

## 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.

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**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.

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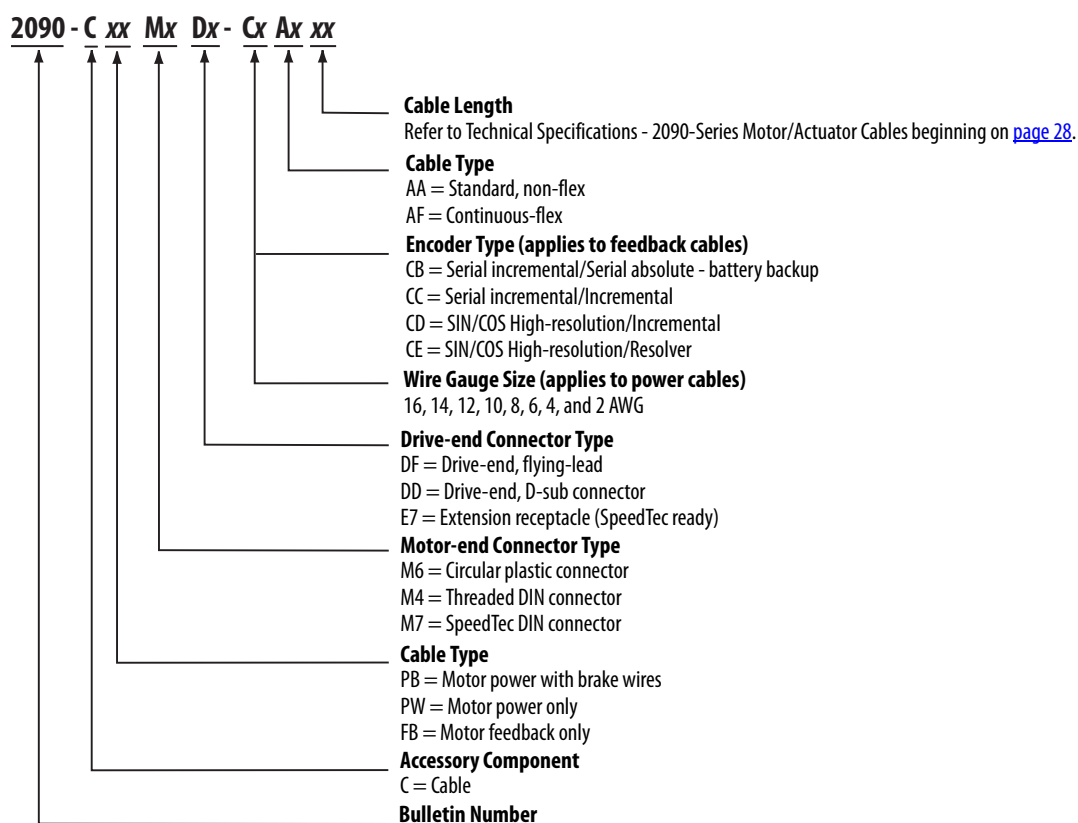
**IMPORTANT** Standard (non-flex) cables have a regular maintenance and installation bend radius of 10 times the cable diameter. For flexing applications, continuous-flex cables have an operational bend radius of 12 times the cable diameter.

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### 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*



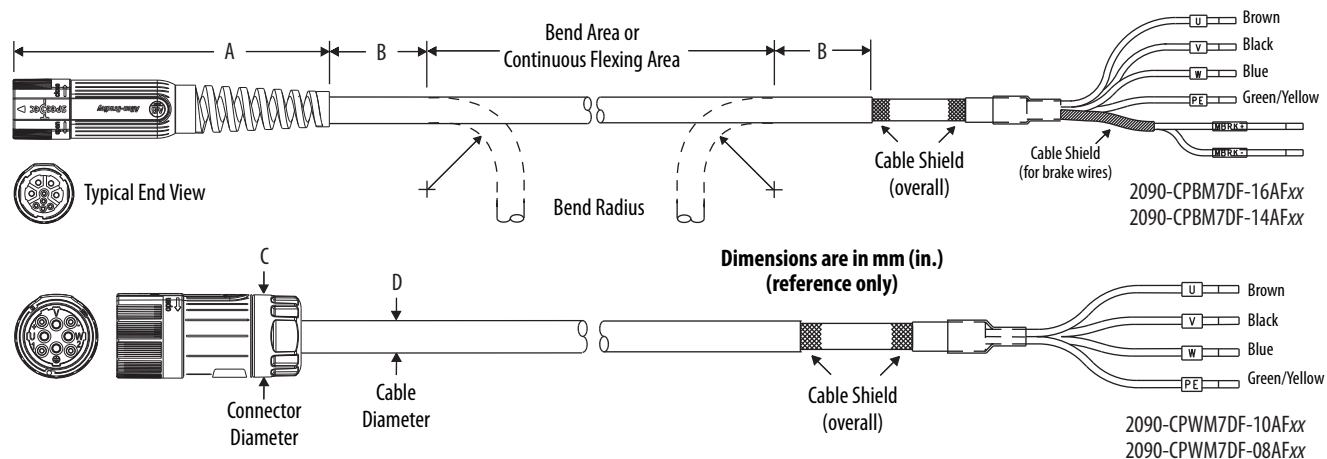
## Technical Specifications - 2090-Series Motor/Actuator Cables

### Power Cable Specifications

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

(1) 2090-CPxM4DF-xxAxxx and 2090-CPxM7DF-xxAxxx 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.

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

| Power Cable Cat. No. | A<br>mm (in.) | B <sup>(1)</sup><br>mm (in.) | Continuous Bend Radius <sup>(1)</sup><br>mm (in.) | C<br>mm (in.) | D<br>mm (in.) | E<br>mm (in.) |
|----------------------|---------------|------------------------------|---------------------------------------------------|---------------|---------------|---------------|
| 2090-CPBM7DF-16AFxx  | 147 (5.8)     | 87.5 (3.4)                   | 150 (5.9)                                         | 28.0 (1.1)    | 12.5 (0.49)   | 150 (5.9)     |
| 2090-CPWM7DF-16AFxx  |               | 67.9 (2.7)                   | 116 (4.6)                                         |               | 9.7 (0.38)    |               |
| 2090-CPBM7DF-14AFxx  |               | 95.9 (3.8)                   | 164 (6.5)                                         |               | 13.7 (0.54)   |               |
| 2090-CPWM7DF-14AFxx  |               | 72.8 (2.9)                   | 125 (4.9)                                         |               | 10.4 (0.41)   |               |
| 2090-CPBM7DF-10AFxx  | 100 (3.9)     | 125 (4.9)                    | 214 (8.4)                                         | 45.0 (1.8)    | 17.8 (0.70)   | 90 (3.5)      |
| 2090-CPWM7DF-10AFxx  |               | 110 (4.3)                    | 188 (7.4)                                         |               | 15.7 (0.62)   |               |
| 2090-CPBM7DF-08AFxx  |               | 144 (5.7)                    | 247 (9.7)                                         |               | 20.6 (0.81)   |               |
| 2090-CPWM7DF-08AFxx  |               | 141 (5.5)                    | 242 (9.5)                                         |               | 20.2 (0.79)   |               |

(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   |             |          |                             |