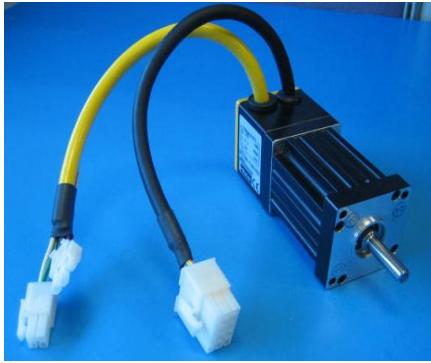




Brake model shown

***Parker Electromechanical is pleased to announce the release of a standard low cost connector option for the BE and SM motor families – LC***

## LC connector Description and Features

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Parker Hannifin has added a low cost connector option to the SM and BE motor families. Known as the Low-Cost, or LC connector option, this gives you a standard low cost connector option for added application and pricing flexibility. This standard option uses the very common Amp, or Tyco brand of connectors on the ends of 8" motor and feedback cables. These connectors are usually available from most electrical supply houses. The mating cables are available from Parker Hannifin, or if your customers prefer, they can build their own cables.

The LC connector option is available in all BE16/23, and all SM16/23 servo motors. The LC option is only available on the BE341 and BE342 size motors. The feedback type selections that are available with the LC option are the J (incremental encoder), Q (smart encoder), and R (resolver) feedback options.

The LC connector motors feature the following:

### General

- Lower priced motor and cable options.
- Low cost Amp / Tyco connectors.
- Eight inch motor and feedback leads.
- "P" clip option included for noise immunity.
- Motor brake option available.
- CE approved.

## BE Low Cost connector part number Nomenclature

|    |     |   |    |   |    |   |
|----|-----|---|----|---|----|---|
| BE | 342 | H | J- | N | LC | N |
|----|-----|---|----|---|----|---|

| BE Series | Frame         |     | Winding                   | Feedback                                                 | Shafting                          | Connection                                                                                                                                                     | Options               |
|-----------|---------------|-----|---------------------------|----------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|           | Magnet length |     |                           |                                                          |                                   |                                                                                                                                                                |                       |
|           | 161           | 230 | 341                       | J - 2000 Line<br>Q - Smart<br>Encoder      R<br>Resolver | N- Normal<br>F- Flat<br>K- Keyway | LC - Low Cost<br>FO-Flying lead -<br>Exposed<br>FL - Flying Lead -<br>Housed<br>PS -Parker Standard<br>MS - Military Style<br>10 - 10' cable<br>25 - 25' cable | N- Normal<br>B- Brake |
|           | 162           | 231 | 342                       |                                                          |                                   |                                                                                                                                                                |                       |
|           | 163           | 232 |                           |                                                          |                                   |                                                                                                                                                                |                       |
|           | 164           | 233 |                           |                                                          |                                   |                                                                                                                                                                |                       |
|           |               |     | C, D, F, J, K,<br>L, etc. |                                                          |                                   |                                                                                                                                                                |                       |

## SM Low Cost connector part number Nomenclature

|    |     |   |    |   |    |   |
|----|-----|---|----|---|----|---|
| SM | 232 | H | J- | N | LC | N |
|----|-----|---|----|---|----|---|

| SM Series | Frame         |     | Winding    | Feedback                                                 | Shafting                          | Connection                                                                                                                                                     | Options                                   |
|-----------|---------------|-----|------------|----------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
|           | Magnet length |     |            |                                                          |                                   |                                                                                                                                                                |                                           |
|           | 161           | 230 | A, B, etc. | E - 1000 Line<br>Q - Smart<br>Encoder      R<br>Resolver | N- Normal<br>F- Flat<br>K- Keyway | LC - Low Cost<br>FO-Flying lead -<br>Exposed<br>FL - Flying Lead -<br>Housed<br>PS -Parker Standard<br>MS - Military Style<br>10 - 10' cable<br>25 - 25' cable | N- Normal<br>B- Brake    V-<br>shaft seal |
|           | 162           | 231 |            |                                                          |                                   |                                                                                                                                                                |                                           |
|           |               | 232 |            |                                                          |                                   |                                                                                                                                                                |                                           |
|           |               | 233 |            |                                                          |                                   |                                                                                                                                                                |                                           |

## Motor - LC connector option availability

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The following table shows the motor frame sizes and stack lengths the LC option can be ordered with:

| Motor | Feedback Options |
|-------|------------------|
| SM16X | E, Q             |
| SM23X | E, Q, R          |
| BE16X | J, Q, R          |
| BE23X | J, Q, R          |
| BE341 | J, Q, R          |
| BE342 | J, Q, R          |

## Parker mating cable part numbers (motor to amplifier)

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The following table shows the motor power and motor feedback mating cables. The cables come in standard lengths of 10 and 25 foot, with non-standard lengths in 5-foot increments.

Please note the motor power cable comes with brake wiring. If the brake leads and brake connector are not needed, you may leave it as is, or cut the brake connector off.

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| LC Cable Part Number | Amplifier   | Function                                     |
|----------------------|-------------|----------------------------------------------|
| F-1F3-XX             | Aries & Vix | Resolver                                     |
| F-1F3-XX             | Aries & Vix | Encoder                                      |
| P-1A3-XX             | Aries & Vix | Motor Power w/ Brake                         |
|                      |             |                                              |
| F-2D3-XX             | Compax 3    | Resolver                                     |
| F-2C3-XX             | Compax 3    | Encoder                                      |
| P-1A3-XX             | Compax 3    | Motor Power w/Brake                          |
|                      |             |                                              |
| F-9F3-XX             | Any         | Tyco Connector to Flying Lead Feedback Cable |

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## Tyco motor connector part numbers:

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Occasionally, customers may build their own mating cables. The following tables provide the Amp / Tyco part numbers for the connector shells, pins, and contacts used for the LC connector option. Use this table to determine the mating cable connector and pin part numbers:

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| Power Connector on cable (4 Position) |                       |               |
|---------------------------------------|-----------------------|---------------|
|                                       | Connector Body Female | Tyco 172159-1 |
|                                       | Single Pin (F)        | Tyco 170362-1 |

| Feedback Connector on cable (15 Position) |                |               |
|-------------------------------------------|----------------|---------------|
|                                           | Connector Body | Tyco 172163-1 |
|                                           | Single Pin (F) | Tyco 170362-1 |

| Brake connector on cable (2 Position) |                |               |
|---------------------------------------|----------------|---------------|
|                                       | Connector Body | Tyco 172157-1 |
|                                       | Single Pin (F) | Tyco 170362-1 |

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Use this table to determine the part numbers for the connector and pins that are already supplied on the motor as part of the LC option:

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| Power connector on motor (4 Position) |                     |               |
|---------------------------------------|---------------------|---------------|
|                                       | Connector Body Male | Tyco 172167-1 |
|                                       | Single Pin (M)      | Tyco 170360-1 |

| Feedback connector on motor (15 Position) |                |               |
|-------------------------------------------|----------------|---------------|
|                                           | Connector Body | Tyco 172171-1 |
|                                           | Single Pin (M) | Tyco 170360-1 |

| Brake connector on motor (2 Position) |                |               |
|---------------------------------------|----------------|---------------|
|                                       | Connector Body | Tyco 172165-1 |
|                                       | Single Pin (M) | Tyco 170360-1 |

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## LC cable pin-out / wire color / function tables

For customers building their own cables, the following tables provide pin-out and wire function data.

**71-029822-01**

**F-1F3-XX**

**Aries Resolver, Aries Encoder, ViX Resolver, ViX Encoder**

| Signal Name      | Wire Color   | Tyco<br>172163-1<br>Pin # | Aires D<br>Pin # |
|------------------|--------------|---------------------------|------------------|
| Enc +5           | Red          | 5                         | 5                |
| Enc +5 (Hall +5) | Violet       | 5                         | 5                |
| Enc Return       | Black        | 3                         | 3                |
| Hall Return      | Blue         | 3                         | 3                |
| A+ (sin+)        | Yellow/Brown | 8                         | 8                |
| A- (sin-)        | Yellow/White | 7                         | 7                |
| B+ (cos+)        | Brown        | 12                        | 12               |
| B- (cos-)        | White        | 11                        | 11               |
| Index+ (Data+)   | Green        | 1                         | 1                |
| Index- (Data-)   | Yellow       | 2                         | 2                |
| Temp             | Grey         | 10                        | 10               |
| Temp             | Pink         | 6                         | 6                |
| Hall 1           | Green/White  | 9                         | 9                |
| Hall 2           | Brown/Green  | 13                        | 13               |
| Hall 3           | White/Grey   | 14                        | 14               |
| Ref +            | Red/Blue     | 4                         | 4                |
| Ref -            | Grey/Pink    | 15                        | 15               |

**71-029829-01**

**F-9F3-XX**

**Flying Lead Cable**

| Signal Name      | Wire Color   | Tyco<br>172163-1<br>Pin # |
|------------------|--------------|---------------------------|
| Enc +5           | Red          | 5                         |
| Enc +5 (Hall +5) | Violet       | 5                         |
| Enc Return       | Black        | 3                         |
| Hall Return      | Blue         | 3                         |
| A+ (sin+)        | Yellow/Brown | 8                         |
| A- (sin-)        | Yellow/White | 7                         |
| B+ (cos+)        | Brown        | 12                        |
| B- (cos-)        | White        | 11                        |
| Index+ (Data+)   | Green        | 1                         |
| Index- (Data-)   | Yellow       | 2                         |
| Temp             | Grey         | 10                        |
| Temp             | Pink         | 6                         |
| Hall 1           | Green/White  | 9                         |
| Hall 2           | Brown/Green  | 13                        |
| Hall 3           | White/Grey   | 14                        |
| Ref +            | Red/Blue     | 4                         |
| Ref -            | Grey/Pink    | 15                        |

**71-029824-01**  
**F-2C3-XX**  
**Compax 3 Encoder**

| <b>Signal Name</b>      | <b>Wire Color</b>   | <b>Tyco<br/>172163-1<br/>Pin #</b> | <b>Compax "D"<br/>Pin #</b> |
|-------------------------|---------------------|------------------------------------|-----------------------------|
| <b>Enc +5</b>           | <b>Red</b>          | <b>5</b>                           | <b>4</b>                    |
| <b>Enc +5 (Hall +5)</b> | <b>Violet</b>       | <b>5</b>                           | <b>4</b>                    |
| <b>Enc Return</b>       | <b>Black</b>        | <b>3</b>                           | <b>15</b>                   |
| <b>Hall Return</b>      | <b>Blue</b>         | <b>3</b>                           | <b>15</b>                   |
| <b>A+</b>               | <b>Yellow/Brown</b> | <b>8</b>                           | <b>8</b>                    |
| <b>A-</b>               | <b>White/Yellow</b> | <b>7</b>                           | <b>7</b>                    |
| <b>B+</b>               | <b>Brown</b>        | <b>12</b>                          | <b>12</b>                   |
| <b>B-</b>               | <b>White</b>        | <b>11</b>                          | <b>11</b>                   |
| <b>Index+ (Data+)</b>   | <b>Green</b>        | <b>1</b>                           | <b>13</b>                   |
| <b>Index- (Data-)</b>   | <b>Yellow</b>       | <b>2</b>                           | <b>14</b>                   |
| <b>Temp+</b>            | <b>Grey</b>         | <b>10</b>                          | <b>10</b>                   |
| <b>Temp-</b>            | <b>Pink</b>         | <b>6</b>                           | <b>5</b>                    |
| <b>Hall 1</b>           | <b>White/Green</b>  | <b>9</b>                           | <b>3</b>                    |
| <b>Hall 2</b>           | <b>Brown/Green</b>  | <b>13</b>                          | <b>6</b>                    |
| <b>Hall 3</b>           | <b>White/Grey</b>   | <b>14</b>                          | <b>9</b>                    |

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**71-029823-01**  
**F-2D3-XX**  
**Compax 3 Resolver**

| <b>Signal Name</b> | <b>Wire Color</b>   | <b>Tyco<br/>172163-1<br/>Pin #</b> | <b>Compax "D"<br/>Pin #</b> |
|--------------------|---------------------|------------------------------------|-----------------------------|
| <b>A+ (sin+)</b>   | <b>Yellow/Brown</b> | <b>8</b>                           | <b>8</b>                    |
| <b>A- (sin-)</b>   | <b>Yellow/White</b> | <b>7</b>                           | <b>7</b>                    |
| <b>B+ (cos+)</b>   | <b>Brown</b>        | <b>12</b>                          | <b>12</b>                   |
| <b>B- (cos-)</b>   | <b>White</b>        | <b>11</b>                          | <b>11</b>                   |
| <b>Temp +</b>      | <b>Grey</b>         | <b>10</b>                          | <b>10</b>                   |
| <b>Temp -</b>      | <b>Pink</b>         | <b>6</b>                           | <b>5</b>                    |
| <b>Ref +</b>       | <b>Red/Blue</b>     | <b>4</b>                           | <b>15</b>                   |
| <b>Ref -</b>       | <b>Grey/Pink</b>    | <b>15</b>                          | <b>4</b>                    |

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If you have any questions, please contact:

- Technical Assistance, Applications Engineering Department (e-mail: [emn\\_support@parker.com](mailto:emn_support@parker.com) or call 800-358-9070 North America, 707-584-7558 International)
- Your local Parker Distributor – Call (800) 722-2282 or (707) 584-7558 for the location of your local distributor