

2090-Series Motor/Actuator Cables

A wide variety of motor/actuator 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.

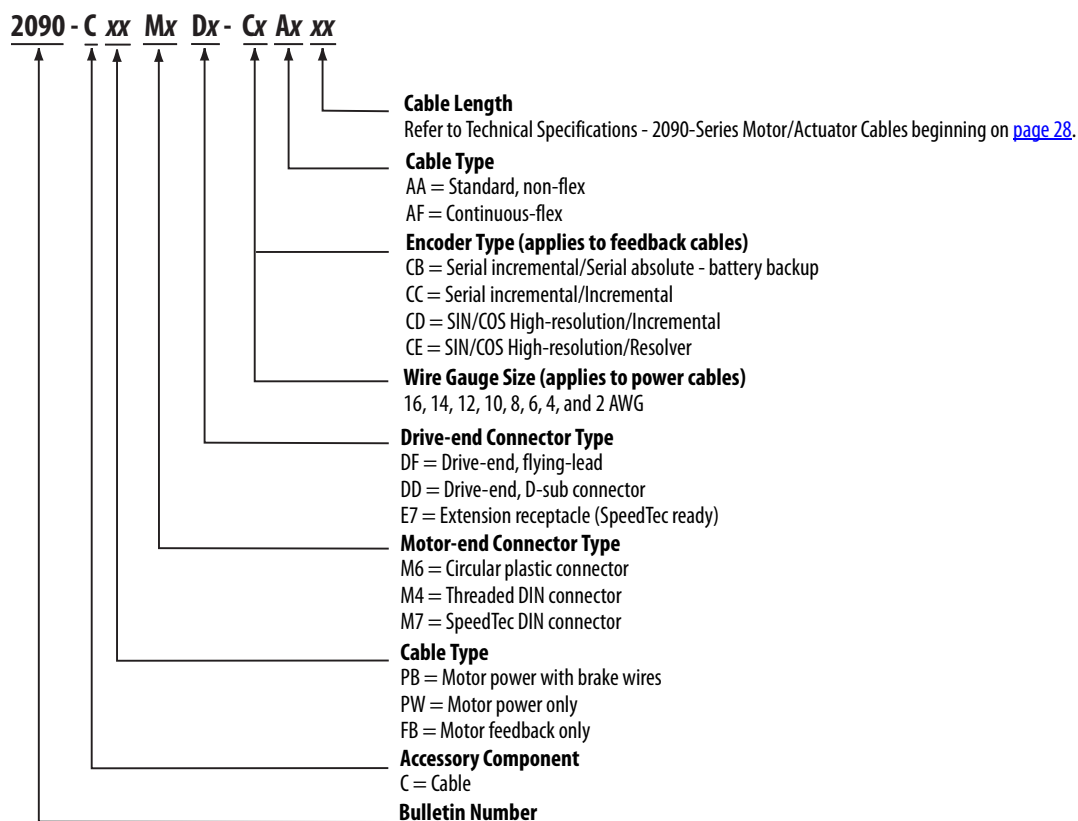
IMPORTANT All flying-lead feedback cables require breakout components or connector kits for drive-end terminations. Refer to Breakout Components and Connector Kits beginning on [page 63](#) for catalog numbers and descriptions.

IMPORTANT Standard (non-flex) cables have a regular maintenance and installation bend radius of 10 times the cable diameter. For flexing applications, continuous-flex cables have an operational bend radius of 12 times the cable diameter.

Catalog Numbers - 2090-Series Motor/Actuator Cable

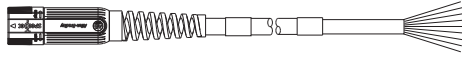
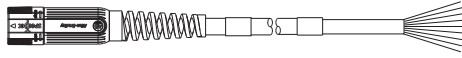
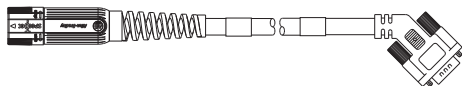
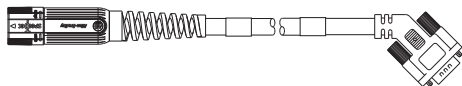
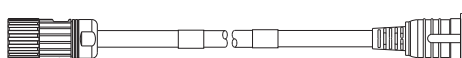
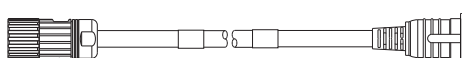
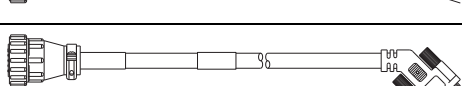
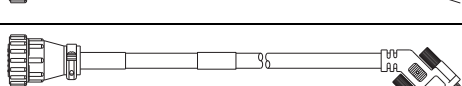
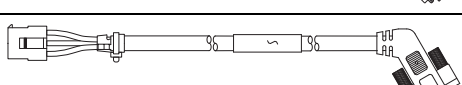
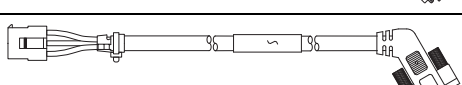
Catalog numbers consist of various characters, each of which identifies a specific option for that component. Use the catalog numbering charts below to understand the configuration of your component. For questions regarding product availability, contact your Allen-Bradley distributor.

Motor Power/Brake, Feedback, and Extension Cables



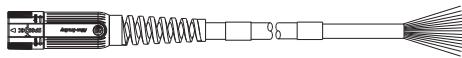
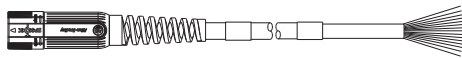
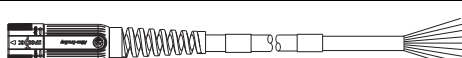
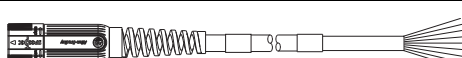
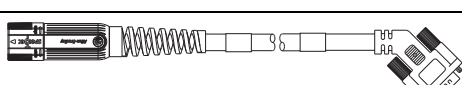
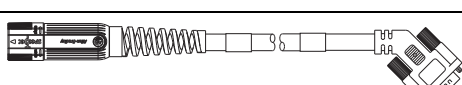
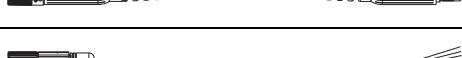
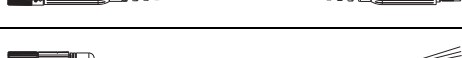
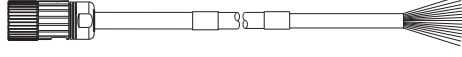
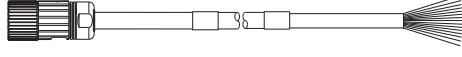
2090-Series Motor/Actuator Cables Overview

Feedback Cable Descriptions (standard, non-flex)

Standard Cable Cat. No.	Description	Cable Configuration		Motor/Actuator Connector
		Motor/Actuator End	Drive End	
2090-CFBM7DF-CEAAxx	- Drive-end flying-leads (DF) - High-resolution or resolver applications (CE)			SpeedTec DIN (M7)
2090-CFBM7DD-CEAAxx	- Drive-end 15-pin connector (DD) - High-resolution or resolver applications (CE)			
2090-XXNFMF-Sxx	- 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)			
2090-CFBM6DF-CBAAxx	- Drive-end flying-leads (DF) - High-resolution, battery backup or Incremental applications (CB)			Circular Plastic (M6)
2090-CFBM6DD-CCAAxx	- Drive-end 15-pin connector (DD) - Incremental applications only (CC)			
2090-DANFCT-Sxx	- Drive-end 20-pin connector - High-resolution applications			Rectangular Plastic

(1) Threaded DIN connector (motor end) and bayonet connector for 2090-XXNFMF-Sxx cable. Refer to 2090-Series Motor Power and Feedback Transition Cables on [page 15](#).

Feedback Cable Descriptions (continuous-flex)

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

(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 14](#).

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

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
MPL-A/B15xxx and MPL-A/B2xxx MPL-A/B3xxx, MPL-A/B4xxx, MPL-A/B45xxx, MPL-A/B5xxx MPL-B6xxx, MPL-B8xxx, and MPL-B9xxx MPM-A/Bxxxx MPF-A/Bxxxx RDB-Bxxxx ⁽¹⁾ LDAT-Sxxxxx-xDx and LDAT-Sxxxxx-xBx ⁽¹⁾ MPAS-A/Bxxxx and MPMA-A/Bxxxx ⁽¹⁾ MPAR-A/Bxxxx MPAI-A/Bxxxx LDC-Cxxxxx and LDL-xxxxxx ⁽¹⁾	SpeedTec-ready DIN	2090-CPxM7DF-xxAAxx 2090-CPxM7DF-xxAFxx	2090-CFBM7DF-CEAAxx 2090-CFBM7DD-CEAAxx 2090-CFBM7DF-CEAFxx 2090-CFBM7DD-CEAFxx 2090-CFBM7DF-CDAFxx
MPS-A/Bxxxx	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/Exxxxx	Threaded DIN	Customer supplied	2090-XXNFMF-Sxx or 2090-CFBM4DF-CDAFxx
		- M4 cable plugs - Adapts to threaded or SpeedTec-ready connectors - O-ring required to dampen the effects of vibration to create a more secure connection	

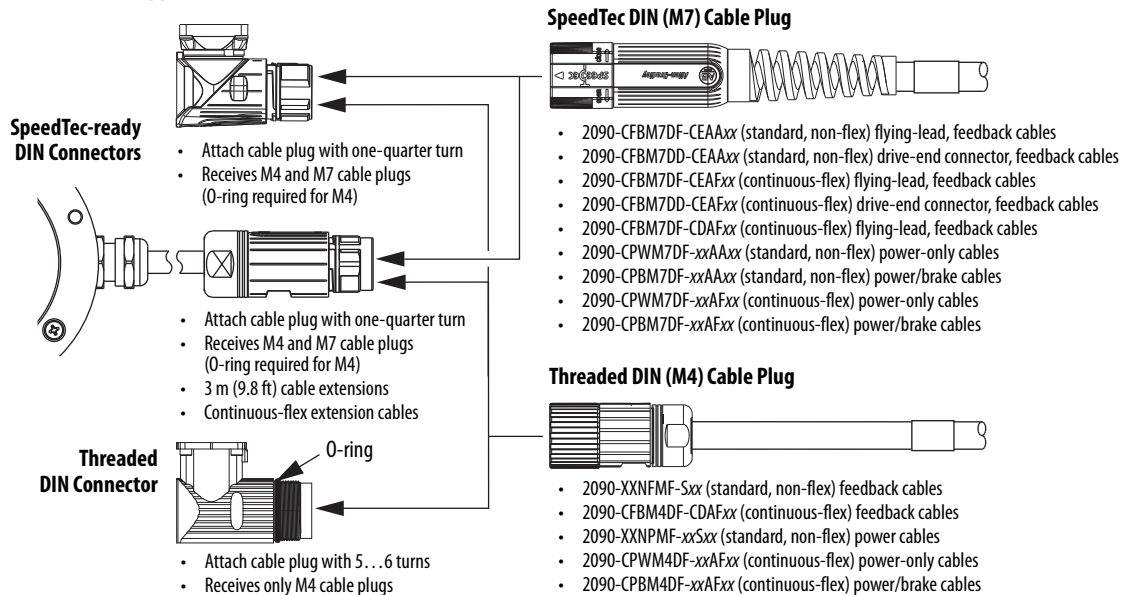
(1) The LDC-Series™ and LDL-Series™ linear motors, LDAT-Sxxxxx-xBx linear thrusters, Bulletin MPAS and MPMA linear stages (direct-drive only), and Bulletin RDB direct-drive motors have SpeedTec-ready DIN (M7) motor connectors, but require the additional conductors included with 2090-CFBM7DF-CDAFxx (continuous-flex) and 2090-XXNFMF-Sxx standard (non-flex) cables.

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



2090-Series Motor/Actuator Cable Selection

These tables provide flying-lead motor cable catalog numbers for drive/motor combinations. Most motor brake wires are in the power cable, so a separate brake cable is not required (except where noted) The IP rating is dependant on the use of Allen-Bradley Bulletin 2090 cables as listed in these tables.

IMPORTANT The MP-Series low-inertia 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-xx2xAA) are being discontinued and require 2090-XXNFMP-Sxx (bayonet) cables. For help with migration or to select bayonet cables, contact your Rockwell Automation sales representative.

MP-Series (Bulletin MPL) Motor Feedback Cables

Motor Cat. No.	Compatible Drive Cat. No.	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPL-A15xxx-V/Ex7xAA, MPL-A2xxx-V/Ex7xAA	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx or 2097-V3xPRx-LM 2098-DSD-xxx	Multi-turn High-resolution Absolute or Single-turn High-resolution Encoder Feedback	2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx 2090-CFBM7DD-CEAFxx (continuous-flex)	Shaft seal is optional: • IP50 without shaft seal • IP66 with shaft seal
MPL-B15xxx-V/Ex7xAA, MPL-B2xxx-V/Ex7xAA	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V34PRx or 2097-V34PRx-LM 2098-DSD-HVxxx			
MPL-A3xxx-M/Sx7xAA, MPL-A4xxx-M/Sx7xAA, MPL-A45xxx-M/Sx7xAA, MPL-A5xxx-M/Sx7xAA	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx or 2097-V3xPRx-LM 2098-DSD-xxx			
MPL-B3xxx-M/Sx7xAA, MPL-B4xxx-M/Sx7xAA, MPL-B45xxx-M/Sx7xAA, MPL-B5xxx-M/Sx7xAA, MPL-B6xxx-M/Sx7xAA, MPL-B8xxx-M/Sx7xAA, MPL-B9xxx-M/Sx7xAA	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V34PRx or 2097-V34PRx-LM 2098-DSD-HVxxx 2099-BMxx-S			
MPL-A15xxx-Hx7xAA, MPL-A2xxx-Hx7xAA	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx or 2097-V3xPRx-LM 2098-DSD-xxx	Incremental ⁽¹⁾ Feedback	2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM7DF-CDAFxx (continuous-flex)	Shaft seal is optional: • IP50 without shaft seal • IP66 with shaft seal
MPL-B15xxx-Hx7xAA, MPL-B2xxx-Hx7xAA	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V34PRx or 2097-V34PRx-LM 2098-DSD-HVxxx			
MPL-A3xxx-Hx7xAA, MPL-A4xxx-Hx7xAA, MPL-A45xxx-Hx7xAA	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx or 2097-V3xPRx-LM 2098-DSD-xxx		2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM7DF-CDAFxx (continuous-flex)	
MPL-B3xxx-Hx7xAA, MPL-B4xxx-Hx7xAA, MPL-B45xxx-Hx7xAA	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V34PRx or 2097-V34PRx-LM 2098-DSD-HVxxx			
MPL-Bxxxx-Rx7xAA	2094-BCxx-Mxx-S or 2094-BMxx-S	Resolver Feedback ⁽¹⁾	2090-CFBM7DF-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx (continuous-flex)	

(1) Not all MP-Series low-inertia motors are available with incremental and resolver feedback options.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 11](#).

Cable length xx is in meters. Refer to Technical Specifications - 2090-Series Motor/Actuator Cables beginning on [page 28](#).

MP-Series Food Grade Motors

Motor Cat. No.	Drive Compatibility	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPF-Axxxx-M/S	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx or 2097-V3xPRx-LM 2098-DSD-xxx	Multi-turn High Resolution Absolute or Single-turn High Resolution Encoder Feedback	2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex)	Shaft seal is standard. IP66/67 with shaft seal.
MPF-Bxxxx-M/S	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V34PRx or 2097-V34PRx-LM 2098-DSD-HVxxx		2090-CFBM7DF-CEAFxx 2090-CFBM7DD-CEAFxx (continuous-flex)	

MP-Series (200V-class) Food Grade Motors	Power Cable Cat. No.	IP Rating
MPF-A310P, MPF-A320H, MPF-A320P, and MPF-A330P	2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	Shaft seal is standard. IP66/67 with shaft seal.
MPF-A430H		
MPF-A430P, MPF-A4530K and MPF-A4540F	2090-CPxM7DF-14AAxx (standard, non-flex) 2090-CPxM7DF-14AFxx (continuous-flex)	
MPF-A540K	2090-CPxM7DF-08AAxx (standard, non-flex) 2090-CPxM7DF-08AFxx (continuous-flex)	

MP-Series (400V-class) Food Grade Motors	Power Cable Cat. No.	IP Rating
MPF-B310P, MPF-B320P, and MPF-B330P	2090-CPxM7DF-16AAxx (standard, non-flex)	Shaft seal is standard. IP66/67 with shaft seal.
MPF-B430P, MPF-B4530K, and MPF-B4540F	2090-CPxM7DF-16AFxx (continuous-flex)	
MPF-B540K	2090-CPxM7DF-10AAxx (standard, non-flex) 2090-CPxM7DF-10AFxx (continuous-flex)	

MP-Series Stainless Steel Motors

Motor Cat. No.	Drive Compatibility	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPS-Axxxx-M/S	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx or 2097-V3xPRx-LM 2098-DSD-xxx	Multi-turn High Resolution Absolute or Single-turn High Resolution Encoder Feedback	2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex)	Shaft seal is standard. IP66/67/IP69K with shaft seal and slinger.
MPS-Bxxxx-M/S	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V34PRx or 2097-V34PRx-LM 2098-DSD-HVxxx		2090-CFBM7DF-CEAFxx 2090-CFBM7DD-CEAFxx (continuous-flex)	

MP-Series (200V-class) Stainless Steel Motors	Power Cable Cat. No.	IP Rating
MPS-A330P	2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	Shaft seal is standard. IP66/67/IP69K with shaft seal and slinger.
MPS-A4540F		

MP-Series (400V-class) Stainless Steel Motors	Power Cable Cat. No.	IP Rating
MPS-B330P	2090-CPxM7DF-16AAxx (standard, non-flex)	Shaft seal is standard. IP66/67/IP69K with shaft seal and slinger.
MPS-B4540F	2090-CPxM7DF-16AFxx (continuous-flex)	
MPS-B560F	2090-CPxM7DF-14AAxx (standard, non-flex) 2090-CPxM7DF-14AFxx (continuous-flex)	

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Cable length xx is in meters. Refer to Technical Specifications - 2090-Series Motor/Actuator Cables beginning on [page 28](#).

MP-Series Integrated Linear Stages

Actuator Cat. No.	Drive Compatibility	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPAS-Axxxxx-VxxSxA (ball screw) MPMA-A (ball screw)	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx 2097-V34PRx-LM 2098-DSD-xxx	Multi-turn High Resolution Absolute Encoder Feedback	2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx 2090-CFBM7DD-CEAFxx (continuous-flex)	IP30
MPAS-Axxxxx-ALMx2C (direct drive) MPMA-A (direct drive)	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx 2098-DSD-xxx 2071-Axx	Incremental Encoder Feedback	2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM7DF-CDAFxx (continuous-flex)	
MPAS-Bxxxxx-VxxSxA (ball screw) MPMA-B (ball screw)	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V3xPRx 2097-V34PRx-LM 2098-DSD-xxx	Multi-turn High Resolution Absolute Encoder Feedback	2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex) 2090-CFBM7DF-CEAFxx 2090-CFBM7DD-CEAFxx (continuous-flex)	
MPAS-Bxxxxx-ALMx2C (direct drive) MPMA-B (direct drive)	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V3xPRx 2098-DSD-xxx	Incremental Encoder Feedback	2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM7DF-CDAFxx (continuous-flex)	
MP-Series (200V-class) Integrated Linear Stages			Power Cable Cat. No.	IP Rating
MPAS-Axxxxx-VxxSxA (ball screw) or MPMA-A			2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	IP30
MPAS-Axxxxx-ALMx2C (direct drive) or MPMA-A			2090-CPWM7DF-16AAxx (standard, non-flex) 2090-CPWM7DF-16AFxx (continuous-flex)	
MP-Series (400V-class) Integrated Linear Stages			Power Cable Cat. No.	IP Rating
MPAS-Bxxxxx-VxxSxA (ball screw) or MPMA-B			2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	IP30
MPAS-Bxxxxx-ALMx2C (direct drive) or MPMA-B			2090-CPWM7DF-16AAxx (standard, non-flex) 2090-CPWM7DF-16AFxx (continuous-flex)	

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 11](#).

Cable length xx is in meters. Refer to Technical Specifications - 2090-Series Motor/Actuator Cables beginning on [page 28](#).

LDAT-Series Integrated Linear Thrusters

Actuator Cat. No.	Drive Compatibility	Feedback Type	Feedback Cable Cat. No.	IP Rating
LDAT-Sxxxxxx-xDx (230V operation)	2097-V3xPRx	Absolute Linear Encoder Feedback	2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex)	IP30
LDAT-Sxxxxxx-xDx (460V operation)	2097-V34PRx		2090-CFBM7DF-CEAFxx 2090-CFBM7DD-CEAFxx (continuous-flex)	
LDAT-Sxxxxxx-xBx (230V operation)	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx 2098-DSD-xxx 2071-Axx	Incremental Encoder Feedback	2090-XXNFMF-Sxx (standard, non-flex) 2090-CFBM7DF-CDAFxx (continuous-flex)	
LDAT-Sxxxxxx-xBx (460V operation)	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V34PRx 2098-DSD-HVxxx			

LDAT-Series (230V or 460V operation) Linear Thrusters	Power Cable Cat. No.	IP Rating
LDAT-S031xxx, LDAT-S032xxx, LDAT-S033xxx	2090-CPWM7DF-16AAxx (standard, non-flex) 2090-CPWM7DF-16AFxx (continuous-flex)	IP30
LDAT-S051xxx, LDAT-S052xxx, LDAT-S053xxx, LDAT-S054xxx		
LDAT-S072xxx, LDAT-S073xxx, LDAT-S074xxx, LDAT-S076xxx-Exx		
LDAT-S102xxx, LDAT-S103xxx, LDAT-S104xxx, LDAT-S106xxx-Exx		
LDAT-S152xxx, LDAT-S153xxx, LDAT-S154xxx, LDAT-S156xxx-Exx		
LDAT-S076xxx-Dxx	2090-CPWM7DF-14AAxx (standard, non-flex) 2090-CPWM7DF-14AFxx (continuous-flex)	
LDAT-S106xxx-Dxx		
LDAT-S156xxx-Dxx		

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 11](#).

Cable length xx is in meters. Refer to Technical Specifications - 2090-Series Motor/Actuator Cables beginning on [page 28](#).

TL-Series Electric Cylinders

Actuator Cat. No.	Drive Compatibility	Feedback Type	Motor Feedback Cable	IP Rating
TLAR-Axxxxx	2093-AC05-MPx or 2093-AMxx 2097-V3xPRx or 2097-V3xPRx-LM 2071-Axx	Multi-turn High Resolution Absolute Encoder Feedback	2090-CFBM6DF-CBAAxx (flying-lead) standard, non-flex	IP40 ⁽¹⁾

TL-Series (200V-class) Electric Cylinders		Motor Power Cable	IP Rating
TLAR-Axxxxx		2090-CPBM6DF-16AAxx (power and brake) standard, non-flex 2090-CPWM6DF-16AAxx (power without brake) standard, non-flex	IP40 ⁽¹⁾

(1) Applies to complete unit, including rod-end seal and breather port.

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 11](#).

Cable length xx is in meters. Refer to Technical Specifications - 2090-Series Motor/Actuator Cables beginning on [page 28](#).

MP-Series Electric Cylinders

Actuator Cat. No.	Drive Compatibility	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPAR-A1xxxx MPAR-A2xxxx MPAR-A3xxxx	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx or 2097-V3xPRx-LM 2098-DSD-xxx	Multi-turn High Resolution Absolute Encoder Feedback	2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex)	IP40 ⁽¹⁾ IP66 ⁽²⁾
MPAR-B1xxxx MPAR-B2xxxx MPAR-B3xxxx	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V34PRx or 2097-V34PRx-LM 2098-DSD-HVxxx		2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex)	

MP-Series (200V-class) Electric Cylinders		Power Cable Cat. No.	IP Rating
MPAR-A1xxxx MPAR-A2xxxx MPAR-A3xxxx		2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	IP40 ⁽¹⁾ IP66 ⁽²⁾

MP-Series (400V-class) Electric Cylinders		Power Cable Cat. No.	IP Rating
MPAR-B1xxxx MPAR-B2xxxx MPAR-B3xxxx		2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	IP40 ⁽¹⁾ IP66 ⁽²⁾

(1) Applies to complete unit, including rod-end seal and breather port.

(2) Applies to electronic components.

MP-Series Heavy Duty Electric Cylinders

Actuator Cat. No.	Drive Compatibility	Feedback Type	Feedback Cable Cat. No.	IP Rating
MPAI-A2xxxx MPAI-A3xxxx MPAI-A4xxxx MPAI-A5xxxx	2093-AC05-MPx or 2093-AMxx 2094-ACxx-Mxx-S or 2094-AMxx-S 2097-V3xPRx or 2097-V3xPRx-LM 2098-DSD-xxx	Multi-turn High Resolution Absolute Encoder Feedback	2090-CFBM7DF-CEAAxx or 2090-CFBM7DD-CEAAxx (standard, non-flex)	IP67 (with specified cables)
MPAI-B2xxxx MPAI-B3xxxx MPAI-B4xxxx MPAI-B5xxxx	2094-BCxx-Mxx-S or 2094-BMxx-S 2094-BCxx-Mxx-M or 2094-BMxx-M 2097-V34PRx or 2097-V34PRx-LM 2098-DSD-HVxxx		2090-CFBM7DF-CEAFxx or 2090-CFBM7DD-CEAFxx (continuous-flex)	

MP-Series (200V-class) Heavy Duty Electric Cylinders		Power Cable Cat. No.	IP Rating
MPAI-A2xxxx, MPAI-A3xxxx, MPAI-A4xxxx		2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	IP67 (with specified cables)
MPAI-A5xxxx		2090-CPxM7DF-14AAxx (standard, non-flex) 2090-CPxM7DF-14AFxx (continuous-flex)	

MP-Series (400V-class) Heavy Duty Electric Cylinders		Power Cable Cat. No.	IP Rating
MPAI-B2xxxx, MPAI-B3xxxx, MPAI-B4xxxx, MPAI-B5xxxx		2090-CPxM7DF-16AAxx (standard, non-flex) 2090-CPxM7DF-16AFxx (continuous-flex)	IP67 (with specified cables)

For cable configuration illustrations and feature descriptions, by catalog number, refer to 2090-Series Motor/Actuator Cables Overview beginning on [page 11](#).Cable length xx is in meters. Refer to Technical Specifications - 2090-Series Motor/Actuator Cables beginning on [page 28](#).

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-18Sxx	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) 05 (16.4) 15 (49.2) 02 (6.5) 07 (22.9) 20 (65.6) 03 (9.8) 09 (29.5) 25 (82.0) 04 (13.1) 12 (39.4) 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-Sxx	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) 07 (22.9) 25 (82.0) 02 (6.5) 09 (29.5) 30 (98.4) 03 (9.8) 12 (39.4) 40 (131.2) 04 (13.1) 15 (49.2) 60 (196.8) 05 (16.4) 20 (65.6) 90 (295.3)
2090-CFBM7DD-CEAAxx	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-CEAAxx		SpeedTec DIN connector (motor end) to flying leads (drive end), 600V.			
2090-UXNFM-Sxx ⁽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) 15 (49.2) 03 (9.8) 30 (98.4) 09 (29.5)
2090-CFBM6DF-CBAAxx		Circular plastic connector (motor end) to flying leads (drive end), 300V.	28 Feedback 16 Power, 5V 22 BAT+		
2090-CFBM6DD-CCAAxx		Circular plastic connector (motor end) to premolded connector (drive end), 300V.	28 Feedback 16 Power, 5V	0.130 (0.088)	01 (3.2) 05 (16.4) 15 (49.2) 02 (6.5) 07 (22.9) 20 (65.6) 03 (9.8) 09 (29.5) 25 (82.0) 04 (13.1) 12 (39.4) 30 (98.4)
2090-DANFCT-Sxx		Rectangular plastic connector (motor end) to premolded connector (drive end), 30V.	28 Feedback 16 Power, 5V 22 BAT+		
2090-CFBM4DF-CDAFxx	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) 09 (29.5) 40 (131.2) 02 (6.5) 12 (39.4) 50 (164.0) 03 (9.8) 15 (49.2) 60 (196.8) 04 (13.1) 20 (65.6) 75 (264.0) 05 (16.4) 25 (82.0) 90 (295.3) 07 (22.9) 30 (98.4)
2090-CFBM7DF-CDAFxx		SpeedTec DIN connector (motor end) to flying leads (drive end), 600V.		0.143 (0.096)	
2090-CFBM7DF-CEAFxx			22 All conductors		
2090-CFBM7DD-CEAFxx		SpeedTec DIN connector (motor end) to premolded connector (drive end), 600V.			

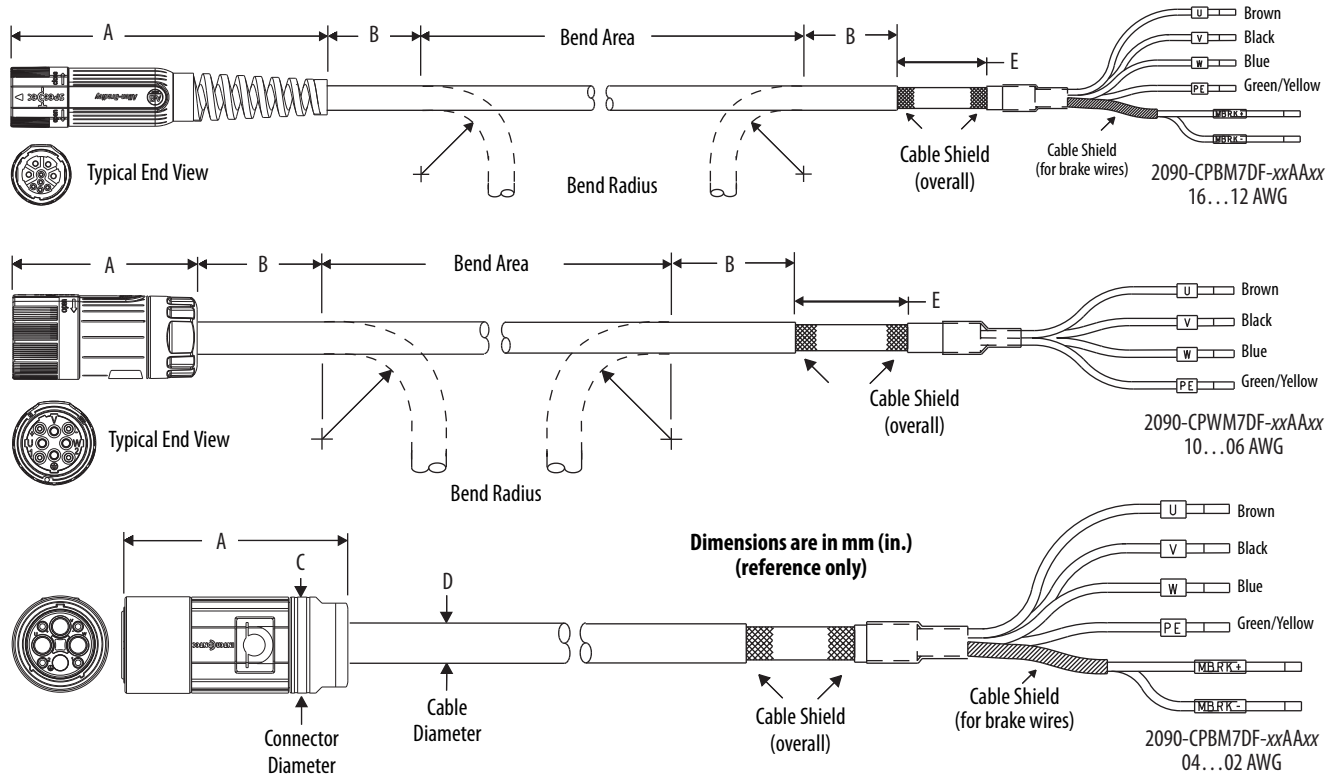
(1) 2090-CFBM7xx-CEAxxx feedback cables are UL Listed, bulk cable, type PLTC-ER.

(2) 2090-CFBM4DF-CDAXxx and 2090-CFBM7xx-CDAXxx feedback cables are UL Listed, bulk cable, type CM.

(3) Use with 2090-KFBM4-CAAA (threaded) or 2090-KFBM7-CAAA (SpeedTec) DIN connector kit.

Motor Power Cables

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



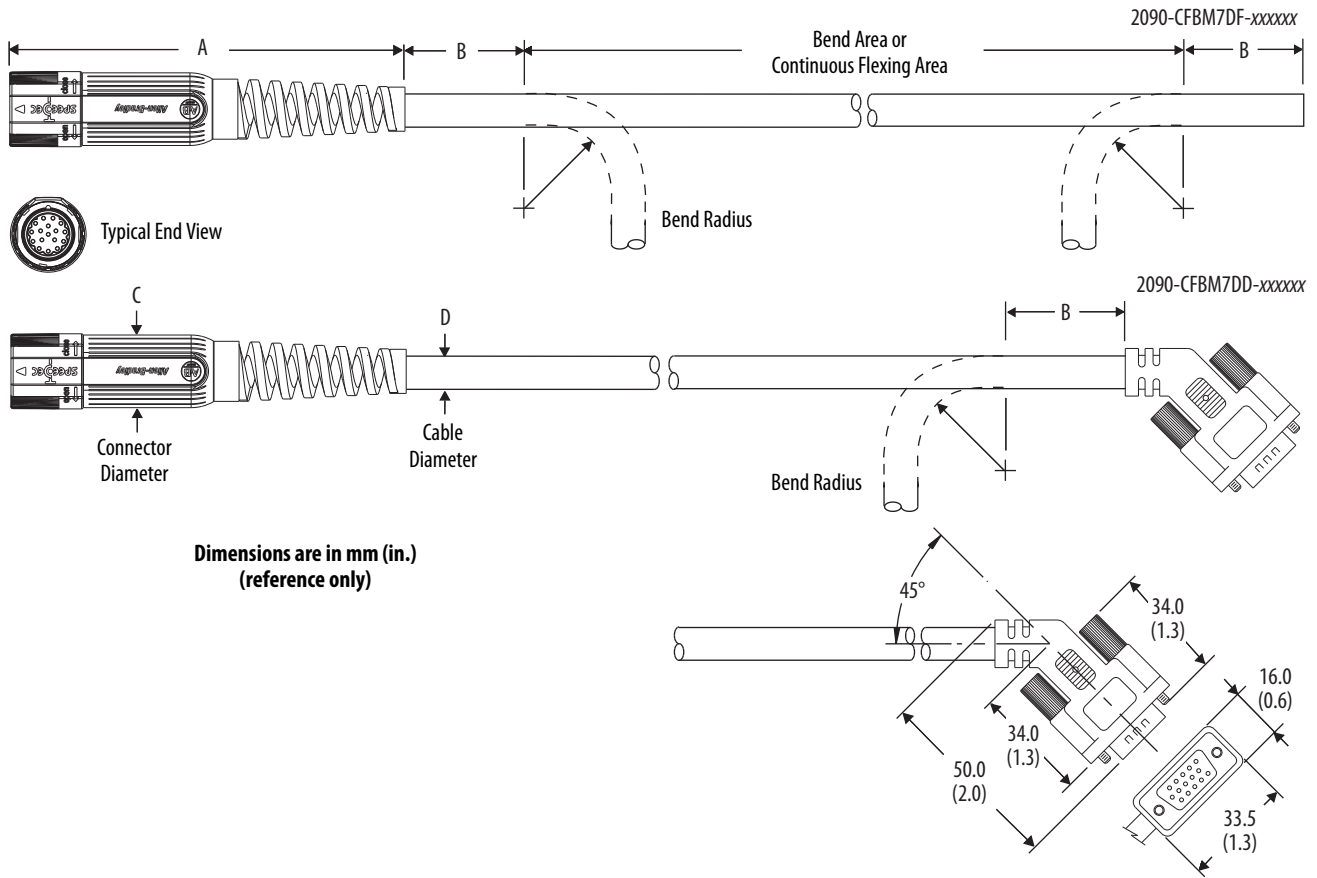
Power Cable Dimensions (standard, non-flex)

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)	45 (1.8)	14.3 (0.56)	90 (3.5)
2090-CPWM7DF-12AAxx		78.4 (3.1)		11.2 (0.44)	
2090-CPBM7DF-10AAxx	100 (3.9)	118 (4.6)		16.8 (0.66)	
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	150 (5.9)	170 (6.7)	63 (2.5)	24.3 (0.96)	
2090-CPBM7DF-04AAxx		202 (7.9)		28.8 (1.13)	
2090-CPBM7DF-02AAxx		229 (9.0)		32.7 (1.29)	

(1) Dimension B (static bend radius) is based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on [page 30](#) 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 (static bend radius) is based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on [page 30](#) 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-CFBM7DF-CDAFxx		81.9 (3.2)	140 (5.5)		11.7 (0.46)

(1) Dimension B (static bend radius) and Continuous Bend Radius are based on the cable diameter. Refer to Motor Power and Feedback Cable Bend Radius Definitions on [page 30](#) for more information.

2090-Series Bulkhead Adapter Kits

These bulkhead adapter kits let you secure your cables as they pass through the cabinet. Adapter kits apply to 2090-Series motor/actuator cables and 2090-Series integrated drive-motor hybrid cables.

2090-Series Motor/Actuator 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-16AAxx	2090-CPWM7DF-16AFxx	Power only	SpeedTec DIN	28.0 (1.1)
	2090-CPWM7DF-14AAxx	2090-CPWM7DF-14AFxx			
	2090-CPWM7DF-12AAxx	N/A			
	2090-CPBM7DF-16AAxx	2090-CPBM7DF-16AFxx	Power/brake		
	2090-CPBM7DF-14AAxx	2090-CPBM7DF-14AFxx			
	2090-CPBM7DF-12AAxx	N/A			
	N/A	2090-CPBM7E7-16AAxx			
	N/A	2090-CPBM7E7-14AAxx			
	N/A	2090-CPWM4DF-16AFxx	Power only	Threaded DIN	
	N/A	2090-CPBM4DF-16AFxx	Power/brake		
	2090-XXNPMF-16Sxx	N/A			
2090-KPB47-06CF	2090-CPWM7DF-10AAxx	2090-CPWM7DF-10AFxx	Power only	SpeedTec DIN	45.0 (1.8)
	2090-CPWM7DF-08AAxx	2090-CPWM7DF-08AFxx			
	2090-CPBM7DF-10AAxx	2090-CPBM7DF-10AFxx	Power/brake		
	2090-CPBM7DF-08AAxx	2090-CPBM7DF-08AFxx			
	2090-CPBM7DF-06AAxx	N/A			

2090-Series Motor/Actuator 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-CEAAxx	2090-CFBM7DF-CEAFxx	Feedback	SpeedTec DIN	28.0 (1.1)
	2090-CFBM7DD-CEAAxx	2090-CFBM7DD-CEAFxx			
	N/A	2090-CFBM7DF-CDAFxx			
	N/A	2090-CFBM7E7-CDAFxx			
	N/A	2090-CFBM7E7-CEAFxx			
2090-KFB47-CF	2090-CFBM4DF-CEAAxx	N/A		Threaded DIN	26.0 (1.0)
	N/A	2090-CFBM4DF-CDAFxx			
	2090-XXNFMF-Sxx	N/A			

2090-Series Integrated Motor-Drive Hybrid Cable Compatibility

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

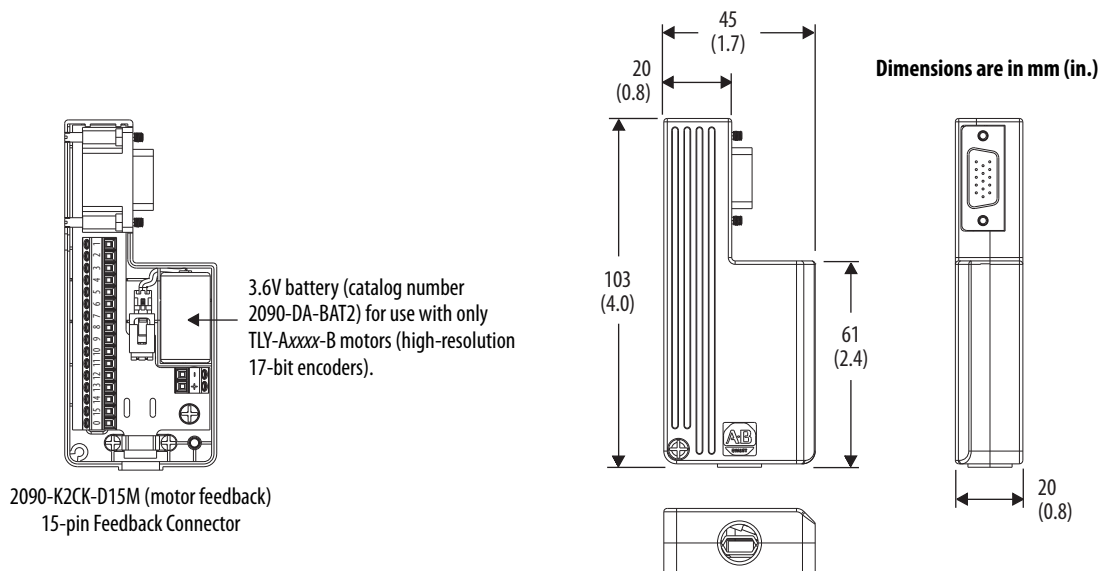
Low-profile Connector Kit Components

Low-profile connector kits are designed for use with the Kinetix 300/350, Kinetix 6000, Kinetix 6200/6500, Kinetix 2000, and Kinetix 7000 drives, and LIM modules. Use this table to identify the low-profile connector kit for your feedback or I/O connector.

IMPORTANT The flying-lead compatible cables listed below require connector kits to complete feedback and I/O connections to the drive.		
Cat. No.	Description	Cable Compatibility
2090-K2CK-D15M	Low-profile connector kit for motor feedback (15-pin, male, D-sub). Use with any Kinetix 2000 IAM/AM module or Kinetix 300/350 drive and compatible motors with incremental or high-resolution feedback. Does not include 3.6V battery (catalog number 2090-DA-BAT2) required for use with TLY-Axxxx-B high-resolution motors and 17-bit encoders.	2090-XXNFMF-Sxx 2090-CFBM4DF-CEAFxx 2090-CFBM7DF-CEAAxx 2090-CFBM7DF-CEAFxx 2090-CFBM7DF-CEAFxx 2090-CFBM6DF-CBAAxx
2090-K2CK-COMBO	Low-profile connector kit for motor feedback (15-pin, male, D-sub) and IO (44-pin, male, D-sub). Use with any Kinetix 2000 IAM/AM module and compatible motors with incremental or high-resolution feedback. Does not include 3.6V battery (catalog number 2090-DA-BAT2) required for use with TLY-Axxxx-B high-resolution motors and 17-bit encoders. The 2090-K2CK-COMBO kit, mounted on the Kinetix 2000 (IAM/AM) drive, fits in a standard 10 in. enclosure.	
2090-K6CK-D15M	Low-profile connector kit for motor feedback (15-pin, male, D-sub). Use with any Kinetix 6000, Kinetix 6200/6500, or Kinetix 7000 drive and compatible motors with incremental or high-resolution feedback.	
	Low-profile connector kit for motor feedback (15-pin, male, D-sub). Use with any Kinetix 6000 IAM/AM module and MPL-Bxxxx-R or MPM-A/Bxxxx-2 (resolver feedback) motors.	2090-CFBM7DF-CEAAxx 2090-CFBM7DF-CEAFxx
2090-K6CK-D15F	Low-profile connector kit for auxiliary feedback (15-pin, female, D-sub). Use with any Kinetix 6000 IAM/AM module or Kinetix 7000 drive auxiliary feedback application.	Customer supplied
2090-K6CK-D26M	Low-profile connector kit for I/O (26-pin, male, D-sub). For use with any Kinetix 6000 IAM/AM module, Kinetix 7000 drive, or 2094-AL09 and 2094-BL02 LIM module.	
2090-K6CK-D44M	Low-profile connector kit for I/O, safety, and auxiliary feedback (44-pin, male, D-sub). For use with any Kinetix 6200 or Kinetix 6500 control module.	
2090-K6CK-D44S0	Low-profile connector kit for I/O and cascading safe torque-off signals (44-pin, male, D-sub). For use with any Kinetix 6200 or Kinetix 6500 (safe torque-off, -S0 control module). Refer to Kinetix 6200 and Kinetix 6500 Safe-off Components on page 91 for example diagrams.	2090-CS0SDS-AAxx

Dimensions - Low-profile Connector Kits

Catalog Number 2090-K2CK-D15M



Panel-mounted Breakout Board Components

Breakout boards, cables, and kits (designed for DIN rail mounting on the panel) and for use with Kinetix drives as specified in the description are shown below. These breakout board components can be ordered separately, or as a kit containing both terminal block and cable.

Panel-mounted Breakout Board Kits

Cat. No.	Description	Cable Compatibility
2090-UXBK-D15xx	DIN rail terminal block (catalog number 2090-UxBB-Dxx) and cable (catalog number 2090-UxBC-Dxxxx) for motor feedback connector (15-pin, male, D-sub). Use with any Kinetix 300/350, Kinetix 2000, Kinetix 6000, Kinetix 6200/6500, or Kinetix 7000 drives (MF connector) or Ultra3000 drives (CN2 connector) for motor feedback connections.	2090-XXNFMF-Sxx 2090-CFBM4DF-CDAFxx 2090-CFBM7DF-CEAAxx 2090-CFBM7DF-CEAFxx 2090-CFBM6DF-CBAAxx
	Terminal block and cable for motor feedback connector (15-pin, male, D-sub). Use with Kinetix 6000 drives, MPL-BxxxxR, and MPM-A/Bxxxx-2 (resolver feedback) motors.	2090-CFBM7DF-CEAAxx
2090-U3BK-D44xx	Terminal block and cable for control interface connector (44-pin, male, D-sub). Use with Ultra3000 drives (CN1 connector) or Kinetix 2000 drives (IOD/AF connector).	Customer Supplied

Panel-mounted Breakout Boards

Cat. No.	Description
2090-UxBB-D15	15-pin terminal block with D-sub connector. Use with any Kinetix 300/350, Kinetix 2000, Kinetix 6000, Kinetix 6200/6500, or Kinetix 7000 drives (MF connector) or Ultra3000 drives (CN2 connector) for motor feedback connections.
2090-U3BB-D44	44-pin terminal block with D-sub connector. Use with Ultra3000 drives (CN1 connector) or Kinetix 2000 drives (IOD/AF connector) for control interface connections.

IMPORTANT The flying-lead compatible cables listed above require either 2090-UxBB-DM15 (drive-mounted) or 2090-UxBB-D15 (panel-mounted) breakout board connector kits to complete feedback and I/O connections to the drive.

Panel-mounted Breakout Cables

Cat. No.	Description
2090-UxBC-D15xx	15-pin cable with D-sub connector. Use with any Kinetix 300/350, Kinetix 2000, Kinetix 6000, Kinetix 6200/6500, or Kinetix 7000 drives (MF connector) or Ultra3000 drives (CN2 connector) for motor feedback connections.
2090-U3BC-D44xx ⁽¹⁾	44-pin cable with D-sub connector. Use with Ultra3000 drives (CN1 connector) or Kinetix 2000 drives (IOD/AF connector) for control interface connections.

(1) This cable does not carry the unbuffered motor encoder signals (CN1 pins 10...15). Contact your Rockwell Automation sales representative if these signals are required for your application.