Technical Data

Original Instructions

Kinetix Rotary and Linear Motion Cable Specifications

Kinetix 2090 and ArmorKinetix 2090

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This document provides catalog numbers, product specifications, and dimensions for motor cables.

Use this publication along with the Kinetix® Motion Control Selection Guide, publication KNX-SG001, and the drive-system design guides to help make decisions on the motion control products that are best suited for your system requirements. See Additional Resources on page 85 for publication numbers.

Summary of Changes

This publication contains the following new or updated information. This list includes substantive updates only and is not intended to reflect all changes.

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Added ArmorKinetix© system cable information.	57

Kinetix Motor Single Cables

Kinetix 2090 single motor cables combine motor power, feedback, and brake conductors all in a single shielded cable. Standard (non-flex) motor cables with rugged SpeedTec DIN connectors are designed for use with Kinetix 5500 and Kinetix 5700 drive systems, and intended for static applications. Continuous-flex rated cables, intended for rolling and reverse bending applications, are also available.

IMPORTANT Because of the unique characteristics of single-cable technology, which is designed for and tested with the Kinetix 5500 and Kinetix 5700 drive families with Kinetix VP motors and actuators, building your own cables, using field modified Rockwell Automation® factory-delivered cable, or using third-party cable is not an option.

IMPORTANT Flying-lead motor power, feedback, and (optional) brake conductors terminate at the drive by using the 2198-KITCON-DSL feedback connector kit. Refer to the Kinetix 5700, 5500, 5300, 5100 Servo Drives Specifications Technical Data, publication KNX-TD003, for more information on the 2198-KITCON-DSL connector kit that is used with the Kinetix 5500 and Kinetix 5700 servo drives.

IMPORTANT Continuous-flex single motor cables have a minimum bend radius of 10 times the cable diameter for 2090-CS*x*M1*xx*-*xx*AF*xx* (TPE) cables and 7 times the cable diameter for 2090-CSBM1*xx*-*xx*LF*xx* (Halogen-free PUR) cables.



These Kinetix 2090 motor cables with SpeedTec DIN connectors, designed by Rockwell Automation for optimal performance with Kinetix 5500 and Kinetix 5700 drive families with Kinetix VP motors and actuators, offer best-in-class features and standards compliance. The single-cable design includes power, feedback, and brake conductors. The continuous-flex cable option, cable lengths in 1 m (3.3 ft) increments, and SpeedTec connectors provide machine builders with complete control of the cable requirements in their machines.

Single Motor Cable Features

Single motor cables are available in three cable materials:

- TPE for standard (non-flex) and continuous-flex cable
- PVC for standard (non-flex) and Halogen-free PUR for continuous-flex cable

Common Single Motor-cable Features

- NFPA-79 compliant
- Low capacitance design to maximize system power density
- SpeedTec connection system
- Encoder communication data pair with state of the art noise rejection
- DESINA compliant jacket (orange) coloring for easy identification and separation of cables in a machine
- Cables are included in the Rockwell Automation® servo system Declaration of Conformity (DoC)

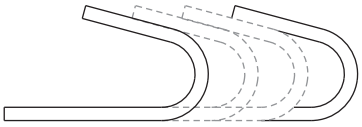
2090-CSxM1xx-xxAA/AFxx (TPE) Cable Features

- UL Listings: 10, 8, and 6 AWG bulk cable - Flexible VFD servo cable, 18 and 14 AWG bulk cable - PLTC-ER
  - UL AWM, 1000V, 105 °C construction
  - cUR AWM I/II A/B, 600V, 105 °C construction for 6 and 8 AWG cables
- CSA AWM I/II A/B, 1000V, 105 °C construction for 10, 14, and 18 AWG cables
- Rated flex-cycles in linear flexing applications
  - 10, 14, and 18 AWG continuous-flex cables and continuous-flex extension cables are suitable for 20 million flex-cycles at 10 times cable diameter. 10 million flex-cycles in bending (tic-toc) applications (see illustration below).
  - 6 and 8 AWG continuous-flex cables and continuous-flex extension cables are suitable for 6.5 million flex-cycles at 10 times cable diameter
- TPE jacket with superior mechanical and chemical properties
- Cable features overall tinned copper braid with aluminum/polyester tape, delivering 100% coverage for excellent EMC/EMI performance and permits power and signal conductors in a single cable
- FT4 rated flame test

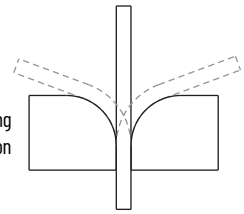
2090-CSxM1xx-xxVAxx (PVC) and 2090-CSBM1xx-xxLFxx (Halogen-free PUR) Cable Features

- UL Recognized: 18, 14, 10, 8, and 6 AWG bulk cable
  - UL AWM, 1000V, 90 °C construction
  - cUR/CSA AWM I/II A/B, 1000V, 90 °C construction
- Rated flex-cycles in linear flexing applications
  - 6, 8, 10, 14, and 18 AWG continuous-flex cables and continuous-flex extension cables are suitable for 10 million flex-cycles at 7 times cable diameter or 15 million flex-cycles at 10 times cable diameter
  - 5 million flex-cycles in bending (tic-toc) applications (see illustration below)
- PVC and PUR jacket with durable mechanical and chemical properties
- Cable features overall tinned copper braid, delivering 85% coverage and tested for excellent EMC/EMI performance and permits power and signal conductors in a single cable
- FT1 rated flame test
- PUR (LF) is Halogen Free materials to IEC 60754, UL 2885

Types of Cable Flexing



Rolling Motion



Catalog Numbers - Kinetix Single Motor Cables

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering charts below to understand the configuration of your component. For questions regarding product availability, contact your Allen-Bradley distributor.

2090 - C Sx M1 Dx - xx xx xx

Cable Length
Refer to Technical Specifications - Kinetix 2090 Single Motor Cables beginning on page 12.

Cable Material Type
AA = TPE, Standard, non-flex
AF = TPE, Continuous-flex
LF = PUR, Continuous-flex, Halogen free
VA = PVC, Standard, non-flex

Wire Gauge Size (applies to power conductors)
18, 14, 10, 8, 6 AWG

Drive-end Connector Type
DF = Drive-end, flying-leads (lead length optimized for Kinetix 5500 drives)
DE = Drive-end, flying-lead power/brake wires and pre-wired feedback connector kit (optimized for Kinetix 5700 drives)
DG = Drive-end, flying-leads (longer leads optimized for Kinetix 5500 or Kinetix 5700 drives)
E1 = Extension receptacle (SpeedTec ready)

Motor-end Connector Type
M1 = Single SpeedTec DIN connector

Cable Type
SB = Single motor power with brake wires
SW = Single motor power only

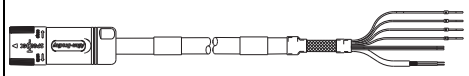
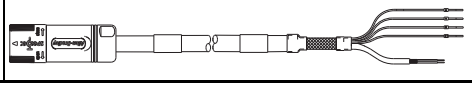
Accessory Component
C = Cable

Bulletin Number

Kinetix Single Motor Cables Overview

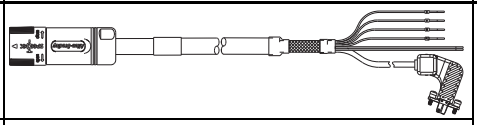
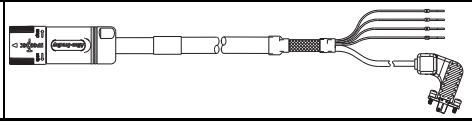
2090-CSxM1DF and 2090-CSxM1DG single motor cables with flying leads provide power, feedback, and brake conductors in a single shielded cable. Refer to Technical Specifications - Kinetix 2090 Single Motor Cables on page 12 for cable descriptions, weights, and standard cable lengths.

Single Motor Cable Descriptions (flying leads)

Cable Cat. No.	Description	Cable Configuration	Motor Connector
		Motor End — Drive End	
2090-CSBM1DF-xxAAxx 2090-CSBM1DF-xxAFxx 2090-CSBM1DG-xxxAxx 2090-CSBM1DG-xxxFxx	• Drive-end flying-leads (DF) (DG = longer lead lengths) • Power/feedback/brake wires (SB) • Standard, non-flex (AA, VA) • Continuous-flex (AF, LF)		SpeedTec DIN
2090-CSWM1DF-xxAAxx 2090-CSWM1DG-xxxAxx	• Drive-end flying-leads (DF) (DG = longer lead lengths) • Power/feedback wires only (SW) • Standard, non-flex (AA, VA)		

2090-CSxM1DE single motor cables also provide power, feedback, and brake conductors in a single shielded cable. However, 2090-CSxM1DE cables include the 2198-KITCON-DSL feedback connector kit that is pre-assembled with the feedback conductors. See Technical Specifications - Kinetix 2090 Single Motor Cables on page 12 for cable descriptions, weights, and standard cable lengths.

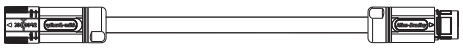
Single Motor Cable Descriptions (feedback connector kit)

Cable Cat. No.	Description	Cable Configuration	Motor Connector
		Motor End — Drive End	
2090-CSBM1DE-*xxx*A*xx* 2090-CSBM1DE-*xxx*F*xx*	• Drive-end feedback connector kit (DE) • Power/feedback/brake wires (SB) • Standard, non-flex (AA, VA) • Continuous-flex (AF, LF)		SpeedTec DIN
2090-CSWM1DE-*xxx*A*xx*	• Drive-end feedback connector kit (DE) • Power/feedback wires only (SW) • Standard, non-flex (AA, VA)		

Optimize the placement of your continuous-flex application with extension cables. Use standard (non-flex) extension cables to cover distances that are outside of the continuous-flex application. For example, attach a standard (non-flex) extension cable to the motor and use a continuous-flex flying lead cable for applications that require flexing closer to the drive. The stationary portion of cable can stay routed permanently throughout the application while the continuous-flex cable can be placed in the location that may need maintenance, changeovers, replacement, or general services.

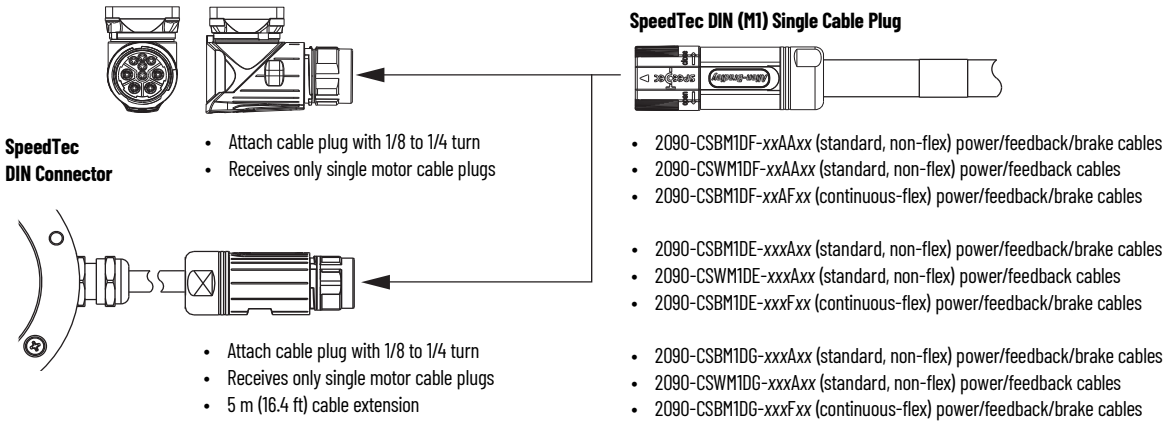
The IP rating for extension cables is consistent with the motor/actuator and cable combination they are extending. Extension cables are available with 18, 14, 10, 8, and 6 AWG power conductors and lengths up to 30 m (98.4 ft).

Single Extension Cable Description

Cable Cat. No.	Description	Cable Configuration	Motor Connector
		Motor End — Drive End	
2090-CSBM1E1-*xxx*F*xx* 2090-CSBM1E1-*xx*VA*xx*	• Drive-end (male) connector, extension (E1) (1) • Motor-end SpeedTec DIN cable plug (M1) • Standard, non-flex (VA) • Continuous-flex (AF, LF)		SpeedTec DIN

(1) SpeedTec DIN connector (motor end) and male connector for extending SpeedTec DIN cable. Refer to Single Continuous-flex Extension Cable with Bulkhead Adapter Example on page 7.

Typical Single Motor Cable Applications



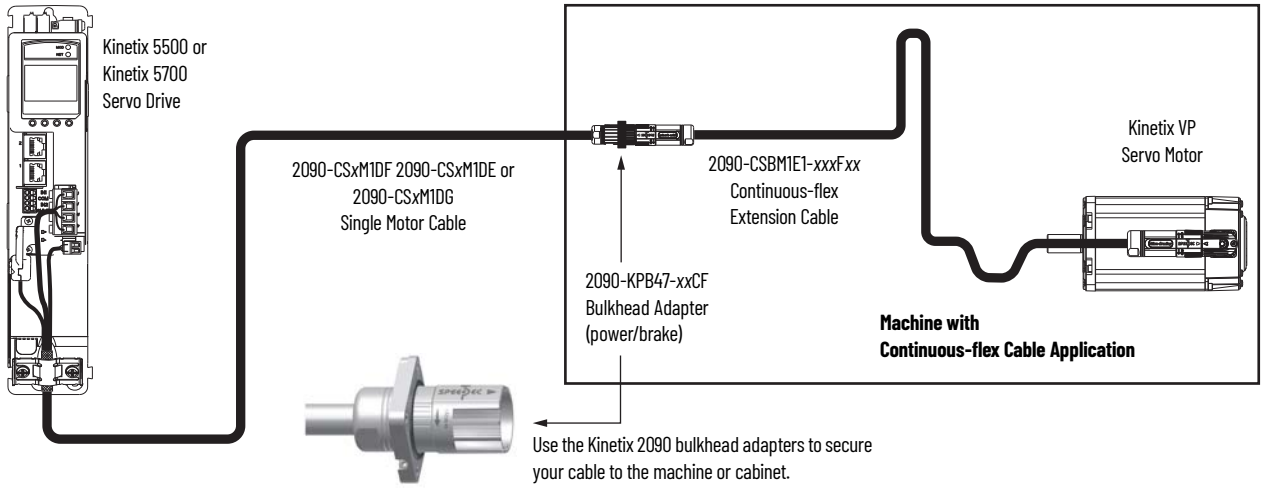
The cable technology used in single cables is the same regardless of the catalog number. What is different about each cable is the lead preparation and feedback conductor terminations.

- 2090-CSxM1DF cable conductors have flying-leads and lead preparation that is designed specifically for Kinetix 5500 servo drives. No on-site lead preparation is required.
- 2090-CSxM1DE cables include the 2198-KITCON-DSL connector kit. The kit is pre-assembled with the feedback conductors and lead preparation for the flying-lead power conductors is designed specifically for Kinetix 5700 servo drives. No on-site lead preparation is required.
- 2090-CSxM1DG cable conductors have flying-leads and lead preparation that is designed for either Kinetix 5500 or Kinetix 5700 servo drives. No on-site lead preparation is required, however, 2090-CSxM1DG cable leads are longer than 2090-CSxM1DF cable leads to accommodate either drive family.

IMPORTANT To avoid problems securing the cable in the shield clamp and routing the flying leads to the motor power, feedback, and brake connector plugs, make sure that you are using the cable that is best suited for your application.

- Use 2090-CSxM1DF cables with Kinetix 5500 servo drives (2198-KITCON-DSL connector kit is included with the drive)
- Use 2090-CSxM1DE cables with Kinetix 5700 servo drives (2198-KITCON-DSL connector kit is pre-wired to the feedback conductors)
- Use 2090-CSxM1DG cables with Kinetix 5500 or Kinetix 5700 servo drives (when used with Kinetix 5700 drives, the 2198-KITCON-DSL connector kit is ordered separately)

Single Continuous-flex Extension Cable with Bulkhead Adapter Example



In this example, the continuous-flex application is near the motor, however, if the continuous-flex application is closer to the drive, a standard (non-flex) extension cable can be attached to the motor.

Kinetix Single Motor Cable Selection

These tables provide single motor cable catalog numbers for use with Kinetix VP motors and actuators. Single motor cables include conductors for motor power, feedback, and motor brakes (if applicable). The IP rating is dependent on the use of Kinetix 2090 cables as listed in the table.

IMPORTANT Maximum motor cable length depends on the feedback type and overall system design. The drive-system power supply, AC input-power type, and AC input voltage are among the configuration variables. For more information on maximum cable lengths see your servo drive user manual or the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.

Kinetix VPL 200V-class Low Inertia Motors

Motor Cat. No.	Compatible (1) Drive Cat. No.	Feedback Type	Cable Cat. No. (2)	IP Rating
VPL-A0631*x*, VPL-A0632F, VPL-A0633*x*	2198-H*xxx*-ERS 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 2198-D*xxx*-ERS4	Single-turn or Absolute, Multi-turn Digital Encoder • SIL 2/PLd Rated • Hiperface DSL Protocol	2090-CSBM1Dx-18xA*xx* or 2090-CSWM1Dx-18xA*xx* (standard, non-flex) 2090-CSBM1Dx-18xF*xx* (continuous-flex)	• IP50, min without shaft seal (standard) • IP66 with shaft seal (3)
VPL-A0751E, VPL-A0752*x*, VPL-A0753*x*				
VPL-A1001C, VPL-A1003*x*			2090-CSBM1Dx-14xA*xx* or 2090-CSWM1Dx-14xA*xx* (standard, non-flex) 2090-CSBM1Dx-14xF*xx* (continuous-flex)	
VPL-A1001M, VPL-A1002*x*				
VPL-A1152*x*, VPL-A1153*x*				
VPL-A1303*x*, VPL-A1304*x*, VPL-A1306*x*				

(1) For information on maximum cable lengths see the Kinetix 5500 Servo Drives User Manual, publication 2198-UM001.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(2) Use 2090-CSxM1DF or 2090-CSxM1DG cables with Kinetix 5500 (2198-H*xxx*-ERSx) servo drives.
(3) IP66 with optional shaft seal and the use of Rockwell Automation® factory-delivered Kinetix 2090 single cable.

Kinetix VPL 400V-class Low Inertia Motors

Motor Cat. No.	Compatible (1) Drive Cat. No.	Feedback Type	Cable Cat. No. (2)	IP Rating
VPL-B0631*x*, VPL-B0632*x*, VPL-B0633*x*	2198-H*xxx*-ERS 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 2198-D*xxx*-ERS4	Single-turn or Absolute, Multi-turn Digital Encoder • SIL 2/PLd Rated • Hiperface DSL Protocol	2090-CSBM1Dx-18xA*xx* or 2090-CSWM1Dx-18xA*xx* (standard, non-flex) 2090-CSBM1Dx-18xF*xx* (continuous-flex)	• IP50, min without shaft seal (standard) • IP66 with shaft seal (3)
VPL-B0751M, VPL-B0752*x*, VPL-B0753*x*				
VPL-B1001M, VPL-B1002E, VPL-B1003C, VPL-B1003F				
VPL-B1002M, VPL-B1003T			2090-CSBM1Dx-14xA*xx* or 2090-CSWM1Dx-14xA*xx* (standard, non-flex) 2090-CSBM1Dx-14xF*xx* (continuous-flex)	
VPL-B1152C, VPL-B1153E			2090-CSBM1Dx-18xA*xx* or 2090-CSWM1Dx-18xA*xx* (standard, non-flex) 2090-CSBM1Dx-18xF*xx* (continuous-flex)	
VPL-B1152F, VPL-B1152T, VPL-B1153F			2090-CSBM1Dx-14xA*xx* or 2090-CSWM1Dx-14xA*xx* (standard, non-flex) 2090-CSBM1Dx-14xF*xx* (continuous-flex)	
VPL-B1303*x*, VPL-B1304*x*, VPL-B1306*x*				
VPL-B1651C, VPL-B1651F, VPL-B1652C, VPL-B1652F, VPL-B1653C, VPL-B1653D, VPL-B1654B				
VPL-B1654D			2090-CSBM1Dx-10xF*xx* (continuous-flex), 2090-CSBM1Dx-10VA*xx* (standard, non-flex)	

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(2) Use 2090-CSxM1DF or 2090-CSxM1DG cables with Kinetix 5500 (2198-H*xxx*-ERSx) servo drives. Use 2090-CSxM1DE or 2090-CSxM1DG cables with Kinetix 5700 (2198-*xxxx*-ERSx) servo drives.
(3) IP66 with optional shaft seal and the use of Rockwell Automation factory-delivered Kinetix 2090 single cable.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Single Motor Cables Overview beginning on page 5.
Cable length *xx* is in meters, 01 (3.3)...50 (164) in 1.0 m (3.3 ft) increments for 2090-CSxM1DF and 2090-CSxM1DG cables.
Refer to Technical Specifications - Kinetix 2090 Single Motor Cables on page 12.

Kinetix VPC 400V-class Continuous Duty Motors

Motor Cat. No.	Drive Cat. No. (1) (2)	Feedback Type	Cable Cat. No. (3)	IP Rating
VPC-B1652*x*-Q, VPC-B1653*x*-Q	2198-D*xxx*-ERS3 2198-S*xxx*-ERS3 2198-D*xxx*-ERS4 2198-S*xxx*-ERS4	Absolute, Multi-turn Digital Encoder • SIL 2/PLd Rated • Hiperface DSL Protocol	2090-CSBM1D*x*-14*x*A*xx* or 2090-CSWM1D*x*-14*x*A*xx* (standard, non-flex) 2090-CSBM1D*x*-14*x*F*xx* (continuous-flex)	IP65 with shaft seal (standard) (4)
VPC-B2153*x*-Q, VPC-B21549-Q				
VPC-B1654D-Q			2090-CSBM1D*x*-10*x*F*xx* (continuous-flex) 2090-CSBM1D*x*-10VA*xx* (standard, non-flex)	
VPC-B2154A-Q				
VPC-B30029-Q				
VPC-B2154B-Q, VPC-B2154D-Q VPC-B2155B-Q, VPC-B2155D-Q			2090-CSBM1DE-08*x*F*xx* (continuous-flex) 2090-CSBM1DE-08VA*xx* (standard, non-flex)	
VPC-B3002A-Q, VPC-B30039-Q VPC-B30049-Q				
VPC-B2156A-Q, VPC-B2156D-Q			2090-CSBM1DE-06*x*F*xx* (continuous-flex) 2090-CSBM1DE-06VA*xx* (standard, non-flex)	
VPC-B3003A-Q				

(1) For information on maximum cable lengths see the Kinetix 5700 Servo Drives User Manual, publication 2198-UM002.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(2) 2198-S263-ERS*x* and 2198-S312-ERS*x* single-axis inverters do not support 2090-CSxM1D*x* single cables.
(3) Use 2090-CSxM1DE or 2090-CSxM1DG cables with Kinetix 5700 (2198-*xxxx*-ERS*x*) servo drives.
(4) IP65 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 single cable.

Kinetix VPF 200V-class Food Grade Motors

Motor Cat. No. (200V-class)	Drive Cat. No. (1)	Feedback Type	Cable Cat. No. (2)	IP Rating
VPF-A0632F, VPF-A0633C, VPF-A0633F	2198-H*xxx*-ERS 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 2198-D*xxx*-ERS4	Single-turn or Absolute, Multi-turn Digital Encoder • SIL 2/PLd Rated • Hiperface DSL Protocol	2090-CSBM1D*x*-18*x*A*xx* or 2090-CSWM1D*x*-18*x*A*xx* (standard, non-flex) 2090-CSBM1D*x*-18*x*F*xx* (continuous-flex)	IP66/IP67 with shaft seal (standard) (3)
VPF-A0752*x*, VPF-A0753*x*				
VPF-A1001C, VPF-A1003C				
VPF-A1001M, VPF-A1002C, VPF-A1002F VPF-A1003E, VPF-A1003F			2090-CSBM1D*x*-14*x*A*xx* or 2090-CSWM1D*x*-14*x*A*xx* (standard, non-flex) 2090-CSBM1D*x*-14*x*F*xx* (continuous-flex)	
VPF-A1153C				
VPF-A1303B, VPF-A1303F, VPF-A1304A, VPF-A1304D				

(1) For information on maximum cable lengths see the Kinetix 5500 Servo Drives User Manual, publication 2198-UM001.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(2) Use 2090-CSxM1DF or 2090-CSxM1DG cables with Kinetix 5500 (2198-H*xxx*-ERSx) servo drives.
(3) IP66/IP67 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 single cable.

Kinetix VPF 400V-class Food Grade Motors

Motor Cat. No. (400V-class)	Drive Cat. No. (1)	Feedback Type	Cable Cat. No. (2)	IP Rating
VPF-B0632F, VPF-B0632T VPF-B0633M, VPF-B0633T	2198-H*xxx*-ERS 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 2198-D*xxx*-ERS4	Single-turn or Absolute, Multi-turn Digital Encoder • SIL 2/PLd Rated • Hiperface DSL Protocol	2090-CSBM1D*x*-18*x*A*xx* or 2090-CSWM1D*x*-18*x*A*xx* (standard, non-flex) 2090-CSBM1D*x*-18*x*F*xx* (continuous-flex)	IP66/IP67 with shaft seal (standard) (3)
VPF-B0752E, VPF-B0752F, VPF-B0752M, VPF-B0753E, VPF-B0753F, VPF-B0753M				
VPF-B1001M, VPF-B1002E, VPF-B1003C, VPF-B1003F				
VPF-B1153E				
VPF-B1002M, VPF-B1003T			2090-CSBM1D*x*-14*x*A*xx* or 2090-CSWM1D*x*-14*x*A*xx* (standard, non-flex) 2090-CSBM1D*x*-14*x*F*xx* (continuous-flex)	
VPF-B1153F				
VPF-B1303C, VPF-B1303F, VPF-B1304C, VPF-B1304E				
VPF-B1652C				

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(2) Use 2090-CSxM1DF or 2090-CSxM1DG cables with Kinetix 5500 (2198-H*xxx*-ERSx) servo drives. Use 2090-CSxM1DE or 2090-CSxM1DG cables with Kinetix 5700 (2198-*xxxx*-ERSx) servo drives.
(3) IP66/IP67 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 single cable.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Single Motor Cables Overview beginning on page 5.
Cable length *xx* is in meters, 01 (3.3)...50 (164) in 1.0 m (3.3 ft) increments for 2090-CSxM1DF and 2090-CSxM1DG cables, 01 (3.3)...90 (294) in 1.0 m (3.3 ft) increments for 2090-CSxM1DE cables.
Refer to Technical Specifications - Kinetix 2090 Single Motor Cables on page 12.

Kinetix VPH 200V-class Hygienic Stainless Steel Motors

Motor Cat. No. (200V-class)	Drive Cat. No. (1)	Feedback Type	Cable Cat. No. (2)	IP Rating (3)
VPH-A0633F VPH-A0753F	2198-H*xxx*-ERS 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 2198-D*xxx*-ERS4	Single-turn or Absolute, Multi-turn Digital Encoder • SIL 2/PLd Rated • Hiperface DSL Protocol	2090-CSBM1D*x*-18x*Axx* or 2090-CSWM1D*x*-18x*Axx* (standard, non-flex) 2090-CSBM1D*x*-18x*Fxx* (continuous-flex)	• IP66/IP67 with shaft seal (standard) (4) • IP69K with shaft seal (standard) (5)
VPH-A1003F VPH-A1152E VPH-A1153C			2090-CSBM1D*x*-14x*Axx* or 2090-CSWM1D*x*-14x*Axx* (standard, non-flex) 2090-CSBM1D*x*-14x*Fxx* (continuous-flex)	
VPH-A1304D				

(1) For information on maximum cable lengths see the Kinetix 5500 Servo Drives User Manual, publication 2198-UM001.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(2) Use 2090-CSxM1DF or 2090-CSxM1DG cables with Kinetix 5500 (2198-H*xxx*-ERSx) servo drives.
(3) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.
(4) IP66/IP67 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 single cable (includes on-motor cable connector).
(5) IP69K for 1200 psi motor washdown with shaft seal (standard). Does not include on-motor cable connector.

Kinetix VPH 400V-class Hygienic Stainless Steel Motors

Motor Cat. No. (400V-class) (1)	Drive Cat. No. (2)	Feedback Type	Cable Cat. No. (3)	IP Rating (4)
VPH-B0632T, VPH-B0633M	2198-H*xxx*-ERS 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 2198-D*xxx*-ERS4	Single-turn or Absolute, Multi-turn Digital Encoder • SIL 2/PLd Rated • Hiperface DSL Protocol	2090-CSBM1D*x*-18x*Axx* or 2090-CSWM1D*x*-18x*Axx* (standard, non-flex) 2090-CSBM1D*x*-18x*Fxx* (continuous-flex)	• IP66/IP67 with shaft seal (standard) (5) • IP69K with shaft seal (standard) (6)
VPH-B0753F				
VPH-B1001F, VPH-B1003F				
VPH-B1152F			2090-CSBM1D*x*-14x*Axx* or 2090-CSWM1D*x*-14x*Axx* (standard, non-flex) 2090-CSBM1D*x*-14x*Fxx* (continuous-flex)	
VPH-B1153E				
VPH-B1304E				
VPH-B1653D				

(1) VPH-B100*xx* and VPH-B1152F frame on-motor cables include 14 AWG conductors and are also compatible with 2090-CSxM1D*x*-14*xxxx* cable.
(2) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(3) Use 2090-CSxM1DF or 2090-CSxM1DG cables with Kinetix 5500 (2198-H*xxx*-ERSx) servo drives. Use 2090-CSxM1DE or 2090-CSxM1DG cables with Kinetix 5700 (2198-*xxxx*-ERSx) servo drives.
(4) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.
(5) IP66/IP67 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 single cable (includes on-motor cable connector).
(6) IP69K for 1200 psi motor washdown with shaft seal (standard). Does not include on-motor cable connector.

Kinetix VPS 400V-class Stainless Steel Motors

Motor Cat. No.	Drive Cat. No. (1)	Feedback Type	Cable Cat. No. (2)	IP Rating (3)
VPS-B1304D	2198-H*xxx*-ERS 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 2198-D*xxx*-ERS4	Absolute, Multi-turn Digital Encoder with Hiperface DSL Protocol	2090-CSWM1D*x*-14x*Axx* (standard, non-flex) 2090-CSBM1D*x*-14x*Fxx* (continuous-flex)	• IP66/IP67 with shaft seal and slinger (standard) (4) • IP69K with shaft seal and slinger (standard) (5)
VPS-B1653D				

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(2) Use 2090-CSxM1DF or 2090-CSxM1DG cables with Kinetix 5500 (2198-H*xxx*-ERSx) servo drives. Use 2090-CSxM1DE or 2090-CSxM1DG cables with Kinetix 5700 (2198-*xxxx*-ERSx) servo drives.
(3) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.
(4) IP66/IP67 with shaft seal and slinger (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 single cable (includes on-motor cable connector).
(5) IP69K for 1200 psi motor washdown with shaft seal and slinger (standard). Does not include on-motor cable connector.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Single Motor Cables Overview beginning on page 5.
Cable length *xx* is in meters, 01 (3.3)...50 (164) in 1.0 m (3.3 ft) increments for 2090-CSxM1DF and 2090-CSxM1DG cables, 01 (3.3)...90 (294) in 1.0 m (3.3 ft) increments for 2090-CSxM1DE cables.
Refer to Technical Specifications - Kinetix 2090 Single Motor Cables on page 12.

Kinetix VPAR 200V-class Electric Cylinders

Actuator Cat. No. (1)	Drive Cat. No. (2)	Feedback Type	Cable Cat. No. (3)	IP Rating
VPAR-A1*xxxxx*-P VPAR-A2*xxxx*C-P	2198-H*xxx*-ERS 2198-H*xxx*-ERS2	Absolute, Multi-turn Digital Encoder with Hiperface DSL Protocol	2090-CSBM1D*x*-18x*Axx* or 2090-CSWM1D*x*-18x*Axx* (standard, non-flex) 2090-CSBM1D*x*-18x*Fxx* (continuous-flex)	• IP40 (4) • IP66 (5)
VPAR-A2*xxxx*F-P VPAR-A3*xxxxx*-P			2090-CSBM1D*x*-14x*Axx* or 2090-CSWM1D*x*-14x*Axx* (standard, non-flex) 2090-CSBM1D*x*-14x*Fxx* (continuous-flex)	

(1) Encoder option for VPAR-A*xxxxx* electric cylinders is -P (absolute multi-turn digital encoder, Hiperface DSL protocol) only.
(2) For information on maximum cable lengths see Kinetix 5500 Servo Drives User Manual, publication 2198-UM001.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(3) Use 2090-CSxM1DF or 2090-CSxM1DG cables with Kinetix 5500 (2198-H*xxx*-ERSx) servo drives. Use 2090-CSxM1DE or 2090-CSxM1DG cables with Kinetix 5700 (2198-*xxxx*-ERSx) servo drives.
(4) IP40 applies to complete Kinetix VPAR unit, including rod-end seal and breather port.
(5) IP66 (in static condition only) for electronic components with the use of Rockwell Automation factory-delivered Kinetix 2090 single cable.

Kinetix VPAR 400V-class Electric Cylinders

Actuator Cat. No. (1)	Drive Cat. No. (2)	Feedback Type	Cable Cat. No. (3)	IP Rating
VPAR-B1*xxxxx-x* VPAR-B2*xxxxx-x*	2198-H*xxx*-ERS 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 2198-D*xxx*-ERS4	Absolute, Multi-turn Digital Encoder • SIL 2/PLd Rated • Hiperface DSL Protocol	2090-CSBM1D*x*-18x*Axx* or 2090-CSWM1D*x*-18x*Axx* (standard, non-flex) 2090-CSBM1D*x*-18x*Fxx* (continuous-flex)	• IP40 (4) • IP66 (5)
VPAR-B3*xxxxx-x*			2090-CSBM1D*x*-14x*Axx* or 2090-CSWM1D*x*-14x*Axx* (standard, non-flex) 2090-CSBM1D*x*-14x*Fxx* (continuous-flex)	

(1) Encoder options for VPAR-B*xxxxx* electric cylinders are -Q and -W (absolute multi-turn digital encoder, Hiperface DSL protocol) SIL 2 (PLd) rated, and -P (absolute multi-turn digital encoder, Hiperface DSL protocol).
(2) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001.
Not all drive/motor combinations are possible. See Additional Resources on page 85 for the drive system design guide or Motion Analyzer software for drive/motor performance specifications.
(3) Use 2090-CSxM1DF or 2090-CSxM1DG cables with Kinetix 5500 (2198-H*xxx*-ERSx) servo drives. Use 2090-CSxM1DE or 2090-CSxM1DG cables with Kinetix 5700 (2198-*xxxx*-ERSx) servo drives.
(4) IP40 applies to complete Kinetix VPAR unit, including rod-end seal and breather port.
(5) IP66 (in static condition only) for electronic components with the use of Rockwell Automation factory-delivered Kinetix 2090 single cable.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Single Motor Cables Overview beginning on page 5.
Cable length *xx* is in meters, 01 (3.3)...50 (164) in 1.0 m (3.3 ft) increments for 2090-CSxM1DF and 2090-CSxM1DG cables, 01 (3.3)...90 (294) in 1.0 m (3.3 ft) increments for 2090-CSxM1DE cables.
Refer to Technical Specifications - Kinetix 2090 Single Motor Cables on page 12.

Technical Specifications - Kinetix 2090 Single Motor Cables

IMPORTANT Maximum motor cable length depends on the feedback type and overall system design. The drive-system power supply, AC input-power type, and AC input voltage are among the configuration variables. For more information on maximum cable lengths see your servo drive user manual or the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.

2090-CSxM1DE Cable Specifications

Cable Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)
2090-CSBM1DE-18AAxx	Standard (non-flex) cable, Industrial TPE, Orange (DESINA, RAL 2003)	1000V hybrid cable with four power, two feedback (digital communication), and two brake conductors.	18	0.212 (0.143)	01 (3.3)...90 (295) in 1.0 m (3.3 ft) increments
2090-CSBM1DE-14AAxx			14	0.261 (0.175)	
2090-CSWM1DE-18AAxx		1000V hybrid cable with four power and two feedback (digital communication) conductors.	18	0.136 (0.091)	
2090-CSWM1DE-14AAxx			14	0.185 (0.124)	
2090-CSBM1DE-18AFxx	Continuous-flex cable, Industrial TPE, Orange (DESINA, RAL 2003)	1000V hybrid cable with four power, two feedback (digital communication), and two brake conductors.	18	0.228 (0.153)	
2090-CSBM1DE-14AFxx			14	0.289 (0.194)	
2090-CSBM1DE-10AFxx			10	0.551 (0.370)	
2090-CSBM1DE-08AFxx			8	1.0 (0.67)	
2090-CSBM1DE-06AFxx			6	1.2 (0.80)	
2090-CSBM1DE-18VAxx	Standard (non-flex) cable, PVC, Orange (DESINA, RAL 2003)	1000V hybrid cable with four power, two feedback (digital communication), and two brake conductors.	18	0.248 (0.167)	51 (167)...90 (295) in 1.0 m (3.3 ft) increments
2090-CSBM1DE-14VAxx			14	0.336 (0.226)	
2090-CSBM1DE-10VAxx			10	0.514 (0.345)	
2090-CSBM1DE-08VAxx			8	0.785 (0.527)	01 (3.3)...90 (295) in 1.0 m (3.3 ft) increments
2090-CSBM1DE-06VAxx			6	1.11 (0.75)	
2090-CSWM1DE-18VAxx		1000V hybrid cable with four power and two feedback (digital communication) conductors.	18	0.222 (0.149)	51 (167)...90 (295) in 1.0 m (3.3 ft) increments
2090-CSWM1DE-14VAxx			14	0.264 (0.177)	
2090-CSBM1DE-18LFxx	Continuous-flex cable, PUR, Orange (DESINA, RAL 2003)	1000V hybrid cable with four power, two feedback (digital communication), and two brake conductors.	18	0.239 (0.160)	
2090-CSBM1DE-14LFxx			14	0.317 (0.213)	
2090-CSBM1DE-10LFxx			10	0.489 (0.329)	
2090-CSBM1DE-08LFxx			8	0.76 (0.511)	01 (3.3)...90 (295) in 1.0 m (3.3 ft) increments
2090-CSBM1DE-06LFxx			6	1.08 (0.73)	

2090-CSxM1DF/DG Cable Specifications

Cable Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)
2090-CSBM1DF-18AA*xx* 2090-CSBM1DG-18AA*xx*	Standard (non-flex) cable, Industrial TPE, Orange (DESINA, RAL 2003)	1000V hybrid cable with four power, two feedback (digital communication), and two brake conductors.	18	0.212 (0.143)	01 (3.3)...50 (164) in 1.0 m (3.3 ft) increments
2090-CSBM1DF-14AA*xx* 2090-CSBM1DG-14AA*xx*			14	0.261 (0.175)	
2090-CSWM1DF-18AA*xx* 2090-CSWM1DG-18AA*xx*		1000V hybrid cable with four power and two feedback (digital communication) conductors.	18	0.136 (0.091)	
2090-CSWM1DF-14AA*xx* 2090-CSWM1DG-14AA*xx*			14	0.185 (0.124)	
2090-CSBM1DF-18AF*xx* 2090-CSBM1DG-18AF*xx*	Continuous-flex cable, Industrial TPE, Orange (DESINA, RAL 2003)	1000V hybrid cable with four power, two feedback (digital communication), and two brake conductors.	18	0.228 (0.153)	01 (3.3)...50 (164) [1] in 1.0 m (3.3 ft) increments
2090-CSBM1DF-14AF*xx* 2090-CSBM1DG-14AF*xx*			14	0.289 (0.194)	
2090-CSBM1DF-10AF*xx* 2090-CSBM1DG-10AF*xx*			10	0.551 (0.370)	
2090-CSBM1DG-18VA*xx*	Standard (non-flex) cable, PVC, Orange (DESINA, RAL 2003)	1000V hybrid cable with four power, two feedback (digital communication), and two brake conductors.	18	0.248 (0.167)	01 (3.3)...50 (164) in 1.0 m (3.3 ft) increments
2090-CSBM1DG-14VA*xx*			14	0.336 (0.226)	
2090-CSBM1DG-10VA*xx*			10	0.514 (0.345)	
2090-CSWM1DG-18VA*xx*		1000V hybrid cable with four power and two feedback (digital communication) conductors.	18	0.222 (0.149)	
2090-CSWM1DG-14VA*xx*			14	0.264 (0.177)	
2090-CSBM1DG-18LF*xx*	Continuous-flex cable, PUR, Orange (DESINA, RAL 2003)	1000V hybrid cable with four power, two feedback (digital communication), and two brake conductors.	18	0.239 (0.160)	01 (3.3)...50 (164) [1] in 1.0 m (3.3 ft) increments
2090-CSBM1DG-14LF*xx*			14	0.317 (0.213)	
2090-CSBM1DG-10LF*xx*			10	0.489 (0.329)	

(1) Applies to all Kinetix 5500 (frame 2 and 3) drives. For Kinetix 5500 (frame 1) drives in continuous-flex applications, 30 m (98 ft) is maximum cable length.

Single Extension Cable Specifications

Extension Cable [1] Cat. No.	Cable Type/ Jacket Color	Description	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)
2090-CSBM1E1-18AF*xx*	Continuous-flex cable, Industrial TPE, Orange (DESINA, RAL 2003)	SpeedTec DIN connector plug on motor end to SpeedTec DIN receptacle for mating with Kinetix 2090 standard, power/brake/feedback cable, 600V.	0.228 (0.153)	01 (3.3)...30 (98.4) in 1.0 m (3.3 ft) increments
2090-CSBM1E1-14AF*xx*			0.289 (0.194)	
2090-CSBM1E1-10AF*xx*			0.551 (0.370)	
2090-CSBM1E1-08AF*xx*			1.0 (0.67)	
2090-CSBM1E1-06AF*xx*			1.2 (0.80)	
2090-CSBM1E1-18VA*xx*	Standard (non-flex) cable, PVC, Orange (DESINA, RAL 2003)	SpeedTec DIN connector plug on motor end to SpeedTec DIN receptacle for mating with Kinetix 2090 power/brake/feedback cable.	0.248 (0.167)	01 (3.3)...30 (98.4) in 1.0 m (3.3 ft) increments
2090-CSBM1E1-14VA*xx*			0.336 (0.226)	
2090-CSBM1E1-10VA*xx*			0.514 (0.345)	
2090-CSBM1E1-08VA*xx*			0.785 (0.527)	
2090-CSBM1E1-06VA*xx*			1.11 (0.75)	
2090-CSBM1E1-18LF*xx*	Continuous-flex cable, PUR, Orange (DESINA, RAL 2003)		0.239 (0.160)	
2090-CSBM1E1-14LF*xx*			0.317 (0.213)	
2090-CSBM1E1-10LF*xx*			0.489 (0.329)	
2090-CSBM1E1-08LF*xx*			0.76 (0.511)	
2090-CSBM1E1-06LF*xx*			1.08 (0.73)	

(1) 2090-CSBM1E1-*xx*AF*xx* extension cables are UL Listed, bulk cable, type PLTC-ER.

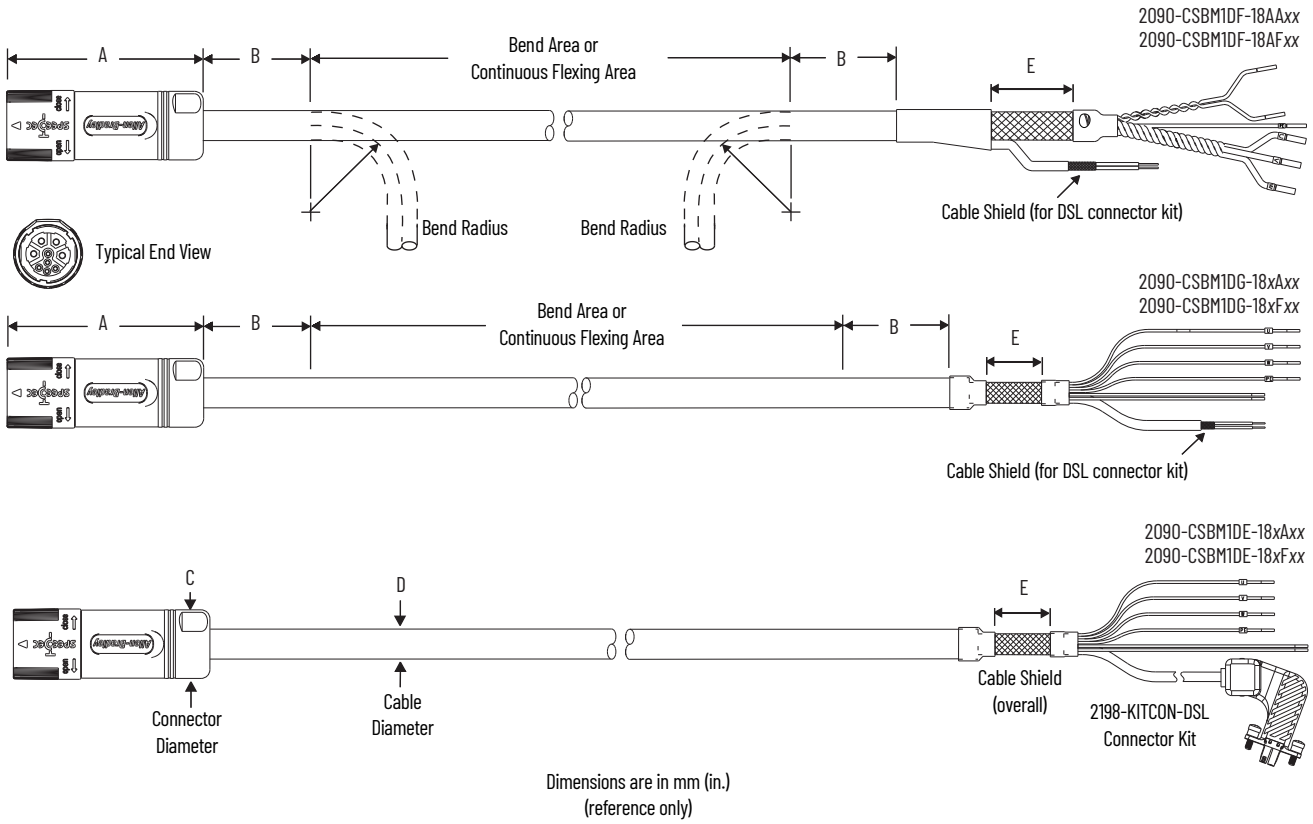
Dimensions - Kinetix 2090 Single Motor Cables

When installing single cable runs between the motor and drive, be careful not to stress the cable by making bends too sharp. Refer to the table below for bend radius definitions and the dimension diagrams that follow when routing cables during system installation.

Single Cable Bend Radius Definitions

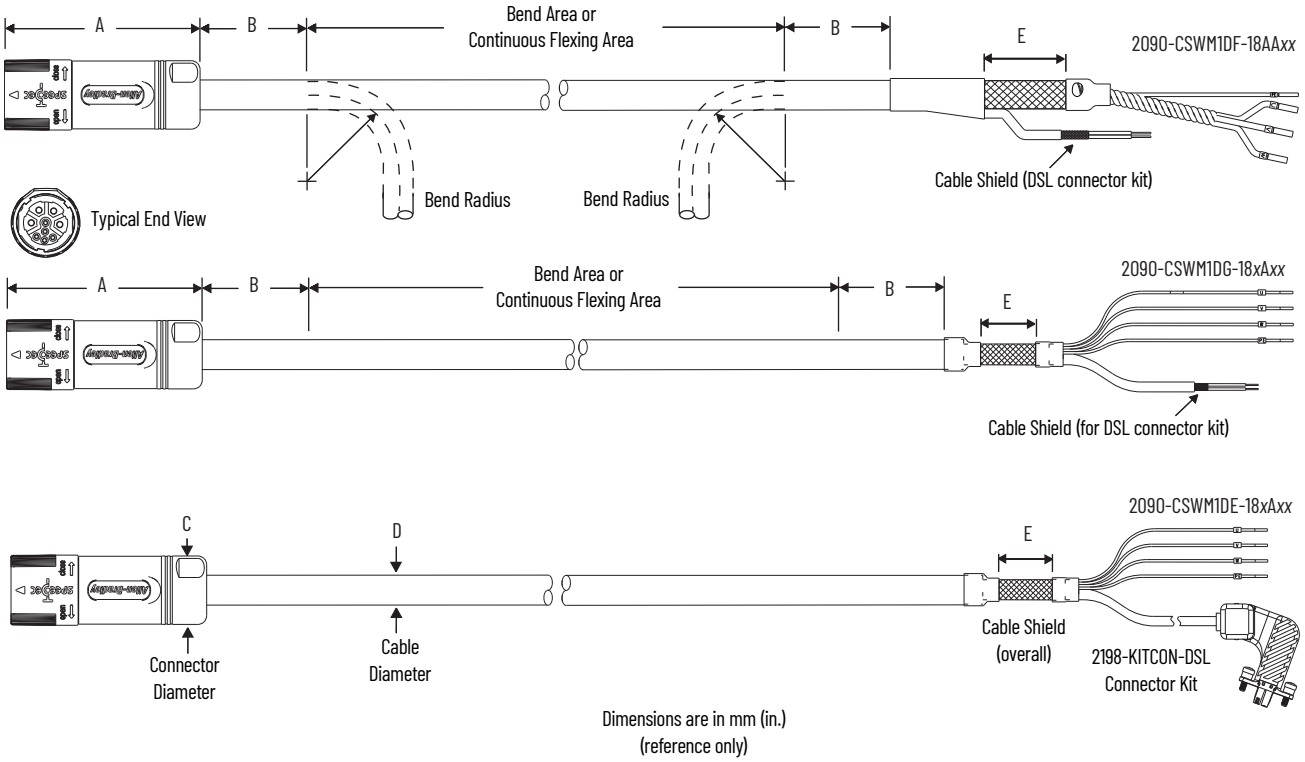
Type of Bend Radius	Type of Cable	Description
Static bend radius	Standard (non-flex) Continuous flex	The static (installation) bend radius and dimension B is: • 7 times the cable diameter for 2090-CSBM1*xx-xx*AA/AF*xx* cables • 5 times the cable diameter for 2090-CSBM1*xx-xx*VA/LF*xx* cables • Do not begin a static bend inside dimension B. • Use this measurement when routing the cable in a non-flex application between motor and drive (the bend area). • The bend area is where standard (non-flex) or continuous-flex cables can be bent to their specified bend radius.
Continuous bend radius	Continuous flex	The continuous bend radius for Kinetix 2090 single motor cables is: • 10 times the cable diameter for 2090-CSBM1*xx-xx*AF*xx* cables • 7 times the cable diameter for 2090-CSBM1*xx-xx*LF*xx* cables • Secure the continuous-flexing area, the recommended cable diameters (dimension B) from each end of the cable, with a rigid mount that helps prevent the cable from flexing where it connects to the motor or shield clamp. Refer to the cable carrier manufacturer's recommendations for procedure and dimensions related to flexing applications. • Use this measurement when routing the cable in a continuous-flex application between motor and drive (the continuous-flexing area). • The continuous flexing area is where continuous-flex cables can be flexed repeatedly. • Install the cable along the neutral axis to make sure that the cable is not in contact with the inner radius of the cable carrier while flexing.

Single Motor Cable Dimensions (18 AWG) Brake



Dimensions are in mm (in.)
(reference only)

Single Motor Cable Dimensions (18 AWG) Without Brake

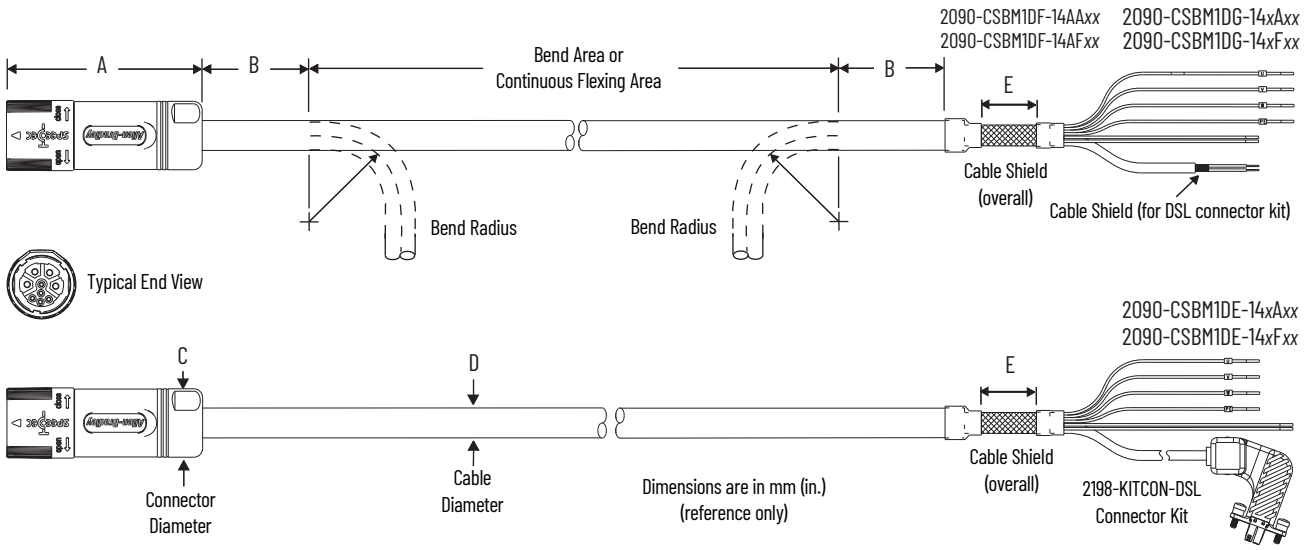


Single Motor Cable Dimensions (18 AWG)

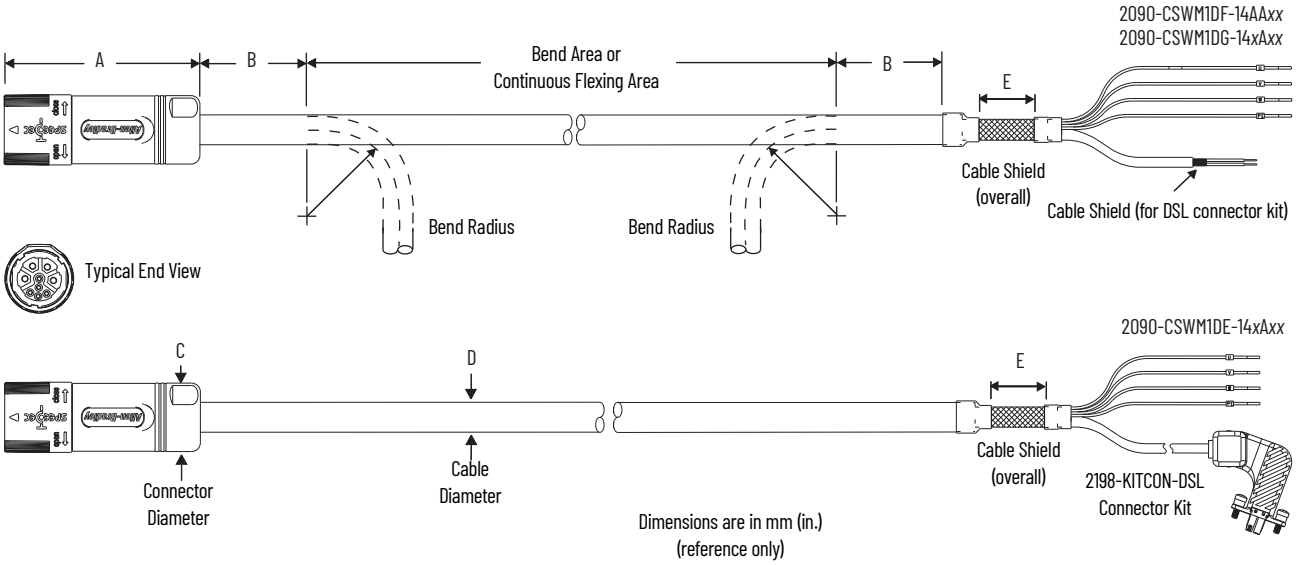
Cable Cat. No.	A mm (in.)	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)
2090-CSBM1DF-18AAxx	81.0 (3.2)	105 (4.1)	–	28.0 (1.1)	15.0 (0.59)	41.0 (1.6)
2090-CSBM1DE-18AAxx						71.0 (2.8)
2090-CSBM1DG-18AAxx						
2090-CSWM1DF-18AAxx						41.0 (1.6)
2090-CSWM1DE-18AAxx						71.0 (2.8)
2090-CSWM1DG-18AAxx						
2090-CSBM1DF-18AFxx			150 (5.9)			41.0 (1.6)
2090-CSBM1DE-18AFxx						71.0 (2.8)
2090-CSBM1DG-18AFxx						
2090-CSBM1DE-18VAxx	81.0 (3.2)	92.4 (3.6)	–	28.0 (1.1)	13.2 (0.52)	71. (2.8)
2090-CSBM1DG-18VAxx						
2090-CSWM1DE-18VAxx		85.4 (3.4)			12.2 (0.48)	
2090-CSWM1DG-18VAxx						
2090-CSBM1DE-18LFxx		92.4 (3.6)	92.4 (3.6)		13.2 (0.52)	
2090-CSBM1DG-18LFxx						

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Single Cable Bend Radius Definitions on page 14 for more information.

Single Motor Cable Dimensions (14 AWG) Brake



Single Motor Cable Dimensions (14 AWG) Without Brake



Single Motor Cable Dimensions (14 AWG)

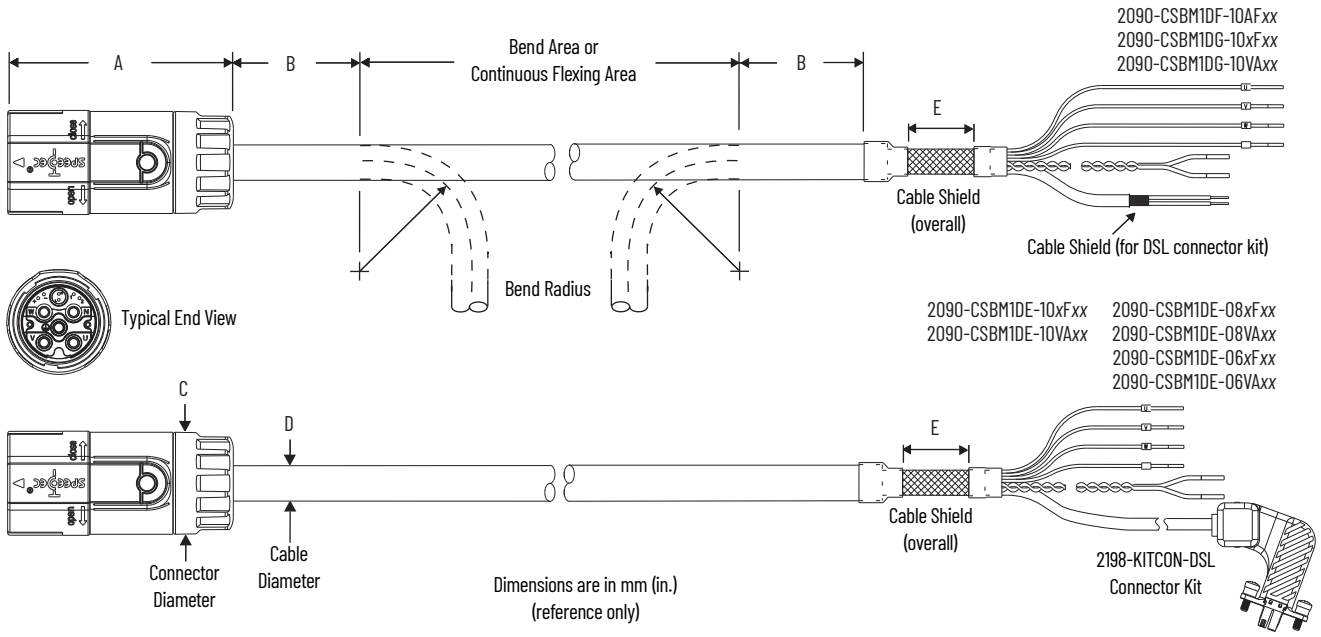
Cable Cat. No.	A mm (in.)	B [1] mm (in.)	Continuous Bend Radius [1] mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)
2090-CSBM1DF-14AAxx	81.0 (3.2)	105 (4.1)	–	28.0 (1.1)	15.0 (0.59)	41.0 (1.6)
2090-CSBM1DE-14AAxx (series A)		105 (4.1)			15.0 (0.59)	71.0 (2.8)
2090-CSBM1DE-14AAxx (series B)		114 (4.5)			16.3 (0.64)	
2090-CSBM1DG-14AAxx		105 (4.1)			15 (0.59)	
2090-CSWM1DF-14AAxx						41.0 (1.6)
2090-CSWM1DE-14AAxx						71.0 (2.8)
2090-CSWM1DG-14AAxx						
2090-CSBM1DF-14AFxx		119 (4.7)	170 (6.7)		17.0 (0.67)	41.0 (1.6)
2090-CSBM1DE-14AFxx (series A and B)						71.0 (2.8)
2090-CSBM1DG-14AFxx						

Single Motor Cable Dimensions (14 AWG) (Continued)

Cable Cat. No.	A mm (in.)	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)
2090-CSBM1DE-14VA*xx*	81 (3.2)	106.4 (4.2)	N/A	28 (1.1)	15.2 (0.60)	71 (2.8)
2090-CSBM1DG-14VA*xx*						
2090-CSWM1DE-14VA*xx*		91 (3.6)			13 (0.51)	
2090-CSWM1DG-14VA*xx*						
2090-CSBM1DE-14LF*xx*		106.4 (4.2)	106.4 (4.2)		15.2 (0.60)	
2090-CSBM1DG-14LF*xx*						

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Single Cable Bend Radius Definitions on page 14 for more information.

Single Motor Cable Dimensions (10, 8, and 6 AWG)



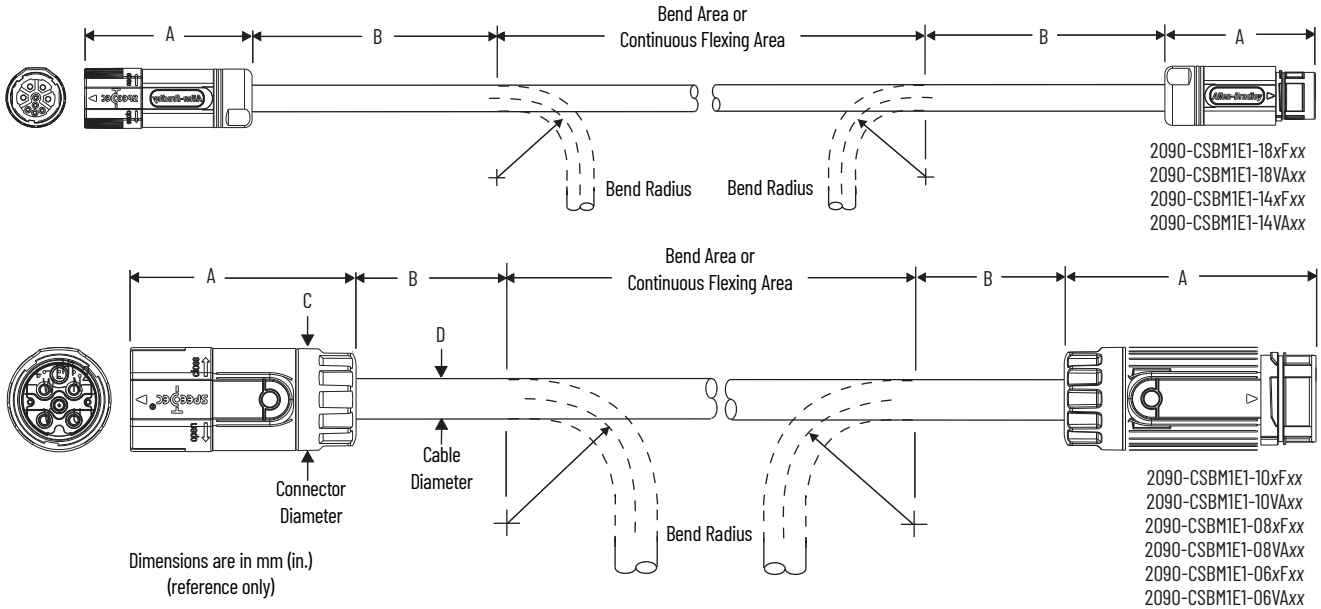
Single Motor Cable Dimensions (10, 8, and 6 AWG)

Cable Cat. No.	A mm (in.)	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)
2090-CSBM1DF-10AF*xx*	100 (4.0)	133 (5.2)	190 (7.5)	46 (1.8)	19.0 (0.75)	50.8 (2.0)
2090-CSBM1DG-10AF*xx*						71.0 (2.8)
2090-CSBM1DE-10AF*xx* (series A)						
2090-CSBM1DE-10AF*xx* (series B)		142 (5.6)	203 (8.0)		20.3 (0.80)	
2090-CSBM1DE-08AF*xx*		200 (8.0)	250 (10.0)		25.0 (0.98)	89.0 (3.5)
2090-CSBM1DE-06AF*xx*						
2090-CSBM1DG-10VA*xx*	100 (4.0)	126 (5.0)	—	46 (1.8)	18.0 (0.71)	76.3 (3.0)
2090-CSBM1DG-10LF*xx*			126 (5.0)			
2090-CSBM1DE-10VA*xx*			—			71.0 (2.8)
2090-CSBM1DE-10LF*xx*			126 (5.0)			
2090-CSBM1DE-08VA*xx*		151.2 (5.9)	—		21.6 (0.85)	89.0 (3.5)
2090-CSBM1DE-08LF*xx*			151.2 (5.9)			
2090-CSBM1DE-06VA*xx*		168 (6.6)	—		24.0 (0.94)	89.0 (3.5)
2090-CSBM1DE-06LF*xx*			168 (6.6)			

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Single Cable Bend Radius Definitions on page 14 for more information.

Dimensions - Single Extension Cables

Extension Cable Dimensions



Extension Cable Dimensions

Extension Cable Cat. No.	**A** mm (in.)	**B** [1] mm (in.)	**Continuous Bend Radius** [1] mm (in.)	**C** mm (in.)	**D** mm (in.)
2090-CSBM1E1-18AFxx	81.0 (3.2)	105 (4.1)	150 (5.9)	28 (1.1)	15.0 (0.59)
2090-CSBM1E1-18LFxx		92.4 (3.6)	92.4 (3.6)		13.2 (0.52)
2090-CSBM1E1-18VAxx			–		
2090-CSBM1E1-14AFxx (series A and B)		119 (4.7)	170 (6.7)		17.0 (0.67)
2090-CSBM1E1-14LFxx		106.4 (4.2)	106.4 (4.2)		15.2 (0.60)
2090-CSBM1E1-14VAxx			–		
2090-CSBM1E1-10AFxx (series A)	100 (4.0)	133 (5.2)	190 (7.5)	46 (1.8)	19.0 (0.75)
2090-CSBM1E1-10AFxx (series B)		142 (5.6)	203 (8.0)		20.3 (0.80)
2090-CSBM1E1-10LFxx		126 (5.0)	126 (5.0)		18.0 (0.70)
2090-CSBM1E1-10VAxx			–		
2090-CSBM1E1-08AFxx		200 (8.0)	250 (10.0)		25.0 (0.98)
2090-CSBM1E1-08LFxx		151.2 (5.9)	151.2 (5.9)		21.6 (0.85)
2090-CSBM1E1-08VAxx			–		
2090-CSBM1E1-06AFxx		200 (8.0)	250 (10.0)		25.0 (0.98)
2090-CSBM1E1-06LFxx		168 (6.6)	168 (6.6)		24.0 (0.94)
2090-CSBM1E1-06VAxx			–		

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Single Cable Bend Radius Definitions on page 14 for more information.

Kinetix 2090 Single Cable Bulkhead Adapter Kits

These bulkhead adapter kits let you secure your single cables as they pass through the cabinet. For bulkhead adapter dimensions, see Bulkhead Adapter Kit Dimensions on page 56.

Kinetix 2090 Single Motor Cable Compatibility

Bulkhead Adapter Cat. No.	Standard (non-flex) (1) Power Cable Cat. No.	Continuous-flex (1) Power Cable Cat. No.	Description		Connector Diameter mm (in.)
2090-KPB47-12CF	2090-CSWM1DE/DG-18xAxx 2090-CSWM1DF-18AAxx	2090-CSWM1DE/DG-18xFxx 2090-CSWM1DF-18AFxx	Power/feedback	SpeedTec DIN	28.0 (1.1)
	2090-CSWM1DE/DG-14xAxx 2090-CSWM1DF-14AAxx	2090-CSWM1DE/DG-14xFxx 2090-CSWM1DF-14AFxx			
	2090-CSBM1DE/DG-18xAxx 2090-CSBM1DF-18AAxx	2090-CSBM1DE/DG-18xFxx 2090-CSBM1DF-18AFxx	Power/brake/ feedback		
	2090-CSBM1DE/DG-14xAxx 2090-CSBM1DF-14AAxx	2090-CSBM1DE/DG-14xFxx 2090-CSBM1DF-14AFxx			
	2090-CSBM1E1-18VAxx	2090-CSBM1E1-18xFxx			
	2090-CSBM1E1-14VAxx	2090-CSBM1E1-14xFxx			
2090-KPB47-06CF	2090-CSBM1DE/DG-10xAxx 2090-CSBM1DF-10AAxx	2090-CSBM1DE/DG-10xFxx 2090-CSBM1DF-10AFxx	Power/brake/ feedback	SpeedTec DIN	46.0 (1.8)
	2090-CSBM1DE-08VAxx	2090-CSBM1DE-08xFxx			
	2090-CSBM1DE-06VAxx	2090-CSBM1DE-06xFxx			
	2090-CSBM1E1-10VAxx	2090-CSBM1E1-10xFxx			
	2090-CSBM1E1-08VAxx	2090-CSBM1E1-08xFxx			
	2090-CSBM1E1-06VAxx	2090-CSBM1E1-06xFxx			

(1) Cable catalog numbers extended with DF/DE/DG reflects 2090-CSxM1DF, 2090-CSxM1DE, and 2090-CSxM1DG cables.

Kinetix Motor Power and Feedback Cables

A wide variety of power and feedback cables with rugged DIN connectors are available for connecting your motion control system. Standard (non-flex) motor power and feedback cables are available for all Allen-Bradley servo motors and actuators. Continuous-flex rated cables, intended for moving applications, are also available. Continuous-flex extension and standard (non-flex) transition cables are also available for your applications that require them.

IMPORTANT	All flying-lead feedback cables require breakout components or connector kits for drive-end terminations. Refer to Breakout Components and Connector Kits in Kinetix 3, 300, 350, 2000, 6000, 6200, 6500, 7000 Servo Drives Specifications, publication KNX-TD005 for catalog numbers and descriptions.

IMPORTANT	Standard (non-flex) cables have a regular maintenance and installation bend radius of 7 times the cable diameter. For flexing applications, continuous-flex cables have an operational bend radius of 12 times the cable diameter.

Catalog Numbers - Kinetix Power and Feedback Cables

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering charts below to understand the configuration of your component. For questions regarding product availability, contact your Allen-Bradley distributor.

Motor Power/Brake, Feedback, and Extension Cables

2090 - C xx Mx Dx - Cx Ax xx

Cable Length
Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Cable Type
AA = Standard, non-flex
AF = Continuous-flex

Encoder Type (applies to feedback cables)
CB = Serial incremental/Serial absolute - battery backup
CC = Serial incremental/Incremental
CD = SIN/COS High-resolution/Incremental
CE = SIN/COS High-resolution/Resolver

Wire Gauge Size (applies to power cables)
16, 14, 12, 10, 8, 6, 4, and 2 AWG

Drive-end Connector Type
DF = Drive-end, flying-lead
DD = Drive-end, D-sub connector
E7 = Extension receptacle (SpeedTec ready)

Motor-end Connector Type
M6 = Circular plastic connector
M4 = Threaded DIN connector
M7 = SpeedTec DIN connector

Cable Type
PB = Motor power with brake wires
PW = Motor power only
FB = Motor feedback only

Accessory Component
C = Cable

Bulletin Number

Transition Cables

Cat. No.	Cable Gauge AWG	Cable Type	Description
2090-CPBM4E2-14TR	14 and 16	Power/brake	Threaded DIN connector (M4) on motor-end to bayonet receptacle (E2) for mating with existing bayonet cable, 500 mm (19.7 in.).
2090-CPBM4E2-10TR	10		
2090-CPBM4E2-08TR	8		
2090-CPBM4E2-04TR	4 and 6		
2090-CPWM4E2-14TR	14 and 16	Power (only)	
2090-CPWM4E2-10TR	10		
2090-CPWM4E2-08TR	8		
2090-CPWM4E2-04TR	4 and 6		
2090-CFBM4E2-CATR	N/A	Feedback	

Motor Power, Feedback, and Brake Cables

2090 - *xx x xx xx - xx S xx*

Cable Length
Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Motor Connector
S = Straight

Wire Gauge Size (AWG)
16 = Motor power cable
18 = Motor brake cables
Blank = Feedback cables

Motor/Actuator Series
MF = Threaded DIN Connectors
MPS-A/B*xxxx* (MPS-A/B*xxxx*-M/S)
HPK-B/E*xxxx* (HPK-B/E*xxxxx*-M/S)
MPAS-A/B*xxxx* (MPAS-A/B*xxxxx*-V/A) or MPMA-A/B*xxxx*
T = TL-Axxxx-B

Cable Type
P = Motor power
F = Motor feedback connector (flying-leads at drive)
FC = Motor feedback (connectors at both ends, Kinetix TL and TLY
FM = Motor feedback (flying-leads to D-sub at drive)
B = Motor brake

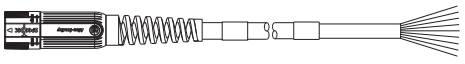
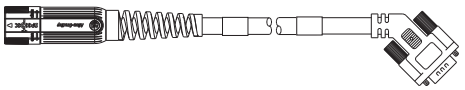
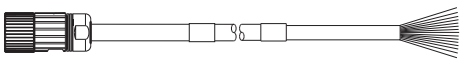
Flex Option
N = Standard cable (non-flex)

Drive Family
DA = Kinetix 5300, Kinetix 5100, Kinetix 3 drives
XX = All other drives

Bulletin Number

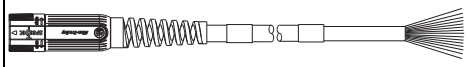
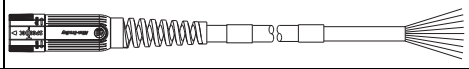
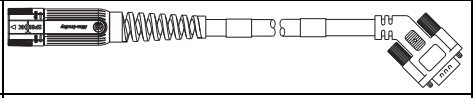
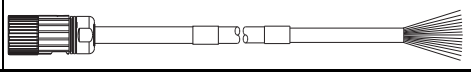
Kinetix Power and Feedback Cables Overview

Feedback Cable Descriptions (standard, non-flex)

Standard Cable Cat. No.	Description	Cable Configuration		Connector Type
		Motor End	Drive End	
2090-CFBM7DF-CEAA*xx*	• Drive-end flying-leads (DF) • High-resolution or resolver applications (CE)			SpeedTec DIN (M7)
2090-CFBM7DD-CEAA*xx*	• Drive-end 15-pin connector (DD) • High-resolution or resolver applications (CE)			
2090-XXNFMF-S*xx*	• Drive-end flying-leads • High-resolution or incremental applications			Threaded DIN (M4)
2090-CFBM4E2-CATR	• Drive-end bayonet (E2), transition (TR) cable [1] • Motor-end threaded DIN (M4) • All feedback types (CA)			

(1) Threaded DIN connector (motor end) and bayonet connector for 2090-XXNFMP-S*xx* cable. Refer to Kinetix Motor Power and Feedback Transition Cables on page 26.

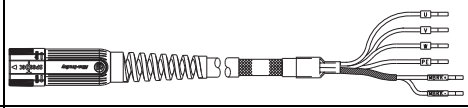
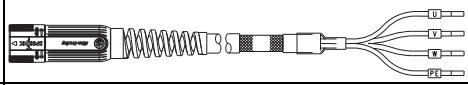
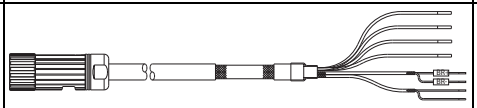
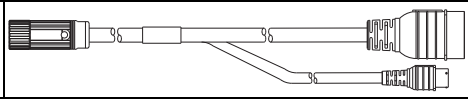
Feedback Cable Descriptions (continuous-flex)

Continuous-flex Cable Cat. No.	Description	Cable Configuration		Connector Type
		Motor End	Drive End	
2090-CFBM7DF-CDAF*xx*	• Drive-end flying-leads (DF) • High-resolution or incremental applications (CD)			SpeedTec DIN (M7)
2090-CFBM7DF-CEAF*xx*	• Drive-end flying-leads (DF) • High-resolution or resolver applications (CE)			
2090-CFBM7DD-CEAF*xx*	• Drive-end 15-pin connector (DD) • High-resolution or resolver applications (CE)			
2090-CFBM7E7-CDAF*xx* 2090-CFBM7E7-CEAF*xx*	• Drive-end (male) connector, extension (E7) [1] • Motor-end SpeedTec DIN cable plug (M7)			
2090-CFBM4DF-CDAF*xx*	• Drive-end flying-leads • High-resolution or incremental applications			Threaded DIN (M4)

(1) SpeedTec DIN connector (motor end) and male connector for extending SpeedTec or threaded DIN cable. Refer to SpeedTec DIN Continuous-flex Extension Cables on page 25.

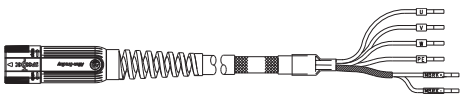
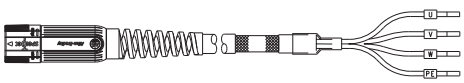
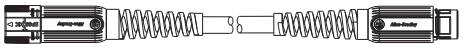
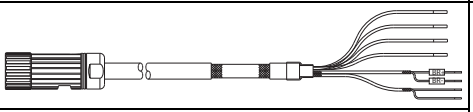
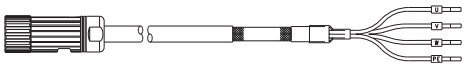
IMPORTANT Feedback cables with the CE designation, for example 2090-CFBM7DF-CEAA*xx*, are intended for high-resolution encoder or resolver applications and have fewer conductors than feedback cables with the CD designation, for example, 2090-CFBM7DF-CDAF*xx* that are intended for high-resolution or incremental encoder applications.

Power/Brake Cable Descriptions (standard, non-flex)

Standard Cable Cat. No.	Description	Cable Configuration		Connector Type
		Motor End	Drive End	
2090-CPBM7DF-*xx*AA*xx*	• Drive-end flying-leads (DF) • Power/brake wires (PB)			SpeedTec DIN (M7)
2090-CPWM7DF-*xx*AA*xx*	• Drive-end flying-leads (DF) • Power wires only (PW)			
2090-XXNPMF-*xx*S*xx*	• Drive-end flying-leads • Power/brake wires			Threaded DIN (M4)
2090-CPBM4E2-*xx*TR	• Drive-end bayonet (E2), transition (TR) cable (1) • Motor-end threaded DIN (M4) • Power/brake wires (PB)			
2090-CPWM4E2-*xx*TR	• Drive-end bayonet (E2), transition (TR) cable (1) • Motor-end threaded DIN (M4) • Power wires only (PW)			

(1) Threaded DIN connector (motor end) and bayonet connector for 2090-XXNFMP-S*xx* cable. Refer to Kinetix Motor Power and Feedback Transition Cables on page 26.

Power/Brake Cable Descriptions (continuous-flex)

Continuous-flex Cable Cat. No.	Description	Cable Configuration		Connector Type
		Motor End	Drive End	
2090-CPBM7DF-*xx*AF*xx*	• Drive-end flying-leads (DF) • Power/brake wires (PB)			SpeedTec DIN (M7)
2090-CPWM7DF-*xx*AF*xx*	• Drive-end flying-leads (DF) • Power wires only (PW)			
2090-CPBM7E7-*xx*AF*xx*	• Drive-end (male) connector, extension (E7) (1) • Motor-end SpeedTec DIN cable plug (M7)			
2090-CPBM4DF-*xx*AF*xx*	• Drive-end flying-leads (DF) • Power/brake wires (PB)			Threaded DIN (M4)
2090-CPWM4DF-*xx*AF*xx*	• Drive-end flying-leads (DF) • Power wires only (PW)			

(1) SpeedTec DIN connector (motor end) and male connector for extending SpeedTec or threaded DIN cable. Refer to SpeedTec DIN Continuous-flex Extension Cables on page 25.

Kinetix Motor Power and Feedback Cables with SpeedTec DIN Connectors Overview



Kinetix power and feedback cables with SpeedTec DIN connectors let OEMs and end-users standardize their machines on a common motor cable family. These cables, designed by Rockwell Automation for optimal performance with Allen-Bradley servo drives, servo motors, and linear actuators, offer best-in-class features and standards compliance. Innovative features, configuration options, and accessories provide machine builders with complete control of the cable requirements in their machines.

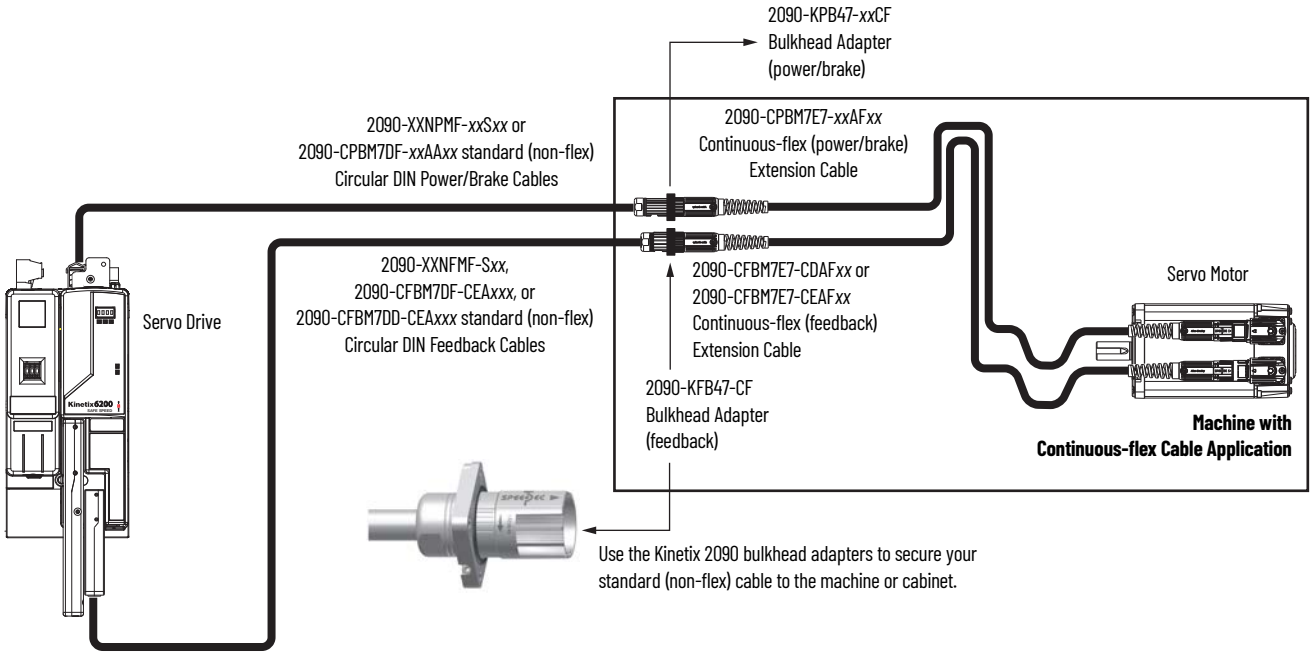
SpeedTec DIN Cable Features

- NFPA 79 Compliant
- UL Listed bulk cable with 600V insulation rating for use in cable trays and exposed run applications.
  - Type TC-ER: Power-only and power-with-brake cables
  - Type PLTC-ER: Feedback cable optimized for high-resolution feedback motors
- CSA AWM, I/II A/B, 600V, 90 °C construction
- SpeedTec connection system yields quick connections with positive metallic keying
- DESINA compliant jacket coloring (orange for power, green for feedback) for easy identification and separation of cables in a machine
- Cables are included in the Rockwell Automation servo system Declaration of Conformity (DoC)
- Continuous flex cables are suitable for 20 million flex-cycles
  - Continuous-flex cables are also available in extension cable configurations
- Comprehensive accessories optimize the use of cables in machines

SpeedTec DIN Continuous-flex Extension Cables

Motor power and feedback extension cables provide continuous-flex cable technology between your standard (non-flex) cable and the continuous-flex application. The IP rating for continuous-flex extension cables is consistent with the motor/actuator and cable combination they are extending. Extension cables are available in lengths up to 30 m (98.4 ft). Extension power cables are available in 16, 14, 10, and 8 AWG.

Typical Extension Cable Application with Bulkhead Adapter



Continuous-flex Extension Feedback Cables

Continuous-flex Cable Cat. No.	Description	Applications
2090-CFBM7E7-CDAFxx	Feedback extension cable, SpeedTec DIN (male/female) connectors	Intended for high-resolution or incremental encoder applications.
2090-CFBM7E7-CEAFxx		Intended for high-resolution encoder or resolver applications.

Continuous-flex Extension Power Cables

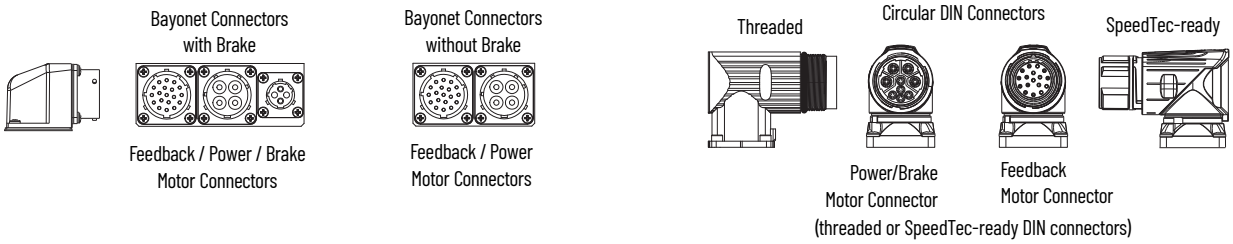
Continuous-flex Cable Cat. No.	Description
2090-CPBM7E7-16AFxx	Power/brake extension cable, SpeedTec DIN (male/female) connectors
2090-CPBM7E7-14AFxx	
2090-CPBM7E7-10AFxx	
2090-CPBM7E7-08AFxx	

Kinetix Motor Power and Feedback Transition Cables

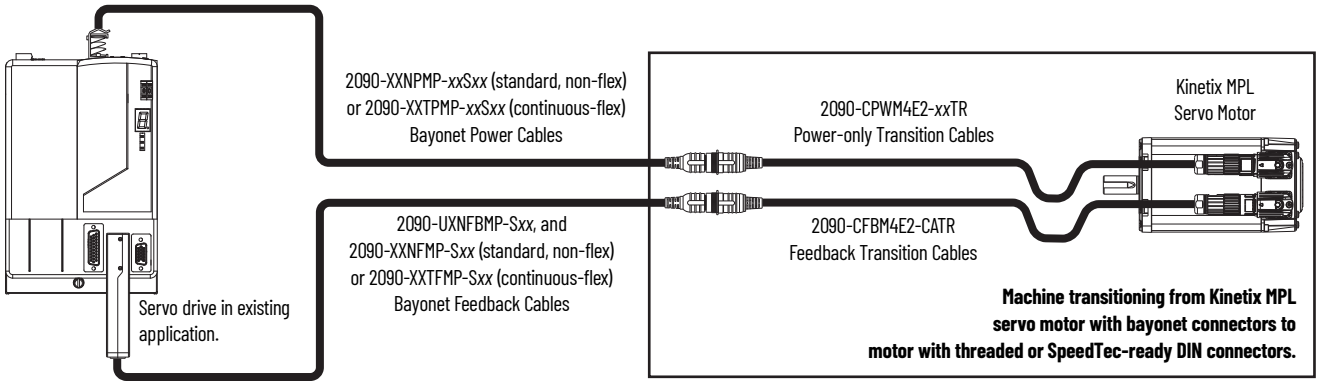
Motor power/brake and feedback transition cables support installations where Kinetix MPL motors with bayonet connectors were recently replaced by the same motor with circular DIN connectors. These 0.5 m (19.7 in.) cables provide a seamless transition between your new motor and existing power, brake, and feedback cables.

Brake contacts for motors with bayonet connectors are in a separate connector. Power/brake cables with circular DIN connectors (either threaded or SpeedTec) include brake contacts in the power/brake connector.

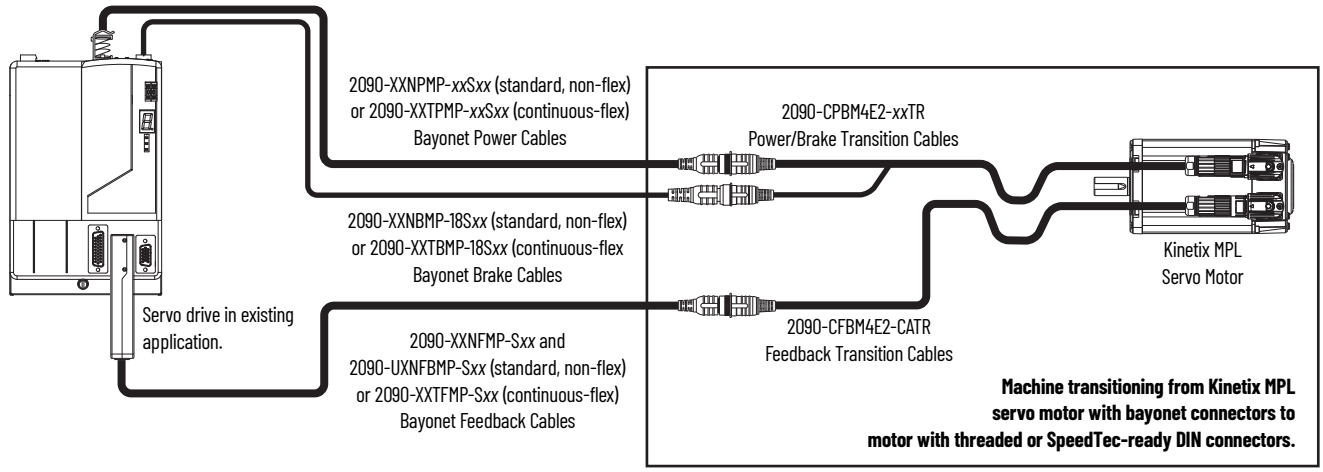
Bayonet and Circular DIN Motor Connectors



Transition Cable Application (power-only cable)



Transition Cable Application (power/brake cable)



Refer to the transition cable selection tables on page 31 for cable catalog numbers for the specific Kinetix MPL or Kinetix MPM motor you are transitioning to.

Circular DIN Connector Compatibility Overview

Motors equipped with either threaded or SpeedTec circular DIN connectors are listed below. Circular DIN motor connectors rotate up to 180° and combine power and brake wires in the same connector.

Motor Connector/Cable Plug Compatibility

Motor/Actuator Cat. No.	Connector Type	Power-only or Power/Brake Cables	Feedback Cables
VPC-B*xxxxx*-Y	SpeedTec-ready DIN	2090-CP*x*M7DF-*xx*AA*xx* 2090-CP*x*M7DF-*xx*AF*xx*	2090-CFBM7DF-CEAA*xx* 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DF-CDAF*xx*
VPC-B*xxxxx*-S VPC-B3004*x*-M MPL-A/B15*xxx* and MPL-A/B2*xxx* MPL-A/B3*xxx*, MPL-A/B4*xxx*, MPL-A/B45*xxx*, MPL-A/B5*xxx* MPL-B6*xxx*, MPL-B8*xxx*, and MPL-B9*xxx* MPM-A/B*xxxx* MPF-A/B*xxxx* RDB-B*xxxx* (1) LDAT-S*xxxxxx*-*x*D*x* and LDAT-S*xxxxxx*-*x*B*x* (1) MPAS-A/B*xxxx* and MPMA-A/B*xxxx* (1) MPAR-A/B*xxxxx* MPAI-A/B*xxxxx* LDC-C*xxxxxxx* and LDL-*xxxxxxx* (1)			2090-CFBM7DF-CEAA*xx* 2090-CFBM7DD-CEAA*xx* 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx* 2090-CFBM7DF-CDAF*xx*
MPS-A/B*xxxx*	SpeedTec-ready DIN with 3 m (9.8 ft) cable extensions	• M7 cable plugs • O-ring on motor connector not required • Adapts to SpeedTec-ready connectors only	
HPK-B/E*xxxxx*	SpeedTec-ready DIN	Customer supplied(2)	2090-CFBM7DF-CEAA*xx* 2090-CFBM7DD-CEAA*xx* 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx*
MMA-B080, MMA-B100, MMA-B132, MMA-B160, MMA-B180, MMA-B225			2090-CFBM7DF-CDAF*xx*

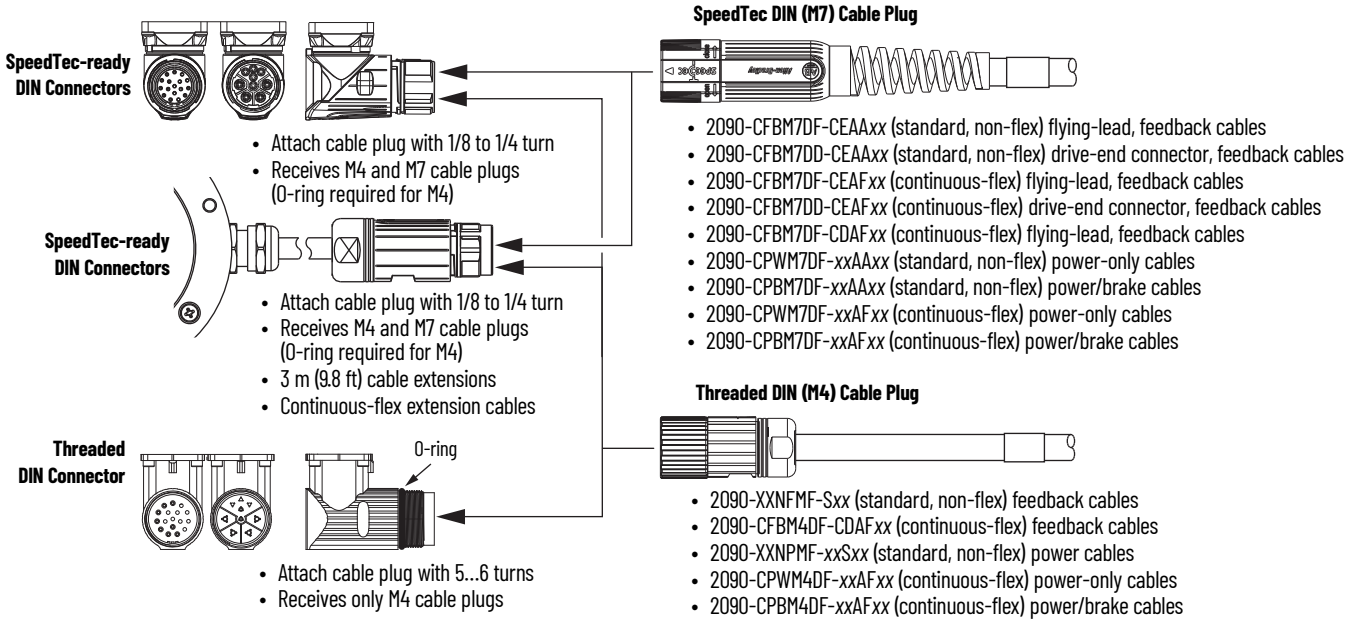
(1) The Kinetix LDC and Kinetix LDL linear motors, LDAT-S*xxxxxx*-*x*B*x* linear thrusters, Kinetix MPAS and MPMA linear stages, and Kinetix RDB motors have SpeedTec-ready DIN (M7) motor connectors, but require the additional conductors included with 2090-CFBM7DF-CDAF*xx* (continuous-flex) and 2090-XXNFMF-S*xx* standard (non-flex) cables.

(2) For information to help size cables for these large motors, see Kinetix MMA Asynchronous Motor Frequently Asked Questions for Good Installation Processes, Knowledgebase articlefor additoinal information.

IMPORTANT Motors equipped with SpeedTec-ready DIN (M7) connectors are fully compatible with threaded DIN (M4) cable plugs.

- SpeedTec-ready DIN motor connectors are also compatible with SpeedTec DIN (M7/E7) extension cable plugs.
- Motors equipped with threaded DIN (M4) connectors are compatible with only threaded DIN (M4) cable plugs.

Typical Circular DIN Cable Applications



Kinetix Motor Power and Feedback Cable Selection

These tables provide motor power and feedback cable catalog numbers for use with Allen-Bradley servo motors. Most motor brake wires are in the power cable, so a separate brake cable is not required (except where noted). The IP rating is dependent on the use of Allen-Bradley Kinetix 2090 cables as listed in these tables.

IMPORTANT Maximum motor cable length depends on the feedback type and overall system design. The drive-system power supply, AC input-power type, and AC input voltage are among the configuration variables. For more information on maximum cable lengths see your servo drive user manual or the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.

Kinetix 5700 single-axis inverters (catalog numbers 2198-S086-ERS*x*, 2198-S130-ERS*x*, and 2198-S160-ERS*x*) are compatible with 2090-CPxM7DF cables that have 10, 8, 6, 4, and 2 AWG power conductors. 2198-S263-ERS*x* and 2198-S312-ERS*x* single-axis inverters are also compatible with 2090-CPxM7DF cables, but only 4 and 2 AWG power conductors.

Kinetix VPC Servo Motors

Motor Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
VPC-B*xxxxx*-S	2198-D*xxx*-ERS3 2198-D*xxx*-ERS4 or 2198-S*xxx*-ERS3 2198-S*xxx*-ERS4	Single-turn Digital Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* (continuous-flex)	IP65 with shaft seal (standard) (2)
VPC-B*xxxxx*-Y		Absolute, Multi-turn Digital Encoder with EnDat Digital Protocol		
VPC-B3004*x*-M	2198-S*xxx*-ERS3 2198-S*xxx*-ERS4	Absolute, Multi-turn Digital Encoder with Hiperface Protocol		

(1) For information on maximum cable lengths see the Kinetix 5700 Servo Drives User Manual, publication 2198-UM002.
(2) IP65 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

Kinetix VPC (400V-class) Servo Motors	Power Cable Cat. No.	IP Rating
VPC-B1652*x*-S/Y, VPC-B1653*x*-S/Y	2090-CPxM7DF-14AA*xx* (standard, non-flex) 2090-CPxM7DF-14AF*xx* (continuous-flex)	IP65 with shaft seal (standard) (1)
VPC-B2153*x*-S/Y, VPC-B21549-S/Y		
VPC-B1654D-S/Y	2090-CPxM7DF-10AA*xx* (standard, non-flex) 2090-CPxM7DF-10AF*xx* (continuous-flex)	
VPC-B2154A-S/Y		
VPC-B30029-S/Y		
VPC-B2154B-S/Y, VPC-B2154D-S/Y, VPC-B2155B-S/Y, VPC-B2155D-S/Y	2090-CPxM7DF-08AA*xx* (standard, non-flex) 2090-CPxM7DF-08AF*xx* (continuous-flex)	
VPC-B3002A-S/Y, VPC-B30039-S/Y, VPC-B30049-S/Y/M		
VPC-B2156A-S/Y, VPC-B2156D-S/Y	2090-CPBM7DF-06AA*xx* (standard, non-flex)	
VPC-B3003A-S/Y		
VPC-B3004A-S/Y, VPC-B3004B-S/Y/M, VPC-B3004D-S/Y/M	2090-CPBM7DF-04AA*xx* (standard, non-flex)	

(1) IP65 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

IMPORTANT The Kinetix MPL servo motors on this page are equipped with DIN connectors (specified by 7 in the catalog number) and are not compatible with cables designed for motors equipped with bayonet connectors (specified by 2 in the catalog number). The motors with bayonet connectors (for example, MPL-A310P-*xx*2xAA) are being discontinued and require 2090-XXNFMP-S*xx* (bayonet) cables. For help with migration or to select bayonet cables, contact your Rockwell Automation sales representative.

Kinetix MPL Servo Motors

Motor Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPL-A15*xxx*-V/E*x*7xAA, MPL-A2*xxx*-V/E*x*7xAA	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM	Single-turn or Absolute, Multi-turn Digital Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx* (continuous-flex)	• IP50 min, without shaft seal (standard) • IP66 with shaft seal (3)
MPL-B15*xxx*-V/E*x*7xAA, MPL-B2*xxx*-V/E*x*7xAA	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x* or 2097-V34PR*x*-LM			
MPL-A3*xxx*-M/S*x*7xAA, MPL-A4*xxx*-M/S*x*7xAA, MPL-A45*xxx*-M/S*x*7xAA, MPL-A5*xxx*-M/S*x*7xAA	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-*xxxx*-ERS3 or 2198-*xxxx*-ERS4 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM			
MPL-B3*xxx*-M/S*x*7xAA, MPL-B4*xxx*-M/S*x*7xAA, MPL-B45*xxx*-M/S*x*7xAA, MPL-B5*xxx*-M/S*x*7xAA, MPL-B6*xxx*-M/S*x*7xAA, MPL-B8*xxx*-M/S*x*7xAA, MPL-B9*xxx*-M/S*x*7xAA	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-*xxxx*-ERS3 or 2198-*xxxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x* or 2097-V34PR*x*-LM 2099-BM*xx*-S			
MPL-A15*xxx*-H*x*7xAA, MPL-A2*xxx*-H*x*7xAA	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM	Incremental (2)	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex)	• IP50 min, without shaft seal (standard) • IP66 with shaft seal (3)
MPL-B15*xxx*-H*x*7xAA, MPL-B2*xxx*-H*x*7xAA	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x* or 2097-V34PR*x*-LM			
MPL-A3*xxx*-H*x*7xAA, MPL-A4*xxx*-H*x*7xAA, MPL-A45*xxx*-H*x*7xAA	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM		2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex)	
MPL-B3*xxx*-H*x*7xAA, MPL-B4*xxx*-H*x*7xAA, MPL-B45*xxx*-H*x*7xAA	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x* or 2097-V34PR*x*-LM			
MPL-B*xxxx*-R*x*7xAA	2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S	Resolver (2)	2090-CFBM7DF-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* (continuous-flex)	

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.
(2) Not all Kinetix MPL motors are available with incremental and resolver feedback options.
(3) IP66 with optional shaft seal and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

IMPORTANT The Kinetix MPL servo motors on this page are equipped with DIN connectors (specified by 7 in the catalog number) and are not compatible with cables designed for motors equipped with bayonet connectors (specified by 2 in the catalog number). The motors with bayonet connectors (for example, MPL-A310P-*xx*2*x*AA) are being discontinued and require 2090-XXNPMP-*xx*S*xx* (bayonet) cables. For help with migration or to select bayonet cables, contact your Rockwell Automation sales representative.

Kinetix MPL (200V-class) Servo Motors	Power Cable Cat. No.	IP Rating
MPL-A15*xxx*-*xx*7xAA, MPL-A2*xxx*-*xx*7xAA	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	• IP50 min, without shaft seal (standard) • IP66 with shaft seal (1)
MPL-A3*xxx*-*xx*7xAA		
MPL-A420P-*xx*7xAA, MPL-A430H-*xx*7xAA		
MPL-A4530F-*xx*7xAA, MPL-A4540C-*xx*7xAA		
MPL-A430P-*xx*7xAA, MPL-A4530K-*xx*7xAA, MPL-A4540F-*xx*7xAA	2090-CPxM7DF-14AA*xx* (standard, non-flex) 2090-CPxM7DF-14AF*xx* (continuous-flex)	
MPL-A4560F-*xx*7xAA	2090-CPxM7DF-12AA*xx* (standard, non-flex)	
MPL-A520K-*xx*7xAA	2090-CPxM7DF-10AA*xx* (standard, non-flex) 2090-CPxM7DF-10AF*xx* (continuous-flex)	
MPL-A540K-*xx*7xAA, MPL-A560F-*xx*7xAA	2090-CPxM7DF-08AA*xx* (standard, non-flex) 2090-CPxM7DF-08AF*xx* (continuous-flex)	

(1) IP66 with optional shaft seal and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

Kinetix MPL (400V-class) Servo Motors	Power Cable Cat. No.	IP Rating
MPL-B15*xxx*-*xx*7xAA, MPL-B2*xxx*-*xx*7xAA	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	• IP50 min, without shaft seal (standard) • IP66 with shaft seal (1)
MPL-B3*xxx*-*xx*7xAA		
MPL-B4*xxx*-*xx*7xAA		
MPL-B45*xxx*-*xx*7xAA		
MPL-B520K-*xx*7xAA		
MPL-B540D-*xx*7xAA, MPL-B540K-*xx*7xAA, MPL-B560F-*xx*7xAA	2090-CPxM7DF-14AA*xx* (standard, non-flex) 2090-CPxM7DF-14AF*xx* (continuous-flex)	
MPL-B580F-*xx*7xAA, MPL-B580J-*xx*7xAA	2090-CPxM7DF-10AA*xx* (standard, non-flex) 2090-CPxM7DF-10AF*xx* (continuous-flex)	
MPL-B640F-*xx*7xAA (2)		
MPL-B660F-*xx*7xAA, MPL-B680D-*xx*7xAA, (2) MPL-B960B-*xx*7xAA, MPL-B980B-*xx*7xAA (2)	2090-CPxM7DF-08AA*xx* (standard, non-flex) 2090-CPxM7DF-08AF*xx* (continuous-flex)	
MPL-B680F-*xx*7xAA, MPL-B680H-*xx*7xAA, MPL-B860D-*xx*7xAA, MPL-B880C-*xx*7xAA,	2090-CPBM7DF-06AA*xx* (standard, non-flex)	
MPL-B880D-*xx*7xAA	2090-CPBM7DF-04AA*xx* (standard, non-flex)	
MPL-B960C-*xx*7xAA, MPL-B960D-*xx*7xAA, MPL-B980C-*xx*7xAA, MPL-B980D-*xx*7xAA		
MPL-B980E-*xx*7xAA	2090-CPBM7DF-02AA*xx* (standard, non-flex)	

(1) IP66 with optional shaft seal and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.
(2) For applications that use these five motors (catalog numbers MPL-B*xxxx*-*xx*7**4**AA with the brake option) where the power cable length exceeds 50 m (164 ft), 2090-CPBM7DF-06AA*xx* (6 AWG) cable is required. Motors without the brake option (catalog numbers MPL-B*xxxx*-*xx*7**2**AA can use the cable size as specified in the table regardless of cable length.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Transition Cables for Kinetix MPL Servo Motors (200V-class)

Motor Cat. No. (1)	Power-only Cable Cat. No.	Power/Brake Cable Cat. No.	Feedback Cable Cat. No.
MPL-A15*xxx* and MPL-A2*xxx*	N/A	N/A	N/A
MPL-A3*xxx*, MPL-A4*xxx*, MPL-A45*xxx*	2090-CPWM4E2-14TR	2090-CPBM4E2-14TR	2090-CFBM4E2-CATR
MPL-A5*xxx*	2090-CPWM4E2-10TR	2090-CPBM4E2-10TR	

(1) Kinetix MPL motor catalog number is transitioning from MPL-A*xxxx-xx2x*AA (with bayonet connectors) to MPL-A*xxxx-xx7x*AA (with SpeedTec DIN connectors).

Transition Cables for Kinetix MPL Servo Motors (400V-class)

Motor Cat. No. (1)	Power-only Cable Cat. No.	Power/Brake Cable Cat. No.	Feedback Cable Cat. No.
MPL-B15*xxx* and MPL-B2*xxx*	N/A	N/A	N/A
MPL-B3*xxx* MPL-B4*xxx*, MPL-B45*xxx* MPL-B520, MPL-B540, MPL-B560	2090-CPWM4E2-14TR	2090-CPBM4E2-14TR	2090-CFBM4E2-CATR
MPL-B580	2090-CPWM4E2-10TR	2090-CPBM4E2-10TR	
MPL-B6*xxx* MPL-B860D, MPL-B880C, MPL-B960B, MPL-B960C, MPL-B980B	2090-CPWM4E2-08TR	2090-CPBM4E2-08TR	
MPL-B960D, MPL-B980C, MPL-B980D	2090-CPWM4E2-04TR	2090-CPBM4E2-04TR	

(1) Kinetix MPL motor catalog number is transitioning from MPL-B*xxxx-xx2x*AA (with bayonet connectors) to MPL-B*xxxx-xx7x*AA (with SpeedTec DIN connectors).

Transition Cables for Kinetix MPM Servo Motors (200V-class)

Motor Cat. No. (1)	Power-only Cable Cat. No.	Power/Brake Cable Cat. No.	Feedback Cable Cat. No.
MPM-A115*xxx*, MPM-A1302F	2090-CPWM4E2-14TR	2090-CPBM4E2-14TR	2090-CFBM4E2-CATR
MPM-A1304F, MPM-A1651F	2090-CPWM4E2-10TR	2090-CPBM4E2-10TR	
MPM-A1652F, MPM-A1653F	2090-CPWM4E2-08TR	2090-CPBM4E2-08TR	
MPM-A2152F, MPM-A2153F MPM-A2154C, MPM-A2154E	2090-CPWM4E2-04TR	2090-CPBM4E2-04TR	

(1) Kinetix MPL motor catalog number is transitioning from MPL-A*xxxx-xx2x*AA (with bayonet connectors) to MPM-A*xxxx-xx7x*AA (with SpeedTec DIN connectors).

Transition Cables for Kinetix MPM Servo Motors (400V-class)

Motor Cat. No. (1)	Power-only Cable Cat. No.	Power/Brake Cable Cat. No.	Feedback Cable Cat. No.
MPM-B115*xxx*, MPM-B1302F, MPM-B130xx MPM-B1651C, MPM-B1651F, MPM-B1652C, MPM-B1653C	2090-CPWM4E2-14TR	2090-CPBM4E2-14TR	2090-CFBM4E2-CATR
MPM-B1651M, MPM-B1652E, MPM-B1652F, MPM-B1653E, MPM-B2152C, MPM-B2153B	2090-CPWM4E2-10TR	2090-CPBM4E2-10TR	
MPM-B1653F, MPM-B2152F, MPM-B2152M MPM-B2153E, MPM-B2153F, MPM-B2154B, MPM-B2154E, MPM-B2154F	2090-CPWM4E2-08TR	2090-CPBM4E2-08TR	

(1) Kinetix MPL motor catalog number is transitioning from MPL-B*xxxx-xx2x*AA (with bayonet connectors) to MPM-B*xxxx-xx7x*AA (with SpeedTec DIN connectors).

Kinetix MPM Servo Motors

Motor Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPM-A*xxxxx*-M/S	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-*xxxx*-ERS3 or 2198-*xxxx*-ERS4 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM	Single-turn or Absolute, Multi-turn Digital Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx* (continuous-flex)	• IP50 min, without shaft seal (standard) • IP66 with shaft seal (2)
MPM-B*xxxxx*-M/S	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-*xxxx*-ERS3 or 2198-*xxxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x* or 2097-V34PR*x*-LM 2099-BM*xx*-S			
MPM-A*xxxxx*-2	2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S	Resolver (3)	2090-CFBM7DF-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* (continuous-flex)	
MPM-B*xxxxx*-2	2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S			

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.
(2) IP66 with optional shaft seal and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.
(3) Not all Kinetix MPM servo motors are available with the resolver feedback option.

Kinetix MPM (200V-class) Servo Motors	Power Cable Cat. No.	IP Rating
MPM-A115*xx*	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	• IP50 min, without shaft seal (standard) • IP66 with shaft seal (1)
MPM-A1302F	2090-CPxM7DF-14AA*xx* (standard, non-flex) 2090-CPxM7DF-14AF*xx* (continuous-flex)	
MPM-A1304F	2090-CPxM7DF-12AA*xx* (standard, non-flex)	
MPM-A1651F	2090-CPxM7DF-10AA*xx* (standard, non-flex) 2090-CPxM7DF-10AF*xx* (continuous-flex)	
MPM-A1652F, MPM-A1653F	2090-CPxM7DF-08AA*xx* (standard, non-flex) 2090-CPxM7DF-08AF*xx* (continuous-flex)	
MPM-A215*xx*	2090-CPBM7DF-06AA*xx* (standard, non-flex)	

(1) IP66 with optional shaft seal and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

Kinetix MPM (400V-class) Servo Motors	Power Cable Cat. No.	IP Rating
MPM-B1151*x*, MPM-B1152*x*	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	• IP50 min, without shaft seal (standard) • IP66 with shaft seal (1)
MPM-B1153E, MPM-B1153F		
MPM-B1302F, MPM-B1302M, MPM-B1304C, MPM-B1304E		
MPM-B1651C, MPM-B1652C		
MPM-B1153T	2090-CPxM7DF-14AA*xx* (standard, non-flex) 2090-CPxM7DF-14AF*xx* (continuous-flex)	
MPM-B1302T, MPM-B1304M		
MPM-B1651F, MPM-B1653C		
MPM-B1651M, MPM-B1652E, MPM-B1652F, MPM-B1653E	2090-CPxM7DF-10AA*xx* (standard, non-flex) 2090-CPxM7DF-10AF*xx* (continuous-flex)	
MPM-B2152C, MPM-B2153B (2)		
MPM-B1653F	2090-CPxM7DF-08AA*xx* (standard, non-flex) 2090-CPxM7DF-08AF*xx* (continuous-flex)	
MPM-B2152F, MPM-B2152M, MPM-B2153E, MPM-B2153F, (2) MPM-B2154B, MPM-B2154E, MPM-B2154F (2)		

(1) IP66 with optional shaft seal and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.
(2) For applications that use these nine motors (catalog numbers MPM-B215*x*-xJ7**4**AA with the brake option) where the power cable length exceeds 50 m (164 ft), 2090-CPBM7DF-06AA*xx* (6 AWG) cable is required. Motors without the brake option (catalog numbers MPM-B215*x*-xJ7**2**AA can use the cable size as specified in the table regardless of cable length.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix MPF Servo Motors

Motor Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPF-A*xxxx*-M/S	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-*xxxx*-ERS3 or 2198-*xxxx*-ERS4 2093-ACO5-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM	Single-turn or Absolute, Multi-turn Digital Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx* (continuous-flex)	IP66/IP67 with shaft seal (standard) (2)
MPF-B*xxxx*-M/S	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x* or 2097-V34PR*x*-LM			

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.
(2) IP66/IP67 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix MPF (200V-class) Servo Motors	Power Cable Cat. No.	IP Rating
MPF-A310P, MPF-A320H, MPF-A320P, and MPF-A330P	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	IP66/IP67 with shaft seal (standard) (1)
MPF-A430H		
MPF-A430P, MPF-A4530K and MPF-A4540F	2090-CPxM7DF-14AA*xx* (standard, non-flex) 2090-CPxM7DF-14AF*xx* (continuous-flex)	
MPF-A540K	2090-CPxM7DF-08AA*xx* (standard, non-flex) 2090-CPxM7DF-08AF*xx* (continuous-flex)	

(1) IP66/IP67 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

Kinetix MPF (400V-class) Servo Motors	Power Cable Cat. No.	IP Rating
MPF-B310P, MPF-B320P, and MPF-B330P	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	IP66/IP67 with shaft seal (standard) (1)
MPF-B430P, MPF-B4530K, and MPF-B4540F		
MPF-B540K	2090-CPxM7DF-10AA*xx* (standard, non-flex) 2090-CPxM7DF-10AF*xx* (continuous-flex)	

(1) IP66/IP67 with shaft seal (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

Kinetix MPS Servo Motors

Motor Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating (2)
MPS-A*xxxx*-M/S	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2093-ACO5-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM	Single-turn or Absolute, Multi-turn Digital Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx* (continuous-flex)	• IP66/IP67 with shaft seal and slinger (standard) (3) • IP69K with shaft seal and slinger (standard) (4)
MPS-B*xxxx*-M/S	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x* or 2097-V34PR*x*-LM			

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.
(2) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.
(3) IP66/IP67 with shaft seal and slinger (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors (includes on-motor cable connectors).
(4) IP69K for 1200 psi motor washdown with shaft seal and slinger (standard). Does not include on-motor cable connectors.

Kinetix MPS Servo Motors (continued)

Kinetix MPS (200V-class) Servo Motors	Power Cable Cat. No.	IP Rating (1)
MPS-A330P	2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	• IP66/IP67 with shaft seal and slinger (standard) (2) • IP69K with shaft seal and slinger (standard) (3)
MPS-A4540F		

(1) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.
(2) IP66/IP67 with shaft seal and slinger (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors (includes on-motor cable connectors).
(3) IP69K for 1200 psi motor washdown with shaft seal and slinger (standard). Does not include on-motor cable connectors.

Kinetix MPS (400V-class) Servo Motors	Power Cable Cat. No.	IP Rating (1)
MPS-B330P	2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	• IP66/IP67 with shaft seal and slinger (standard) (2) • IP69K with shaft seal and slinger (standard) (3)
MPS-B4540F		
MPS-B560F	2090-CPxM7DF-14AAxx (standard, non-flex) 2090-CPxM7DF-14AFxx (continuous-flex)	

(1) The cable connectors are rated IP66 and IP67 and are not designed to withstand high-pressure washdown or washdown with aggressive cleaning compounds. Position connectors away from direct exposure to cleaning processes, for example, within washdown-rated conduit or junction boxes.
(2) IP66/IP67 with shaft seal and slinger (standard) and the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors (includes on-motor cable connectors).
(3) IP69K for 1200 psi motor washdown with shaft seal and slinger (standard). Does not include on-motor cable connectors.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix RDB Servo Motors

Motor Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
RDB-B*xxxx*-7/3	2198-*xxxx*-ERS3 or 2198-*xxxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2099-BM*xx*-S	Single-turn or Absolute, Multi-turn High Resolution Encoder with EnDat Analog Protocol	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex)	IP65 (2)

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.
(2) IP65 with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

Kinetix RDB (400V-class) Motors	Power Cable Cat. No.	IP Rating
RDB-B21519, RDB-B21529	2090-CPWM7DF-16AA*xx* (standard, non-flex) 2090-CPWM7DF-16AF*xx* (continuous-flex)	IP65 (1)
RDB-B29014, RDB-B29016, RDB-B29024		
RDB-B2151C, RDB-B21539	2090-CPWM7DF-14AA*xx* (standard, non-flex) 2090-CPWM7DF-14AF*xx* (continuous-flex)	
RDB-B29019, RDB-B29034		
RDB-B2152C	2090-CPWM7DF-12AA*xx* (standard, non-flex)	
RDB-B29026		
RDB-B2153C	2090-CPWM7DF-10AA*xx* (standard, non-flex) 2090-CPWM7DF-10AF*xx* (continuous-flex)	
RDB-B29036, RDB-B41014		
RDB-B29029, RDB-B41016, RDB-B41024	2090-CPWM7DF-08AA*xx* (standard, non-flex) 2090-CPWM7DF-08AF*xx* (continuous-flex)	
RDB-B29039, RDB-B41018, RDB-B41026, RDB-B41035	2090-CPBM7DF-06AA*xx* (standard, non-flex)	

(1) IP65 with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix HPK Servo Motors

Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
HPK-B*xxxxx*-M/S HPK-E*xxxxx*-M/S	2198-S*xxx*-ERS3 2198-S*xxx*-ERS4 2099-BM*xx*-S	Absolute Single-turn or Multi-turn encoders with Hiperface protocol.	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx* (continuous-flex)	IP65 (2)

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.
(2) IP65 with the use of Rockwell Automation factory-delivered Kinetix 2090 feedback cable connector.

Kinetix HPK Servo Motors	Power Cable Cat. No.
All HPK-B*xxxx* or HPK-E*xxxx* motors	Customer Supplied

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix MMA Main Motors

Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
MMA-B080, MMA-B100, MMA-B132, MMA-B160, MMA-B180, MMA-B225	2198-D*xxx*-ERS*x* 2198-S*xxx*-ERS3 2198-S*xxx*-ERS4 2099-BM*xx*-S	Absolute Single-turn or Multi-turn encoders with Hiperface or EnDat protocols	2090-CFBM7DF-CDAF*xx* (continuous-flex)(2)	IP54 (3)

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002.
(2) Kinetix 2090-CFBM7Dx-CExxxx style cables do not have the additional wire required for the PT1000 thermistor included in every Kinetix MMA motor
(3) Kinetix MMA motors come standard as IP54, but you can select IP55 as a configurable option. Both IP54/IP55 ratings require the use of Rockwell Automation factory-delivered Kinetix 2090 feedback cable connector.

Kinetix MMA Main Motors	Power Cable Cat. No.
All MMA-B*xxxx*	Customer Supplied(1)

(1) For information to help size cables for these large motors, see Kinetix MMA Asynchronous Motor Frequently Asked Questions for Good Installation Processes, Knowledgebase article for additional information.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix TL and TLY Servo Motors

Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
TLY-A*xxxx*-H	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM	Incremental	2090-CFBM6DF-CBAA*xx* (flying lead) or 2090-CFBM6DD-CCAA*xx* (premolded connector)	• IP54 without shaft seal (standard) (2) • IP65 with shaft seal (3) • IP30 for on-motor cable connectors
	2071-A*xx*		2090-CFBM6DF-CBAA*xx* (flying lead)	
TLY-A*xxxx*-B	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2093-AC05-MP*x* or 2093-AM*xx* 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM	Absolute, Multi-turn Digital Encoder with Tamagawa 17-bit Protocol	2090-CFBM6DF-CBAA*xx* (flying lead) or 2090-CFBM6DD-CCAA*xx* (premolded connector)	
	2071-A*xx*		2090-CFBM6DF-CBAA*xx* (flying lead)	
TL-A*xxxx*-B	2198-C*xxxx*-ERS or 2198-E*xxxx*-ERS 2071-A*xx*		2090-DANFCT-S*xx* (4)	

(1) For information on maximum cable lengths see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.
(2) IP54 without shaft seal (standard) and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors (excludes on-motor cable connectors).
(3) IP65 with optional shaft seal and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors (excludes on-motor cable connectors).
(4) For 2198-C*xxxx*-ERS and 2198-E*xxxx*-ERS drives with high-resolution encoder applications, remove the drive-side connector and wire flying leads to the 2198-K5xCK-D15M connector kit and customer-supplied 3.6V lithium battery. For 2071-A*xx* drives, use when high-resolution absolute encoder feedback is not required. For high-resolution encoder applications, remove the drive-side connector and wire flying leads to the 2071-TBMF connector kit with customer-supplied 3.6V lithium battery.

Kinetix TL and TLY (200V-class) Servo Motors	Power Cable Cat. No.	IP Rating
TLY-A*xxxx*-H	2090-CPBM6DF-16AA*xx* (power and brake) 2090-CPWM6DF-16AA*xx* (power without brake)	• IP54 without shaft seal (standard) (1) • IP65 with shaft seal (2) • IP30 for on-motor cable connectors
TLY-A*xxxx*-B		
TL-A*xxxx*-B	2090-DANPT-16S*xx*	

(1) IP54 without shaft seal (standard) and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors (excludes on-motor cable connectors).
(2) IP65 with optional shaft seal and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors (excludes on-motor cable connectors).

Kinetix (200V-class) Servo Motors	Brake Cable Cat. No.	IP Rating
TL-A*xxxx*-B motors	2090-DANBT-18S*xx*	• IP54 without shaft seal (standard) (1) • IP65 with shaft seal (2) • IP30 for on-motor cable connectors

(1) IP54 without shaft seal (standard) and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors (excludes on-motor cable connectors).
(2) IP65 with optional shaft seal and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors (excludes on-motor cable connectors).

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.
For N-Series retrofit cable information, refer to the Kinetix Rotary Motion Technical Data, publication KNX-TD001.

IMPORTANT TL-A*xxxx*-B motors have rectangular plastic on-motor connectors and are intended for use with Kinetix 5100, Kinetix 5300, and Kinetix 3 servo drives.
The TLY-A*xxxx* motors have circular plastic on-motor connectors and are intended for use with Kinetix 5100, Kinetix 5300, Kinetix 2000, Kinetix 6000, and Kinetix 300/350 (200V-class) servo drives.

Kinetix MPAS Integrated Linear Stages

Actuator Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPAS-A*xxxxx*-V*xx*S*x*A (ballscrew) MPMA-A (ballscrew)	2198-C*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V34PR*x*-LM	Absolute, Multi-turn Digital Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx* (continuous-flex)	IP30 rating with unique, long life strip seal system.
MPAS-A*xxxxx*-ALM*x*2C MPMA-A	2198-C*xxxx*-ERS 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* 2071-A*xx*	Incremental Magnetic Linear Encoder	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex)	
MPAS-B*xxxxx*-V*xx*S*x*A (ballscrew) MPMA-B (ballscrew)	2198-C*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V3*x*PR*x* or 2097-V34PR*x*-LM	Absolute, Multi-turn Digital Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx* (continuous-flex)	
MPAS-B*xxxxx*-ALM*x*2C MPMA-B	2198-C*xxxx*-ERS 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V3*x*PR*x*	Incremental Magnetic Linear Encoder	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex)	

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.

Kinetix MPAS Integrated Linear Stages (continued)

Kinetix MPAS (200V-class) Integrated Linear Stages	Power Cable Cat. No.	IP Rating
MPAS-A*xxxxx*-V*xx*S*x*A (ballscrew) or MPMA-A	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	IP30 rating with unique, long life strip seal system.
MPAS-A*xxxxx*-ALM*x*2C or MPMA-A	2090-CPWM7DF-16AA*xx* (standard, non-flex) 2090-CPWM7DF-16AF*xx* (continuous-flex)	

Kinetix MPAS (400V-class) Integrated Linear Stages	Power Cable Cat. No.	IP Rating
MPAS-B*xxxxx*-V*xx*S*x*A (ballscrew) or MPMA-B	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	IP30 rating with unique, long life strip seal system.
MPAS-B*xxxxx*-ALM*x*2C or MPMA-B	2090-CPWM7DF-16AA*xx* (standard, non-flex) 2090-CPWM7DF-16AF*xx* (continuous-flex)	

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix LDAT Integrated Linear Thrusters

Actuator Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
LDAT-S*xxxxxx*-x*D*x (230V operation)	2198-C*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2097-V3*x*PR*x*	Absolute Linear Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* 2090-CFBM7DD-CEAF*xx* (continuous-flex)	IP30 with strip cover option.
LDAT-S*xxxxxx*-x*D*x (460V operation)	2198-C*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2097-V34PR*x*			
LDAT-S*xxxxxx*-x*B*x (230V operation)	2198-C*xxxx*-ERS 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* 2071-A*xx*	Incremental Encoder	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex)	
LDAT-S*xxxxxx*-x*B*x (460V operation)	2198-C*xxxx*-ERS 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x*			

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.

Kinetix LDAT (230V or 460V operation) Linear Thrusters	Power Cable Cat. No.	IP Rating
LDAT-S031*xxx*, LDAT-S032*xxx*, LDAT-S033*xxx*	2090-CPWM7DF-16AA*xx* (standard, non-flex) 2090-CPWM7DF-16AF*xx* (continuous-flex)	IP30 with strip cover option
LDAT-S051*xxx*, LDAT-S052*xxx*, LDAT-S053*xxx*, LDAT-S054*xxx*		
LDAT-S072*xxx*, LDAT-S073*xxx*, LDAT-S074*xxx*, LDAT-S076*xxx*-E*xx*		
LDAT-S102*xxx*, LDAT-S103*xxx*, LDAT-S104*xxx*, LDAT-S106*xxx*-E*xx*		
LDAT-S152*xxx*, LDAT-S153*xxx*, LDAT-S154*xxx*, LDAT-S156*xxx*-E*xx*		
LDAT-S076*xxx*-D*xx*	2090-CPWM7DF-14AA*xx* (standard, non-flex) 2090-CPWM7DF-14AF*xx* (continuous-flex)	
LDAT-S106*xxx*-D*xx*		
LDAT-S156*xxx*-D*xx*		

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix MPAR Electric Cylinders

Actuator Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPAR-A1*xxxx* MPAR-A2*xxxx* MPAR-A3*xxxx*	2198-C*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM	Absolute, Multi-turn Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* or 2090-CFBM7DD-CEAF*xx* (continuous-flex)	• IP40 (2) • IP66 (3)
MPAR-B1*xxxx* MPAR-B2*xxxx* MPAR-B3*xxxx*	2198-C*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x* or 2097-V34PR*x*-LM			

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.
(2) IP40 applies to complete Kinetix MPAR unit, including rod-end seal and breather port.
(3) IP66 (in static condition only) for electronic components and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

Kinetix MPAR (200V-class) Electric Cylinders	Power Cable Cat. No.	IP Rating
MPAR-A1*xxxx* MPAR-A2*xxxx* MPAR-A3*xxxx*	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	• IP40 (1) • IP66 (2)

Kinetix MPAR (400V-class) Electric Cylinders	Power Cable Cat. No.	IP Rating
MPAR-B1*xxxx* MPAR-B2*xxxx* MPAR-B3*xxxx*	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	• IP40 (1) • IP66 (2)

(1) IP40 applies to complete Kinetix MPAR unit, including rod-end seal and breather port.
(2) IP66 (in static condition only) for electronic components and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

Kinetix MPAI Heavy-duty Electric Cylinders

Actuator Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPAI-A2*xxxx* MPAI-A3*xxxx* MPAI-A4*xxxx* MPAI-A5*xxxx*	2198-C*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* or 2097-V3*x*PR*x*-LM	Absolute, Multi-turn Encoder with Hiperface Protocol	2090-CFBM7DF-CEAA*xx* or 2090-CFBM7DD-CEAA*xx* (standard, non-flex) 2090-CFBM7DF-CEAF*xx* or 2090-CFBM7DD-CEAF*xx* (continuous-flex)	IP66/IP67 (2)
MPAI-B2*xxxx* MPAI-B3*xxxx* MPAI-B4*xxxx* MPAI-B5*xxxx*	2198-C*xxxx*-ERS 2198-H*xxx*-ERS or 2198-H*xxx*-ERS2 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x* or 2097-V34PR*x*-LM			

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002, or Kinetix 5500 Servo Drives User Manual, publication 2198-UM001. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.
(2) IP66/IP67 (in static condition only) and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

Kinetix MPAI (200V-class) Heavy-duty Electric Cylinders	Power Cable Cat. No.	IP Rating
MPAI-A2*xxxx*, MPAI-A3*xxxx*, MPAI-A4*xxxx*	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	IP66/IP67 (1)
MPAI-A5*xxxx*	2090-CPxM7DF-14AA*xx* (standard, non-flex) 2090-CPxM7DF-14AF*xx* (continuous-flex)	

Kinetix MPAI (400V-class) Heavy-duty Electric Cylinders	Power Cable Cat. No.	IP Rating
MPAI-B2*xxxx*, MPAI-B3*xxxx*, MPAI-B4*xxxx*, MPAI-B5*xxxx*	2090-CPxM7DF-16AA*xx* (standard, non-flex) 2090-CPxM7DF-16AF*xx* (continuous-flex)	IP66/IP67 (1)

(1) IP66/IP67 (in static condition only) and with the use of Rockwell Automation factory-delivered Kinetix 2090 cable connectors.

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix LDC Linear Motors

Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
LDC-C*xxxxxx*-*xx*T*x*1 (230V operation)	2198-C*xxxx*-ERS 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* 2071-A*xx*	Sin/Cos or TTL Encoder	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex)	IP65
LDC-C*xxxxxx*-*xx*T*x*1 (460V operation)	2198-C*xxxx*-ERS 2198-D*xxx*-ERS3 or 2198-D*xxx*-ERS4 2094-BC*xx*-M*xx*-S or 2094-BM*xx*-S 2094-BC*xx*-M*xx*-M or 2094-BM*xx*-M 2097-V34PR*x*			

(1) For information on maximum cable lengths see Kinetix 5700 Servo Drives User Manual, publication 2198-UM002. For all other drive families, see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.

Kinetix LDC (230V or 460V operation) Linear Motors	Power Cable Cat. No.	IP Rating
LDC-C*xxxxxx*-*xx*T*x*1	2090-CPWM7DF-16AA*xx* (standard, non-flex) 2090-CPWM7DF-16AF*xx* (continuous-flex)	IP65

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Kinetix LDL Linear Motors

Cat. No.	Drive Compatibility (1)	Feedback Type	Feedback Cable Cat. No.	IP Rating
LDL-*xxxxxxx*-*xx*T*x*1	2198-C*xxxx*-ERS 2093-AC05-MP*x* or 2093-AM*xx* 2094-AC*xx*-M*xx*-S or 2094-AM*xx*-S 2097-V3*x*PR*x* 2071-A*xx*	Sin/Cos or TTL Encoder	2090-XXNFMF-S*xx* (standard, non-flex) 2090-CFBM7DF-CDAF*xx* (continuous-flex)	IP65

(1) For information on maximum cable lengths see the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.

Kinetix LDL Linear Motors	Power Cable Cat. No.	IP Rating
LDL-*xxxxxxx*-*xx*T*x*1	2090-CPWM7DF-16AA*xx* (standard, non-flex) 2090-CPWM7DF-16AF*xx* (continuous-flex)	IP65

For cable configuration illustrations and feature descriptions, by catalog number, refer to Kinetix Motor Power and Feedback Cables beginning on page 20.
Cable length *xx* is in meters. Refer to Technical Specifications - Kinetix Motor Power and Feedback Cables beginning on page 41.

Technical Specifications - Kinetix Motor Power and Feedback Cables

IMPORTANT Maximum motor cable length depends on the feedback type and overall system design. The drive-system power supply, AC input-power type, and AC input voltage are among the configuration variables. For more information on maximum cable lengths see your servo drive user manual or the Kinetix 5700, 5500, 5300, 5100 Servo Drives Technical Data, publication KNX-TD003.

Power Cable Specifications

Power Cables [1] Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)		
2090-XXNPMF-16S*xx*	Standard (non-flex) cable, Industrial TPE, Black	Four conductor, 600V, shielded cable for three-phase power with additional four conductors, 18 AWG, shielded, for motor brake and spares.	16	0.276 (0.186)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1) 05 (16.4)	07 (22.9) 09 (29.5) 12 (39.4) 15 (49.2) 20 (65.6)	25 (82.0) 30 (98.4) 40 (131.2) 60 (196.8) 90 (295.3)
2090-XXNPMF-14S*xx*			14	0.315 (0.212)			
2090-CPBM7DF-16AA*xx*	Standard (non-flex) cable, Industrial TPE, Orange (DESINA, RAL 2003)	Four conductor, 600V, shielded cable for three-phase power with additional two conductors 18 AWG for motor brake.	16	0.212 (0.143)			
2090-CPBM7DF-14AA*xx*			14	0.261 (0.175)			
2090-CPBM7DF-12AA*xx*			12	0.349 (0.235)			
2090-CPBM7DF-10AA*xx*			10	0.492 (0.331)			
2090-CPBM7DF-08AA*xx*			8	0.708 (0.476)			
2090-CPBM7DF-06AA*xx*			6	1.038 (0.698)			
2090-CPBM7DF-04AA*xx* [2]		Four conductor, 600V, shielded cable for three-phase power with additional two conductors 16 AWG for motor brake.	4	1.549 (1.041)			
2090-CPBM7DF-02AA*xx* [2]			2	2.166 (1.455)			
2090-CPWM7DF-16AA*xx*		Four conductor, 600V, shielded cable for three-phase power.	16	0.136 (0.091)			
2090-CPWM7DF-14AA*xx*			14	0.185 (0.124)			
2090-CPWM7DF-12AA*xx*			12	0.248 (0.167)			
2090-CPWM7DF-10AA*xx*			10	0.418 (0.281)			
2090-CPWM7DF-08AA*xx*			8	0.644 (0.433)			
2090-CPWM6DF-16AA*xx*	Standard (non-flex) cable, Industrial TPE, Black		16	0.138 (0.093)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1)	05 (16.4) 07 (22.9) 09 (29.5) 12 (39.4)	15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4)
2090-DANPT-16S*xx*			16				
2090-CPBM6DF-16AA*xx*		Four conductor, 600V, shielded cable for three-phase power with additional two conductors 18 AWG for motor brake.	16	0.180 (0.121)			
2090-CPBM4DF-16AF*xx*	Continuous-flex cable Industrial TPE, Orange (DESINA, RAL 2003)		16	0.228 (0.153)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1) 05 (16.4) 07 (22.9)	09 (29.5) 12 (39.4) 15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4)	40 (131.2) 50 (164.0) 60 (196.8) 75 (264.0) 90 (295.3)
2090-CPBM7DF-16AF*xx*			16				
2090-CPBM7DF-14AF*xx*			14	0.289 (0.194)			
2090-CPBM7DF-10AF*xx*			10	0.513 (0.345)			
2090-CPBM7DF-08AF*xx*			8	0.697 (0.468)			
2090-CPWM4DF-16AF*xx*		Four conductor, 600V, shielded cable for three-phase power.	16	0.154 (0.104)			
2090-CPWM7DF-16AF*xx*			16				
2090-CPWM7DF-14AF*xx*			14	0.196 (0.132)			
2090-CPWM7DF-10AF*xx*			10	0.452 (0.304)			
2090-CPWM7DF-08AF*xx*			8	0.666 (0.448)			

(1) 2090-CPxM4DF-*xx*A*xxx* and 2090-CPxM7DF-*xx*A*xxx* power cables are UL Listed, bulk cable, type TC-ER.
(2) For this cable, the 01 and 02 m (3.2 and 6.5 ft) standard lengths do not apply.

Brake Cable Specifications

Brake Cables Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)		
2090-DANBT-18S*xx*	Standard (non-flex) cable, Industrial TPE, Black	Two conductor, 600V, 18 AWG, shielded cable for motor brake.	18	0.070 (0.047)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1)	05 (16.4) 07 (22.9) 09 (29.5) 12 (39.4)	15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4)

Feedback Cable Specifications

Feedback Cables (1) (2) Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)
2090-XXNFMF-S*xx*	Standard (non-flex) cable, Industrial TPE, Black	Threaded DIN connector (motor end) to flying leads (drive end), 30V.	28 Feedback 16 Power, 5V 22 Power, 9V	0.120 (1.35)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1) 05 (16.4) 07 (22.9) 09 (29.5) 12 (39.4) 15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4) 40 (131.2) 60 (196.8) 90 (295.3)
2090-CFBM7DD-CEAA*xx*	Standard (non-flex) cable, Industrial TPE, Green (DESINA, RAL 6018)	SpeedTec DIN connector (motor end) to premolded connector (drive end), 600V.	22 All conductors	0.136 (0.092)	
2090-CFBM7DF-CEAA*xx*		SpeedTec DIN connector (motor end) to flying leads (drive end), 600V.			
2090-UXNFM-S*xx* (3)	Standard (non-flex) cable, Industrial TPE, Black	Flying-leads (motor end) to premolded connector (drive end), 30V.	28 Feedback 16 Power, 5V 22 Power, 9V	0.120 (1.35)	01 (3.2) 03 (9.8) 09 (29.5) 15 (49.2) 30 (98.4)
2090-CFBM6DF-CBAA*xx*		Circular plastic connector (motor end) to flying leads (drive end), 300V.	28 Feedback 16 Power, 5V 22 BAT+		01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1) 05 (16.4) 07 (22.9) 09 (29.5) 12 (39.4) 15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4)
2090-CFBM6DD-CCAA*xx*		Circular plastic connector (motor end) to premolded connector (drive end), 300V.	28 Feedback 16 Power, 5V		
2090-DANFCT-S*xx*		Rectangular plastic connector (motor end) to premolded connector (drive end), 30V.	28 Feedback 16 Power, 5V 22 BAT+	0.130 (0.088)	
2090-CFBM4DF-CDAF*xx*	Continuous-flex cable Industrial TPE, Green (DESINA, RAL 6018)	Threaded DIN connector (motor end) to flying leads (drive end), 600V.	26 Feedback 16 Power, 5V 22 Power, 9V	0.177 (0.119)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1) 05 (16.4) 07 (22.9) 09 (29.5) 12 (39.4) 15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4) 40 (131.2) 50 (164.0) 60 (196.8) 75 (264.0) 90 (295.3)
2090-CFBM7DF-CDAF*xx*		SpeedTec DIN connector (motor end) to flying leads (drive end), 600V.			
2090-CFBM7DF-CEAF*xx*			22 All conductors	0.143 (0.096)	
2090-CFBM7DD-CEAF*xx*		SpeedTec DIN connector (motor end) to premolded connector (drive end), 600V.			

(1) 2090-CFBM7*xx*-CEA*xxx* feedback cables are UL Listed, bulk cable, type PLTC-ER.
(2) 2090-CFBM4DF-CDA*xxx* and 2090-CFBM7*xx*-CDA*xxx* feedback cables are UL Listed, bulk cable, type CM.
(3) Use with 2090-KFBM4-CAAA (threaded) or 2090-KFBM7-CAAA (SpeedTec) DIN connector kit.

Continuous-flex Extension Cable Specifications

Extension Cable (1) (2) Cat. No.	Cable Type/ Jacket Color	Description	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)
2090-CPBM7E7-16AF*xx*	Power with brake Industrial TPE, Orange (DESINA, RAL 2003)	SpeedTec DIN connector plug on motor end to SpeedTec DIN receptacle for mating with Kinetix 2090 standard, non-flex power/brake cable, 600V.	0.228 (0.153)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1) 05 (16.4) 07 (22.9) 09 (29.5) 12 (39.4) 15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4)
2090-CPBM7E7-14AF*xx*			0.289 (0.194)	
2090-CPBM7E7-10AF*xx*			0.513 (0.345)	
2090-CPBM7E7-08AF*xx*			0.697 (0.468)	
2090-CFBM7E7-CDAF*xx*	Feedback Industrial TPE, Green (DESINA, RAL 6018)	SpeedTec DIN connector plug on motor end to SpeedTec DIN receptacle for mating with Kinetix 2090 standard, non-flex feedback cable, 600V.	0.153 (0.103)	
2090-CFBM7E7-CEAF*xx*			0.143 (0.096)	

(1) 2090-CPBM7E7-*xx*AF*xx* extension power cables are UL Listed, bulk cable, type TC-ER.
(2) 2090-CFBM7E7-CDAF*xx* extension feedback cables are UL Listed, bulk cable, type CM.
2090-CFBM7E7-CEAF*xx* extension feedback cables are UL Listed, bulk cable, type PLTC-ER.

Power and Feedback Transition Cable Specifications

Transition Cable Cat. No.	Cable Gauge AWG	Cable Type/ Jacket Color	Description	Standard Cable Lengths mm (in.)
2090-CPBM4E2-14TR	14 and 16	Power with brake Industrial TPE, Black	Threaded DIN connector on motor end to bayonet receptacle for mating with existing bayonet cable, 600V.	500 (19.7)
2090-CPBM4E2-10TR	10			
2090-CPBM4E2-08TR	8			
2090-CPBM4E2-04TR	4 and 6			
2090-CPWM4E2-14TR	14 and 16	Power (only) Industrial TPE, Black		
2090-CPWM4E2-10TR	10			
2090-CPWM4E2-08TR	8			
2090-CPWM4E2-04TR	4 and 6			
2090-CFBM4E2-CATR	N/A	Feedback Industrial TPE, Black	Threaded DIN connector on motor end to bayonet receptacle for mating with existing bayonet cable, 300V.	

Dimensions - Kinetix Motor Power and Feedback Cables

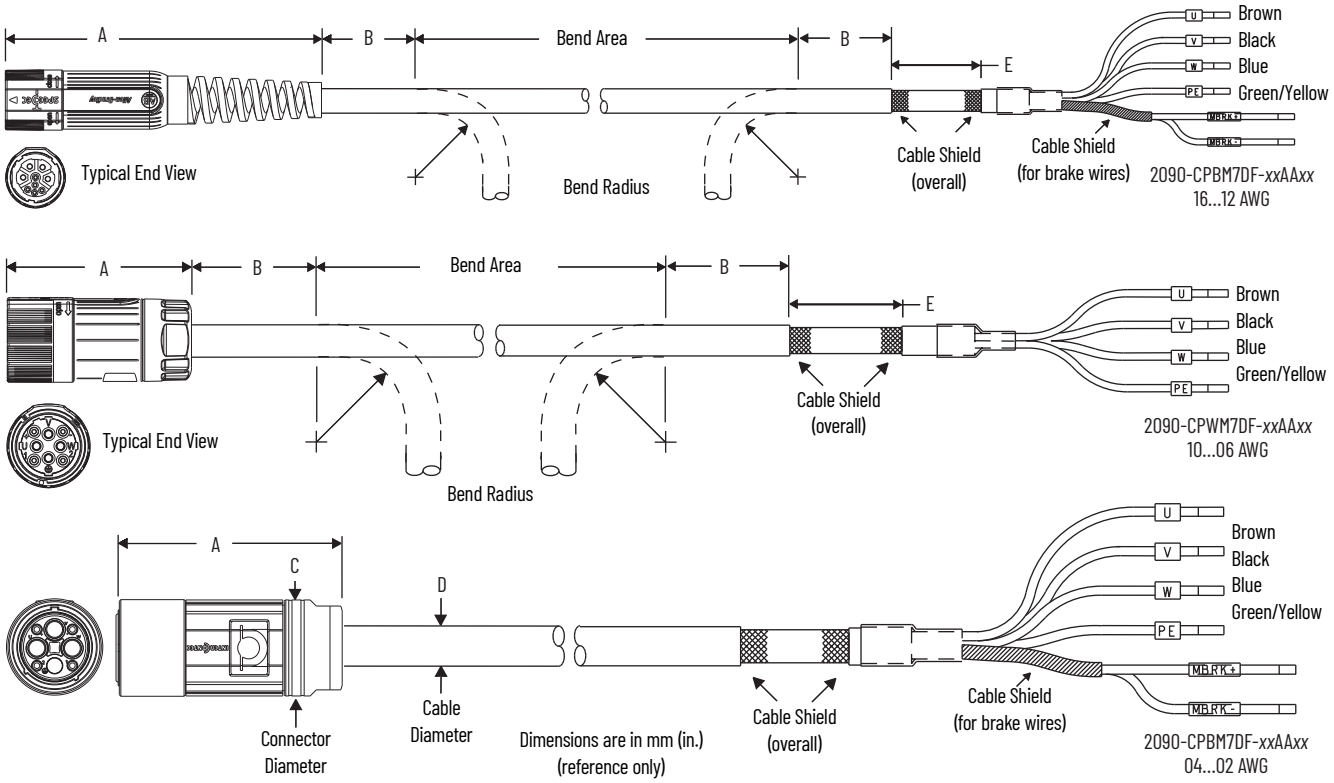
When installing cable runs between the motor and drive, be careful not to stress the cable by making bends too sharp. Refer to the table below for bend radius definitions, and the dimension diagrams that follow, when routing cables during system installation.

Motor Power and Feedback Cable Bend Radius Definitions

Type of Bend Radius	Type of Cable	Description
Static bend radius	Standard (non-flex) Continuous flex	The static (installation) bend radius and dimension B are 7 times the cable diameter: • Do not begin a static bend inside dimension B. • Use this measurement when routing the cable in a non-flex application between motor and drive (the bend area). – The bend area is where standard (non-flex) or continuous-flex cables can be bent to their specified bend radius.
Continuous bend radius	Continuous flex	The continuous bend radius for Kinetix motor power and feedback cables is 12 times the cable diameter: • Secure the continuous-flexing area, at least 7 cable diameters (dimension B) from each end of the cable, with a rigid mount that helps prevent the cable from flexing where it connects to the motor or shield clamp. • Use this measurement when routing the cable in a continuous-flex application between motor and drive (the continuous-flexing area). – The continuous flexing area is where continuous-flex cables can be flexed repeatedly.

Motor Power Cables

Power Cable Dimensions, Standard, Non-flex (SpeedTec DIN connector)

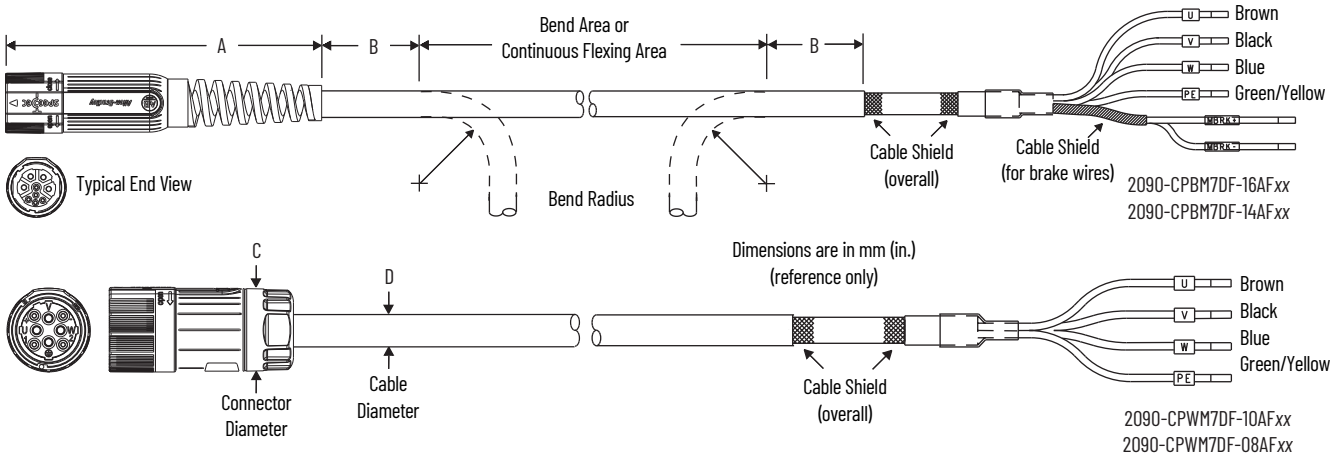


Power Cable Dimensions (standard, non-flex)

Power Cable Cat. No.	A mm (in.)	B (1) mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)
2090-CPBM7DF-16AAxx	147 (5.8)	81.2 (3.2)	28 (1.1)	11.6 (0.46)	150 (5.9)
2090-CPWM7DF-16AAxx		64.4 (2.5)		9.2 (0.36)	
2090-CPBM7DF-14AAxx		88.9 (3.5)		12.7 (0.50)	
2090-CPWM7DF-14AAxx		72.1 (2.8)		10.3 (0.40)	
2090-CPBM7DF-12AAxx	80 (3.15)	100 (3.9)		14.3 (0.56)	
2090-CPWM7DF-12AAxx		78.4 (3.1)		11.2 (0.44)	
2090-CPBM7DF-10AAxx	100 (3.9)	118 (4.6)	46 (1.8)	16.8 (0.66)	90 (3.5)
2090-CPWM7DF-10AAxx		107 (4.2)		15.3 (0.60)	
2090-CPBM7DF-08AAxx		141 (5.5)		20.1 (0.79)	
2090-CPWM7DF-08AAxx		131 (5.2)		18.7 (0.74)	
2090-CPBM7DF-06AAxx		170 (6.7)		24.3 (0.96)	
2090-CPBM7DF-04AAxx	150 (5.9)	202 (7.9)	64 (2.5)	28.8 (1.13)	
2090-CPBM7DF-02AAxx		229 (9.0)		32.7 (1.29)	

(1) Dimension B is based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Power Cable Dimensions, Continuous-flex (SpeedTec DIN connector)

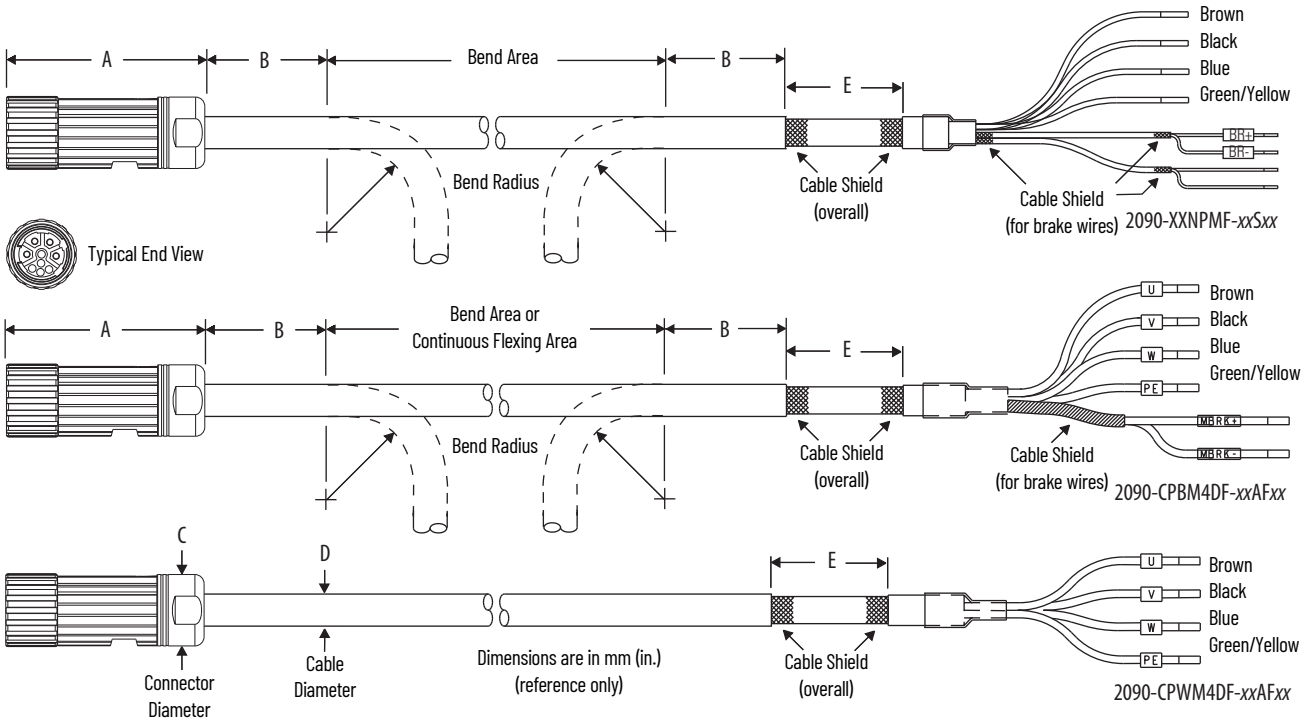


Power Cable Dimensions (continuous-flex rated)

Power Cable Cat. No.	**A** mm (in.)	**B** [1] mm (in.)	**Continuous Bend Radius** [1] mm (in.)	**C** mm (in.)	**D** mm (in.)	**E** mm (in.)
2090-CPBM7DF-16AF*xx*	147 (5.8)	87.5 (3.4)	150 (5.9)	28 (1.1)	12.5 (0.49)	150 (5.9)
2090-CPWM7DF-16AF*xx*		67.9 (2.7)	116 (4.6)		9.7 (0.38)	
2090-CPBM7DF-14AF*xx*		95.9 (3.8)	164 (6.5)		13.7 (0.54)	
2090-CPWM7DF-14AF*xx*		72.8 (2.9)	125 (4.9)		10.4 (0.41)	
2090-CPBM7DF-10AF*xx*	100 (3.9)	125 (4.9)	214 (8.4)	46 (1.8)	17.8 (0.70)	90 (3.5)
2090-CPWM7DF-10AF*xx*		110 (4.3)	188 (7.4)		15.7 (0.62)	
2090-CPBM7DF-08AF*xx*		144 (5.7)	247 (9.7)		20.6 (0.81)	
2090-CPWM7DF-08AF*xx*		141 (5.5)	242 (9.5)		20.2 (0.79)	

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Power Cable Dimensions (threaded DIN connector)



Power Cable Dimensions (standard, non-flex)

Power Cable Cat. No.	A mm (in.)	B (1) mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)
2090-XXNPMF-16Sxx	75 (2.9)	98.0 (3.8)	28.0 (1.1)	14.0 (0.55)	150 (5.9)
2090-XXNPMF-14Sxx		105 (4.1)		15.0 (0.59)	90.0 (3.5)
2090-XXNPMF-10Sxx	96 (3.8)	133 (5.2)	46.0 (1.8)	19.0 (0.75)	

(1) Dimension B is based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

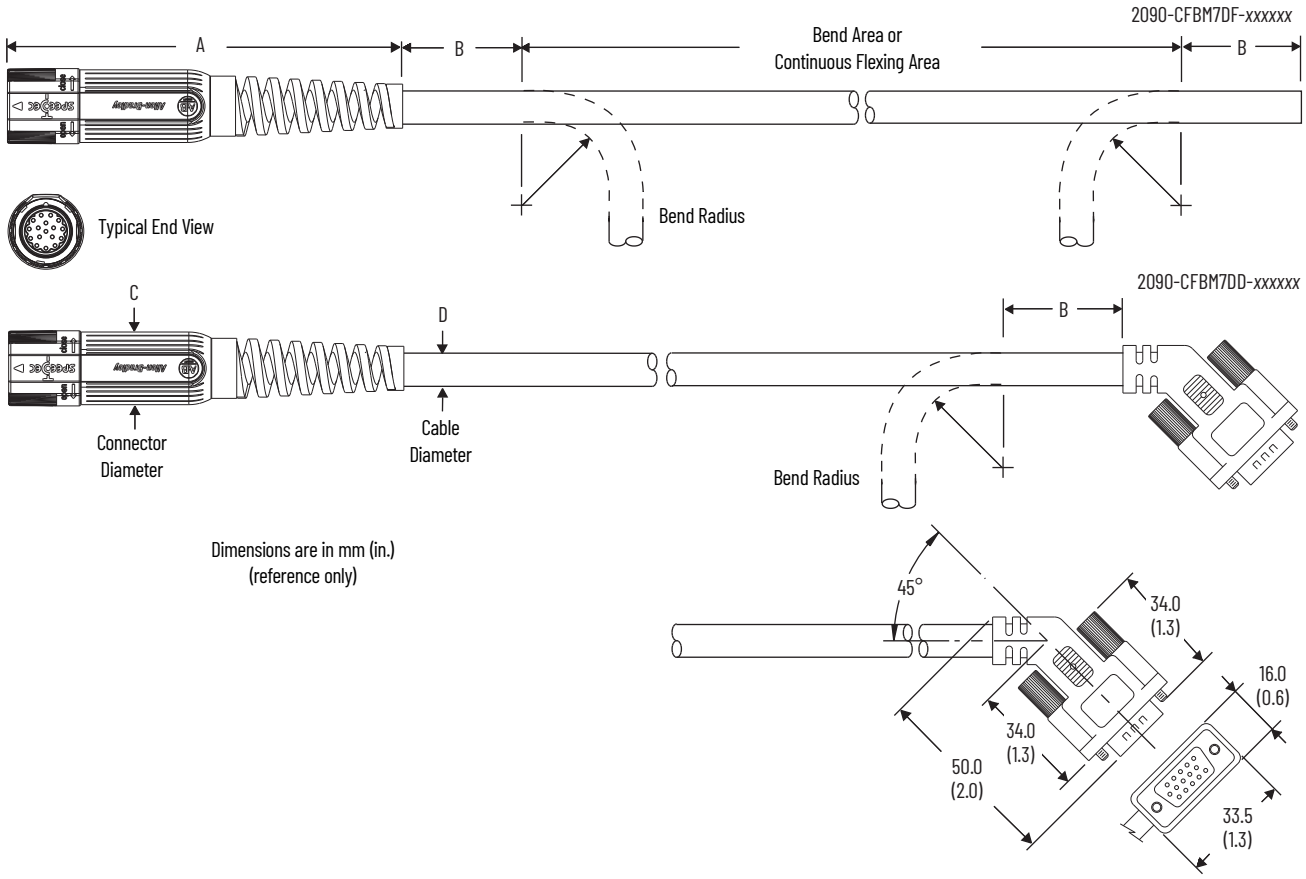
Power Cable Dimensions (continuous-flex rated)

Power Cable Cat. No.	A mm (in.)	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)
2090-CPBM4DF-16AFxx	75 (2.9)	87.5 (3.4)	150 (5.9)	28.0 (1.1)	12.5 (0.49)	150 (5.9)
2090-CPWM4DF-16AFxx		67.9 (2.7)	116 (4.6)		9.7 (0.38)	

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Motor Feedback Cables

Feedback Cable Dimensions (SpeedTec DIN connector)



Feedback Cable Dimensions (standard, non-flex)

Feedback Cable Cat. No.	A mm (in.)	B (1) mm (in.)	C mm (in.)	D mm (in.)
2090-CFBM7DF-CEAAxx	147 (5.8)	68.6 (2.7)	28.0 (1.1)	9.8 (0.38)
2090-CFBM7DD-CEAAxx				

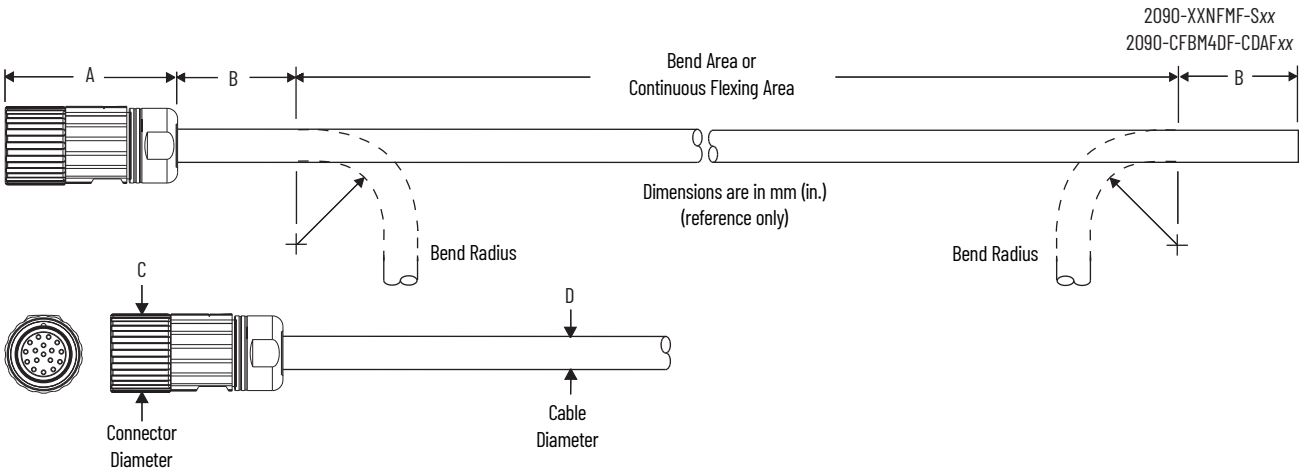
(1) Dimension B is based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Feedback Cable Dimensions (continuous-flex rated)

Feedback Cable Cat. No.	A mm (in.)	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C mm (in.)	D mm (in.)
2090-CFBM7DF-CEAFxx	147 (5.8)	72.1 (2.8)	124 (4.9)	28.0 (1.1)	10.3 (0.40)
2090-CFBM7DD-CEAFxx					
2090-CFBM7DD-CDAFxx		81.9 (3.2)	140 (5.5)		11.7 (0.46)

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Feedback Cable Dimensions (threaded DIN connector)



Feedback Cable Dimensions (standard, non-flex)

Feedback Cable Cat. No.	A mm (in.)	B (1) mm (in.)	C mm (in.)	D mm (in.)
2090-XXNFMF-Sxx	57.0 (2.2)	70 (2.7)	26.0 (1.0)	10.0 (0.40)

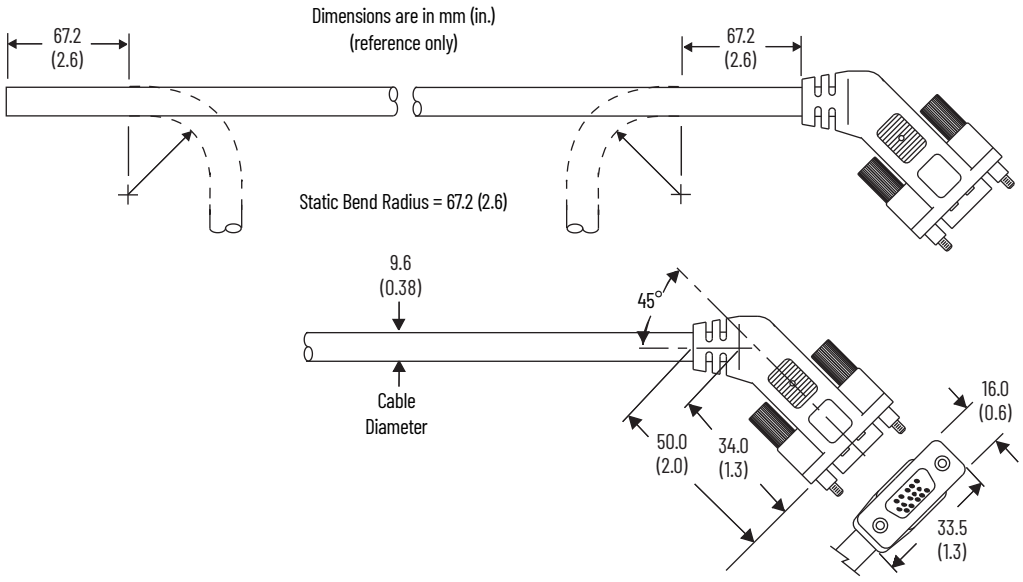
(1) Dimension B is based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Feedback Cable Dimensions (continuous-flex rated)

Feedback Cable Cat. No.	A mm (in.)	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C mm (in.)	D mm (in.)
2090-CFBM4DF-CDAFxx	57.0 (2.2)	81.9 (3.2)	140 (5.5)	26.0 (1.0)	11.7 (0.46)

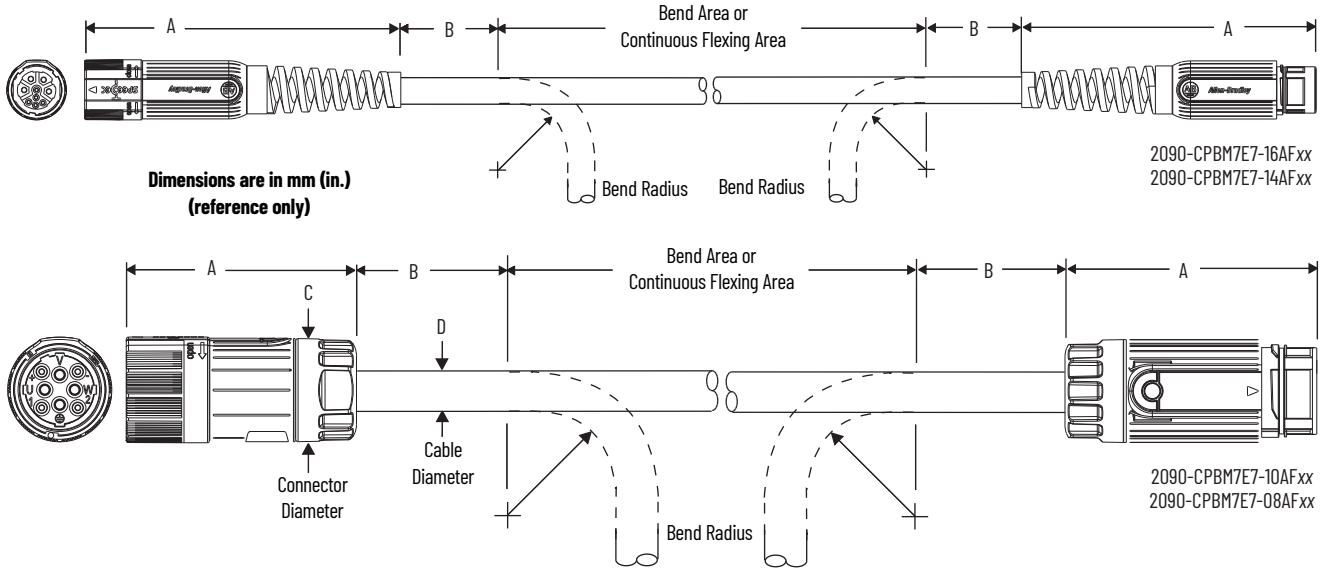
(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Feedback Cable Dimensions (catalog number 2090-UXNFM-Sxx)



Continuous-flex Extension Cables

Power Cable Dimensions (SpeedTec DIN)

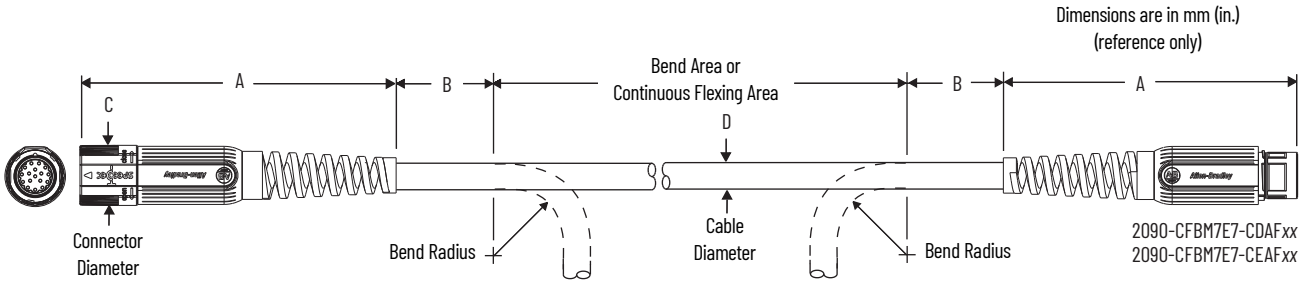


Power Cable Dimensions (continuous-flex rated)

Power Cable Cat. No.	A mm (in.)	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C mm (in.)	D mm (in.)
2090-CPBM7E7-16AF*xx*	147 (5.8)	87.5 (3.4)	150 (5.9)	28.0 (1.1)	12.5 (0.49)
2090-CPBM7E7-14AF*xx*		95.9 (3.8)	164 (6.4)		13.7 (0.54)
2090-CPBM7E7-10AF*xx*	97 (3.8)	125 (4.9)	214 (8.4)	46.0 (1.8)	17.8 (0.70)
2090-CPBM7E7-08AF*xx*		144 (5.7)	247 (9.7)		20.6 (0.81)

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Feedback Cable Dimensions (SpeedTec DIN)



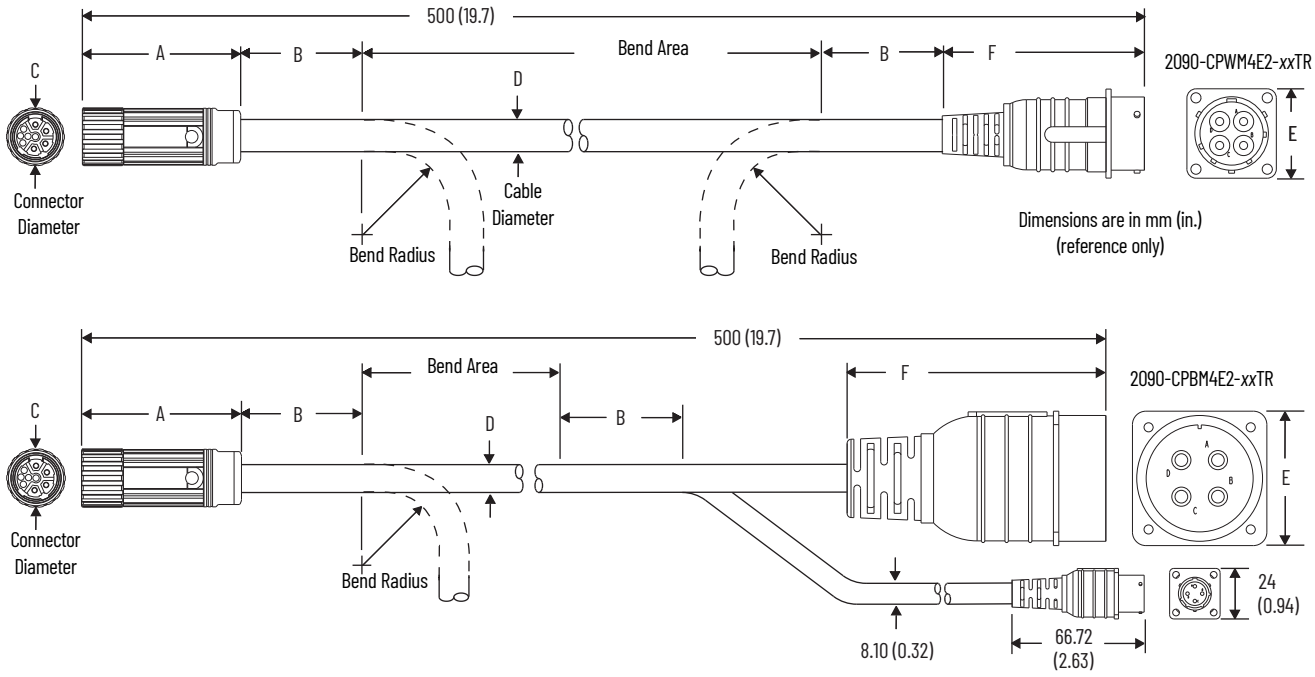
Feedback Cable Dimensions (continuous-flex rated)

Feedback Cable Cat. No.	A mm (in.)	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C mm (in.)	D mm (in.)
2090-CFBM7E7-CEAF*xx*	147 (5.8)	72.1 (2.8)	124 (4.9)	28.0 (1.1)	10.3 (0.40)
2090-CFBM7E7-CDAF*xx*		81.9 (3.2)	140 (5.5)		11.7 (0.46)

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Transition Cables

Power Cable Dimensions

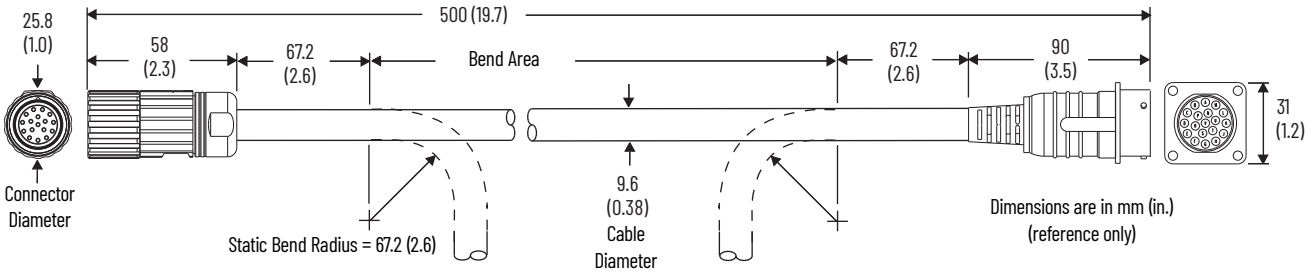


Power Cable Dimensions (standard, non-flex)

Power Cable Cat. No.	A mm (in.)	B (1) mm (in.)	C mm (in.)	D mm (in.)	E mm (in.)	F mm (in.)
2090-CPBM4E2-14TR	80.0 (3.15)	104 (4.09)	28.0 (1.10)	14.8 (0.58)	31.0 (1.22)	90 (3.54)
2090-CPWM4E2-14TR		72.8 (2.87)		10.4 (0.41)		
2090-CPBM4E2-10TR	80.0 (3.15)	129 (5.08)	46.0 (1.81)	18.4 (0.74)	46.0 (1.81)	
2090-CPWM4E2-10TR	95.0 (3.74)	102 (4.02)		14.5 (0.57)	31.0 (1.22)	
2090-CPBM4E2-08TR	98.7 (3.89)	144 (5.67)		20.5 (0.81)	46.0 (1.81)	146 (5.75)
2090-CPWM4E2-08TR	95.0 (3.74)	132 (5.20)		18.9 (0.74)		
2090-CPBM4E2-04TR	147 (5.77)	201 (7.91)	64.0 (2.5)	28.7 (1.13)	64.0 (2.52)	131 (5.17)
2090-CPWM4E2-04TR					63.7 (2.51)	132 (5.20)

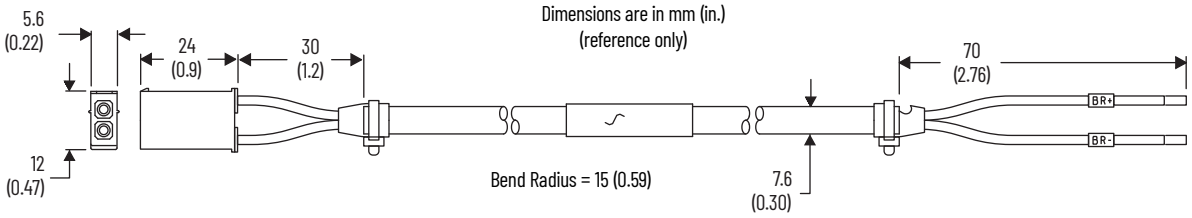
(1) Dimension B is based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on page 43 for more information.

Feedback Cable Dimensions (catalog number 2090-CFBM4E2-CATR)



Motor Brake Cables

Brake Cable Dimensions (catalog number 2090-DANBT-18S*xx*)



Kinetix Motor-end Cable Connector Kits

Motor-end connector kits are available for building your own cables. These kits are intended for bayonet, circular DIN (M4 and M7), and circular plastic (M6) cable connectors.

Bayonet Motor-end Cable Connector Kits

Motor Cat. No.	Connector Kit Cat. No.	Description
MPL-A/B3*xxx*-*xx*2xAA, MPL-A/B4*xxx*-*xx*2xAA, MPL-A/B45*xxx*-*xx*2xAA MPL-A520K-*xx*2xAA MPL-B520K-*xx*2xAA, MPL-B540K-*xx*2xAA, MPL-B540D-*xx*2xAA, MPL-B560F-*xx*2xAA, and MPL-B580F-*xx*2xAA	2090-MPPC-S	Straight Power Connector Kit, 12 AWG max
MPL-B6*xxx*-*xx*2xAA, MPL-B8*xxx*-*xx*2xAA, MPL-B960B-*xx*2xAA, MPL-B960C-*xx*2xAA, MPL-B980B-*xx*2xAA, MPL-B980C-*xx*2xAA	2090-MPPC-08S	Straight Power Connector Kit, 8 AWG max
MPL-A/B3*xxx*-*xx*2xAA, MPL-A/B4*xxx*-*xx*2xAA, MPL-A/B45*xxx*-*xx*2xAA, MPL-A/B5*xxx*-*xx*2xAA MPL-B6*xxx*-*xx*2xAA, MPL-B8*xxx*-*xx*2xAA, MPL-B9*xxx*-*xx*2xAA	2090-MPFC-S	Straight Feedback Connector Kit
All MPL-A/B*xxx*-*xx*2xAA	2090-MPBC-S	Straight Brake Connector Kit

Circular DIN Motor-end Cable Connector Kits

Feedback Cable Connector Kits



2090-KFBM4-CAAA
2090-KFBM7-CAAA
Motor-end Connector Kits



Connector pins and sockets in these kits are soldered.

M23 Cable Plug Connector Kits

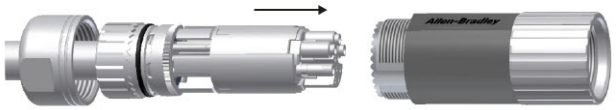


2090-KFBE7-CAAA
Motor-end Connector Kits



M23 Cable Extension Connector Kits

Power Cable Connector Kits

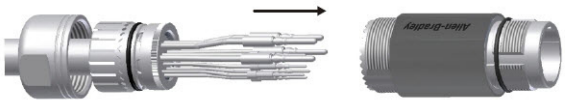


2090-KPBM4-12AA
2090-KPBM4-06AA
2090-KPBM7-12AA
2090-KPBM7-06AA
Motor-end Connector Kits



Connector pins and sockets in these kits are crimped.

M23 or M40 Cable Plug Connector Kits



2090-KPBE7-12AA
2090-KPBE7-06AA
Motor-end Connector Kits



M23 or M40 Cable Extension Connector Kits

Motor-end Connector Kit Cross-reference Tables

The tables beginning on page 53 provide a cross-reference for the circular DIN (M4 and M7) connector kits above to the compatible motor series catalog number. Also provided are the bulkhead adapters for securing the cables as they pass through the cabinet and crimping tools required for properly attaching the power wires to sockets and pins. See Kinetix 2090 Circular-DIN Connector Kits, Flange Kits, and Crimp Tools, publication 2090-IN042, for more information.

Connector kits and crimping tools are also available for circular plastic (M6) connectors. Refer to page 54 for the compatible motor series and crimp tool catalog numbers.

Power Cable Connector Kits (SpeedTec DIN)

Connector Kit Cat. No.	Description	Crimp Tool Cat. No.	Bulkhead Adapter Cat. No.	Motor Series
2090-KPBM7-12AA	Motor-end cable connector SpeedTec plug, M23 connector 16, 14, and 12 AWG motor power 18 AWG motor brake	2090-TCR47-M23	2090-KPB47-12CF	MPL-A/B15*xxx*-V/Ex7xAA, MPL-A/B2*xxx*-V/Ex7xAA MPL-A/B3*xx*, MPL-A/B4*xx*, MPL-A/B45*xx*, MPL-B520, MPL-B540, MPL-B560
				MPM-A/B115*xx*, MPM-A/B130*xx*, MPM-B1651C, MPM-B1651F, MPM-B1652C, MPM-B1653C
				MPF-A/B3*xxx*-S/Mx7xAA, MPF-A/B4*xxx*-S/Mx7xAA, MPF-A/B45*xxx*-S/Mx7xAA
				MPS-A/B3*xx*, MPS-A/B45*xx*, MPS-B5*xx* (SpeedTec motor connectors)
				RDB-B130*xx*, RDB-B165*xx*, RDB-B21519, RDB-B2151C, RDB-B21529, RDB-B2152C, RDB-B21539, RDB-B2901*x*, RDB-B29024, RDB-B29026, RDB-B29034
2090-KPBM7-06AA	Motor-end cable connector SpeedTec plug, M40 connector 10, 8, and 6 AWG motor power 18 AWG motor brake	2090-TCR47-M40 (power pins) 2090-TCR47-M23 (brake pins)	2090-KPB47-06CF	MPL-A5*xx*, MPL-B580, MPL-B6*xx*, MPL-B860, MPL-B880C, MPL-B960B, MPL-B980B
				MPM-A1651F, MPM-B1651M, MPM-B1652E, MPM-A/B1652F, MPM-B1653E, MPM-A/B1653F, MPM-A/B215*xx*
				MPF-A/B5*xxx*-S/Mx7xAA
				RDB-B2151F, RDB-B2152F, RDB-B2153C, RDB-B2153E, RDB-B29029, RDB-B29036, RDB-B410*xx*
2090-KPBE7-12AA	Extension cable connector SpeedTec plug, M23 connector 16, 14, and 12 AWG motor power 18 AWG motor brake	2090-TCR47-M23	2090-KPB47-12CF	MPL-A/B3*xx*, MPL-A/B4*xx*, MPL-A/B45*xx*, MPL-B520, MPL-B540, MPL-B560
				MPM-A/B115*xx*, MPM-A/B130*xx*, MPM-B1651C, MPM-B1651F, MPM-B1652C, MPM-B1653C
				MPF-A/B3*xxx*-S/Mx7xAA, MPF-A/B4*xxx*-S/Mx7xAA, MPF-A/B45*xxx*-S/Mx7xAA
				RDB-B130*xx*, RDB-B165*xx*, RDB-B21519, RDB-B2151C, RDB-B21529, RDB-B2152C, RDB-B21539, RDB-B2901*x*, RDB-B29024, RDB-B29026, RDB-B29034
2090-KPBE7-06AA	Extension cable connector SpeedTec plug, M40 connector 10, 8, and 6 AWG motor power 18 AWG motor brake	2090-TCR47-M40 (power pins) 2090-TCR47-M23 (brake pins)	2090-KPB47-06CF	MPL-A5*xx*, MPL-B580, MPL-B6*xx*, MPL-B860, MPL-B880C, MPL-B960B, MPL-B980B
				MPM-A1651F, MPM-B1651M, MPM-B1652E, MPM-A/B1652F, MPM-B1653E, MPM-A/B1653F, MPM-A/B215*xx*
				MPF-A/B5*xxx*-S/Mx7xAA
				RDB-B2151F, RDB-B2152F, RDB-B2153C, RDB-B2153E, RDB-B29029, RDB-B29036, RDB-B410*xx*

Power Cable Connector Kits (threaded DIN)

Connector Kit Cat. No.	Description	Crimp Tool Cat. No.	Bulkhead Adapter Cat. No.	Motor Series
2090-KPBM4-12AA	Motor-end cable connector Threaded plug, M23 connector 16, 14, and 12 AWG motor power 18 AWG motor brake	2090-TCR47-M23	2090-KPB47-12CF	MPL-A/B15*xxx*-V/Ex4xAA, MPL-A/B2*xxx*-V/Ex4xAA
				MPF-A/B3*xxx*-S/Mx4xAA, MPF-A/B4*xxx*-S/Mx4xAA, MPF-A/B45*xxx*-S/Mx4xAA, MPF-A/B5*xxx*-S/Mx4xAA
				MPS-A/B3*xx*, MPS-A/B45*xx*, MPS-B5*xx* (threaded motor connectors)
2090-KPBM4-06AA	Motor-end cable connector Threaded plug, M40 connector 10, 8, and 6 AWG motor power 18 AWG motor brake	2090-TCR47-M40 (power pins) 2090-TCR47-M23 (brake pins)	2090-KPB47-06CF	MPF-A/B5*xxx*-S/Mx4xAA

Feedback Cable Connector Kits (circular DIN)

Connector Kit Cat. No.	Description	Crimp Tool Cat. No.	Bulkhead Adapter Cat. No.	Motor Series
2090-KFBM7-CAAA	Motor-end cable connector SpeedTec plug, M23 connector	N/A (soldered contacts)	2090-KFB47-CF	MPL-A/B15*xxx*-V/Ex7xAA or MPL-A/B2*xxx*-V/Ex7xAA MPL-A/B3*xx*, MPL-A/B4*xx*, MPL-A/B45*xx*, MPL-A/B5*xx* MPL-B6*xx*, MPL-B8*xx*, MPL-B9*xx* MPM-A/B115*xx*, MPM-A/B130*xx*, MPM-A/B165*xx*, MPM-A/B215*xx* MPF-A/B3*xxx*-S/Mx7xAA, MPF-A/B4*xxx*-S/Mx7xAA, MPF-A/B45*xxx*-S/Mx7xAA, MPF-A/B5*xxx*-S/Mx7xAA MPS-A/B3*xx*, MPS-A/B45*xx*, MPS-A/B5*xx* (SpeedTec motor connectors) RDB-B130*xx*, RDB-B165*xx*, RDB-B215*xx*, RDB-B290*xx*, RDB-B410*xx*
2090-KFBE7-CAAA	Extension cable connector SpeedTec plug, M23 connector			MPL-A/B3*xx*, MPL-A/B4*xx*, MPL-A/B45*xx*, MPL-A/B5*xx*, MPL-B6*xx*, MPL-B8*xx*, MPL-B9*xx*
				MPM-A/B115*xx*, MPM-A/B130*xx*, MPM-A/B165*xx*, MPM-A/B215*xx*
				MPF-A/B3*xxx*-S/Mx7xAA, MPF-A/B4*xxx*-S/Mx7xAA, MPF-A/B45*xxx*-S/Mx7xAA, MPF-A/B5*xxx*-S/Mx7xAA
				RDB-B130*xx*, RDB-B165*xx*, RDB-B215*xx*, RDB-B290*xx*, RDB-B410*xx*
2090-KFBM4-CAAA	Motor-end cable connector Threaded plug, M23 connector			MPL-A/B15xxx-V/Ex4xAA or MPL-A/B2xxx-V/Ex4xAA MPF-A/B3xxx-S/Mx4xAA, MPF-A/B4xxx-S/Mx4xAA, MPF-A/B45xxx-S/Mx4xAA, MPF-A/B5xxx-S/Mx4xAA MPS-A/B3xx, MPS-A/B45xx, MPS-A/B5xx (threaded motor connectors)

Power and Feedback Cable Connector Kits (circular plastic)

Connector Kit Cat. No.	Description	Crimp Tool Cat. No.	Bulkhead Adapter Cat. No.	Motor Series
2090-KPBM6-16AA	Straight Power Connector Kit	58495-1 (Tyco AMP)	N/A	All TLY-A*xxx* motors
2090-KFBM6-AA	Straight Feedback Connector Kit	58448-1 (Tyco AMP)	N/A	

Kinetix Bulkhead Adapter Kits

These bulkhead adapter kits let you secure your cables as they pass through the cabinet. Adapter kits apply to Kinetix TL and TLY motor power and feedback cables and Kinetix integrated drive-motor hybrid cables.

Kinetix Power Cable Compatibility

Bulkhead Adapter Cat. No.	Standard (non-flex) Power Cable Cat. No.	Continuous-flex Power Cable Cat. No.	Description		Connector Diameter mm (in.)
2090-KPB47-12CF	2090-CPWM7DF-16AA*xx*	2090-CPWM7DF-16AF*xx*	Power only	SpeedTec DIN	28.0 (1.1)
	2090-CPWM7DF-14AA*xx*	2090-CPWM7DF-14AF*xx*			
	2090-CPWM7DF-12AA*xx*	–			
	2090-CPBM7DF-16AA*xx*	2090-CPBM7DF-16AF*xx*	Power/brake		
	2090-CPBM7DF-14AA*xx*	2090-CPBM7DF-14AF*xx*			
	2090-CPBM7DF-12AA*xx*	–			
	–	2090-CPBM7E7-16AA*xx*			
	–	2090-CPBM7E7-14AA*xx*			
	–	2090-CPWM4DF-16AF*xx*	Power only	Threaded DIN	
	–	2090-CPBM4DF-16AF*xx*	Power/brake		
	2090-XXNPMF-16S*xx*	–			
2090-KPB47-06CF	2090-CPWM7DF-10AA*xx*	2090-CPWM7DF-10AF*xx*	Power only	SpeedTec DIN	46.0 (1.8)
	2090-CPWM7DF-08AA*xx*	2090-CPWM7DF-08AF*xx*			
	2090-CPBM7DF-10AA*xx*	2090-CPBM7DF-10AF*xx*	Power/brake		
	2090-CPBM7DF-08AA*xx*	2090-CPBM7DF-08AF*xx*			
	2090-CPBM7DF-06AA*xx*	–			

Kinetix Feedback Cable Compatibility

Bulkhead Adapter Cat. No.	Standard (non-flex) Feedback Cable Cat. No.	Continuous-flex Feedback Cable Cat. No.	Description		Connector Diameter mm (in.)
2090-KPB47-12CF	2090-CFBM7DF-CEAA*xx*	2090-CFBM7DF-CEAF*xx*	Feedback	SpeedTec DIN	28.0 (1.1)
	2090-CFBM7DD-CEAA*xx*	2090-CFBM7DD-CEAF*xx*			
	–	2090-CFBM7DF-CDAF*xx*			
	–	2090-CFBM7E7-CDAF*xx*			
	–	2090-CFBM7E7-CEAF*xx*			
2090-KFB47-CF	2090-CFBM4DF-CEAA*xx*	–		Threaded DIN	26.0 (1.0)
	–	2090-CFBM4DF-CDAF*xx*			
	2090-XXNFMF-S*xx*	–			

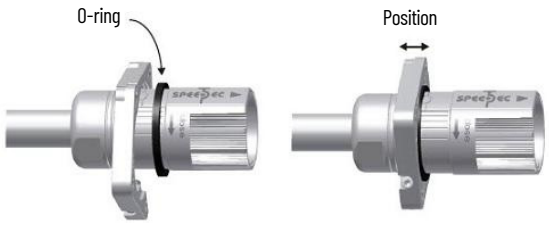
Kinetix Integrated Motor-Drive Hybrid Cable Compatibility

Bulkhead Adapter Cat. No.	Hybrid Cable Cat. No.	Description		Connector Diameter mm (in.)
2090-KPB47-12CF	2090-CHBIFS8-12AA*xx*	Hybrid	SpeedTec	25.4 (1.0)
	2090-CHBP8S8-12AA*xx*			

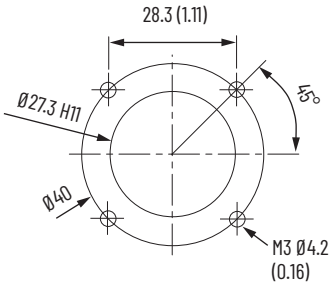
Bulkhead Adapter Kit Dimensions

These bulkhead adapter dimensions apply to Kinetix TL and TLY motor power and feedback cables, integrated motor-drive hybrid cables, and single cables.

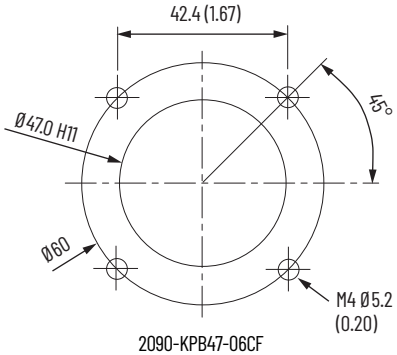
Bulkhead Adapter Kit Mounting Dimensions



Dimensions are in mm (in.)

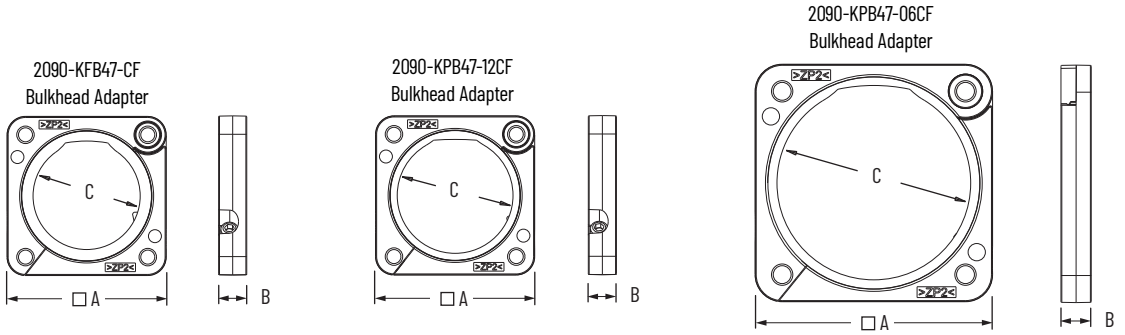


2090-KFB47-CF and 2090-KPB47-12CF (M23)
Bulkhead Adapter Kits



2090-KPB47-06CF
(M40) Bulkhead Adapter Kits

Bulkhead Adapter Kit Dimensions



Bulkhead Adapter Cat. No.	Size	Dimension A mm (in.)	Dimension B mm (in.)	Dimension C (reference) mm (in.)
2090-KFB47-CF	M23	36.8 (1.44)	6.5 (0.26)	23.0 (0.90)
2090-KPB47-12CF				26.0 (1.02)
2090-KPB47-06CF	M40	54.8 (2.16)	7.0 (0.28)	43.0 (1.69)

ArmorKinetix 2090 Cables

ArmorKinetix® cables provide a simplified and robust connection system to ArmorKinetix modules and Kinetix motors. Cables come with rugged SpeedTec DIN connectors and are continuous flex rated for your application. Hybrid and power cables are UL PVVA recognized. Feedback and Ethernet Extension cables are UL CYJV recognized.

ArmorKinetix Cable Features

Hybrid Cable:

- Daisy chain cable connection between DS*x* modules simplifies the system connection.
- TPE cable material for continuous-flex cable
- UL PVVA Recognized
- 2090-CDHIFS-12AF*xxxx* are available in 0.1 m (0.3 ft) increments between 3…5 m (9.8…16.4 ft) and 0.5 m (1.6 ft) increments between 5…50 m (16.4…164.0 ft)
- 2090-CDHP1S-12AF*xxxx* are available in 0.1 m (0.3 ft) increments between 0.1…5 m (0.3…16.4 ft) and 0.5 m (1.6 ft) increments between 5…30 m (16.4…164.0 ft)
- 2090-CDHP1S-12AFJ is 0.3 m (0.98 ft) in length

Motor Power/Feedback Cable:

- Single cable motor power/feedback connection between DSD modules and Kinetix VPL motors or motor power connection between DSD modules and Kinetix MPL, Kinetix linear, and Induction motors
- PUR cable material for Halogen-free continuous-flex cable
- UL PVVA Recognized
- 2090-CSBM1P7-14AF*xx* and 2090-CPWFLP7-14AF*xx* are available in 1 m (3.2 ft) increments up to 4 m (13.1 ft)

Feedback Cable:

- Feedback cable between DSD modules and Kinetix MPL motors, Kinetix linear motors, induction motors, and auxiliary feedback device
- PUR cable material for Halogen-Free continuous-flex cable
- UL CYJV Recognized
- 2090-CFBFLS7-CDAFxx and 2090-CFBM7S7-CDAFxx are available in 1 m (3.2 ft) increments up to 4 m (13.1 ft)

Hybrid Ethernet Extension Cable:

- Connecting between DSx modules and Kinetix 5700 In-cabinet drives or Ethernet Switch devices.
- TPE cable material for continuous-flex cable
- UL CYJV Recognized
- 2090-CDET is 0.5 m (1.6 ft) in length

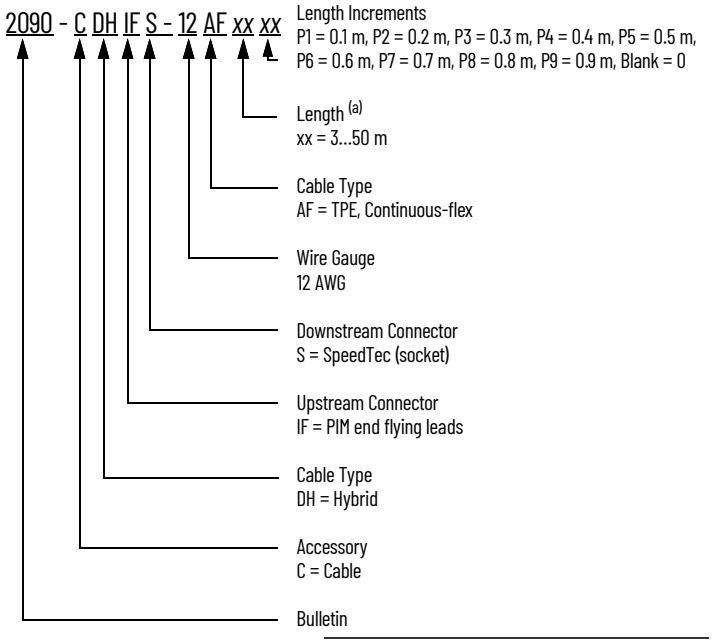
IMPORTANT Due to the unique characteristics of Kinetix 2090 single cable technology, designed for and tested with ArmorKinetix DSx modules, building your own cables or using third-party cable is not an option.

Cable Catalog Numbers

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering charts below to understand the configuration of your component. For the cable type: PUR = Polyurethane and TPE = Thermoplastic Elastomer.

ArmorKinetix PIM to ArmorKinetix DSx Hybrid Cables

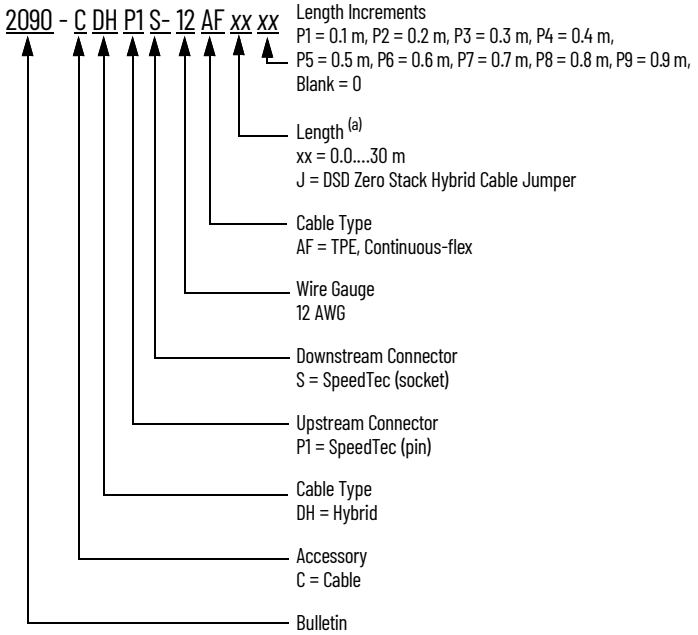
This cable connects the ArmorKinetix Power Interface Module (PIM) to either the ArmorKinetix Distributed Servo Motor (DSM) or the Distributed Servo Drive (DSD).



(a) For 3 m to 5 m cable lengths, cables are available in 0.1 m increments. For cable lengths longer than 5 m, cables are available in 0.5 m increments.

ArmorKinetix DSx to DSx Hybrid Cables

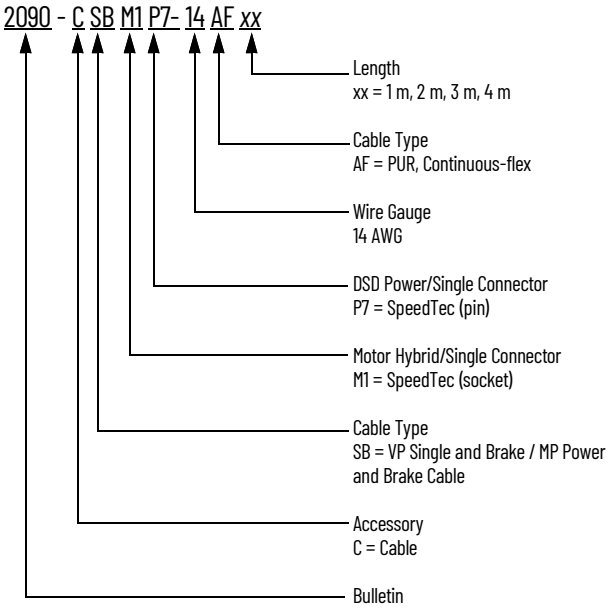
This cable connects distributed servo drives and motors to each other.



(a) For 0.5...5 m cable lengths, cables are available in 0.1 m increments. For cable lengths longer than 5 m, cables are available in 0.5 m increments.

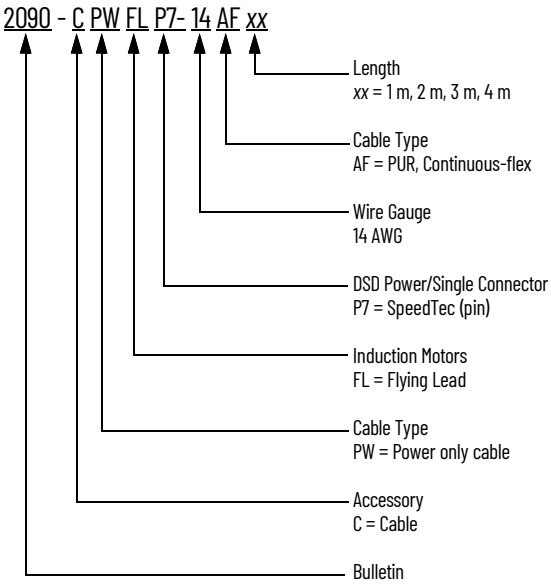
ArmorKinetix DSD to Kinetix VPL/MPL Motor Power Cable

This cable connects the distributed servo drive to Kinetix® VPL/MPL motors.



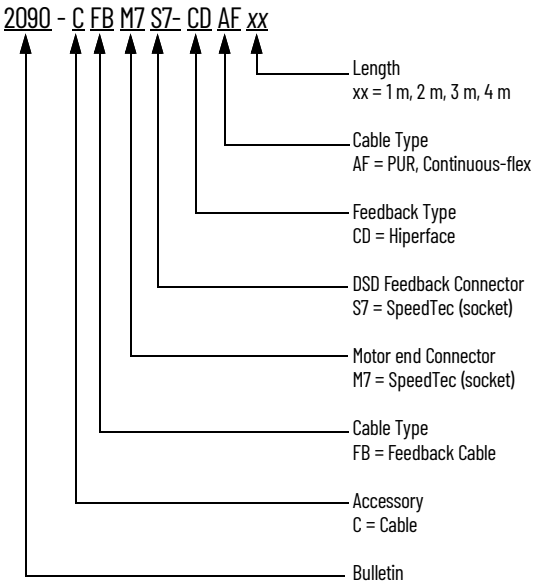
ArmorKinetix DSD to Induction Motor Power Cable

This cable connects the DSD to induction motors with open loop, Hiperface, incremental TTL, and generic SIN/COS encoders.



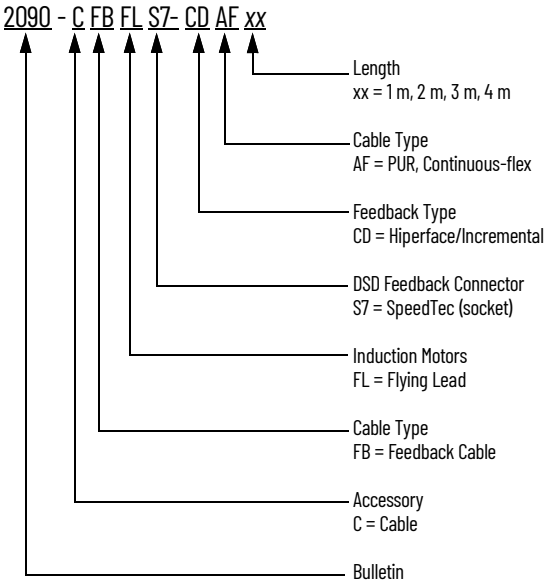
ArmorKinetix DSD to Kinetix Motor Feedback Cable

This cable connects the Kinetix motor feedback to the distributed servo drive.



ArmorKinetix DSD to Induction Motor Feedback or Auxiliary Feedback Cable

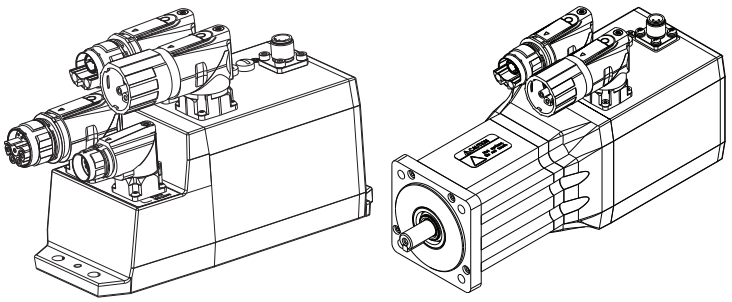
This cable connects an induction motor feedback or auxiliary feedback device to the distributed servo drive.



Motor Connector/Cable Compatibility

ArmorKinetix DSD and DSM modules are equipped with SpeedTec DIN connectors.

SpeedTec Connector



- DSD and DSM modules
- Receives only single cable plugs
- Attach cable plug with one-quarter turn

SpeedTec DIN Single Cable Plug

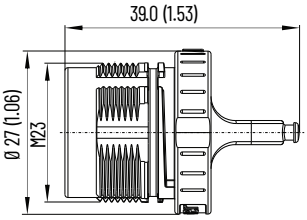


- 2090-CDHIFS-12AF*xxxx* (DSD and DSM)
- 2090-CDHP1S-12AF*xxxx* (DSD and DSM)
- 2090-CSBM1P7-14AF*xx* (DSD)
- 2090-CPWFLP7-14AF*xx* (DSD)
- 2090-CFBFLS7-CDAF*xx* (DSD)
- 2090-CFBM7S7-CDAF*xx* (DSD)
- 2090-CDET

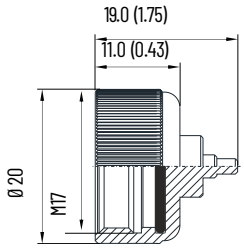
For ArmorKinetix 2090 motor cables specifications, refer to Kinetix Motion Accessories Specifications Technical Data, publication KNX-TD004.

Connector Terminator Dimensions - 2090-CDHT, 2090-CDFT, 2090-CDPT

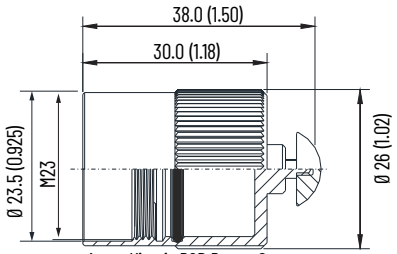
Dimensions in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes.



ArmorKinetix DSx Hybrid Connector Output Terminator - 2090-CDHT



ArmorKinetix DSD Feedback Connector Terminator - 2090-CDFT



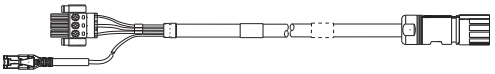
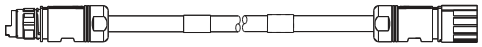
ArmorKinetix DSD Power Connector Terminator - 2090-CDPT

- The terminator kits are designed for IP protection on DS*x* modules when a connector is not used
- 2090-CDHT and 2090-CDPT are UL PVVA Recognized
- 2090-CDFT is UL CYJV Recognized

Motor Cable Selection

These cables apply to Allen-Bradley compatible rotary motors including Kinetix VPL, VPF, VPS, and VPH (63...130 mm frames) rotary motors and Kinetix MPL, MPF, MPS, and MPM (100...130 mm frames) rotary motors. They also apply to compatible Kinetix LDAT linear thrusters, Kinetix VPAR and MPAR electric cylinders, and LDC linear motors. For maximum motor-cable lengths with ArmorKinetix modules, see the ArmorKinetix System User Manual, publication 2198-UM006.

ArmorKinetix Cable Descriptions

Standard Cable Cat. No.	Description	Cable Configuration	Motor/Actuator Connector
2090-CDHIFS-12AF*xxxx*	• ArmorKinetix PIM to DSx Hybrid Cable		SpeedTec DIN (M23)
• 2090-CDHP1S-12AF*xxxx* • 2090-CDHP1S-12AFJ	• ArmorKinetix DSx to DSx Hybrid Cable • ArmorKinetix DSx to DSx Zero Stack Jumper Cable		SpeedTec DIN (M23)
2090-CSBM1P7-14AF*xx*	• ArmorKinetix DSD to Kinetix VPL/MPL Motor Power/ Feedback Cable		SpeedTec DIN (M23)
2090-CPWFLP7-14AF*xx*	• ArmorKinetix DSD to Induction Motor Power Cable		SpeedTec DIN (M23)
2090-CFBM7S7-CDAF*xx*	• ArmorKinetix DSD to Kinetix Motor Feedback Cable		SpeedTec DIN (M17 and M23)
2090-CFBFLS7-CDAF*xx*	• ArmorKinetix DSD to Induction Motor and Auxiliary Feedback Cable		SpeedTec DIN (M17)
2090-CDET	• ArmorKinetix 2090 Hybrid Connector Communication Extension		SpeedTec DIN (M23 and M12)

Motor and Cable Combinations

The ArmorKinetix DSD module uses these cables to connect to these Kinetix motors.

ArmorKinetix Cable Compatibility

Kinetix Motors	Power Cable Cat. No.	Feedback Cable Cat. No.
• VPL-A/Bxxxx-C/P/Q/W, • VPF-A/Bxxxx-C/P/Q/W, • VPH-A/Bxxxx-C/Q/W, • VPS-BxxxD-P (Frames 63 mm, 75 mm, 100 mm, 115 mm, and 130 mm) with High-resolution Feedback	2090-CSBM1P7-14AFxx Single Motor Power/Feedback Cable	
Kinetix MPL, MPM, MPF, and MPS (Frames 100 mm, 115 mm, and 130 mm)	2090-CSBM1P7-14AFxx	2090-CFBM7S7-CDAFxx
• VPAR-B1xxxx-W • VPAR-B2xxxx-W • VPAR-B3xxxx-Q Electric Cylinders with High-resolution Feedback	2090-CSBM1P7-14AFxx Single Motor Power/Feedback Cable	
LDAT-Sxxxxxx-xDx Linear Thrusters	2090-CSBM1P7-14AFxx	2090-CFBM7S7-CDAFxx
Kinetix MPAR Electric Cylinders	2090-CSBM1P7-14AFxx	2090-CFBM7S7-CDAFxx
DC-Cxxxxxx-xHTx1 Linear Motor Coil with Sin/Cos or TTL External Encoder	2090-CSBM1P7-14AFxx	2090-CFBM7S7-CDAFxx

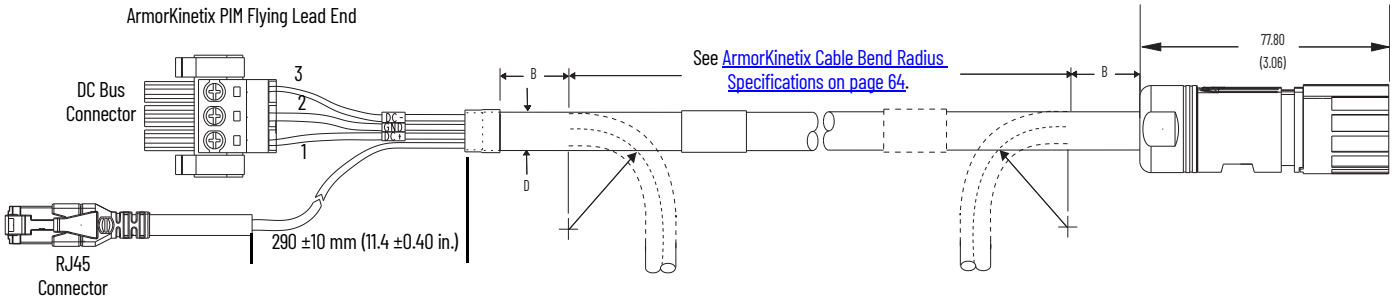
ArmorKinetix Cables Environmental Specifications

Description	Value
Storage Temperature	-40...+85 °C (-40...+185 °F)
Humidity	5...95% noncondensing
IP Protection	IP66, IP67
Mechanical Shock and Vibration	25 g shock and 5 g vibe
Oil Resistance	Oil resistance to UL 50E
UV Resistance	Sunlight resistance per UL 50E
Water Absorption	Water absorption to be tested per UL 1581 - IEC 60811 for 168 hours (7 days).

ArmorKinetix Cable Dimensions

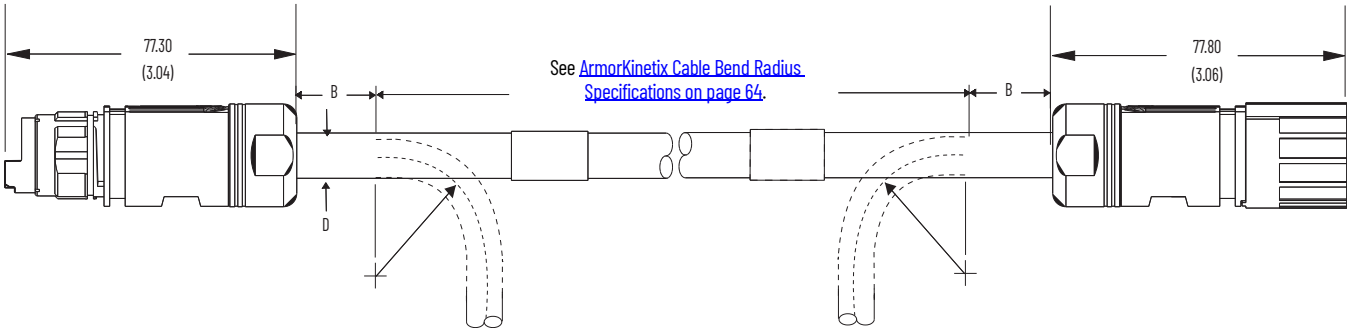
The PIM to DSx module cables (2090-CDHIFS-12AFxxxx) are available in 0.1 m (0.3 ft) increments between 3...5 m (9.8...16.4 ft) and 0.5 m (1.6 ft) increments between 5...50 m (16.4...164.0 ft).

ArmorKinetix PIM to DSx Hybrid Cable - 2090-CDHIFS-12AF*xxxx*



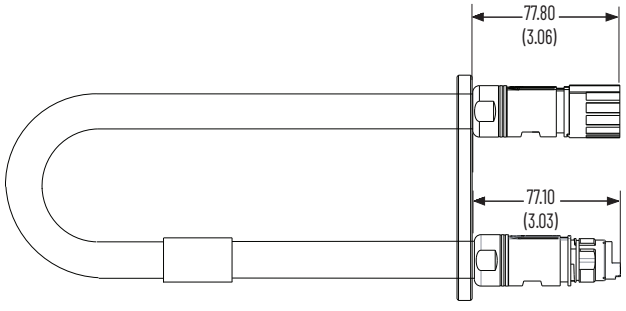
The hybrid cables (2090-CDHP1S-12AF*xxxx*) are available in 0.1 m (0.3 ft) increments between 0.1...5 m (0.3...16.4 ft) and 0.5 m (1.6 ft) increments between 5...30 m (16.4...164.0 ft).

ArmorKinetix DSx to DSx Hybrid Cable - 2090-CDHP1S-12AF*xxxx*



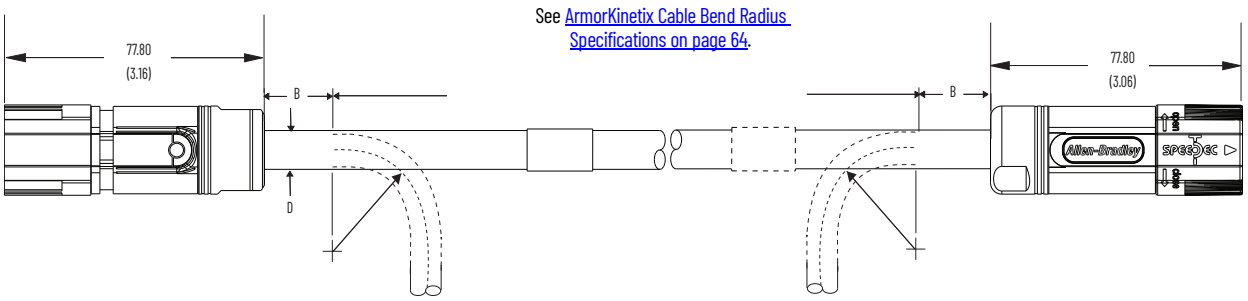
The zero stack hybrid cable (2090-CDHP1S-12AFJ) is 0.3 m (0.98 ft) in length.

ArmorKinetix DSx to DSx Zero Stack Jumper Cable - 2090-CDHP1S-12AFJ



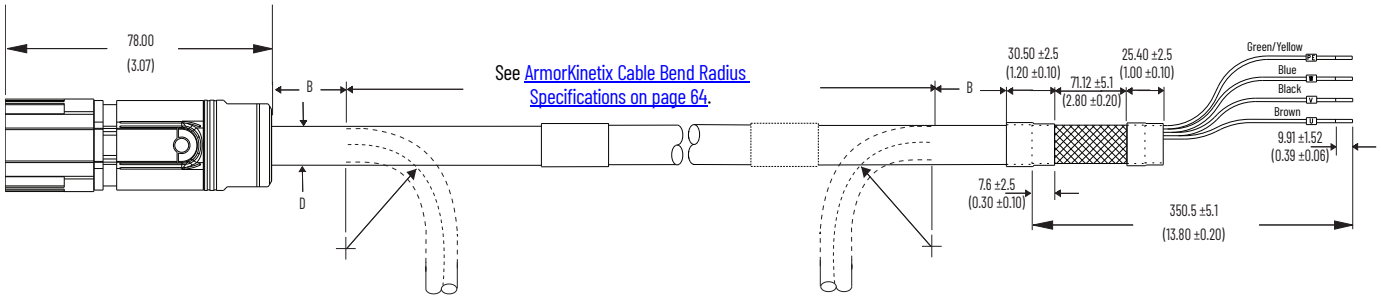
The DSD to Kinetix VP/MP motor cables (2090-CSBM1P7-14AF*xx*) are available in 1 m (3.2 ft) increments up to 4 m (13.1 ft).

ArmorKinetix DSD to Kinetix VP/MP Motor Power/Feedback Cable (2090-CSBM1P7-14AF*xx*)



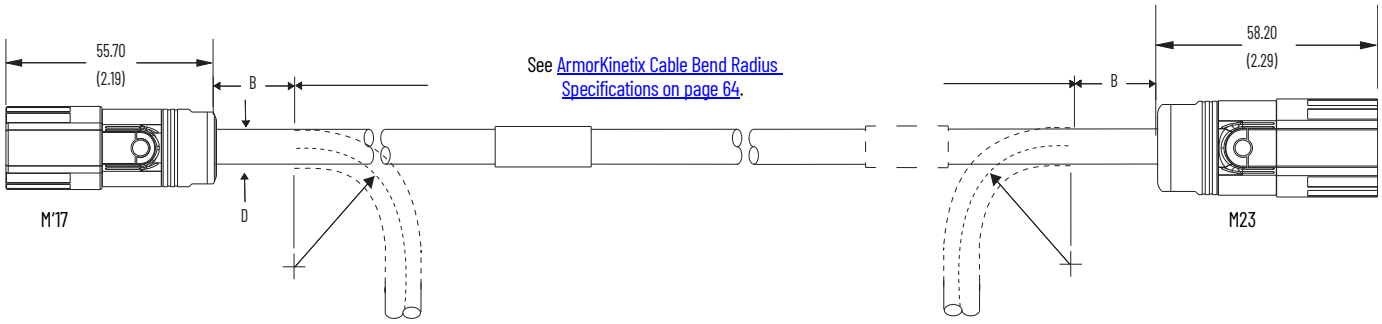
The DSD to induction motor cables (2090-CPWFLP7-14AF*xx*) are available in 1 m (3.2 ft) increments up to 4 m (13.1 ft).

ArmorKinetix DSD to Induction Motor Power Cable (2090-CPWFLP7-14AFxx)



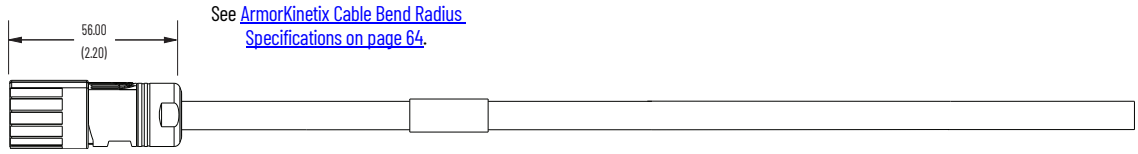
The DSD to Kinetix motor feedback cables (2090-CFBM7S7-CDAF*xx*) are available in 1 m (3.2 ft) increments up to 4 m (13.1 ft).

ArmorKinetix DSD to Kinetix Motor Feedback Cable (2090-CFBM7S7-CDAFxx)



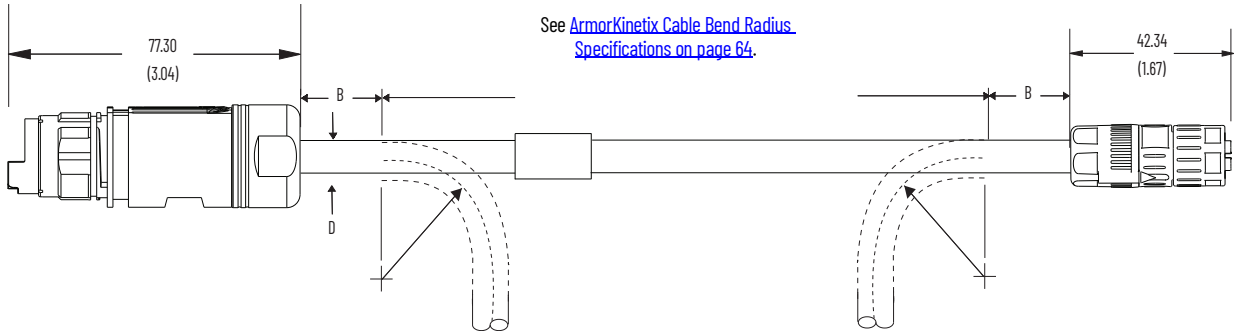
The DSD to induction motor feedback cables (2090-CFBFLS7-CDAF*xx*) are available in 1 m (3.2 ft) increments up to 4 m (13.1 ft).

ArmorKinetix DSD to Induction Motor and Auxiliary Feedback Cable (stand-alone) (2090-CFBFLS7-CDAF*xx*)



The communication extension jumper cable (2090-CDET) is 0.5 m (1.6 ft) in length.

ArmorKinetix DSx Hybrid Connector - Communication Extension Jumper-cable (2090-CDET)



ArmorKinetix Cable Bend Radius Specifications

Cable Cat. No.	Wire Size	D	B	Static (installation) bend radius	Continuous Bend Radius	Continuous Bend Radius Factor	Expected Flex cycle at Rated Radius
2090-CDHIFS-12AFxxxx	12	13.2	92.4	66	132	10	10 M
2090-CDHP1S-12AFxxxx	12	13.2	92.4	66	132	10	10 M
2090-CSBM1P7-14AFxx	14	15.2	76	76	106.4	7	10 M
2090-CPWFLP7-14AFxx	14	15.2	76	76	106.4	7	10 M
2090-CFBM7S7-CDAFxx	–	9.8	68.6	49	98	10	10 M
2090-CFBFLS7-CDAFxx	–	9.8	68.6	49	98	10	10 M
2090-CDET	24	7	49	35	70	10	10 M

Kinetix TL and TLY Motor Power and Feedback Cables

A wide variety of power and feedback cables with rugged connectors are available for connecting your motion control system. Standard (non-flex) motor power and feedback cables are available for all Allen-Bradley servo motors and actuators.

IMPORTANT	All flying-lead feedback cables require breakout components or connector kits for drive-end terminations. Refer to Breakout Components and Connector Kits in Kinetix 3, 300, 350, 2000, 6000, 6200, 6500, 7000 Servo Drives Specifications, publication KNX-TD005 for catalog numbers and descriptions.

IMPORTANT	Standard (non-flex) cables have a regular maintenance and installation bend radius of 7 times the cable diameter.

Catalog Numbers - Kinetix TL and TLY Power and Feedback Cables

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering charts below to understand the configuration of your component. For questions regarding product availability, contact your Allen-Bradley distributor.

Motor Power/Brake, Feedback, and Extension Cables

2090 - C *xx* M*x* D*x* - C*x* A*x* *xx*

Cable Length
Refer to Technical Specifications - Kinetix TL and TLY Motor Power and Feedback Cables beginning on page 67.

Cable Type
AA = Standard, non-flex

Encoder Type (applies to feedback cables)
CB = Serial incremental/Serial absolute - battery backup
CC = Serial incremental/Incremental

Wire Gauge Size (applies to power cables)
16 AWG

Drive-end Connector Type
DF = Drive-end, flying-lead
DD = Drive-end, D-sub connector

Motor-end Connector Type
M6 = Circular plastic connector

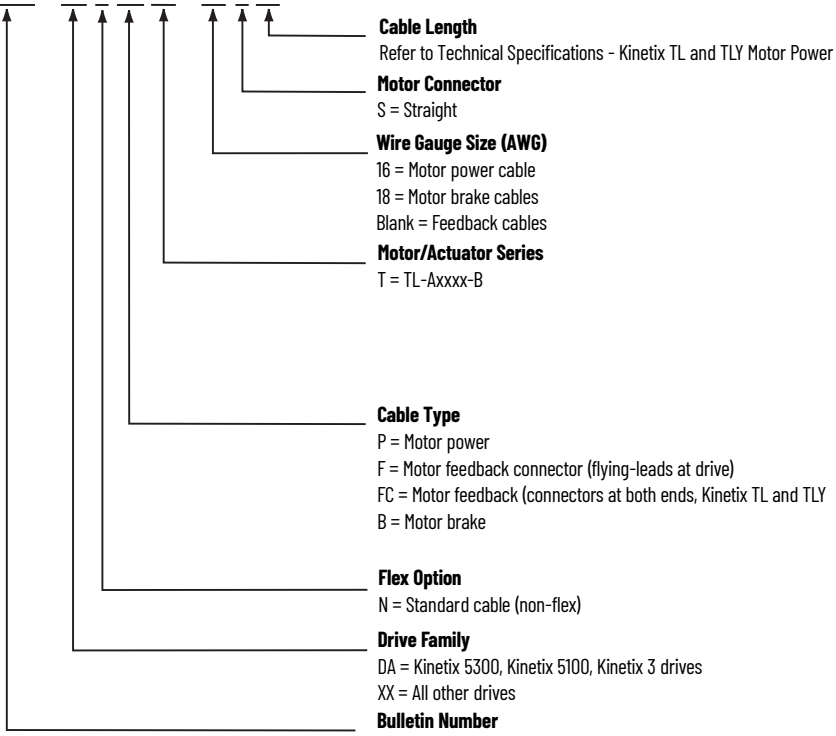
Cable Type
PB = Motor power with brake wires
PW = Motor power only
FB = Motor feedback only

Accessory Component
C = Cable

Bulletin Number

Motor Power, Feedback, and Brake Cables

2090 - *xx x xx xx - xx S xx*



Cable Length
Refer to Technical Specifications - Kinetix TL and TLY Motor Power and Feedback Cables beginning on page 67.

Motor Connector
S = Straight

Wire Gauge Size (AWG)
16 = Motor power cable
18 = Motor brake cables
Blank = Feedback cables

Motor/Actuator Series
T = TL-Axxxx-B

Cable Type
P = Motor power
F = Motor feedback connector (flying-leads at drive)
FC = Motor feedback (connectors at both ends, Kinetix TL and TLY
B = Motor brake

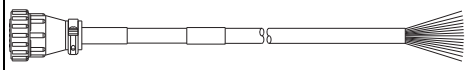
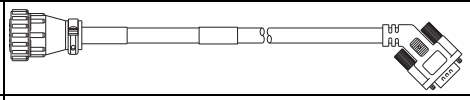
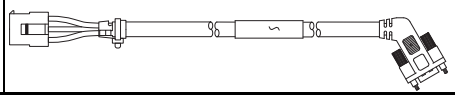
Flex Option
N = Standard cable (non-flex)

Drive Family
DA = Kinetix 5300, Kinetix 5100, Kinetix 3 drives
XX = All other drives

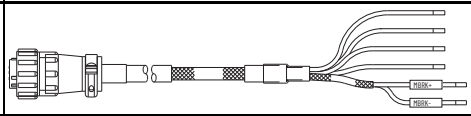
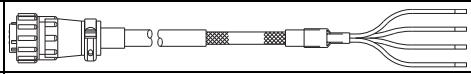
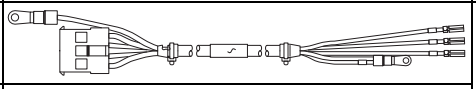
Bulletin Number

Kinetix TL and TLY Power and Feedback Cables Overview

Feedback Cable Descriptions (standard, non-flex)

Standard Cable Cat. No.	Description	Cable Configuration		Connector Type
		Motor End	Drive End	
2090-CFBM6DF-CBAA*xx*	• Drive-end flying-leads (DF) • High-resolution, battery backup or Incremental applications (CB)			Circular Plastic (M6)
2090-CFBM6DD-CCAA*xx*	• Drive-end 15-pin connector (DD) • Incremental applications only (CC)			
2090-DANFCT-S*xx*	• Drive-end 20-pin connector • High-resolution applications			Rectangular Plastic

Power/Brake Cable Descriptions (standard, non-flex)

Standard Cable Cat. No.	Description	Cable Configuration		Connector Type
		Motor End	Drive End	
2090-CPBM6DF-16AA*xx*	• Drive-end flying-leads (DF) • Power/brake wires (PB)			Circular Plastic (M6)
2090-CPWM6DF-16AA*xx*	• Drive-end flying-leads (DF) • Power wires only (PW)			
2090-DANPT-16S*xx*	• Drive-end flying-leads • Power wires only			Rectangular Plastic
2090-DANBT-18S*xx*	Drive-end flying-lead brake wires			

Technical Specifications - Kinetix TL and TLY Motor Power and Feedback Cables

IMPORTANT Maximum motor cable length depends on the feedback type and overall system design. The drive-system power supply, AC input-power type, and AC input voltage are among the configuration variables. For more information on maximum cable lengths see your servo drive user manual or the Kinetix 5700, 5500, 5300, 5100 Servo Drives Specifications Technical Data, publication KNX-TD003.

Power Cable Specifications

Power Cables Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)		
2090-CPWM6DF-16AA*xx*	Standard (non-flex) cable, Industrial TPE, Black	Four conductor, 600V, shielded cable for three-phase power.	16	0.138 (0.093)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1)	05 (16.4) 07 (22.9) 09 (29.5) 12 (39.4)	15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4)
2090-DANPT-16S*xx*			16				
2090-CPBM6DF-16AA*xx*		Four conductor, 600V, shielded cable for three-phase power with additional two conductors 18 AWG for motor brake.	16	0.180 (0.121)			

Brake Cable Specifications

Brake Cables Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)		
2090-DANBT-18S*xx*	Standard (non-flex) cable, Industrial TPE, Black	Two conductor, 600V, 18 AWG, shielded cable for motor brake.	18	0.070 (0.047)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1)	05 (16.4) 07 (22.9) 09 (29.5) 12 (39.4)	15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4)

Feedback Cable Specifications

Feedback Cables Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)
2090-CFBM6DF-CBAA*xx*	Standard (non-flex) cable, Industrial TPE, Black	Circular plastic connector (motor end) to flying leads (drive end), 300V.	28 Feedback 16 Power, 5V 22 BAT+	0.120 (1.35)	01 (3.2) 02 (6.5) 03 (9.8) 04 (13.1) 05 (16.4) 07 (22.9) 09 (29.5) 12 (39.4) 15 (49.2) 20 (65.6) 25 (82.0) 30 (98.4)
2090-CFBM6DD-CCAA*xx*		Circular plastic connector (motor end) to premolded connector (drive end), 300V.	28 Feedback 16 Power, 5V		
2090-DANFCT-S*xx*		Rectangular plastic connector (motor end) to premolded connector (drive end), 30V.	28 Feedback 16 Power, 5V 22 BAT+	0.130 (0.088)	

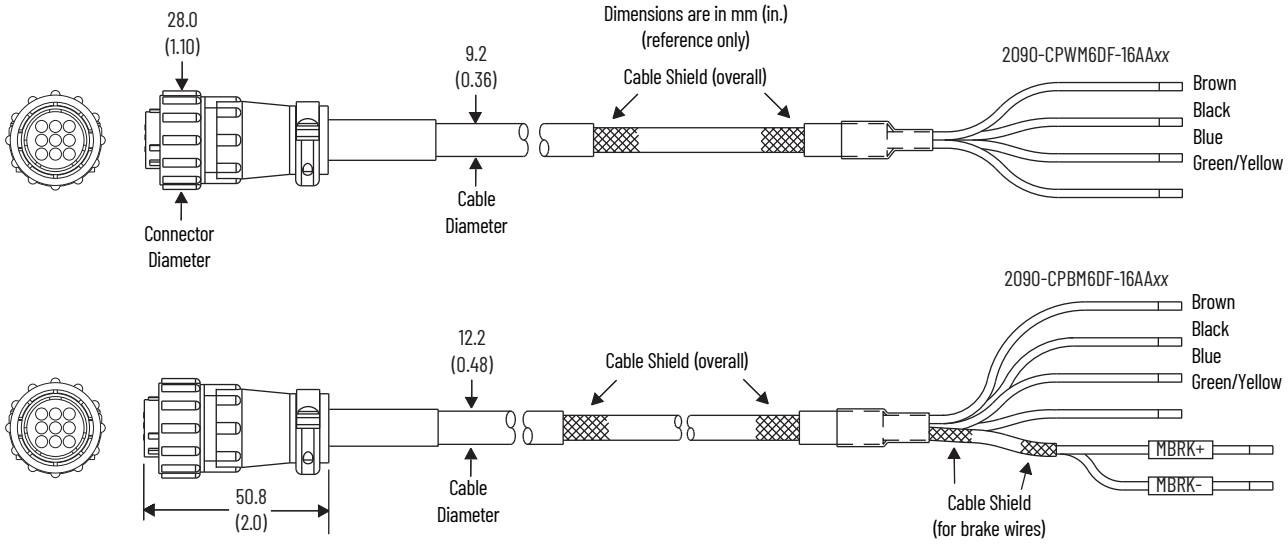
Dimensions - Kinetix TL and TLY Motor Power and Feedback Cables

When installing cable runs between the motor and drive, be careful not to stress the cable by making bends too sharp. Refer to the table below for bend radius definitions, and the dimension diagrams that follow, when routing cables during system installation.

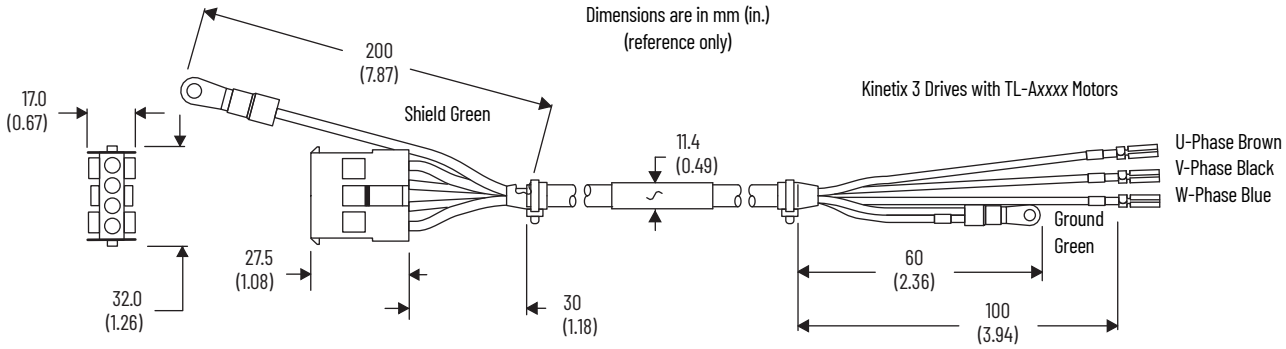
Motor Power and Feedback Cable Bend Radius Definitions

Type of Bend Radius	Type of Cable	Description
Static bend radius	Standard (non-flex)	The static (installation) bend radius and dimension B are 7 times the cable diameter: • Do not begin a static bend inside dimension B. • Use this measurement when routing the cable in a non-flex application between motor and drive (the bend area). – The bend area is where standard (non-flex) or continuous-flex cables can be bent to their specified bend radius.

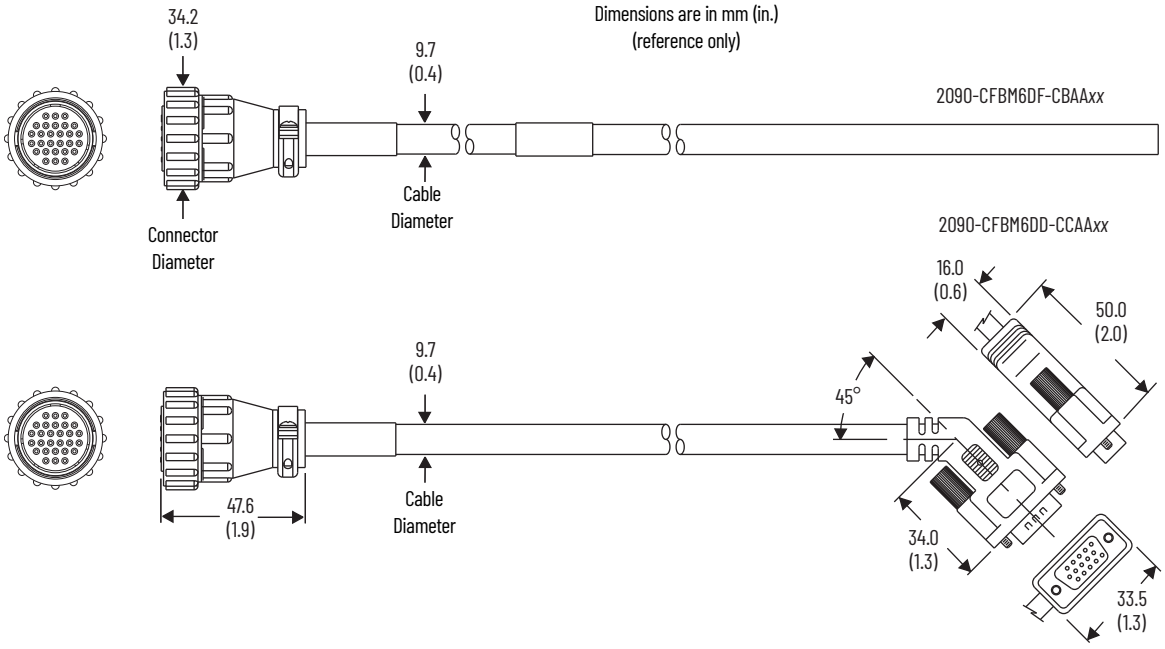
Power Cable Dimensions (catalog number 2090-CP*x*M6DF-16AA*xx*)



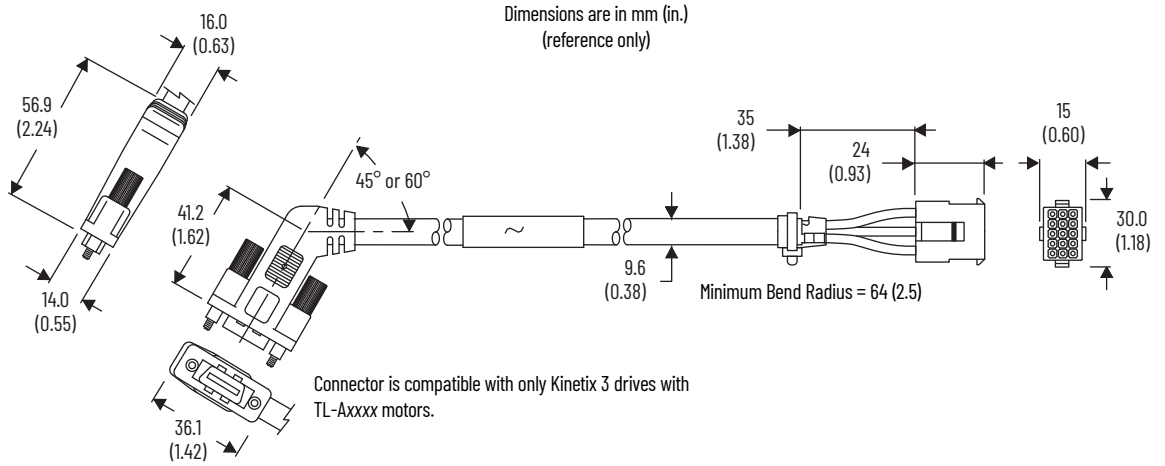
Power Cable Dimensions (catalog number 2090-DANPT-16S*xx*)



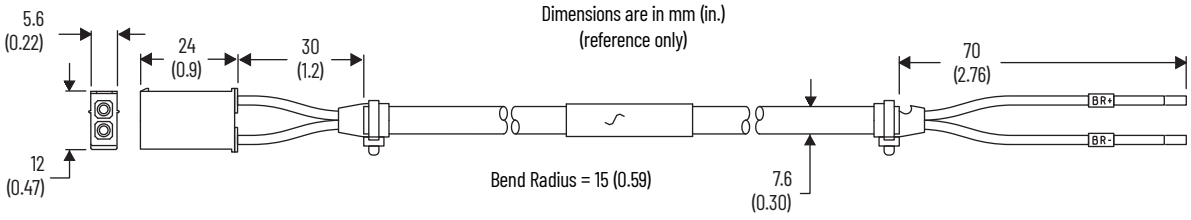
Feedback Cable Dimensions (catalog numbers 2090-CFBM6DF-CBAA*xx* and 2090-CFBM6DD-CCAA*xx*)



Feedback Cable Dimensions (catalog number 2090-DANFCT-S*xx*)



Brake Cable Dimensions (catalog number 2090-DANBT-18S*xx*)



Kinetix TLP Motor Power and Feedback Cables

Kinetix TLP power and feedback cables are designed specifically for applications with Kinetix TLP servo motors and Kinetix 5100 or Kinetix 5300 drives. Cables equipped with rectangular connectors mate with the on-motor cables that are included with TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors. Cables equipped with military style connectors mate with all other (larger) Kinetix TLP servo motors. Standard (non-flex) motor power and feedback cables are available, as are continuous-flex rated cables that are intended for moving applications. Continuous-flex extension cables are also available for your applications that require them.

IMPORTANT Feedback cables include a drive-end connector, but 2198-K5xCK-D15M feedback connector kits are available and provide drive-end terminations when building your own cables. Refer to Kinetix TLP Motor-end Cable Connector Kits beginning on page 83 for power and feedback cable connector kit catalog numbers and descriptions. Refer to the Kinetix 5700, 5500, 5300, 5100 Servo Drives Specifications Technical Data, publication KNX-TD003, for more information on the 2198-K5xCK-D15M connector kit that is used with Kinetix 5100 and Kinetix 5300 servo drives.

IMPORTANT Standard (non-flex) cables have a regular maintenance and installation bend radius of 7 times the cable diameter. For flexing applications, continuous-flex cables have an operational bend radius of 12 times the cable diameter.



The Kinetix TLP power and feedback cables are designed to match with Kinetix TLP servo motors and Kinetix 5100 or Kinetix 5300 drives for optimal system performance. Kinetix TLP cables offer up to 50 m (164 ft) in length and a variety of options for your application needs.

Kinetix TLP Motor Cable Features

- UL Recognized: 18, 16, 12, 8, 6, and 4 AWG power cable
  - UL AWM, 600V, 105 °C construction
  - cUR AWM I/II A, 600V, 105 °C construction
- UL Recognized: Feedback cable
  - UL AWM, 300V, 80 °C construction for up to 20 m (65.6 ft) cable length
  - UL AWM, 30V, 80 °C construction for 30 m (98.4 ft) and 50 m (164 ft) cable length
- UL Recognized: Brake cable
  - UL AWM, 300V, 105 °C construction
- Molded connectors for 16 and 18 AWG, military style connectors for 16...4 AWG
- PVC cable jacket
- Tested for EMC/EMI system performance

Catalog Numbers - Kinetix TLP Power and Feedback Cables

Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering charts below to understand the configuration of your component. For questions regarding product availability, contact your Allen-Bradley distributor.

2090 - C T *xx* - *xx xx* - *xx x xx*

Cable Length
Refer to Technical Specifications - Kinetix TLP Power and Feedback Cables beginning on page 76.

Cable Type
A = Standard, non-flex
F = Continuous-flex

Wire Gauge Size (PB, PW, and BK cable types)
20, 18, 16, 14, 12,10, 08, 06, and 04 AWG

Encoder Type (FB cable types)
CF = Serial absolute, battery backup

Drive-end Connector Type
DF = Flying-lead power and brake cable
DD = Premolded connector on feedback cable
ET = Extension receptacle on power, feedback, and brake cables

Motor-end Connector Type (BK cable type)
MB = Military style, applies to TLP-A/B200-550, and TLP-A/B200-750 and TLP-A/B235-*xxx* motors

Motor-end Connector Type (FB cable type)
MA = Rectangular, applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors
MF = Military style, applies to TLP-A/B115, TLP-A/B145, TLP-A/B200, and TLP-A/B235 motors

Motor-end Connector Type (PB and PW cable type)
MA = Rectangular, applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors
MC = Military style, applies to TLP-A/B115-*xxx* and TLP-A/B145-*xxx* motors
MD = Military style, applies to TLP-A/B200-200, TLP-A/B200-300, TLP-A/B200-350, and TLP-A/B200-450 motors
ME = Military style, applies to TLP-A/B200-550, and TLP-A/B200-750 and TLP-A/B235-*xxx* motors

Cable Type
PB = Motor power with brake wires
PW = Motor power only
FB = Motor feedback
BK = Motor brake

Matching Motor Family
T = Compatible with Kinetix TLP servo motors

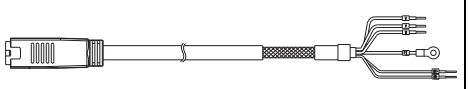
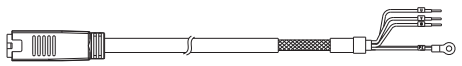
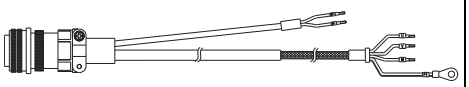
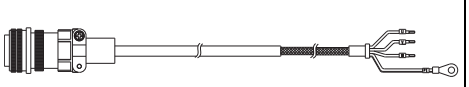
Accessory Component
C = Cable

Bulletin Number

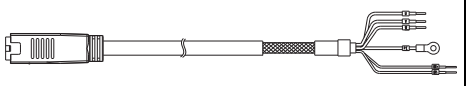
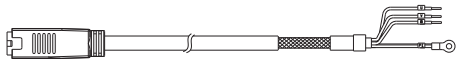
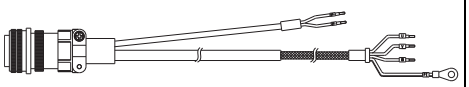
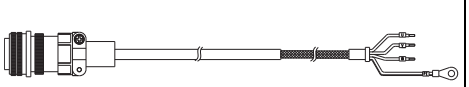
Kinetix TLP Motor Cables Overview

2090-CTP*x*-MADF cables attach to on-motor cable connectors. 2090-CTP*x*-MC/D/E cables attach to military-style connectors. 2090-CTP*x*-MxET extension cables provide continuous-flex cable technology between your standard (non-flex) cable and the continuous-flex application.

Power/Brake Cable Descriptions (standard, non-flex)

Standard Cable Cat. No.	Description	Cable Configuration	Motor Connector
		Motor End — Drive End	
2090-CTPB-MADF-*xx*A*xx*	• Applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors (MA) • Drive-end flying-leads (DF) • Power/brake wires (PB)		Rectangular
2090-CTPW-MADF-*xx*A*xx*	• Applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors (MA) • Drive-end flying-leads (DF) • Power wires only (PW)		
2090-CTPB-MCDF-*xx*A*xx* 2090-CTPB-MDDF-*xx*A*xx*	• Applies to TLP-A/B115...TLP-A/B145 motors (MC) • Applies to TLP-A/B200 (MD) • Drive-end flying-leads (DF) • Power/brake wires (PB)		Military style
2090-CTPW-MCDF-*xx*A*xx* 2090-CTPW-MDDF-*xx*A*xx* 2090-CTPW-MEDF-*xx*A*xx*	• Applies to TLP-A/B115...TLP-A/B145 motors (MC) • Applies to TLP-A/B200 motors (MD) • Applies to TLP-A/B200...TLP-A/B235 motors (ME) • Drive-end flying-leads (DF) • Power wires only (PW)		

Power/Brake Cable Descriptions (continuous-flex)

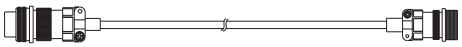
Continuous-flex Cable Cat. No.	Description	Cable Configuration	Motor Connector
		Motor End — Drive End	
2090-CTPB-MADF-*xx*F*xx*	• Applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors (MA) • Drive-end flying-leads (DF) • Power/brake wires (PB)		Rectangular
2090-CTPW-MADF-*xx*F*xx*	• Applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors (MA) • Drive-end flying-leads (DF) • Power wires only (PW)		
2090-CTPB-MAET-*xx*F*xx* 2090-CTPW-MAET-*xx*F*xx*	• Applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors (MA) • Drive-end (male) connector, extension (ET) • Power/brake wires (PB) • Power wires only (PW)		
2090-CTPB-MCDF-*xx*F*xx* 2090-CTPB-MDDF-*xx*F*xx*	• Applies to TLP-A/B115...TLP-A/B145 motors (MC) • Applies to TLP-A/B200 motors (MD) • Drive-end flying-leads (DF) • Power/brake wires (PB)		Military style
2090-CTPW-MCDF-*xx*F*xx* 2090-CTPW-MDDF-*xx*F*xx* 2090-CTPW-MEDF-*xx*F*xx*	• Applies to TLP-A/B115...TLP-A/B145 motors (MC) • Applies to TLP-A/B200 motors (MD) • Applies to TLP-A/B200 motors (ME) • Drive-end flying-leads (DF) • Power wires only (PW)		
2090-CTPB-MCET-*xx*F*xx* 2090-CTPB-MDET-*xx*F*xx*	• Applies to TLP-A/B115...TLP-A/B145 motors (MC) • Applies to TLP-A/B200 (MD) • Drive-end (male) connector, extension (ET) • Power/brake wires (PB)		Military style
2090-CTPW-MCET-*xx*F*xx* 2090-CTPW-MDET-*xx*F*xx* 2090-CTPW-MEET-*xx*F*xx*	• Applies to TLP-A/B115...TLP-A/B145 motors (MC) • Applies to TLP-A/B200 motors (MD) • Applies to TLP-A/B200...TLP-A/B235 motors (ME) • Drive-end (male) connector, extension (ET) • Power wires only (PW)		

Brake wires for TLP-A/B200-550, TLP-A/B200-750, and TLP-A/B235-*xxx* servo motors are in a separate cable. 2090-CTBK-MBET extension cables provide continuous-flex cable technology between your standard (non-flex) cable and the continuous-flex application.

Brake Cable Descriptions (standard, non-flex)

Standard Cable Cat. No.	Description	Cable Configuration		Motor Connector
		Motor End	Drive End	
2090-CTBK-MBDF-20A*xx*	• Applies to TLP-A/B200-550, TLP-A/B200-750, and TLP-A/B235-*xxx* motors (MB) • Drive-end flying-leads (DF) • Brake wires (BK)			Military style

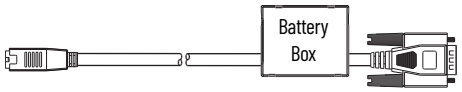
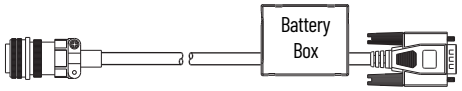
Brake Cable Descriptions (continuous-flex)

Continuous-flex Cable Cat. No.	Description	Cable Configuration		Motor Connector
		Motor End	Drive End	
2090-CTBK-MBDF-20F*xx*	• Applies to TLP-A/B200-550, TLP-A/B200-750, and TLP-A/B235-*xxx* motors (MB) • Drive-end flying-leads (DF) • Brake wires (BK)			Military style
2090-CTBK-MBET-20F*xx*	• Applies to TLP-A/B200-550, TLP-A/B200-750, and TLP-A/B235-*xxx* motors (MB) • Drive-end (male) connector, extension (ET) • Brake wires (BK)			

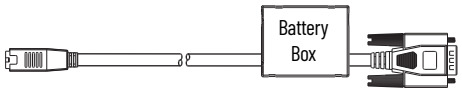
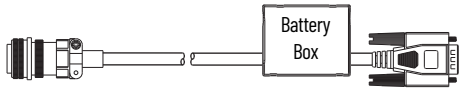
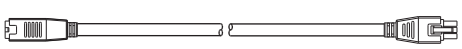
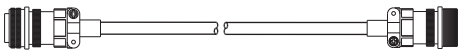
2090-CTFB-MADD cables attach to the on-motor cable. 2090-CTFB-MFDD cables attach to the motor feedback connector. Drive-end connectors attach to Kinetix 5100 and Kinetix 5300 feedback connectors.

2090-CTFB-MxET extension cables provide continuous-flex cable technology between your standard (non-flex) cable and the continuous-flex application.

Feedback Cable Descriptions (standard, non-flex)

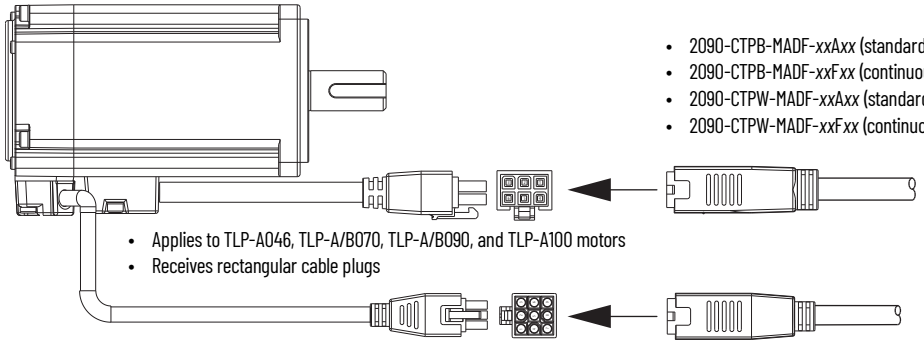
Standard Cable Cat. No.	Description	Cable Configuration		Motor Connector
		Motor End	Drive End	
2090-CTFB-MADD-CFA*xx*	• Applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors (MA) • Battery box for Kinetix TLP and TL/TLY encoders • Feedback connector (FB)			Rectangular
2090-CTFB-MFDD-CFA*xx*	• Applies to TLP-A/B115...TLP-A/B235 motors (MF) • Battery box for Kinetix TLP and TL/TLY encoders • Feedback connector (FB)			Military style

Feedback Cable Descriptions (continuous-flex)

Standard Cable Cat. No.	Description	Cable Configuration		Motor Connector
		Motor End	Drive End	
2090-CTFB-MADD-CFF*xx*	• Applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors (MA) • Battery box for Kinetix TLP and TL/TLY encoders • Feedback connector (FB)			Rectangular
2090-CTFB-MFDD-CFF*xx*	• Applies to TLP-A/B115...TLP-A/B235 motors (MF) • Battery box for Kinetix TLP and TL/TLY encoders • Feedback connector (FB)			Military style
2090-CTFB-MAET-CFF*xx*	• Applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors (MA) • Drive-end (male) connector, extension (ET) • Feedback connector (FB)			Rectangular
2090-CTFB-MFET-CFF*xx*	• Applies to TLP-A/B115...TLP-A/B235 motors (MF) • Drive-end (male) connector, extension (ET) • Feedback connector (FB)			Military style

Motor Connector/Cable Compatibility

TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 servo motors are equipped with rectangular connectors.

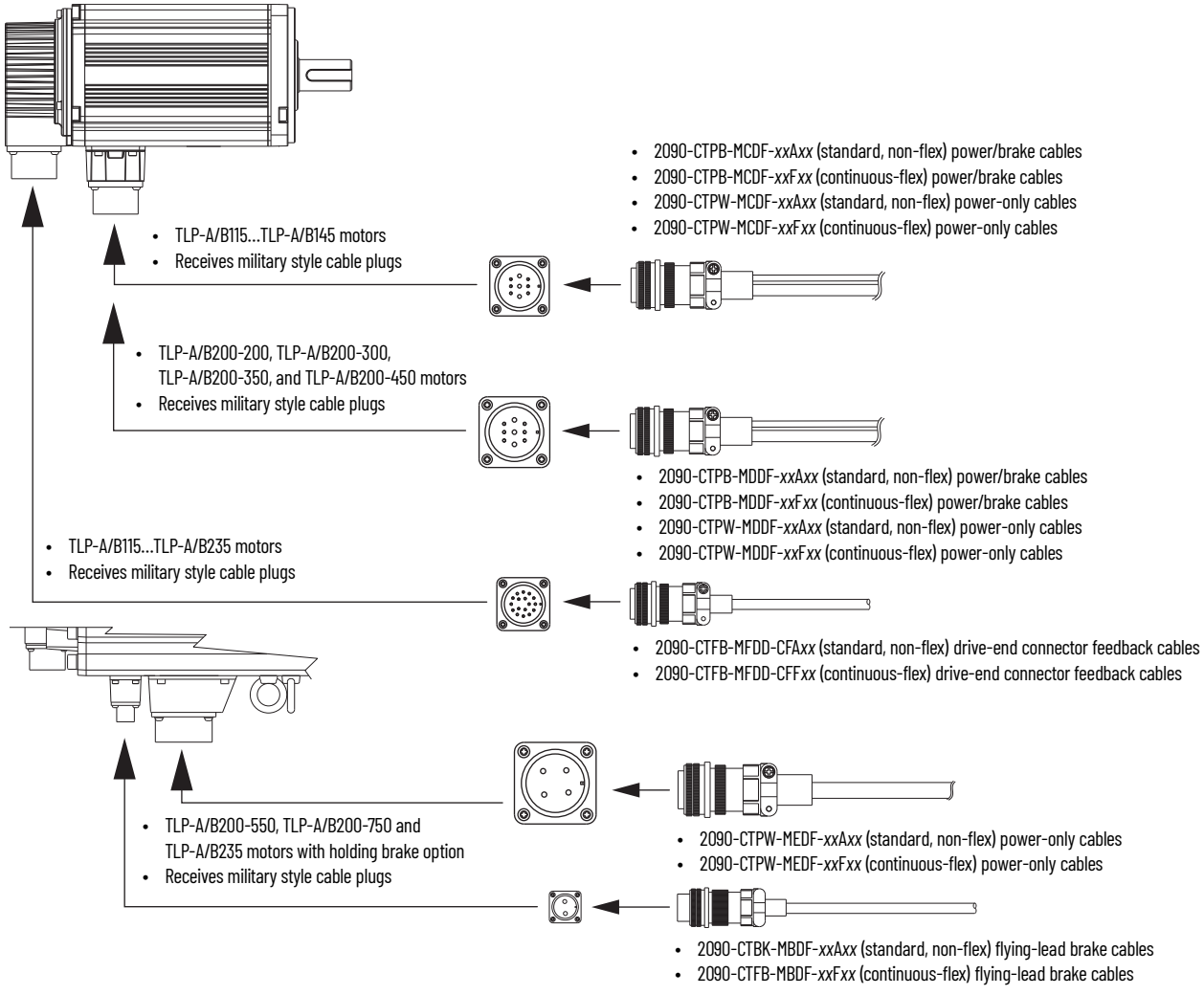


- 2090-CTPB-MADF-*xx*A*xx* (standard, non-flex) power/brake cables
- 2090-CTPB-MADF-*xx*F*xx* (continuous-flex) power/brake cables
- 2090-CTPW-MADF-*xx*A*xx* (standard, non-flex) power-only cables
- 2090-CTPW-MADF-*xx*F*xx* (continuous-flex) power-only cables

- Applies to TLP-A046, TLP-A/B070, TLP-A/B090, and TLP-A100 motors
- Receives rectangular cable plugs

- 2090-CTFB-MADD-CFA*xx* (standard, non-flex) drive-end connector feedback cables
- 2090-CTFB-MADD-CFF*xx* (continuous-flex) drive-end connector feedback cables

TLP-A/B115, TLP-A/B145, TLP-A/B200, TLP-A/B235 servo motors are equipped with military style connectors.



- 2090-CTPB-MCDF-*xx*A*xx* (standard, non-flex) power/brake cables
- 2090-CTPB-MCDF-*xx*F*xx* (continuous-flex) power/brake cables
- 2090-CTPW-MCDF-*xx*A*xx* (standard, non-flex) power-only cables
- 2090-CTPW-MCDF-*xx*F*xx* (continuous-flex) power-only cables

- TLP-A/B115...TLP-A/B145 motors
- Receives military style cable plugs

- TLP-A/B200-200, TLP-A/B200-300, TLP-A/B200-350, and TLP-A/B200-450 motors
- Receives military style cable plugs

- 2090-CTPB-MDDF-*xx*A*xx* (standard, non-flex) power/brake cables
- 2090-CTPB-MDDF-*xx*F*xx* (continuous-flex) power/brake cables
- 2090-CTPW-MDDF-*xx*A*xx* (standard, non-flex) power-only cables
- 2090-CTPW-MDDF-*xx*F*xx* (continuous-flex) power-only cables

- TLP-A/B115...TLP-A/B235 motors
- Receives military style cable plugs

- 2090-CTFB-MFDD-CFA*xx* (standard, non-flex) drive-end connector feedback cables
- 2090-CTFB-MFDD-CFF*xx* (continuous-flex) drive-end connector feedback cables

- TLP-A/B200-550, TLP-A/B200-750 and TLP-A/B235 motors with holding brake option
- Receives military style cable plugs

- 2090-CTPW-MEDF-*xx*A*xx* (standard, non-flex) power-only cables
- 2090-CTPW-MEDF-*xx*F*xx* (continuous-flex) power-only cables

- 2090-CTBK-MBDF-*xx*A*xx* (standard, non-flex) flying-lead brake cables
- 2090-CTFB-MBDF-*xx*F*xx* (continuous-flex) flying-lead brake cables

Kinetix TLP Motor Cable Selection

This table provides motor cable catalog numbers for use with Kinetix TLP servo motors. Motor power, feedback, and motor brakes (if applicable) cables are specified. The IP rating is dependent on the use of Kinetix 2090 cables as listed in the table.

IMPORTANT Maximum motor cable length depends on the feedback type. For more information on maximum cable lengths, see your servo drive user manual or the Kinetix 5700, 5500, 5300, 5100 Servo Drives Specifications Technical Data, publication KNX-TD003.

Kinetix TLP Motor and Cable Combinations

Rotary Motor (200V-class)

Cat. No. (1)	Motor Power/Brake Cable	Feedback Cable Cat. No.	Brake Cat. No.
TLP-A046-*xxx*, TLP-A070-*xxx*, TLP-A090-*xxx*, (2) TLP-A100-*xxx*	2090-CTP*x*-MADF-18A*xx* (standard) or 2090-CTP*x*-MADF-18F*xx* (continuous-flex)	2090-CTFB-MADD-CFA*xx* (standard) or 2090-CTFB-MADD-CFF*xx* (continuous-flex)	Not applicable. Brake conductors are included in the power cable.
TLP-A115-100, (3) TLP-A145-050, TLP-A145-100	2090-CTP*x*-MCDF-16A*xx* (standard) or 2090-CTP*x*-MCDF-16F*xx* (continuous-flex)	2090-CTFB-MFDD-CFA*xx* (standard) or 2090-CTFB-MFDD-CFF*xx* (continuous-flex)	
TLP-A115-200, TLP-A145-090, TLP-A145-150, TLP-A145-250	2090-CTP*x*-MCDF-12A*xx* (standard) or 2090-CTP*x*-MCDF-12F*xx* (continuous-flex)		
TLP-A200-200, TLP-A200-300, TLP-A200-350 (4)	2090-CTP*x*-MDDF-12A*xx* (standard) or 2090-CTP*x*-MDDF-12F*xx* (continuous-flex)		
TLP-A200-450	2090-CTP*x*-MDDF-08A*xx* (standard) or 2090-CTP*x*-MDDF-08F*xx* (continuous-flex)		
TLP-A200-550, TLP-A200-750, TLP-A235-11K (5) (6)	2090-CTPW-MEDF-06A*xx* (standard) or 2090-CTPW-MEDF-06F*xx* (continuous-flex)		2090-CTBK-MBDF-20A*xx* (standard) or 2090-CTBK-MBDF-20F*xx* (continuous-flex)
TLP-A235-15K (7) (6)	2090-CTPW-MEDF-04A*xx* (standard) or 2090-CTPW-MEDF-04F*xx* (continuous-flex)		

(1) The TLP-A046...TLP-A100 frame on-motor cables include 18 AWG conductors that are compatible with 2090-CTP*x*-MADF-18*xxx* cable conductors.
(2) For TLP-A090-*xxx* motors, use 2090-CTP*x*-MADF-16*xxx* motor power/brake cable to comply with NFPA 79 requirements.
(3) For TLP-A115-100 motors, use 2090-CTP*x*-MCDF-12*xxx* motor power/brake cable to comply with NFPA 79 requirements.
(4) For TLP-A200-350 motors, use 2090-CTP*x*-MDDF-08*xxx* motor power/brake cable to comply with NFPA 79 requirements.
(5) For TLP-A235-11K motors, use 2090-CTP*x*-MEDF-04*xxx* motor power cable to comply with NFPA 79 requirements.
(6) Only these motors have separate brake connectors and brake cables. All other motors have brake wires included with the motor power/brake connector.
(7) For TLP-A235-15K motors, you must build your own motor power cable to comply with NFPA 79 requirements.

Rotary Motor (400V-class)

Cat. No. (1)	Motor Power/Brake Cable	Feedback Cable Cat. No.	Brake Cat. No.
TLP-B070-040 TLP-B090-075	2090-CTP*x*-MADF-18A*xx* (standard) or 2090-CTP*x*-MADF-18F*xx* (continuous-flex)	2090-CTFB-MADD-CFA*xx* (standard) or 2090-CTFB-MADD-CFF*xx* (continuous-flex)	Not applicable. Brake conductors are included in the power cable.
TLP-B115-100, TLP-B115-200 (2) TLP-B145-050, TLP-B145-100 TLP-B145-150, TLP-B145-200	2090-CTP*x*-MCDF-16A*xx* (standard) or 2090-CTP*x*-MCDF-16F*xx* (continuous-flex)	2090-CTFB-MFDD-CFA*xx* (standard) or 2090-CTFB-MFDD-CFF*xx* (continuous-flex)	
TLP-B145-250	2090-CTP*x*-MCDF-12A*xx* (standard) or 2090-CTP*x*-MCDF-12F*xx* (continuous-flex)		
TLP-B200-300, TLP-B200-450	2090-CTP*x*-MDDF-12A*xx* (standard) or 2090-CTP*x*-MDDF-12F*xx* (continuous-flex)		
TLP-B200-550, TLP-B200-750	2090-CTP*x*-MDDF-08A*xx* (standard) or 2090-CTP*x*-MDDF-08F*xx* (continuous-flex)		
TLP-B235-11K, TLP-B235-14K (3)	2090-CTPW-MEDF-06A*xx* (standard) or 2090-CTPW-MEDF-06F*xx* (continuous-flex)		2090-CTBK-MBDF-20A*xx* (standard) or 2090-CTBK-MBDF-20F*xx* (continuous-flex)

(1) The TLP-B070-040 and TLP-B090-075 frame on-motor cables include 18 AWG conductors that are compatible with 2090-CTP*x*-MADF-18*xxx* cable conductors.
(2) For TLP-B115-200 motors, use 2090-CTP*x*-MCDF-12*xxx* motor power/brake cable to comply with NFPA 79 requirements.
(3) Only these motors have separate brake connectors and brake cables. All other motors have brake wires included with the motor power/brake connector.

Technical Specifications - Kinetix TLP Power and Feedback Cables

IMPORTANT Maximum motor cable length depends on the feedback type. For more information on maximum cable lengths see your servo drive user manual or the Kinetix 5700, 5500, 5300, 5100 Servo Drives Specifications Technical Data, publication KNX-TD003.

Power Cable (non-flex) Specifications

Power Cable Cat. No.	Cable Type/ Jacket Color	Description	Wire Size (1) AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)	
2090-CTPB-MADF-18A*xx*	Power/brake Industrial PVC, Half matte black	Four conductor, 600V, shielded cable for three-phase power with additional two brake conductors.	18	0.129 (0.086)	03 (9.8) 05 (16.4) 10 (32.8) 15 (49.2)	20 (65.6) 30 (98.4) 50 (164)
2090-CTPB-MADF-16A*xx*			16	0.191 (0.128)		
2090-CTPB-MCDF-16A*xx*			16	0.240 (0.161)		
2090-CTPB-MCDF-12A*xx*			12	0.420 (0.282)		
2090-CTPB-MDDF-12A*xx*			12	0.450 (0.302)		
2090-CTPB-MDDF-08A*xx*			08	0.808 (0.543)		
2090-CTPW-MADF-18A*xx*	Power-only Industrial PVC, Half matte black	Four conductor, 600V, shielded cable for three-phase power.	18	0.112 (0.075)		
2090-CTPW-MADF-16A*xx*			16	0.172 (0.115)		
2090-CTPW-MCDF-16A*xx*			16	0.200 (0.134)		
2090-CTPW-MCDF-12A*xx*			12	0.333 (0.224)		
2090-CTPW-MDDF-12A*xx*			12	0.381 (0.256)		
2090-CTPW-MDDF-08A*xx*			08	0.767 (0.515)		
2090-CTPW-MEDF-06A*xx*			06	1.438 (1.223)		
2090-CTPW-MEDF-04A*xx*			04	1.820 (1.223)		

(1) 2090-CTPB-MADF brake conductors are 22 AWG. 2090-CTPB-MCDF and 2090-CTPB-MDDF brake conductors are 20 AWG.

Power Cable (continuous-flex) Specifications

Power Cable Cat. No.	Cable Type/ Jacket Color	Description	Wire Size (1) AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)	
2090-CTPB-MADF-18F*xx*	Power/brake Industrial PVC, Half matte black	Four conductor, 600V, shielded cable for three-phase power with additional two brake conductors.	18	0.129 (0.086)	03 (9.8) 05 (16.4) 10 (32.8) 15 (49.2)	20 (65.6) 30 (98.4) 50 (164)
2090-CTPB-MADF-16F*xx*			16	0.191 (0.128)		
2090-CTPB-MCDF-16F*xx*			16	0.240 (0.161)		
2090-CTPB-MCDF-12F*xx*			12	0.420 (0.282)		
2090-CTPB-MDDF-12F*xx*			12	0.450 (0.302)		
2090-CTPB-MDDF-08F*xx*			08	0.808 (0.543)		
2090-CTPW-MADF-18F*xx*	Power-only Industrial PVC, Half matte black	Four conductor, 600V, shielded cable for three-phase power.	18	0.112 (0.075)		
2090-CTPW-MADF-16F*xx*			16	0.172 (0.115)		
2090-CTPW-MCDF-16F*xx*			16	0.200 (0.134)		
2090-CTPW-MCDF-12F*xx*			12	0.333 (0.224)		
2090-CTPW-MDDF-12F*xx*			12	0.381 (0.256)		
2090-CTPW-MDDF-08F*xx*			08	0.767 (0.515)		
2090-CTPW-MEDF-06F*xx*			06	1.438 (1.223)		
2090-CTPW-MEDF-04F*xx*			04	1.820 (1.223)		

(1) 2090-CTPB-MADF brake conductors are 22 AWG. 2090-CTPB-MCDF and 2090-CTPB-MDDF brake conductors are 20 AWG.

Feedback Cable Specifications

Feedback Cable Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)	
2090-CTFB-MADD-CFA*xx*	Standard, non-flex Industrial PVC, Half matte black	Six conductor, 600V, shielded cable for motor feedback.	24 Feedback (1) 22 Power, 5V	0.086 (0.058)	03 (9.8) 05 (16.4) 10 (32.8) 15 (49.2)	20 (65.6) 30 (98.4) 50 (164)
2090-CTFB-MFDD-CFA*xx*				0.100 (0.067)		
2090-CTFB-MADD-CFF*xx*	Continuous-flex Industrial PVC, Half matte black		26 Feedback (2) 16 Power, 5V	0.086 (0.058)		
2090-CTFB-MFDD-CFF*xx*				0.100 (0.067)		

(1) Applies to 2090-CTFB-MxDD-CF*xxx* cables with 05, 10, 15, and 20 m cables lengths.
(2) Applies to 2090-CTFB-MxDD-CF*xxx* cables with 30 and 50 m cables lengths.

Brake Cable Specifications

Brake Cable Cat. No.	Cable Type/ Jacket Color	Description	Wire Size AWG	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)
2090-CTBK-MBDF-20A*xx*	Standard, non-flex Industrial PVC, Half matte black	Two conductor, 600V, shielded cable for motor brake power.	20	0.045 (0.030)	03 (9.8), 05 (16.4), 10 (32.8), 15 (49.2), 20 (65.6), 30 (98.4), 50 (164)
2090-CTBK-MBDF-20F*xx*	Continuous-flex Industrial PVC, Half matte black		20		

Continuous-flex Extension Cable Specifications

Extension Cable Cat. No.	Cable Type/ Jacket Color	Description	Weight, approx kg/m (lb/ft)	Standard Cable Lengths m (ft)
2090-CTPB-MAET-18F*xx*	Power/brake Industrial PVC, Half matte black	Four conductor, 600V, shielded cable for three-phase power with additional two brake conductors. Connector plug on motor end to receptacle for mating with power/brake cable.	0.135 (0.091)	03 (9.8), 05 (16.4), 10 (32.8)
2090-CTPB-MCET-16F*xx*			0.275 (0.185)	
2090-CTPB-MCET-12F*xx*			0.456 (0.306)	
2090-CTPB-MDET-12F*xx*			0.482 (0.324)	
2090-CTPB-MDET-08F*xx*			0.869 (0.584)	
2090-CTPW-MAET-18F*xx*	Power-only Industrial PVC, Half matte black	Four conductor, 600V, shielded cable for three-phase power. Connector plug on motor end to receptacle for mating with power cable.	0.112 (0.076)	
2090-CTPW-MCET-16F*xx*			0.200 (0.134)	
2090-CTPW-MCET-12F*xx*			0.378 (0.254)	
2090-CTPW-MDET-12F*xx*			0.441 (0.296)	
2090-CTPW-MDET-08F*xx*			0.829 (0.557)	
2090-CTPW-MEET-06F*xx*			1.537 (1.033)	
2090-CTPW-MEET-04F*xx*			1.920 (1.290)	
2090-CTFB-MAET-CFF*xx*	Feedback Industrial PVC, Half matte black	Six conductor, 600V, shielded cable for motor feedback. Connector plug on motor end to receptacle for mating with feedback cable.	0.079 (0.053)	
2090-CTFB-MFET-CFF*xx*			0.128 (0.086)	
2090-CTBK-MBET-20F*xx*	Brake Industrial PVC, Half matte black	Two conductor, 600V, shielded cable for motor brake power. Connector plug on motor end to receptacle for mating with brake cable.	0.058 (0.039)	

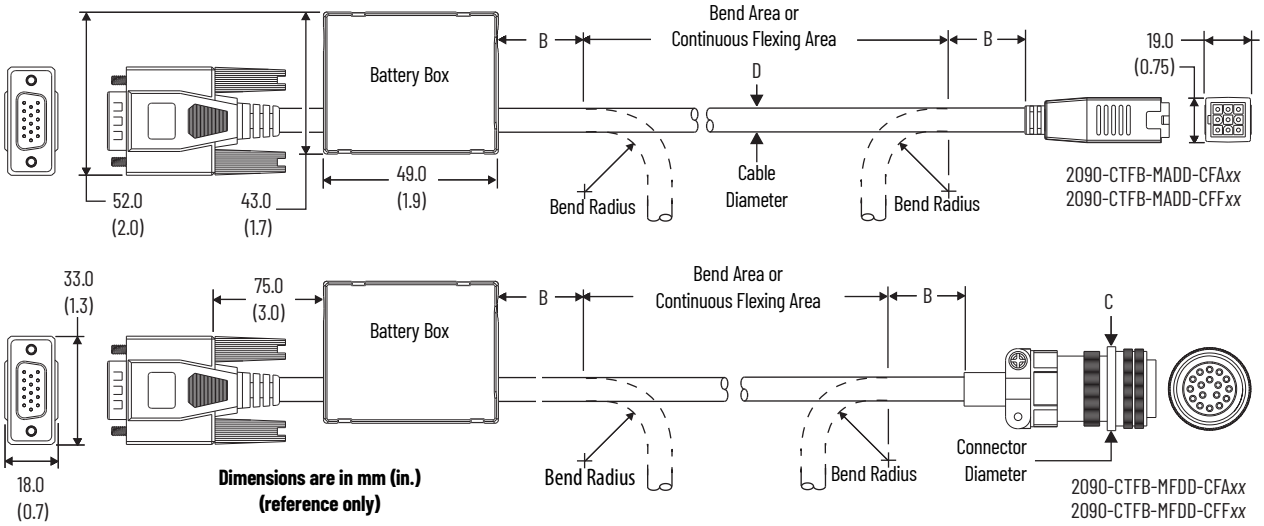
Dimensions - Kinetix TLP Motor Cables

When installing cable runs between the motor and drive, be careful not to stress the cable by making bends too sharp. Refer to the table below for bend radius definitions and the dimension diagrams that follow when routing cables during system installation.

Motor Power/brake, Feedback, and Brake Cable Bend Radius Definitions

Type of Bend Radius	Type of Cable	Description
Static bend radius	Standard (non-flex) Continuous flex	The static (installation) bend radius and dimension B are 7 times the cable diameter: • Do not begin a static bend inside dimension B. • Use this measurement when routing the cable in a non-flex application between motor and drive (the bend area). – The bend area is where standard (non-flex) or continuous-flex cables can be bent to their specified bend radius.
Continuous bend radius	Continuous flex	The continuous bend radius for 2090-CT*xx*-M*xxx* motor power and feedback cables is 12 times the cable diameter: • Secure the continuous-flexing area, at least 7 cable diameters (dimension B) from each end of the cable, with a rigid mount that helps prevent the cable from flexing where it connects to the motor or shield clamp. • Use this measurement when routing the cable in a continuous-flex application between motor and drive (the continuous-flexing area). – The continuous flexing area is where continuous-flex cables can be flexed repeatedly.

Feedback Cable Dimensions

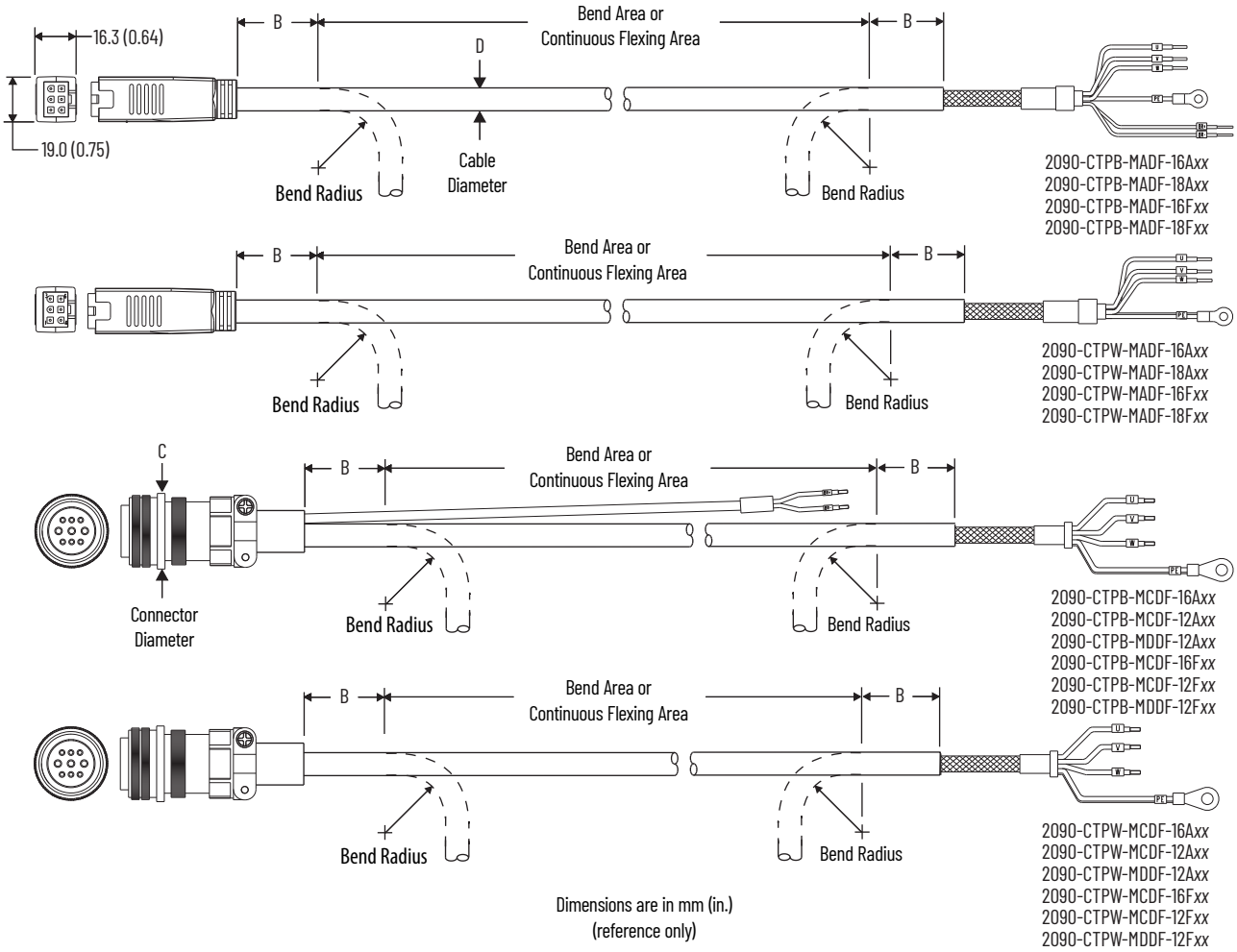


Feedback Cable Dimensions

Power Cable Cat. No.	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C (2) mm (in.)	D mm (in.)
2090-CTFB-MADD-CF*xxx*	49.0 (1.93)	84.0 (3.31)	19.0 (0.75)	7.0 (0.28)
2090-CTFB-MFDD-CF*xxx*			37.2 (1.50)	

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power/brake, Feedback, and Brake Cable Bend Radius Definitions on page 78 for more information.
(2) Drive-end (15-pin) connector that is 33.0 mm (1.30 in.) high, requires a 50 mm (1.97 in.) hole to pass through.
The motor-end (rectangular) connector that is 19.0 mm (0.75 in.) square, requires a 26 mm (1.02 in.) hole to pass through.
The motor-end (military-style) connector that is 37.2 mm (1.50 in.) diameter, requires a 48 mm (1.89 in.) hole to pass through.

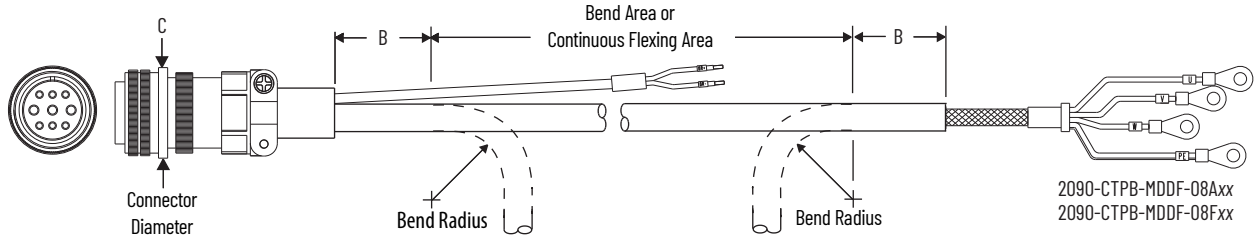
Power Cable Dimensions (18, 16, 12 AWG cables)

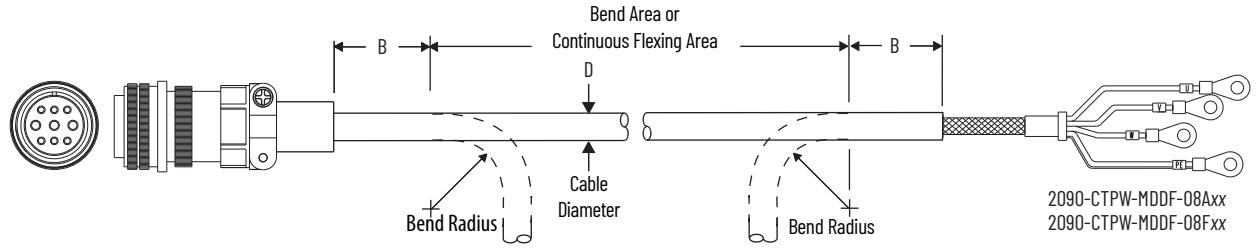


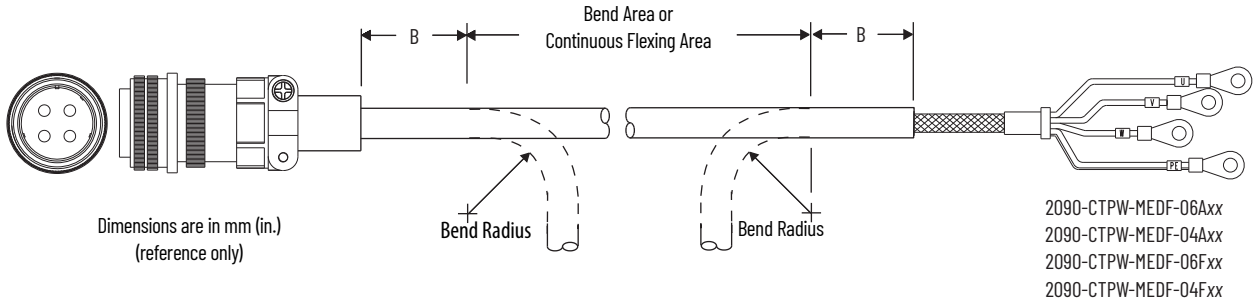
Power Cable Cat. No.	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C (2) mm (in.)	D mm (in.)
2090-CTPB-MADF-18*xxx*	63.0 (2.48)	108 (4.25)	19.0 (0.75)	9.0 (0.35)
2090-CTPB-MADF-16*xxx*	84.0 (3.31)	144 (5.67)		12.0 (0.47)
2090-CTPW-MADF-18*xxx*	56.7 (2.23)	97.2 (3.83)		8.1 (0.32)
2090-CTPW-MADF-16*xxx*	77.0 (3.03)	132 (5.20)		11.0 (0.43)
2090-CTPB-MCDF-16*xxx*	77.0 (3.03)	132 (5.20)	37.2 (1.46)	11.0 (0.43)
2090-CTPB-MCDF-12*xxx*	101.5 (4.0)	174 (6.85)		14.5 (0.57)
2090-CTPW-MCDF-16*xxx*	77.0 (3.03)	132 (5.20)		11.0 (0.43)
2090-CTPW-MCDF-12*xxx*	101.5 (4.0)	174 (6.85)		14.5 (0.57)
2090-CTPB-MDDF-12*xxx*	101.5 (4.0)	174 (6.85)	43.0 (1.69)	14.5 (0.57)
2090-CTPW-MDDF-12*xxx*				

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power/brake, Feedback, and Brake Cable Bend Radius Definitions on page 78 for more information.
(2) The motor-end (rectangular) connector that is 19.0 mm (0.75 in.) high, requires a 24 mm (0.94 in.) hole to pass through.
The motor-end (military-style) connector that is 37.2 mm (1.50 in.) diameter, requires a 48 mm (1.89 in.) hole to pass through.
The motor-end (military-style) connector that is 43.0 (1.69) diameter, requires a 53 mm (2.09 in.) hole to pass through.

Power Cable Dimensions (08, 06, 04 AWG cables)



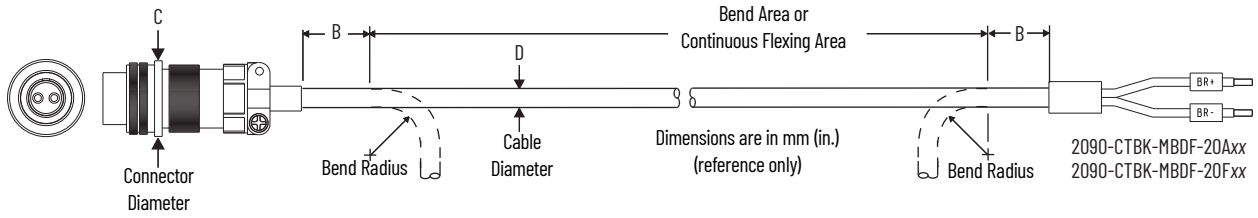




Power Cable Cat. No.	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C (2) mm (in.)	D mm (in.)
2090-CTPB-MDDF-08*xxx*	154 (6.06)	264 (10.39)	43.0 (1.69)	22.0 (0.87)
2090-CTPW-MDDF-08*xxx*				
2090-CTPW-MEDF-06*xxx*	196 (7.72)	336 (13.23)	55.2 (2.17)	28.0 (1.10)
2090-CTPW-MEDF-04*xxx*	224 (8.82)	384 (15.12)		32.0 (1.26)

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power/brake, Feedback, and Brake Cable Bend Radius Definitions on page 78 for more information.
(2) The motor-end (military-style) connector that is 43.0 mm (1.69 in.) diameter, requires a 53 mm (2.09 in.) hole to pass through.
The motor-end (military-style) connector that is 55.2 mm (2.17 in.) diameter, requires a 65 mm (2.56 in.) hole to pass through.

Brake Cable Dimensions



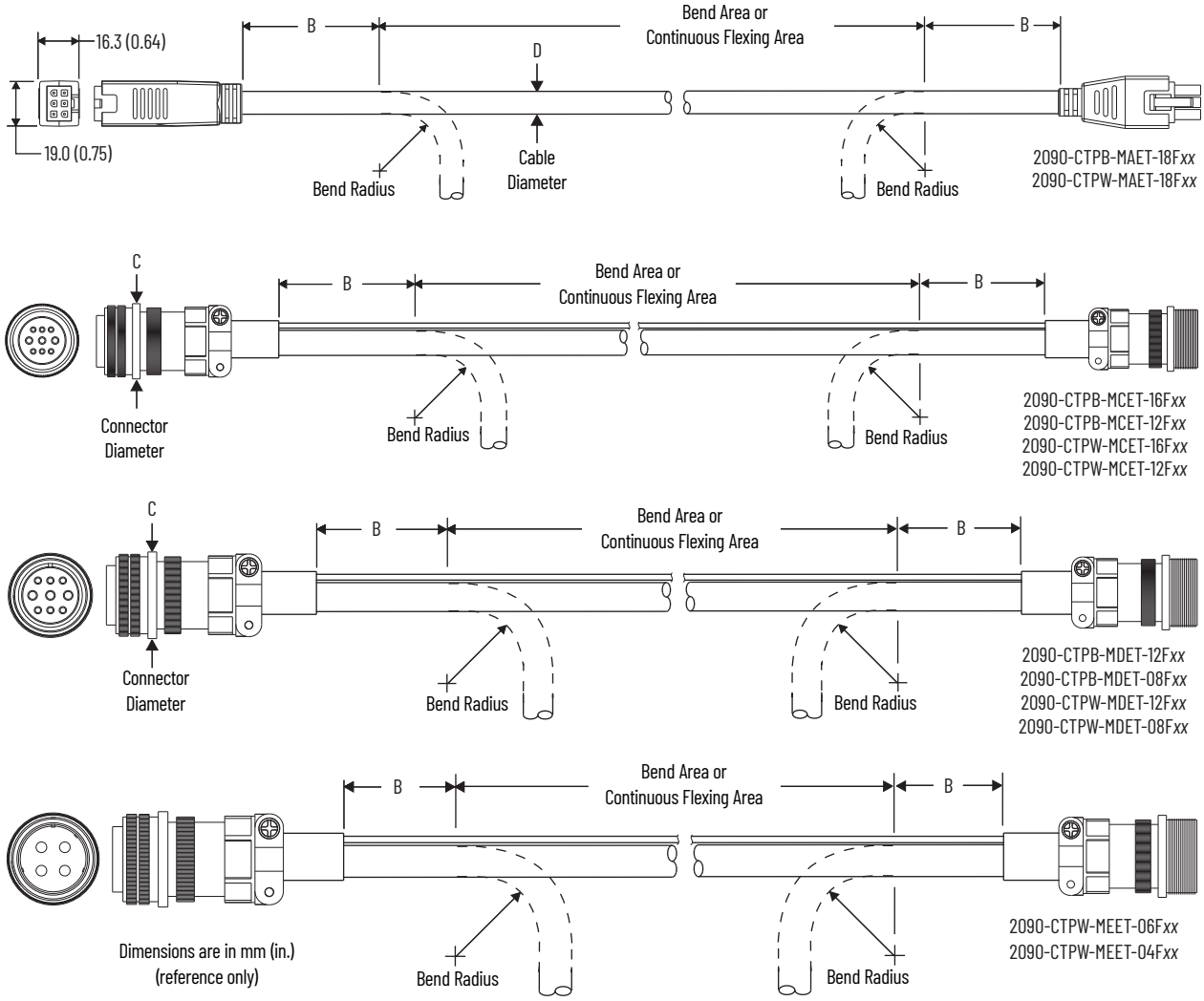
Brake Cable Dimensions

Power Cable Cat. No.	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C (2) mm (in.)	D mm (in.)
2090-CTBK-MBDF-20*xxx*	38.5 (1.52)	66.0 (2.60)	23.0 (0.91)	5.5 (0.22)

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power/brake, Feedback, and Brake Cable Bend Radius Definitions on page 78 for more information.
(2) The motor-end (military-style) connector that is 23.0 mm (0.91 in.) diameter, requires 28.0 mm (1.10 in.) hole to pass through.

Continuous-flex Extension Cables

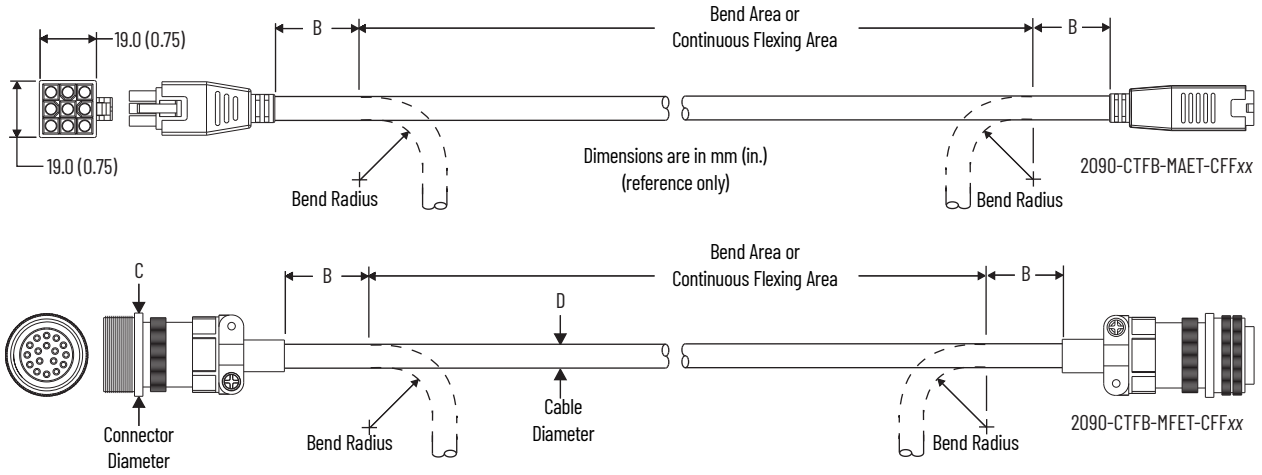
Power Cable Dimensions



Power Cable Cat. No.	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C (2) mm (in.)	D mm (in.)
2090-CTPB-MAET-18Fxx	63.0 (2.48)	108 (4.25)	19.0 (0.75)	9.0 (0.35)
2090-CTPW-MAET-18Fxx	56.7 (2.23)	97.2 (3.83)		8.1 (0.32)
2090-CTPB-MCET-16Fxx	77.0 (3.03)	132 (5.20)	37.2 (1.46)	11.0 (0.43)
2090-CTPB-MCET-12Fxx	101.5 (4.0)	174 (6.85)		14.5 (0.57)
2090-CTPW-MCET-16Fxx	77.0 (3.03)	132 (5.20)		11.0 (0.43)
2090-CTPW-MCET-12Fxx	101.5 (4.0)	174 (6.85)		14.5 (0.57)
2090-CTPB-MDET-12Fxx	101.5 (4.0)	174 (6.85)	43.0 (1.69)	14.5 (0.57)
2090-CTPW-MDET-12Fxx				
2090-CTPB-MDET-08Fxx	154 (6.06)	264 (10.39)		22.0 (0.87)
2090-CTPW-MDET-08Fxx				
2090-CTPW-MEET-06Fxx	196 (7.72)	336 (13.23)	55.2 (2.17)	28.0 (1.10)
2090-CTPW-MEET-04Fxx	224 (8.82)	384 (15.12)		32.0 (1.26)

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power/brake, Feedback, and Brake Cable Bend Radius Definitions on page 78 for more information.
(2) The motor-end (rectangular) connector that is 19.0 mm (0.75 in.) high, requires a 24 mm (0.94 in.) hole to pass through.
The motor-end (military-style) connector that is 37.2 mm (1.50 in.) diameter, requires 48 mm (1.89 in.) hole to pass through.
The motor-end (military-style) connector that is 43.0 mm (1.69 in.) diameter, requires a 53 mm (2.09 in.) hole to pass through.
The motor-end (military-style) connector that is 55.2 mm (2.17 in.) diameter, requires a 65 mm (2.56 in.) hole to pass through.

Feedback Cable Dimensions

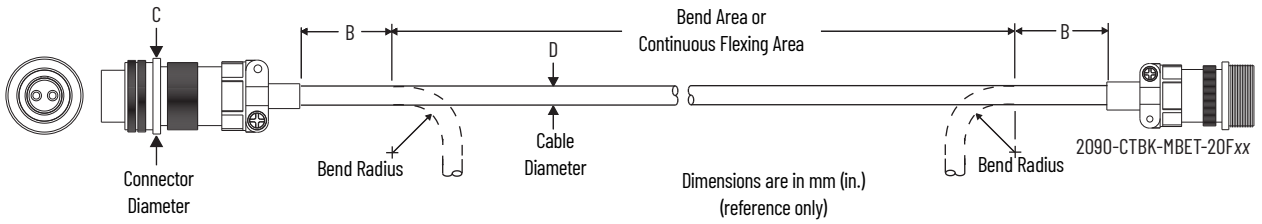


Feedback Cable Dimensions

Power Cable Cat. No.	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C (2) mm (in.)	D mm (in.)
2090-CTFB-MAET-CFF*xx*	49.0 (1.93)	84.0 (3.31)	19.0 (0.75)	7.0 (0.28)

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power/brake, Feedback, and Brake Cable Bend Radius Definitions on page 78 for more information.
(2) The motor-end (rectangular) connector that is 19.0 mm (0.75 in.) square, requires a 26 mm (1.02 in.) hole to pass through.
The motor-end (military-style) connector that is 37.2 mm (1.50 in.) diameter, requires a 48 mm (1.89 in.) hole to pass through.

Brake Cable Dimensions



Brake Cable Dimensions

Power Cable Cat. No.	B (1) mm (in.)	Continuous Bend Radius (1) mm (in.)	C (2) mm (in.)	D mm (in.)
2090-CTBK-MBET-20F*xx*	38.5 (1.52)	66.0 (2.60)	23.0 (0.91)	5.5 (0.22)

(1) Dimension B and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power/brake, Feedback, and Brake Cable Bend Radius Definitions on page 78 for more information.
(2) The motor-end (military-style) connector that is 23.0 mm (0.91 in.) diameter, requires a 28.0 mm (1.10 in.) hole to pass through.

Kinetix TLP Motor-end Cable Connector Kits

Motor-end connector kits are available for building your own cables. These kits are intended for Kinetix TLP cable connectors.

Kinetix TLP Motor-end Cable Connector Kits

Cable Type	Motor Cat. No.	Connector Kit Cat. No.		Description
Rectangular	TLP-A046-*xxx*, TLP-A/B070-*xxx*, TLP-A/B090-*xxx*, TLP-A100-*xxx*	6-pin motor power	2090-KTPC-MA-AA	Straight power connector on motor end.
			2090-KTPC-MA-AE	Straight power connector with extension connector.
		9-pin motor feedback	2090-KTFB-MA-AA	Straight feedback connector.
			2090-KTFB-MA-AE	Straight feedback connector with extension connector.
Military style	TLP-A/B115-*xxx*, TLP-A/B235-*xxx*	2090-KTFB-MF-AA		Straight feedback connector.
		2090-KTFB-MF-AE		Straight feedback connector with extension connector.
	TLP-A/B115-*xxx*, TLP-A/B145-*xxx*	2090-KTPC-MC-AA		Straight power connector.
		2090-KTPC-MC-AE		Straight power connector with extension connector.
	TLP-A/B200-200, TLP-A/B200-300, TLP-A/B200-350, TLP-A/B200-450	2090-KTPC-MD-AA		Straight power connector.
		2090-KTPC-MD-AE		Straight power connector with extension connector.
	TLP-A/B200-550, TLP-A/B200-750, TLP-A/B235-*xxx*	2090-KTPC-ME-AA		Straight power connector.
		2090-KTPC-ME-AE		Straight power connector with extension connector.
		2090-KTBK-MB-AA		Straight brake connector.
		2090-KTBK-MB-AE		Straight brake connector with extension connector.

See Build Your Own Kinetix TLP Motor Cables Installation Instructions, publication 2090-IN048, for more information.

Notes:

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.
You can view or download publications at rok.auto/literature.

Resource	Description
Kinetix Rotary Motion Specifications, publication KNX-TD001	Provides product specifications for Kinetix VPL, VPC, VPF, VPH, VPS, Kinetix MPL, MPM, MPF, MPS; Kinetix TL and TLY, Kinetix RDB, Kinetix MMA, and Kinetix HPK rotary motors.
Kinetix Linear Motion Specifications, publication KNX-TD002	Provides product specifications for Kinetix MPAS and MPMA linear stages, Kinetix VPAR, MPAR, and MPAI electric cylinders, and Kinetix LDC and Kinetix LDL linear motors.
Kinetix 5700, 5500, 5300, 5100 Servo Drives Specifications, publication KNX-TD003	Provides product specifications for Kinetix Integrated Motion over the EtherNet/IP network and EtherNet/IP networking servo drive families.
Kinetix 3, 300, 350, 2000, 6000, 6200, 6500, 7000 Servo Drives Specifications, publication KNX-TD005	Provides product specifications for Kinetix Integrated Motion over the EtherNet/IP network (Kinetix 6500 and Kinetix 350), Integrated Motion over Sercos interface (Kinetix 6200, Kinetix 6000, Kinetix 2000, and Kinetix 7000), and component (Kinetix 3) servo drive families.
Kinetix Servo Drive Performance Specifications per Ecodesign Regulation (EU) 2019/1781 technical data, publication KNX-TD006	Provides energy efficiency performance data for Rockwell Automation Kinetix Servo drives. This data supports IE2 compliance of Kinetix Servo drives per EU 2019/1781.
Kinetix Motion Control Selection Guide, publication KNX-SG001	Provides an overview of Kinetix servo drives, motors, actuators, and motion accessories designed to help make initial decisions for the motion control products best suited for your system requirements.
Kinetix 5700 Drive Systems Design Guide, publication KNX-RM010	Provides system design guide to determine and select the required (drive specific) drive module, power accessory, connector kit, motor cable, and interface cable catalog numbers for your drive and motor/actuator motion control system. Included are system performance specifications and torque/speed curves (rotary motion) and force/velocity curves (linear motion) for your motion application.
Kinetix 5500 Drive Systems Design Guide, publication KNX-RM009	
Kinetix 5300 Drive Systems Design Guide, publication KNX-RM012	
Kinetix 5100 Drive Systems Design Guide, publication KNX-RM011	
Kinetix 6000 and Kinetix 6200/6500 Drive Systems Design Guide, publication KNX-RM003	
Kinetix 300/350 Drive Systems Design Guide, publication KNX-RM004	
Kinetix 3 Drive Systems Design Guide, publication KNX-RM005	
Kinetix 2000 Drive Systems Design Guide, publication KNX-RM006	
Kinetix 7000 Drive Systems Design Guide, publication GMC-RM007	
Kinetix 5700 Servo Drives User Manual, publication 2198-UM002	Provides information on how to install, configure, startup, and troubleshoot your Kinetix servo drive system.
Kinetix 5500 Servo Drives User Manual, publication 2198-UM001	
Kinetix 5300 Single-axis EtherNet/IP Servo Drives User Manual, publication 2198-UM005	
Kinetix 5100 EtherNet/IP Indexing Servo Drives User Manual, publication 2198-UM004	
ArmorKinetix System User Manual, publication 2198-UM006	
Kinetix 6200 and Kinetix 6500 Modular Multi-axis Servo Drives User Manual, publication 2094-UM002	
Kinetix 6000 Multi-axis Servo Drives User Manual, publication 2094-UM001	
Kinetix 7000 High Power Servo Drives User Manual, publication 2099-UM001	
Kinetix 2000 Multi-axis Servo Drives User Manual, publication 2093-UM001	
Kinetix 300 EtherNet/IP Indexing Servo Drives User Manual, publication 2097-UM001	
Kinetix 350 Single-axis EtherNet/IP Servo Drives User Manual, publication 2097-UM002	
Kinetix 3 Component Servo Drives User Manual, publication 2071-UM001	
Kinetix Halogen-free PUR and PVC Single Motor Cables Quick Reference, publication 2090-QR002	Provides product specifications comparing 2090-CSBM1*xx*-*xx*LF*xx* (Halogen-free PUR) and 2090-CS*x*M1*xx*-*xx*VA*xx* (PVC) single motor cables.
Industrial Ethernet Media Brochure, publication 1585-BR001	Provides information to determine which Bulletin 1585 Ethernet cable fits your application and the product specifications to help select the appropriate components.
Motion Analyzer System Sizing and Selection Tool rok.auto/motion-analyzer	Provides comprehensive motion application sizing tool used for analysis, optimization, selection, and validation of your Kinetix Motion Control system.
Rockwell Automation Product Selection website, rok.auto/systemtools	Provides online product selection and system configuration tools, including AutoCAD (DXF) drawings.
Ethernet Reference Manual, ENET-RM002	Describes basic Ethernet concepts, infrastructure components, and infrastructure features.
Product Certifications website, rok.auto/certifications.	Provides declarations of conformity, certificates, and other certification details.

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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Publication KNX-TD004K-EN-P - August 2023
Supersedes Publication KNX-TD004J-EN-P - October 2021

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