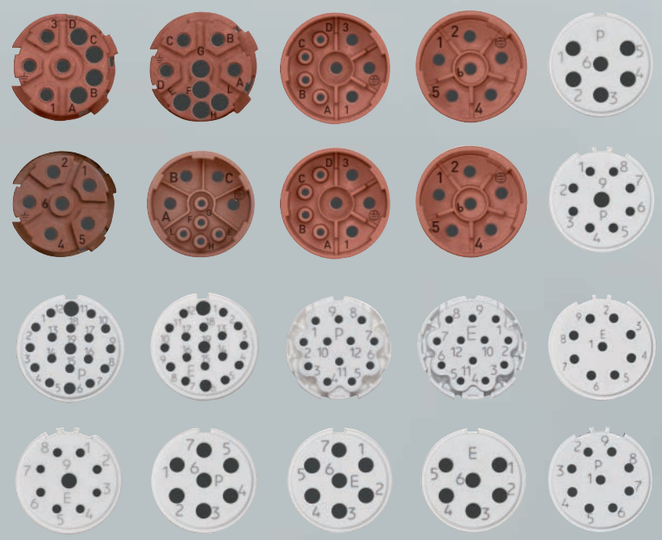
LUTZE servo cable assemblies are fully suitable with ALLEN BRADLEY® drive systems. As a special service LUTZE offers each cable assembly in custom lengths of 0.5 m increments.
The product offering includes all power and feedback sizes. In addition, raw cable is available for field assembly. There is no minimum order amount, delivery times are short and there is a cost-effective price/performance ratio.

LUTZE systems comply with the highest industrial standards, LUTZE solutions mean improvement and innovation. Our solutions include components and concepts suitable for almost any automation application.

For more information on our solutions, please visit www.lutze.com

LUTZE®
SYSTEMATIC TECHNOLOGY

Always the right connection:
LÜTZE cable assemblies



Standard Cable Assembly Solutions

LUTZE servo cable assemblies are fully compatible with respective ALLEN BRADLEY® systems.

Additionally LUTZE offers servo cable assemblies for SIEMENS 6FX and Bosch Rexroth systems. For servo motors, encoder and feedback cables, for C-track or fixed installation, LÜTZE offers lots of solutions for highest requirements.

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

Advantages of LÜTZE Tamper-proof connector

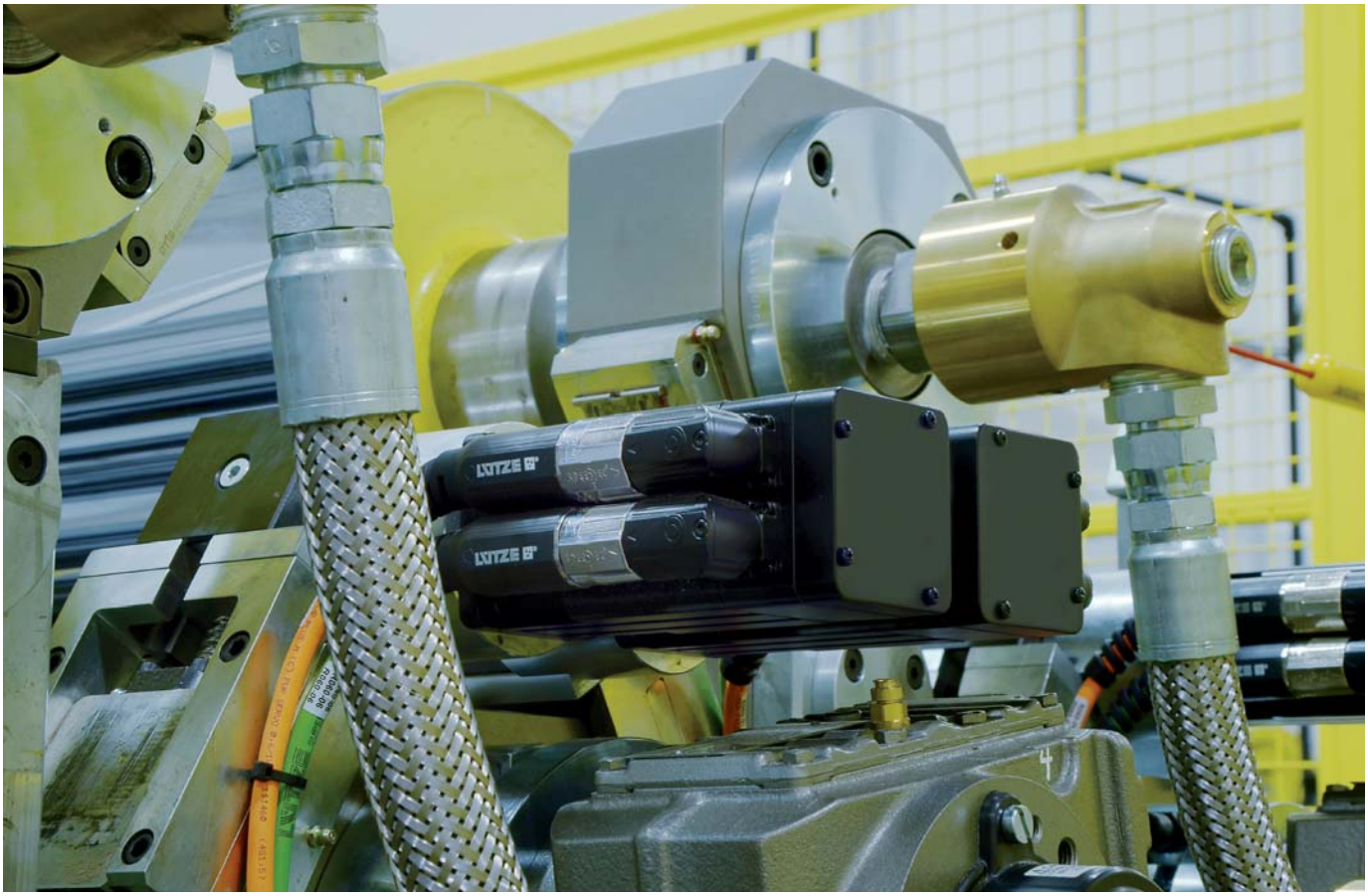
LUTZE covers the full range of connectors needed for the specific servo systems including power, feedback and single configurations.

Certain connectors provide integrated kink protection via spiral plastic sleeve. All connectors ensure proper 360° EMC shielding, thus meeting and exceeding requirements of the demanding industrial applications.

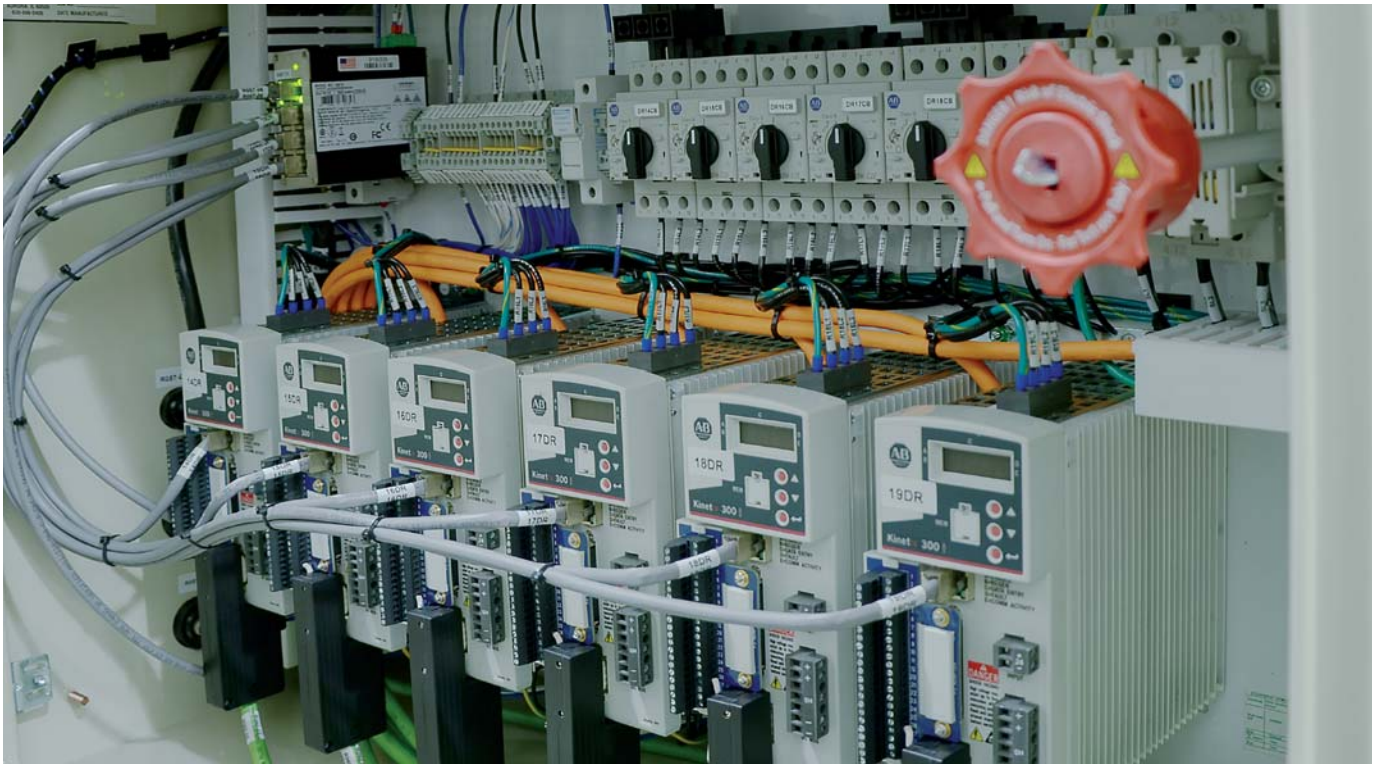
Other benefits:

- Tamper-proof: to avoid unauthorized opening of the connector housing and incorrect field terminations
- Fully compatible with respective servo systems
- Production of single unit available
- Short delivery times
- 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 Cable Assemblies for stationary applications

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 machine tool wiring
- Very suitable for extreme operating conditions and high interference signals
- In dry, moist and wet environment
- 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 MΩ × km
Temperature range	
fixed	-40 °C to +90 °C
Minimum bending radius	
fixed	D × 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 ≥ 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 Ø ca. mm
Base cable SpeedTec				
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+(2×AWG18))	12.1
193990.1000	2090-CPBM7DF-14AAxx*	10.0	(4GAWG14+(2×AWG18))	12.8
193356.1000	2090-CPBM7DF-12AAxx*	10.0	(4GAWG12+(2×AWG18))	14.2
193962.1000	2090-CPBM7DF-10AAxx*	10.0	(4GAWG10+(2×AWG18))	18.1
193357.1000	2090-CPBM7DF-08AAxx*	10.0	(4GAWG8+(2×AWG18))	22.5
193961.1000	2090-CPBM7DF-06AAxx*	10.0	(4GAWG6+(2×AWG18))	24.6
193362.1000	2090-CPBM7DF-04AAxx*	10.0	(4GAWG4+(2×AWG18))	29.5
193369.1000	2090-CPBM7DF-02AAxx*	10.0	(4GAWG2+(2×AWG18))	34.1

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* UL approval and technical data shown apply to the cable used in the assemblies

Servomotor Cable Assemblies 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 resitance 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
- 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
DIN thread				
193951.1000	2090-XXNPMF-16Sxx*	10.0	(4G1.5+2×(2×0.75))	12.9
193950.1000	2090-XXNPMF-14Sxx*	10.0	(4G2.5+2×(2×1.0))	14.2

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Servomotor Cable Assemblies 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
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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
- 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 ∅ ca. mm
Base cable SpeedTec				
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+(2×1.5))	16.1
193991.1000	2090-CPBM7DF-16AFxx*	10.0	(4G1.5+(2×1.5))	11.4
193308.1000	2090-CPWM7DF-14AFxx*	10.0	(4G2.5)	10.8
193957.1000	2090-CPBM7DF-14AFxx*	10.0	(4G2.5+(2×1.5))	12.9
193311.1000	2090-CPWM7DF-08AFxx*	10.0	(4G10)	17.6
193355.1000	2090-CPBM7DF-08AFxx*	10.0	(4G10+(2×1.5))	19.5
DIN thread				
193985.1000	2090-CPBM4DF-16AFxx*	10.0	(4G1.5+(2×1.5))	12.9
193303.1000	2090-CPWM4DF-16AFxx*	10.0	(4G1.5)	8.6
193983.1000	2090-CPBM4DF-14AFxx*	10.0	(4G2.5+(2×1.5))	14.2
193301.1000	2090-CPWM4DF-14AFxx*	10.0	(4G2.5)	10.8
Extension SpeedTec				
193996.1000	2090-CPBM7E7-16AFxx*	10.0	(4G1.5+(2×1.5))	11.4
193994.1000	2090-CPBM7E7-10AFxx*	10.0	(4G6.0+(2×1.5))	16.1
193360.1000	2090-CPBM7E7-14AFxx*	10.0	(4G2.5+(2×1.5))	12.9
193361.1000	2090-CPBM7E7-08AFxx*	10.0	(4G10+(2×1.5))	19.5

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Signal Cable Assemblies for stationary applications

According to Allen-Bradley 2090 standard

Application
- Feedback cables for Allen Bradley drives
- Conform with NFPA79 for machine tool wiring
- Very suitable for extreme operating conditions and high interference signals
- In dry, moist and wet environment
- 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 × 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

Part No.	Allen-Bradley designation	Length m	Number of strands/ cross-section	OD ∅ ca. mm
Base cable SpeedTec				
193959.1000	2090-CFBM7DF-CEAAxx*	10.0	(5×2×AWG22)	9.9
193358.1000	2090-CFBM7DD-CEAAxx*	10.0	(5×2×AWG22)	9.9
DIN thread				
193337.1000	2090-XXNFMF-Sxx*	10.0	(2×AWG16+2×AWG22 +6×2×AWG26)	13.6

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Signal Cable Assemblies 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 resitance 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
- Conductor marking Conductors color-coded for specific system
- Ground conductor green/yellow according to DIN EN 50334 G = with green/yellow ground conductor, × = 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 ∅ ca. mm
Base cable SpeedTec				
193977.1000	2090-CFBM7DF-CEAFxx*	10.0	(5×2×AWG22)	9.2
193958.1000	2090-CFBM7DF-CDAFxx*	10.0	(2×AWG16+2×AWG22 +6×2×AWG26)	10.8
193350.1000	2090-CFBM7DD-CEAFxx*	10.0	(5×2×AWG22)	9.2
DIN thread				
193973.1000	2090-CFBM4DF-CDAFxx*	10.0	(2×AWG16+2×AWG22 +6×2×AWG26)	10.8
Extension SpeedTec				
193979.1000	2090-CFBM7E7-CEAFxx*	10.0	(5×2×AWG22)	9.2
193978.1000	2090-CFBM7E7-CDAFxx*	10.0	(2×AWG16+2×AWG22 +6×2×AWG26)	10.8

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Single Cable Assemblies for C-tracks

According to Allen-Bradley 2090 standard

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

Note
max cable length according to Allen- Bradley specifications
Base cable for Kinetix 5500 Drives max. 50 m
Base cable for Kinetix 5700 Drives max. 90 m
Extension cable max. 30 m

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, × = 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

Part No.	Allen-Bradley designation	Length m	Number of strands/ cross-section	OD Ø ca. mm
Base cable SpeedTec				
193366.1000	2090-CSBM1DF-18AF10	10	(4G1.0+(2×0.75)+(2×AWG22))	11.8
193364.1000	2090-CSBM1DF-14AF10	10	(4G2.5+(2×1.0)+(2×AWG22))	14.0
193371.1000	2090-CSWM1DF-18AF10	10	(4G1.0+(2×AWG22))	11.8
193370.1000	2090-CSWM1DF-14AF10	10	(4G2.5+(2×AWG22))	14.0
193375.1000	2090-CSBM1DF-10AF10	10	(4G6+(2×1.0)+(2×AWG22))	17.8
193376.1000	2090-CSWM1DF-10AF10	10	(4G6+(2×AWG22))	17.8
193300.1000	2090-CSBM1DG-18AF10	10	(4G1,0+(2×0,75)+(2×AWG22))	11.8
193302.1000	2090-CSBM1DG-14AF10	10	(4G2,5+(2×1,0)+(2×AWG22))	14.0
193304.1000	2090-CSBM1DG-10AF10	10	(4G6+(2×1,0)+(2×AWG22))	17.8
193305.1000	2090-CSWM1DG-18AF10	10	(4G1,0+(2×0,75)+(2×AWG22))	11.8
193310.1000	2090-CSWM1DG-14AF10	10	(4G2,5+(2×1,0)+(2×AWG22))	14.0
Base cable with 2198-KITCON-DSL				
193952.1000	2090-CSBM1DE-18AF10	10	(4G1.0+(2×0.75)+(2×AWG22))	11.8
193963.1000	2090-CSBM1DE-14AF10	10	(4G2.5+(2×1.0)+(2×AWG22))	14.0
193379.1000	2090-CSWM1DE-18AF10	10	(4G1.0+(2×AWG22))	11.8
193955.1000	2090-CSWM1DE-14AF10	10	(4G2.5+(2×AWG22))	14.0
193968.1000	2090-CSBM1DE-10AF10	10	(4G6+(2×1.0)+(2×AWG22))	17.8
193967.1000	2090-CSWM1DE-10AF10	10	(4G6+(2×AWG22))	17.8
Extension SpeedTec				
193373.1000	2090-CSBM1E1-18AF10	10	(4G1.0+(2×0.75)+(2×AWG22))	11.8
193374.1000	2090-CSBM1E1-14AF10	10	(4G2.5+(2×1.0)+(2×AWG22))	14.0
193377.1000	2090-CSBM1E1-10AF10	10	(4G6+(2×1,0)+(2×AWG22))	17.8

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LÜTZE SILFLEX®M (C) TPE POWER TRAY CABLE
Flexible Motor Cable 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 × 15
fixed	D × 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
- PVC/Nylon insulation with conductor stress relief layer
- Braid from tinned copper wire, optical coverage ≥85%
- Strand color brown, black, bluePair: black, wihte
- Ground conductor green/yellow
- Outer jacket Special TPE according to UL 1581
- Jacket color orange RAL 2003

Part No.	No. of conductors incl. ground	Outer Ø mm	Outer Ø inches	Weight Lbs/Mft	Cu-Index Lbs/Mft
Construction without signal pair					
A3161604	AWG 16 (16/30) (4GAWG16)	10.5	0.410	124	50
A3161404	AWG 14 (41/30) (4GAWG14)	11.6	0.455	159	71
A3161204	AWG 12 (65/30) (4GAWG12)	13.1	0.510	214	107
A3161004	AWG 10 (105/30) (4GAWG10)	16.5	0.650	321	161
A3160804	AWG 8 (168/30) (4GAWG8)	21.0	0.825	490	267
Construction with one signal pair					
A3171604	AWG 16 (16/30) (4GAWG16+(2×AWG18))	12.1	0.477	161	72
A3171404	AWG 14 (41/30) (4GAWG14+(2×AWG18))	12.8	0.505	196	92
A3171204	AWG 12 (65/30) (4GAWG12+(2×AWG18))	15.0	0.581	263	128
A3171004	AWG 10 (105/30) (4GAWG10+(2×AWG18))	18.1	0.716	380	191
A3170804	AWG 8 (168/30) (4GAWG8+(2×AWG18))	22.5	0.890	568	285
A3170604	AWG 6 (266/30) (4GAWG6+(2×AWG18))	25.5	1.000	786	417
A3170404	AWG 4 (413/30) (4GAWG4+(2×AWG18))	29.5	1.162	1119	613
A3170204	AWG 2 (665/30) (4GAWG2+(2×AWG18))	34.1	1.340	1543	983

LÜTZE SUPERFLEX® PLUS M (C) PUR SERVO 0.6/1 kV
High Flexing Motor Cable for Siemens and other systems
For highest requirements

Application
- Connection cable motor or motor/brake especially for frequency converters and SERVO drives in machine and plant construction, transport and conveyor technology
- Due to optimized cable construction optimally suited for continuous flexing applications in C-tracks
- Very good resitance 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
- Weatherproof, ozone and UV resistant (normal lighting conditions)
- Good ruggedness and salt water resistance
- Excellent coolant and lubricant resistance
- Resistant to most oils, greases, alcohol-free benzines and kerosene
- Silicone free
- RoHS compliant

Technical data

UL style	AWM 21223
Rated voltage UL	1000 V
Rated voltage U_0/U	600/1000 V
Test voltage type	AC 4000 V
Insulation resistance at 20°C	≥ 500 MΩ×km
Temperature according to UL	80 °C
Temperature range moving	-25 °C … +80 °C
Temperature range fixed	-40 °C … +80 °C
Minimum bending radius moving	7.5×D ≤16 mm^2
Minimum bending radius fixed	5×D
Burning behavior	VDE 0482 Part 265-2 DIN EN 50265-2 IEC 60332-1 UL 1581 Part 1080 VW-1 CSA FT1
Halogen free according to	IEC 60754-1 EN 50267-2-1

Construction
- Conductor: CU-wire bare
- Conductor category: IEC 60228, Class 6
- Conductor insulation: Special TPE
- Conductor marking: black, with white print, U/L1/C/L+, V/L2, W/L3/D/L, green/yellow
- Conductor marking standard: DIN EN 50334
- Overall stranding: Conductors twisted without mechanical stress
- Overall wrapping: Non-woven material
- Overall shield: Braid shield, Tinned copper wires, optical cover approx. 85%
- Ground conductor: green/yellow according to DIN EN 50334 G = with green/yellow ground conductor, × = without ground conductor
- Jacket material: PUR
- Surface: adhesion-free, matt
- Jacket color: orange RAL 2003

Part No.	Number of conductors/cross-section	Outer Ø mm	Weight kg/100 m	Cu-Index kg/100 m
Construction without signal pair				
111879	(4G1.0)	7.4	10.8	6.5
111460	(4G1.5)	8.6	11.7	8.3
111461	(4G2.5)	10.8	17.3	13.0
111462	(4G4)	12.2	24.5	19.3
111463	(4G6)	14.0	36.5	27.5
111464	(4G10)	17.6	54.9	45.0
111465	(4G16)	21.2	84.9	72.0
111466	(4G25)	25.0	129.9	108.0
111467	(4G35)	28.8	169.2	152.4
111468	(4G50)	33.9	244.2	216.8
Construction with one signal pair				
111420	(4G1.5+(2×1.5))	11.4	21.0	14.9
111421	(4G2.5+(2×1.5))	12.9	23.5	19.3
111422	(4G4+(2×1.5))	14.5	32.0	25.5
111423	(4G6+(2×1.5))	16.1	43.0	33.9
111424	(4G10+(2×1.5))	19.5	68.0	52.6
111425	(4G16+(2×1.5))	23.6	95.6	77.3
111426	(4G25+(2×1.5))	28.5	136.5	113.0
111427	(4G35+(2×1.5))	31.0	274.6	159.0
111428	(4G50+(2×1.5))	34.5	373.7	224.0

CE These products are in conformity with the EU Low Voltage Directive 2014/35/EU
*Siemens article designations are registered trademarks of Siemens AG
* UL approval and technical data shown apply to the cable used in the assemblies

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 × 15
fixed	D × 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

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 %
- Special TPE jacket Bio oil resistant
- Jacket color green RAL 6018

Part No.	Number of strands/cross-section/ strand colors	OD Ø ca. mm	OD Ø inches	Weight Lbs/Mft	Cu-Index Lbs/Mft
A1410001	(5×2×AWG22) black, black/white, red, red/white, green , green/white, yellow, yellow/white, orange, orange/white	9.9	0.390	102.0	40
A1410002	(1×2×AWG16+1×2×AWG22+6×2×AWG26) 1×2×AWG16 greenyellow/white, yellow/white 1×2×AWG22 orange, orange/white 6×2×AWG26 black, black/white, red, red/white, green , green/white, blue, blue/white, brown, brown/white, yellow, yellow/white	13.6	0.537	143.0	54

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

Application
- Incremental encoder cable, connection cable for tacho sensor, brake sensor, speed sensor
- Due to optimized cable construction optimally suited for continuous flexing applications in C-tracks
- Very good resitance 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
- Weatherproof, ozone and UV resistant (normal lighting conditions)
- Good ruggedness and salt water resistance
- Excellent coolant and lubricant resistance
- Resistant to most oils, greases, alcohol-free benzines and kerosene
- Silicone free
- RoHS compliant

Technical data

UL style	AWM 21223
Rated voltage UL	1000 V
Test voltage type	AC 2000 V
Insulation resistance at 20°C	≥ 200 MΩ×km
Temperature according to UL	80 °C
Temperature range moving	-25 °C … +80 °C
Temperature range fixed	-40 °C … +80 °C
Minimum bending radius moving	12×D
Minimum bending radius fixed	6×D
Burning behavior	VDE 0482 Part 265-2 DIN EN 50265-2 IEC 60332-1 UL 1581 Part 1080 VW-1 CSA FT1
Halogen free according to	EN 50267-2-1

Construction
- Conductor: CU-wire bare
- Conductor category: IEC 60228, Class 6, DIN EN 13602, Superfinely stranded DIN VDE 0295
- Conductor insulation: Special TPE
- Conductor marking: Colour coded
- Overall stranding: Elements stranded together
- Overall wrapping: Non-woven material
- Overall shield: Braid shield, Tinned copper wires, optical cover approx. 85%
- Jacket material: PUR
- Surface: adhesion-free, matt
- Jacket color: green RAL 6018

Part No.	Number of strands/cross-section/ strand colors	Outer Ø mm	Weight kg/100 m	Cu-Index kg/100 m
For Allen Bradley system (and similar)				
111489	(2×AWG16+2×AWG22+6×2×AWG26) 2×AWG16 white/grey, grey 2×AWG22 white/orange, orange 6×2×AWG26 black/white, white, red/white, red, green/white, green , blue/white, blue, brown/white, brown, yellow/white, yellow	10.8	18.0	12.0
111488	(5×2×AWG22) black/white, black, red/white, red, green/white, green , grey/white, grey, orange/white, orange	9.2	10.7	5.4

CE These products are in conformity with the EU Low Voltage Directive 2014/35/EU

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
- Due to Full PUR jacket and TPE / HGI conductor insulation optimally suited for c-tracks, extremely rough 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
- Weatherproof, ozone and UV resistant (normal lighting conditions)
- Good ruggedness and salt water resistance
- Excellent coolant and lubricant resistance
- Resistant to most oils, greases, alcohol-free benzines and kerosene
- Silicone free
- RoHS compliant

Technical data

UL style	AWM 21223
Rated voltage UL	1000 V
Rated voltage U_0/U	600/1000 V
Test voltage type	AC 3000 V
Insulation resistance at 20°C	≥ 500 MΩ×km
Temperature according to UL	80 °C
Temperature range moving	-25 °C … +80 °C
Temperature range fixed	-40 °C … +80 °C
Minimum bending radius moving	7.5×D
Minimum bending radius fixed	5×D
Burning behavior	VDE 0482 Part 265-2 DIN EN 50265-2 IEC 60332-1 UL 1581 Part 1080 VW-1 CSA FT1
Halogen free according to	EN 50267-2-1 IEC 60754-1

Construction
- Conductor: CU-wire bare
- Conductor category: IEC 60228, Class 6, DIN EN 13602, Superfinely stranded DIN VDE 0295
- Conductor insulation: TPE-O
- Conductor marking: U/L1/C/L+, V/L2, W/L3/D/L, green/yellow
- Conductor marking standard: DIN EN 50334, DIN VDE 0293
- Overall stranding: Elements stranded together
- Overall wrapping: Non-woven material
- Overall shield: Braid shield, Tinned copper wires, optical cover approx. 85%
- Ground conductor: green/yellow according to DIN EN 50334 G = with green/yellow ground conductor, × = without ground conductor
- Jacket material: PUR
- Jacket color: orange RAL 2003

Part No.	Number of conductors/cross-section	Outer Ø mm	Weight kg/100 m	Cu-Index kg/100 m
111598	(4G0.75+(2×0.34)+(2×AWG22))	11.4	21.1	13.3
111599	(4G1.0+(2×0.75)+(2×AWG22))	11.8	19.0	11.2
111600	(4G1.5+(2×0.75)+(2×AWG22))	13.2	25.2	16.0
111601	(4G2.5+(2×1.0)+(2×AWG22))	14.0	31.4	21.5
111602	(4G4+(2×1.0)+(2×AWG22))	15.8	40.8	28.8
111603	(4G6+(2×1.0)+(2×AWG22))	17.8	51.2	37.2
111604	(4G10+(2×1.5)+(2×AWG22))	21.0	77.9	57.3
111605	(4G16+(2×1.5)+(2×AWG22))	26.0	119.8	87.0

CE These products are in conformity with the EU Low Voltage Directive 2014/35/EU

Notes

Cable Installation of static cables

Proper handling and installation of static cables

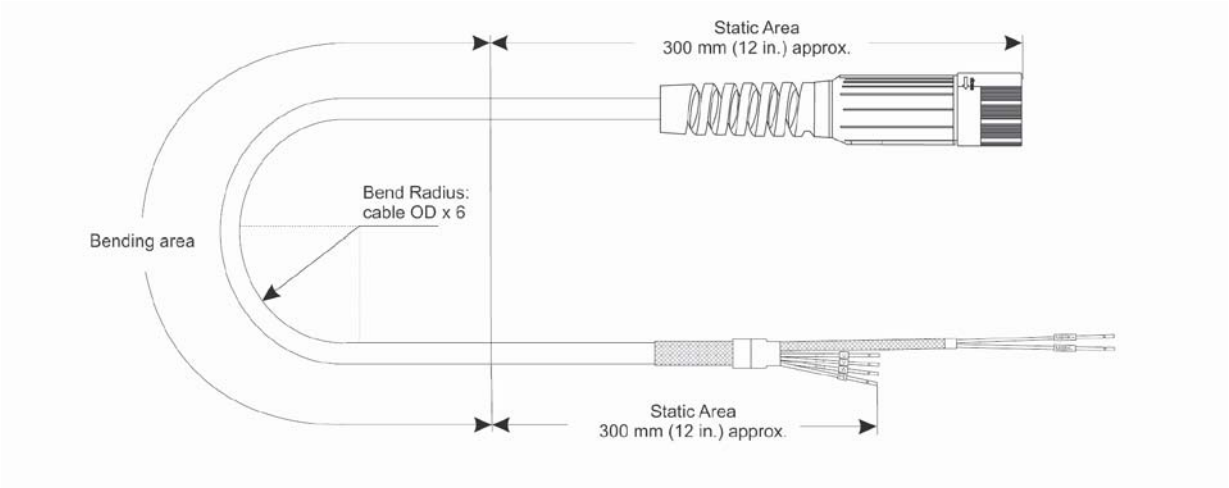
Installing the cable assembly:

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.

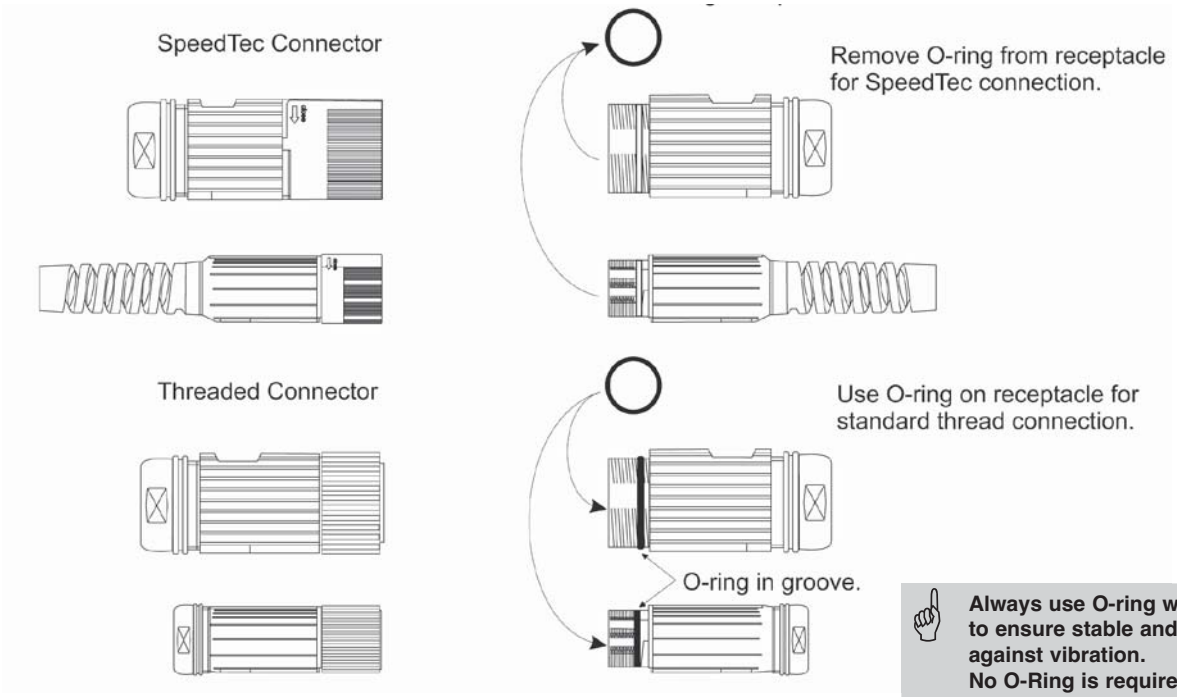
   Do not bend the cable within the static area.



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:

Key to Lutze Cable Assembly Part Numbers:
Technical design
Cable length in cm
For example, 193985.0500 corresponds to a cable length of 5 m/ 500 cm

Technical design	Cable length in cm
193985	. 0500

Cable Length

2090-CPBM4DF-16AFxx
01 = 1m
05 = 5m
10 = 10m

193985.xxxx
.0100 = 100 cm
.0500 = 500 cm
.1000 = 1000 cm

LÜTZE cable assemblies are fully compatible with Rockwell Allen-Bradley systems. Further information and downloads available at www.lutze.com

Feedback				
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)

Motor				
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))

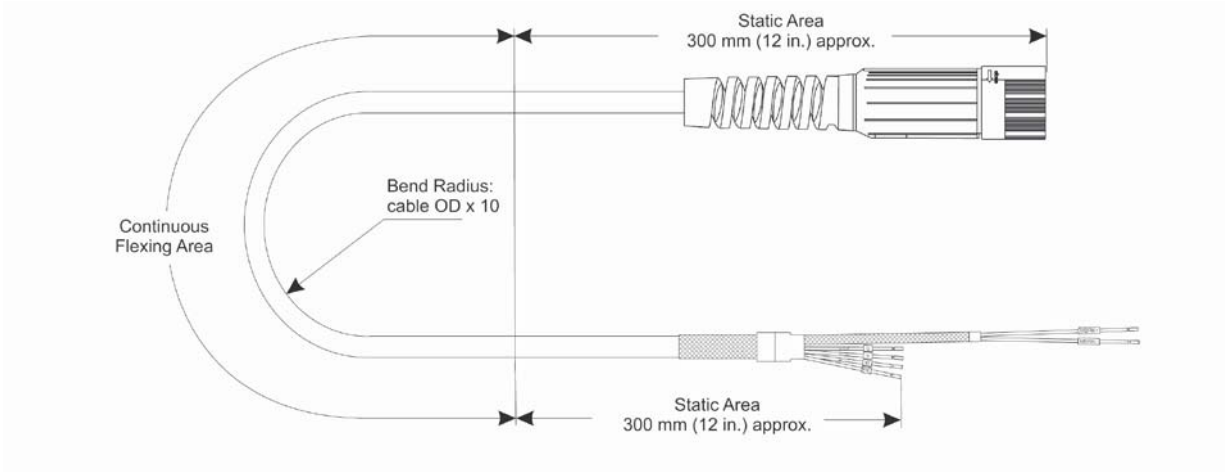
Cable Installation of flexing cables

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 precicely.

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 seperate cavities to avoid tangling of the cables.

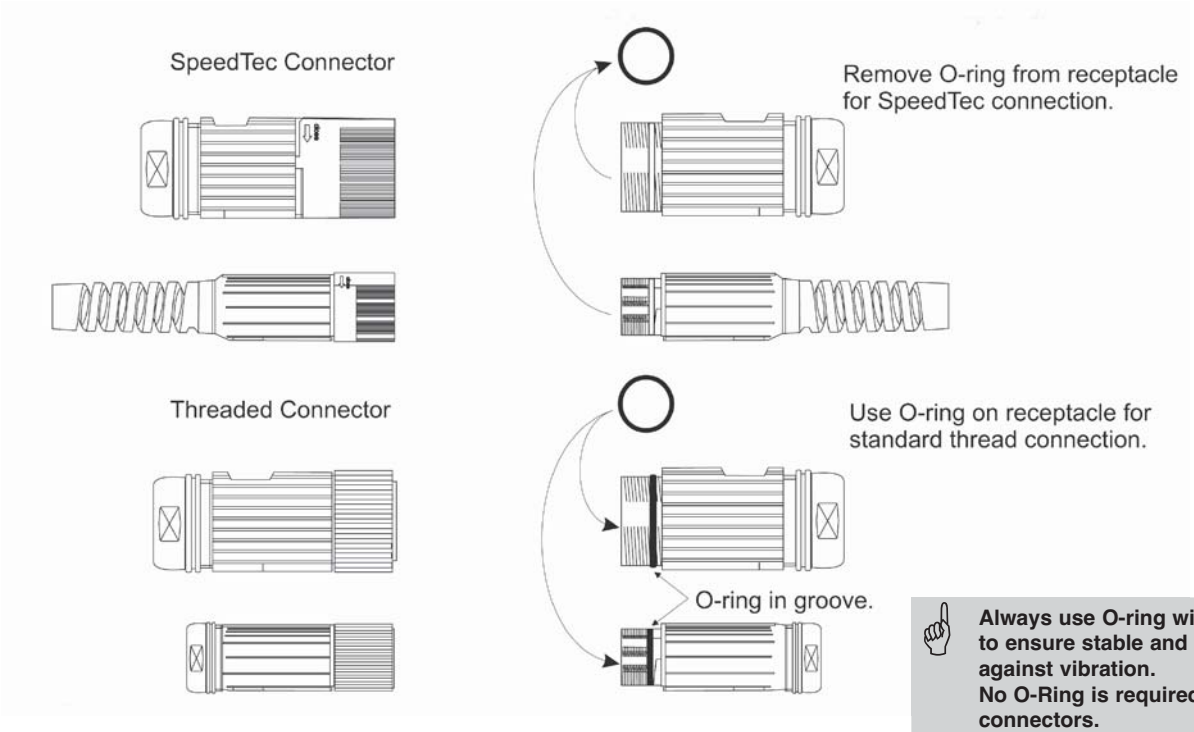
   Desired cavity size depends on cable diameter and should be adjusted to each application seperately.
5. Observe minimum bend radius for optimal performance.
6. Ensure proper strain relief at both ends of the drag chain. Observe minimum Static Area lengths.



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:

Key to Lutze Cable Assembly Part Numbers:
Technical design
Cable length in cm
For example, 193985.0500 corresponds to a cable length of 5 m/ 500 cm

Technical design	Cable length in cm
193985	. 0500

Cable Length

2090-CPBM4DF-16AFxx
01 = 1m
05 = 5m
10 = 10m

193985.xxxx
.0100 = 100 cm
.0500 = 500 cm
.1000 = 1000 cm

LÜTZE cable assemblies are fully compatible with Rockwell Allen-Bradley systems. Further information and downloads available at www.lutze.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-CSBM1DG-18AFxx	193300..xxxx	111599	(4G1,0+(2x0,75)+(2xAWG22))
	2090-CSBM1DG-14AFxx	193302.xxxx	111601	(4G2,5+(2x1,0)+(2xAWG22))
	2090-CSBM1DG-10AFxx	193304.xxxx	111603	(4G6+(2x1,0)+(2xAWG22))
	2090-CSWM1DG-18AFxx	193305.xxxx	111599	(4G1,0+(2x0,75)+(2xAWG22))
	2090-CSWM1DG-14AFxx	193310.xxxx	111601	(4G2,5+(2x1,0)+(2xAWG22))

Base cable with 2198-KITCON-DSL				
	Allen Bradley Part. No.	**LÜTZE Part. No.**	**LÜTZE Cable**	**Type**
	2090-CSBM1DE-18AFxx	193952.xxxx	111599	(4G1.0+(2x0.75)+(2xAWG22))
	2090-CSBM1DE-14AFxx	193963.xxxx	111601	(4G2.5+(2x1.0)+(2xAWG22))
	2090-CSWM1DE-18AFxx	193379.xxxx	111599	(4G1.0+(2x0.75)+(2xAWG22))
	2090-CSWM1DE-14AFxx	193955.xxxx	111601	(4G2.5+(2x1.0)+(2xAWG22))
	2090-CSBM1DE-10AFxx	193968.xxxx	111603	(4G6+(2x1.0)+(2xAWG22))
	2090-CSWM1DE-10AFxx	193967.xxxx	111603	(4G6+(2x1.0)+(2xAWG22))

Extension				
Speed Tec	**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))
	2090-CSBM1E1-10AFxx	193377.xxxx	111603	(4G6+(2x1,0)+(2xAWG22))

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11.2016.USA.3000.02.33 • © by Friedrich Lütze GmbH, Weinstadt, Deutschland • Printed in Germany. Subject to technical modification.

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