Motor Control Center
Type Advantage™
Renewal Parts

Supersedes RP03A.02.S.E
pages 1-24, dated September 2000

Description
Motor Control Center Type Advantage

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</tr>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MCC Type</th>
<th>Dates</th>
<th>Cutler-Hammer Renewal Parts Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2100 Advantage Series 2100</td>
<td>1995-96</td>
<td>RP04304001E</td>
</tr>
<tr>
<td>S Star Freedom Unitrol</td>
<td>1975-87</td>
<td>RP04304003E</td>
</tr>
<tr>
<td>Type W 9800 Unitrol 11-300</td>
<td>1965-75</td>
<td>RP04304008E</td>
</tr>
</tbody>
</table>

RP04304002E
For more information visit: www.cutler-hammer.eaton.com
Identifying Motor Control Center Types

In most cases, it is possible to identify MCC design by handle type. Starter type, bucket width and door width can assist in identification.

Table 1. Identifying Motor Control Center Types

<table>
<thead>
<tr>
<th>MCC Type</th>
<th>Type of Handle Mechanism</th>
<th>Original MCC Starter Type</th>
<th>Bucket Width Inches (mm)</th>
<th>Door Width Inches (mm)</th>
<th>Original Manufacturer</th>
<th>Starter Type (Installed in New Unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advantage</td>
<td>Lever</td>
<td>Advantage</td>
<td>13-3/4 (349.3)</td>
<td>15-5/8 (397.0)</td>
<td>Advantage</td>
<td>Advantage</td>
</tr>
<tr>
<td>F10 Unitrol</td>
<td>Slider and Lever</td>
<td>Citation</td>
<td>14 (355.6)</td>
<td>14-3/4 (374.7) w/ Wireway</td>
<td>Cutler-Hammer 1972 – 1989</td>
<td>Freedom</td>
</tr>
<tr>
<td>9800 Unitrol</td>
<td>Rotary 1</td>
<td>3 Star/Citation</td>
<td>16-1/8 (409.7)</td>
<td>19-3/8 (492.3)</td>
<td>Cutler-Hammer 1956 – 1974</td>
<td>Freedom</td>
</tr>
<tr>
<td>11-300</td>
<td>Rotary</td>
<td>11-200 Lifeline Type N/A200</td>
<td>15-3/4 (400.1)</td>
<td>20 (508.0)</td>
<td>Westinghouse 1950 – 1965</td>
<td>A200</td>
</tr>
</tbody>
</table>

① MCC types were sometimes produced outside the time spans shown. This was due to the overlap of production when a new design was adopted.
② The unit “wrappers” are mechanically identical for these designs.
③ 9800 originally was supplied with Rotary. New replacement units are manufactured with slider handle mechanism.

Identification by Original Handle Mechanism

F2100, Advantage, Series 2100/5 Star

Freedom Unitrol

F10 Unitrol Slider 9800 Unitrol

F10 Unitrol Lever and 9800 Unitrol

Type W

9800 Unitrol

11-300
Procedure for Identifying Motor Control Center Types

In the event that the nameplate is missing, it is possible to identify the MCC design by the type of handle mechanism, starter type, bucket width and door width.

Table 2. Identifying Motor Control Center Types

<table>
<thead>
<tr>
<th>MCC Type</th>
<th>Type of Handle Mechanism</th>
<th>Starter Type</th>
<th>Bucket Width Inches (mm)</th>
<th>Door Width Inches (mm)</th>
<th>Cutler-Hammer Renewal Parts Publication</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Star Freedom Unitrol F10 Unitrol</td>
<td>Lever</td>
<td>Freedom Series Citation</td>
<td>13-3/4 (349.3)</td>
<td>15-5/8 (397.0)</td>
<td>RP04304003E</td>
</tr>
<tr>
<td>Type W 9800 Unitrol 11-300</td>
<td>Slider</td>
<td>A200 or 11-200 3 Star and/or Citation 11-200 Life-line N and/or A200</td>
<td>13-3/8 (339.9)</td>
<td>19-3/8 (492.3)</td>
<td>RP04304006E</td>
</tr>
</tbody>
</table>

For more information visit: www.cutler-hammer.eaton.com
**Advantage Product Description**

Introduced in 1991 as a sister to the Westinghouse Series 2100 MCC, the Advantage starter design revolutionized the industry. It uses state-of-the-art technology to solve motor control application problems, such as coil burnout and contact chatter/welding.

The vertical structures are normally 20 inches (508.0 mm) wide, 90 inches (2286.0 mm) high and 16 inches (406.4 mm) or 21 inches (533.4 mm) deep. Vertical sections may be bolted together forming a single lineup with continuous horizontal bus and open horizontal wireways. Unit height is measured in 6-inch (154.4 mm) increments, up to a maximum of 72 inches (1828.8 mm) of usable vertical space.

A two-tone light/dark enamel paint system is used for this design. Ferro white is applied to the structural framework and units. ANSI 61 gray is applied to all exterior back sheets, side sheets and doors. Starter units are 13-3/4 inches (349.3 mm) wide and are interchangeable with the 5 Star and Series 2100 design.

The Advantage starter unit’s handle mechanism is a gray toggle type handle with a black exterior mounting panel and is used on the Series 2100/5 Star and F2100 designs. Bus and bus support systems are typically braced to withstand fault currents of 65,000A.

**Table 3. Advantage Product Rating**

<table>
<thead>
<tr>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Phase, 600V, 600 hp, 3200A Bus</td>
</tr>
</tbody>
</table>
Advantage Replacement Starter Units

How to Order
When ordering a replacement unit, you receive:
- Series C® HMCP or HMCP.
- Advantage Starter.
- Unit options as specified.
- New steel wrapper, door and handle mechanism.
- New stabs.
- UL® label.

Use the following steps for creating a catalog number for your specific application:

Step 1
Select the correct replacement unit from Pages 6 – 14. When selecting, you need to know the following:
- MCC type.
- Class of Unit (FVNR, FVR, Reduced Voltage — Autotransformer or Part Winding or Solid State, FV — 2 Speed, 1 Winding or 2 Speed, 2 Winding, etc.).
- Starter size or horsepower rating.
- Protection device (breaker or fusible).
- Service voltage.
- Control voltage.
- Space required.

Step 2
Verify required space is available.

Step 3
Create a catalog number by selecting Catalog Codes from the columns per the example given.

Step 4
Add modifications as required from the Unit Options on Pages 16 – 18. Space available determines allowable options.

Table 4. Catalog Numbering System Example

Table 5. Full Voltage Non-Reversing Combination Starter — HMCP (Must specify if HMCP is required)

<table>
<thead>
<tr>
<th>NEMA® Size</th>
<th>Maximum Horsepower</th>
<th>HMCP Size</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Control Voltage</th>
<th>Catalog Code</th>
<th>Space Options Inches (mm)</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>208V</td>
<td>240V</td>
<td>380V</td>
<td>480V</td>
<td>600V</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>0.5</td>
<td>0.33</td>
<td>1</td>
<td>1</td>
<td>1.5</td>
<td>3</td>
<td>FK206A</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>FK206B</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>7.5</td>
<td>7.5</td>
<td>15</td>
<td>FK206C</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>7.5</td>
<td>7.5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>30</td>
<td>FK206D</td>
<td>E</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>15</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>50</td>
<td>FK206E</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206F</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206G</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206H</td>
<td>E</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206I</td>
<td>F</td>
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<td>3</td>
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<td>30</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td>FK206J</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206K</td>
<td>C</td>
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<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206L</td>
<td>D</td>
</tr>
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<td></td>
<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206M</td>
<td>E</td>
</tr>
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<td>4</td>
<td>40</td>
<td>50</td>
<td>75</td>
<td>100</td>
<td>150</td>
<td>250</td>
<td>FK206N</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206O</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206P</td>
<td>D</td>
</tr>
<tr>
<td>5</td>
<td>60</td>
<td>75</td>
<td>100</td>
<td>125</td>
<td>150</td>
<td>200</td>
<td>FK206Q</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>208</td>
<td>240</td>
<td>380</td>
<td>480</td>
<td>575</td>
<td></td>
<td>FK206R</td>
<td>C</td>
</tr>
</tbody>
</table>

1 On 6-inch (152.4 mm) units, the only options available are (3) E22 pilot devices and separate source fuse or disconnect or CPT.

For more information visit: www.cutler-hammer.eaton.com
### Advantage Replacement Starter Units

#### Table 6. Full Voltage Reversing Combination Starter — HMCP

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>HMCP Size</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Control Voltage</th>
<th>Space Options Inches (mm)</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5 1 1 3 7.5</td>
<td>1 2 3 7.5</td>
<td>FK216A</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>18 (457.2) High</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>10 15 25 25 50</td>
<td>FK216E</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>18 (457.2) High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>25 30 50 50 50</td>
<td>FK216H</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>18 (457.2) High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>40 50 75 100 150</td>
<td>FK216L</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>18 (457.2) High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>50 75 100 150 200</td>
<td>FK216P</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>18 (457.2) High</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Table 7. Full Voltage 2 Speed 1 Winding — Constant/Variable Torque — HMCP

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>HMCP Size</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Control Voltage</th>
<th>Space Options Inches (mm)</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5 1 1 3 7.5</td>
<td>1 2 3 7.5</td>
<td>FK946A</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>24 (609.6) High</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>10 15 25 25 50</td>
<td>FK946E</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>24 (609.6) High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>25 30 50 50 50</td>
<td>FK946H</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>24 (609.6) High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>40 50 75 100 150</td>
<td>FK946L</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>24 (609.6) High</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For constant horsepower instead of constant/variable torque, see Option SV6 on Page 18.
### Advantage Replacement Starter Units

**Table 8. Full Voltage 2 Speed 2 Winding — Constant/Variable Torque — HMCP**

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>HMCP Size</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Control Voltage</th>
<th>Space Options Inches (mm)</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5 1.0 3.0 7.5</td>
<td>0.33 1.0 2.0 5.0</td>
<td>FK956A</td>
<td>208 240 380 480 575</td>
<td>120 208 240 300 480 575</td>
<td>24 (609.6) High 30 (762.0) High</td>
<td>S</td>
</tr>
<tr>
<td>2</td>
<td>10 15 25 25 50</td>
<td>FK956E</td>
<td>208 240 380 480 575</td>
<td>120 208 240 300 480 575</td>
<td>A B C D E F</td>
<td>24 (609.6) High 30 (762.0) High</td>
<td>S</td>
</tr>
<tr>
<td>3</td>
<td>25 30 50 50 100</td>
<td>FK956H</td>
<td>208 240 380 480 575</td>
<td>120 208 240 300 480 575</td>
<td>A B C D E F</td>
<td>30 (762.0) High</td>
<td>S</td>
</tr>
<tr>
<td>4</td>
<td>40 50 75 100 150</td>
<td>FK956L</td>
<td>208 240 380 480 575</td>
<td>120 208 240 300 480 575</td>
<td>A B C D E F</td>
<td>30 (762.0) High</td>
<td>S</td>
</tr>
<tr>
<td>5</td>
<td>50 75 100 150 200 250</td>
<td>FK956P</td>
<td>208 240 380 480 575</td>
<td>120 208 240 300 480 575</td>
<td>A B C D E F</td>
<td>72 (1828.8) High</td>
<td>S</td>
</tr>
</tbody>
</table>

**Note:** For constant horsepower instead of constant/variable torque, see Option SV6 on Page 18.

**Table 9. Reduced Voltage Autotransformer — HMCP**

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>HMCP Size</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Control Voltage</th>
<th>Space Options Inches (mm)</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>10 15 25 25 50</td>
<td>FK606E</td>
<td>208 240 380 480 575</td>
<td>120 208 240 300 480 575</td>
<td>A B C D E F</td>
<td>36 (914.4) High</td>
<td>S</td>
</tr>
<tr>
<td>3</td>
<td>25 30 50 50 100</td>
<td>FK606H</td>
<td>208 240 380 480 575</td>
<td>120 208 240 300 480 575</td>
<td>A B C D E F</td>
<td>48 (1219.2) High</td>
<td>S</td>
</tr>
<tr>
<td>4</td>
<td>40 50 75 100 150</td>
<td>FK606L</td>
<td>208 240 380 480 575</td>
<td>120 208 240 300 480 575</td>
<td>A B C D E F</td>
<td>48 (1219.2) High</td>
<td>S</td>
</tr>
</tbody>
</table>

**Note:** If existing MCC is back-to-back design, 36 inches (914.4 mm) in bottom rear is unusable.
### Advantage Replacement Starter Units

#### Table 10. Reduced Voltage Part Winding — HMCP

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>HMCP Size</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Control Voltage</th>
<th>Space Options</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>208V</td>
<td>240V</td>
<td>380V</td>
<td>480V</td>
<td>600V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>10</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>30</td>
<td>FK706D</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>25</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>100</td>
<td>FK706F</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>50</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>150</td>
<td>FK706J</td>
</tr>
<tr>
<td>4</td>
<td>—</td>
<td>75</td>
<td>—</td>
<td>150</td>
<td>125</td>
<td>150</td>
<td>250</td>
</tr>
</tbody>
</table>

#### Table 11. Reduced Voltage Wye Delta Open Transition — HMCP

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>HMCP Size</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Control Voltage</th>
<th>Space Options</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>208V</td>
<td>240V</td>
<td>380V</td>
<td>480V</td>
<td>600V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>25</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>100</td>
<td>FK806F</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>50</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>150</td>
<td>FK806J</td>
</tr>
<tr>
<td>4</td>
<td>60</td>
<td>—</td>
<td>75</td>
<td>—</td>
<td>150</td>
<td>—</td>
<td>150</td>
</tr>
</tbody>
</table>

For more information visit: [www.cutler-hammer.eaton.com](http://www.cutler-hammer.eaton.com)
## Advantage Replacement Starter Units

Table 12. Reduced Voltage Wye Delta Closed Transition — HMCP (Non-Chiller Application)

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>HMCP Size</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Catalog Code</th>
<th>Control Voltage</th>
<th>Catalog Code</th>
<th>Space Options Inches (mm)</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>20</td>
<td>208</td>
<td>FK896F</td>
<td>240 240 380 480 575</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>A B C D E F</td>
<td>48 (1219.2) High</td>
<td>S</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>208</td>
<td>FK896J</td>
<td>240 380 480 575</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>A B C D E F</td>
<td>60 (1524.0) High</td>
<td>S</td>
</tr>
<tr>
<td>4</td>
<td>60</td>
<td>208</td>
<td>FK896M</td>
<td>240 380 480 575</td>
<td>B C D E F</td>
<td>120 208 240 380 480 575</td>
<td>A B C D E F</td>
<td>60 (1524.0) High</td>
<td>S</td>
</tr>
</tbody>
</table>
IT06 — Intelligent Technologies IT. Solid-State Reduced Voltage Starter — HMCP

The IT. solid-state reduced voltage starter uses SCRs when starting and a low impedance run circuit during operation. Solid-state starters have (5) 24V DC inputs and 2 relay outputs. Soft start units include a disconnect, starter, 24V DC power supply and 100VA CPT.

Motor Service Factor (SF) Effect on IT. Starter Selection

- A 1.0 service factor motor may draw up to 1.00 x full load amperes.
- A 1.15 service factor motor may draw up to 1.15 x full load amperes.
- 15% more current. IT. starters are current rated devices. In some cases, a larger IT. SSRV starter must be supplied for 1.15 SF motors. See the maximum horsepower chart below.

Note: Most motors used in industrial applications are 1.15 Service Factor (SF).

Table 13. Replacement IT. Soft Start Units

<table>
<thead>
<tr>
<th>Service Factor</th>
<th>Horsepower</th>
<th>IT. Soft-Start Amperes</th>
<th>HMCP Amperes</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Catalog Code</th>
<th>Control Voltage</th>
<th>Catalog Code</th>
<th>Space Options Inches (mm)</th>
<th>Catalog Code</th>
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<td>208</td>
<td>B</td>
<td>120</td>
<td>A</td>
<td>12 (304.8) High</td>
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<td>15</td>
<td>66</td>
<td></td>
<td>FK306B</td>
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<td>150</td>
<td>FK306C</td>
<td></td>
<td></td>
<td>240 C</td>
<td></td>
<td>18 (457.2) High</td>
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</tr>
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<td>40</td>
<td>135</td>
<td></td>
<td>FK306D</td>
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<td></td>
<td>380 D</td>
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<td></td>
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<tr>
<td></td>
<td>50</td>
<td>180</td>
<td>400</td>
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<td></td>
<td>480 E</td>
<td></td>
<td>36 (914.4) High</td>
<td></td>
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<td>60</td>
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<td></td>
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<td>240 C</td>
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<td>480 E</td>
<td></td>
<td>36 (914.4) High</td>
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<td>240</td>
<td>400</td>
<td>FK306F</td>
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<td></td>
<td>575 F</td>
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<td>FK306G</td>
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</tbody>
</table>
### Advantage Replacement Starter Units

#### Table 14. Full Voltage Non-Reversing — Fusible

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>Fuse Clip Amperes</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Catalog Code</th>
<th>Control Voltage</th>
<th>Catalog Code</th>
<th>Space Options Inches (mm)</th>
<th>Catalog Code</th>
</tr>
</thead>
<tbody>
<tr>
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<td>B C D E F</td>
<td>120</td>
<td>A B C D E F</td>
<td>6 (152.4) High 12 (304.8) High 18 (457.2) High</td>
<td>C X</td>
<td></td>
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<tr>
<td>2</td>
<td>— — 15 15 15 25</td>
<td>30 60</td>
<td>FK204E FK204F</td>
<td>B C D E F</td>
<td>120</td>
<td>A B C D E F</td>
<td>12 (304.8) High 18 (457.2) High</td>
<td>S X</td>
<td></td>
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<tr>
<td>3</td>
<td>— 25 30 40 50 60</td>
<td>60 100</td>
<td>FK204H FK204J</td>
<td>B C D E F</td>
<td>120</td>
<td>A B C D E F</td>
<td>24 (609.6) High</td>
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</tr>
<tr>
<td>4</td>
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<td>100 200</td>
<td>FK204L FK204M</td>
<td>B C D E F</td>
<td>120</td>
<td>A B C D E F</td>
<td>48 (1219.2) High</td>
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</tr>
<tr>
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<td>60 100 150 200 200</td>
<td>50 100 30 50 30</td>
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<td>54 (1371.6) High</td>
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</table>

(1) Fuse clip ratings shown are based on Class RK1, 5 fuses.

On 6-inch (152.4 mm) units, the only option available are (3) E22 pilot devices and separate source fuse or disconnect or CPT.

#### Table 15. Full Voltage Reversing — Fusible

<table>
<thead>
<tr>
<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>Fuse Clip Amperes</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Catalog Code</th>
<th>Control Voltage</th>
<th>Catalog Code</th>
<th>Space Options Inches (mm)</th>
<th>Catalog Code</th>
</tr>
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<tbody>
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<td>FK214C</td>
<td>B C D E F</td>
<td>120</td>
<td>A B C D E F</td>
<td>24 (609.6) High 30 (762.0) High</td>
<td>S X</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>— — 15 15 15 25</td>
<td>30 60</td>
<td>FK214E FK214F</td>
<td>B C D E F</td>
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<td>A B C D E F</td>
<td>24 (609.6) High 30 (762.0) High</td>
<td>S X</td>
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<td>— 25 30 40 50 60</td>
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<td>FK214H FK214J</td>
<td>B C D E F</td>
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<td>A B C D E F</td>
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<tr>
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<td>60 100 30 50 30</td>
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<td>A B C D E F</td>
<td>48 (1219.2) High</td>
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</table>

(3) Fuse clip ratings shown are based on Class RK1, 5 fuses.
Table 16. Full Voltage 2 Speed 1 Winding — Fusible — Constant/Variable Torque

<table>
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<th>NEMA Size</th>
<th>Maximum Horsepower</th>
<th>Fuse Clip Amperes</th>
<th>Catalog Code</th>
<th>Service Voltage</th>
<th>Control Voltage</th>
<th>Catalog Code</th>
<th>Space Options Inches (mm)</th>
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<td>C</td>
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Table 17. Full Voltage 2 Speed 2 Winding — Fusible — Constant/Variable Torque

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1. Fuse clip ratings shown are based on Class RK1, 5 fuses.
2. For constant horsepower instead of constant/variable torque, see Option SV6 on Page 18.

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RP04304002E For more information visit: www.cutler-hammer.eaton.com
## Advantage Replacement Starter Units

### Table 18. Reduced Autotransformer — Fusible

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<th>Service Voltage</th>
<th>Catalog Code</th>
<th>Control Voltage</th>
<th>Catalog Code</th>
<th>Space Options Inches (mm)</th>
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</table>

1. Fuse clip ratings shown are based on Class RK1, 5 fuses.
2. If existing MCC is back-to-back design, 36 inches (914.4 mm) in bottom rear is unusable.

### Table 19. Reduced Voltage Part Winding — Fusible

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<th>NEMA Size</th>
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1. Fuse clip ratings shown are based on Class RK1, 5 fuses.
## Advantage Replacement Starter Units

### Table 20. Reduced Voltage Wye Delta Open Transition — Fusible

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<th>Fuse Clip Amperes</th>
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**Note:** Fuse clip ratings shown are based on Class RK1, 5 fuses.

### Table 21. Reduced Voltage Wye Delta Closed Transition — Fusible (Non-Chiller Application)

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**Note:** Fuse clip ratings shown are based on Class RK1, 5 fuses.
## Advantage Unit Options

### Table 22. Option Groups

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<td>Relay and Timer (Control, Voltage, Current) Options</td>
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<td>S</td>
<td>Starter Contact Options</td>
<td>18</td>
</tr>
<tr>
<td>SV</td>
<td>Vacuum Starter Options</td>
<td>18</td>
</tr>
<tr>
<td>T</td>
<td>Terminal Block Options</td>
<td>18</td>
</tr>
<tr>
<td>U</td>
<td>Unit Wiring Options</td>
<td>18</td>
</tr>
</tbody>
</table>

1. Select your option suffix and attach it to the end of the catalog number.

### Table 23. Option Suffix

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Description</th>
<th>Space Required</th>
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<tbody>
<tr>
<td>A</td>
<td>Advantage Options</td>
<td>C 3</td>
</tr>
<tr>
<td>A15</td>
<td>Advantage Hand/Off/Auto ACM for FVNR or RVNR Starters</td>
<td></td>
</tr>
<tr>
<td>A16</td>
<td>Advantage Stop/Start for FVNR or RVNR Starters</td>
<td>C 3</td>
</tr>
<tr>
<td>A17</td>
<td>Advantage Hand/Off/Auto-Start/Stop ACM for FVNR or RVNR Starters</td>
<td>C 3</td>
</tr>
<tr>
<td>A18</td>
<td>Advantage Fast/Slow/Stop 2-Speed Starters</td>
<td>C 3</td>
</tr>
<tr>
<td>A19</td>
<td>Advantage Forward/Reverse/Stop for Reversing Starters</td>
<td>C 3</td>
</tr>
<tr>
<td>A20</td>
<td>Advantage Fast/Slow/Off/Auto for 2-Speed Starters</td>
<td>C 3</td>
</tr>
<tr>
<td>A21</td>
<td>Advantage Forward/Reverse/Off/Auto for Reversing Starters</td>
<td>C 3</td>
</tr>
<tr>
<td>A22</td>
<td>ACM Metering Module</td>
<td>C 3</td>
</tr>
<tr>
<td>A23</td>
<td>WBELL Form C Bell Alarm Contact</td>
<td>C 3</td>
</tr>
<tr>
<td>A24</td>
<td>Reset with Overload Alarm and Trip Indication</td>
<td>C 3</td>
</tr>
<tr>
<td>A25</td>
<td>120V AC PLC Circuit Compatible Load Resistor</td>
<td>C 3</td>
</tr>
<tr>
<td>A26</td>
<td>WPONI PowerNet Communications Module</td>
<td>C 3</td>
</tr>
<tr>
<td>A27</td>
<td>Advantage Status Only ACM</td>
<td>C 3</td>
</tr>
<tr>
<td>A28</td>
<td>WPONIDNA DeviceNet Communications Module</td>
<td>C 3</td>
</tr>
<tr>
<td>B</td>
<td>Breaker Options</td>
<td>C 3</td>
</tr>
<tr>
<td>B10</td>
<td>Shunt Trip 120V AC Wired to Terminal Blocks for Remote Tripping</td>
<td>C 3</td>
</tr>
<tr>
<td>B11</td>
<td>Auxiliary Switch Form C (1NO/1NC) Wired to Terminal Blocks</td>
<td>C 3</td>
</tr>
<tr>
<td>B12</td>
<td>Form C Bell Alarm Contact</td>
<td>C 3</td>
</tr>
<tr>
<td>B13</td>
<td>Undervoltage Release</td>
<td>C 3</td>
</tr>
<tr>
<td>B14</td>
<td>IQ Energy Sentinel — F Frame</td>
<td>C 3</td>
</tr>
<tr>
<td>B15</td>
<td>IQ Energy Sentinel — J Frame</td>
<td>C 3</td>
</tr>
<tr>
<td>B16</td>
<td>IQ Energy Sentinel — K Frame</td>
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</tr>
<tr>
<td>B17</td>
<td>IQ Central Energy Display</td>
<td>C 3</td>
</tr>
<tr>
<td>B18</td>
<td>Thermal Magnetic Circuit Breaker Instead of HMCP</td>
<td>C 3</td>
</tr>
<tr>
<td>C</td>
<td>Control Power Source Options</td>
<td>C 3</td>
</tr>
<tr>
<td>C10</td>
<td>Control Fuse Wired for Separate Source in Lieu of Control Power Transformer</td>
<td>C 3</td>
</tr>
<tr>
<td>C11</td>
<td>Control Power Transformer 100 VA for Size 1 and 2 Starters (Fused)</td>
<td>C 3</td>
</tr>
<tr>
<td>C12</td>
<td>Control Power Transformer 150 VA for Size 3 and 4 Starters (Fused)</td>
<td>C 3</td>
</tr>
<tr>
<td>C14</td>
<td>Control Power Transformer 100 VA with Interposing Relay for Size 6 Starters, Fused</td>
<td>C 3</td>
</tr>
<tr>
<td>C15</td>
<td>Extra 50 VA for Control Power Transformer</td>
<td>C 3</td>
</tr>
<tr>
<td>C16</td>
<td>Extra 100 VA for Control Power Transformer</td>
<td>C 3</td>
</tr>
<tr>
<td>C17</td>
<td>Service Voltage Control, Fused in Lieu of Control Power Transformer</td>
<td>C 3</td>
</tr>
<tr>
<td>C18</td>
<td>Full Capacity Control Power Transformer for Size 5 Starters, Fused</td>
<td>C 3</td>
</tr>
<tr>
<td>G</td>
<td>Ground Fault Protection Options</td>
<td>C 3</td>
</tr>
<tr>
<td>G10</td>
<td>Class 1 Ground Fault Protection — GRT1 Size 1 – 4</td>
<td>X</td>
</tr>
<tr>
<td>G11</td>
<td>Class 1 Ground Fault Protection — GRT1 Size 5 – 6</td>
<td>X</td>
</tr>
<tr>
<td>G12</td>
<td>Ground Fault Test Panel</td>
<td>X</td>
</tr>
</tbody>
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1. Minimum unit size required (refer to Replacement Unit pages).
2. Not available in 6 inches (152.4 mm).
3. Consult factory for spacing.
### Advantage Unit Options

**Table 23. Option Suffix (Continued)**

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Description</th>
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<tr>
<td><strong>M — Metering Options</strong></td>
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<tr>
<td>M10</td>
<td>Mini Voltmeter</td>
<td>C 7</td>
</tr>
<tr>
<td>M11</td>
<td>Mini Ammeter with Current Transformer</td>
<td>S 0</td>
</tr>
<tr>
<td>M12</td>
<td>Mini Elapsed Time Meter</td>
<td>C 8</td>
</tr>
<tr>
<td>M13</td>
<td>Current Transformer for Remote Metering</td>
<td>S 0</td>
</tr>
<tr>
<td>M14</td>
<td>Current Transducer 4-20 mA Output</td>
<td>X 1</td>
</tr>
<tr>
<td><strong>O — Overload Options</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O10</td>
<td>IQ 500 Solid-State Overload Relay</td>
<td>—</td>
</tr>
<tr>
<td>O11</td>
<td>IQ 500 Load Protection Module</td>
<td>—</td>
</tr>
<tr>
<td>O16</td>
<td>Bell Alarm (1NO) Wired</td>
<td>C 6</td>
</tr>
<tr>
<td>O17</td>
<td>Bi-Metallic Overload Substitution</td>
<td>C 6</td>
</tr>
<tr>
<td>O18</td>
<td>Adjustable A200 Overload Substitution</td>
<td>C 6</td>
</tr>
<tr>
<td>O19</td>
<td>Overload Relay Heater/Heater Pack</td>
<td>C 6</td>
</tr>
<tr>
<td>O20</td>
<td>CEP7 Solid-State Overload Relay</td>
<td>C 6</td>
</tr>
<tr>
<td><strong>P — Pilot Device Options</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P10</td>
<td>Red &quot;RUN&quot; Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P11</td>
<td>Green &quot;STOPPED&quot; Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P12</td>
<td>Amber &quot;OVERLOAD TRIPPED&quot; Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P13</td>
<td>Green &quot;RUN&quot; Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P14</td>
<td>Red &quot;STOPPED&quot; Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P15</td>
<td>Red &quot;RUN&quot; Push-to-Test Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P16</td>
<td>Green &quot;STOPPED&quot; Push-to-Test Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P17</td>
<td>Amber &quot;OVERLOAD TRIPPED&quot; Push-to-Test Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P18</td>
<td>Green &quot;RUN&quot; Push-to-Test Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P19</td>
<td>Red &quot;STOPPED&quot; Push-to-Test Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P20</td>
<td>Special Function Light</td>
<td>C 2</td>
</tr>
<tr>
<td>P30</td>
<td>&quot;START&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P31</td>
<td>&quot;STOP&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P32</td>
<td>&quot;START/STOP&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P33</td>
<td>&quot;ON&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P34</td>
<td>&quot;OFF&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P35</td>
<td>&quot;ON/OFF&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P36</td>
<td>&quot;FORWARD/REVERSE/STOP&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P37</td>
<td>&quot;FAST/SLOW/STOP&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P38</td>
<td>&quot;FAST/OFF/SLOW&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P39</td>
<td>&quot;HIGH/LOW/STOP&quot; Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P40</td>
<td>&quot;HIGH/LOW/OFF&quot; Pushbutton</td>
<td>C 2</td>
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<tr>
<td>P41</td>
<td>Special Function Pushbutton</td>
<td>C 2</td>
</tr>
<tr>
<td>P50</td>
<td>&quot;ON-OFF&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P51</td>
<td>&quot;HIGH-LOW&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P52</td>
<td>&quot;OFF-AUTO&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P53</td>
<td>&quot;START-STOP&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P54</td>
<td>&quot;SLOW-FAST&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P55</td>
<td>&quot;FORWARD-REVERSE&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P56</td>
<td>Special Function 2-Position Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P57</td>
<td>&quot;HAND-OFF-AUTO&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P58</td>
<td>&quot;LOCAL-OFF-REMOTE&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P59</td>
<td>&quot;FAST-OFF-SLOW&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P60</td>
<td>&quot;HIGH-OFF-LOW&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P61</td>
<td>Special Function 3-Position Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P62</td>
<td>&quot;HIGH-LOW-OFF-AUTO&quot; Selector Switch</td>
<td>C 2</td>
</tr>
<tr>
<td>P63</td>
<td>Special Function 4-Position Selector Switch</td>
<td>C 2</td>
</tr>
</tbody>
</table>

1. Minimum unit size required (refer to Replacement Unit pages).
2. Customer to supply range of meter required.
3. Available only with F2100, Advantage, Series 2100/5 Star, Freedom Unitrol, F10 Unitrol and Type W. Consult factory for specific size limitations.
## Advantage Unit Options

### Table 23. Option Suffix (Continued)

<table>
<thead>
<tr>
<th>Suffix</th>
<th>Description</th>
<th>Space Required</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R</strong></td>
<td>Relay and Timer Options</td>
<td></td>
</tr>
<tr>
<td>R10</td>
<td>Auxiliary Control Relay 2-Pole (1NO/1NC) Convertible Contacts Wired in Parallel with Starter Coil</td>
<td>S</td>
</tr>
<tr>
<td>R11</td>
<td>Auxiliary Control Relay 4-Pole (2NO/2NC) Convertible Contacts Wired in Parallel with Starter Coil</td>
<td>S</td>
</tr>
<tr>
<td>R12</td>
<td>Auxiliary Control Relay 2-Pole Overload Alarm (1NO/1NC) Convertible Contacts</td>
<td>S</td>
</tr>
<tr>
<td>R13</td>
<td>Mechanical Latching Relay (Specify Connection)</td>
<td>X</td>
</tr>
<tr>
<td>R14</td>
<td>Ice Cube Relay 300 Volts 3-Pole Blade Type (Specify Connection)</td>
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</tr>
<tr>
<td>R15</td>
<td>Phase Voltage Relay</td>
<td>X</td>
</tr>
<tr>
<td>R16</td>
<td>Current Sensing Relay with Contacts Wired to Terminal Blocks</td>
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</tr>
<tr>
<td>R17</td>
<td>Deceleration Timing Relay (Pneumatic “OFF” Delay)</td>
<td>S</td>
</tr>
<tr>
<td>R18</td>
<td>Compelling Timing Relay (Pneumatic “ON” Delay)</td>
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</tr>
<tr>
<td>R19</td>
<td>Time Clock 24 Hour</td>
<td>1</td>
</tr>
<tr>
<td>R20</td>
<td>Time Clock 7 Day</td>
<td>2</td>
</tr>
<tr>
<td>R21</td>
<td>Solid-State Timer Type TR (Specify Connection)</td>
<td>S</td>
</tr>
<tr>
<td>R22</td>
<td>DN65 DeviceNet Interface Module</td>
<td>S</td>
</tr>
<tr>
<td>R23</td>
<td>D15 2-Pole Control Relay</td>
<td>C</td>
</tr>
<tr>
<td>R24</td>
<td>D15 4-Pole Control Relay</td>
<td>C</td>
</tr>
<tr>
<td><strong>S</strong></td>
<td>Starter Contact Options (Maximum of 8 Contacts)</td>
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<tr>
<td>S_._.</td>
<td>To order extra starter contacts, you must specify the number of NO/NC contacts, given a maximum of eight (8). To define the unit option required, create a suffix based on the following example:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quantity of Normally Open Contacts</td>
<td>Quantity of Normally Closed Contacts</td>
</tr>
<tr>
<td>S2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>SV</strong></td>
<td>Vacuum Starter Options</td>
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</tr>
<tr>
<td>SV4</td>
<td>Vacuum Starter Size 4 Substitution FVNR</td>
<td>1</td>
</tr>
<tr>
<td>SV5</td>
<td>Vacuum Starter Size 5 Substitution FVNR</td>
<td>2</td>
</tr>
<tr>
<td>SV6</td>
<td>Constant Horsepower Instead of Constant/Variable Torque</td>
<td></td>
</tr>
<tr>
<td><strong>T</strong></td>
<td>Terminal Block Options</td>
<td></td>
</tr>
<tr>
<td>T10</td>
<td>Pull-apart Type Terminal Blocks (Standard on all Vintages Except Type W and 11-300)</td>
<td>S</td>
</tr>
<tr>
<td>T11</td>
<td>Utility Screw Type Terminal Blocks (Add 6 inches (152.4 mm) for Every 18 Points)</td>
<td></td>
</tr>
<tr>
<td>T12</td>
<td>Front-mounted Pull-apart Terminal Block for F2100, Advantage, Series 2100/5 Star</td>
<td>S</td>
</tr>
<tr>
<td>T13</td>
<td>T-Lead Power Terminal Blocks for Size 1 Starter</td>
<td></td>
</tr>
<tr>
<td><strong>U</strong></td>
<td>Unit Wiring Options</td>
<td></td>
</tr>
<tr>
<td>U10</td>
<td>Surge Suppressor on Coil</td>
<td>C</td>
</tr>
<tr>
<td>U11</td>
<td>Type SIS Control Wire</td>
<td>C</td>
</tr>
<tr>
<td>U12</td>
<td>Type SIS Power Wire</td>
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</tr>
<tr>
<td>U13</td>
<td>Type 14 Gauge Control Wire (Standard for all Vintages Except F2100, Series 2100/5 Star, Type W and 11-300)</td>
<td>C</td>
</tr>
<tr>
<td>U14</td>
<td>Wiremarkers — Sleeve Type on all Control Wire</td>
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</tr>
<tr>
<td>U15</td>
<td>Locking Fork Terminals on all Control Wiring</td>
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</tr>
<tr>
<td>U16</td>
<td>Ring Wire Terminals on Power Wiring</td>
<td>C</td>
</tr>
<tr>
<td>U17</td>
<td>Wiring Diagram Inside Starter Unit Door</td>
<td>C</td>
</tr>
<tr>
<td>U18</td>
<td>Pre-insulated Ring Terminals on all Control Wiring</td>
<td>C</td>
</tr>
<tr>
<td>U19</td>
<td>Pre-insulated Ring Terminals on all Control Wiring, except for Freedom Starter Terminals</td>
<td>C</td>
</tr>
<tr>
<td>U20</td>
<td>Wiremarkers for Power Wiring</td>
<td>C</td>
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</table>

1. Minimum unit size required (refer to Replacement Unit pages),
2. Consult factory for spacing.
Table 24. Structure Parts

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Page</th>
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<tbody>
<tr>
<td>1</td>
<td>Blank Unit Door with Mounting Hardware</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>Vertical Bus Barrier Kit</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Shutter Kit</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Top and Side Sheet Metal Covers</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Touch-up Paint Kit</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>Vertical Bus Bar</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>Horizontal Bus Bar</td>
<td>21</td>
</tr>
<tr>
<td>6</td>
<td>Horizontal Wireway Door Kit</td>
<td>21</td>
</tr>
<tr>
<td>7</td>
<td>Horizontal Bus Barriers</td>
<td>21</td>
</tr>
<tr>
<td>8</td>
<td>Divider Pan/Guide Rails with Mounting Hardware</td>
<td>21</td>
</tr>
<tr>
<td>9</td>
<td>Vertical Wireway Door Kit</td>
<td>21</td>
</tr>
<tr>
<td>10</td>
<td>Horizontal to Vertical Bus Connection Kit</td>
<td>22</td>
</tr>
<tr>
<td>11</td>
<td>Horizontal Bus Insulator Kit</td>
<td>22</td>
</tr>
<tr>
<td>12</td>
<td>Horizontal Bus Splice Kit</td>
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</tr>
<tr>
<td></td>
<td>Door Mounting Hardware Kit</td>
<td>22</td>
</tr>
</tbody>
</table>
### Advantage Structure Parts

#### Vertical Bus Bar

This section describes the vertical bus bar with 65,000 ampere rms bus bracing.

![Vertical Bus Bar](image)

#### Vertical Bus Barrier Kit

This kit includes the Labyrinth barrier kit and is formatted as a table with descriptions and style numbers.

**Table 25. Vertical Bus Barrier Kit**

<table>
<thead>
<tr>
<th>Ampere Rating</th>
<th>Mounting Type</th>
<th>Style Number</th>
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<tbody>
<tr>
<td>300</td>
<td>Front</td>
<td>4719A90G06</td>
</tr>
<tr>
<td>600</td>
<td>Front</td>
<td>4719A90G07</td>
</tr>
<tr>
<td>800</td>
<td>Front/Back-to-Back</td>
<td>4719A90G08</td>
</tr>
<tr>
<td>1200</td>
<td>Front</td>
<td>4719A90G10</td>
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</table>

### Sheet Metal Covers with Mounting Hardware

#### Table 27. Sheet Metal Covers with Mounting Hardware

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side Sheets</td>
<td></td>
</tr>
<tr>
<td>16-Inches (406.4 mm) Deep, Front Mounted</td>
<td>4719A91G31</td>
</tr>
<tr>
<td>21-Inches (533.4 mm) Deep, Front Mounted</td>
<td>4719A91G32</td>
</tr>
<tr>
<td>21-Inches (533.4 mm) Deep, Back-to-Back Mounted</td>
<td>4719A91G33</td>
</tr>
<tr>
<td>Rear Sheets</td>
<td></td>
</tr>
<tr>
<td>20-Inches (508.0 mm) Wide x 90-Inches (2286.0 mm) High</td>
<td>4719A91G34</td>
</tr>
<tr>
<td>24-Inches (609.6 mm) Wide x 90-Inches (2286.0 mm) High</td>
<td>4719A91G35</td>
</tr>
<tr>
<td>Top Sheets</td>
<td></td>
</tr>
<tr>
<td>20-Inches (508.0 mm) Wide x 16-Inches (406.4 mm) Front Mounted</td>
<td>4719A91G36</td>
</tr>
<tr>
<td>20-Inches (508.0 mm) Wide x 21-Inches (533.4 mm) Front Mounted</td>
<td>4719A91G37</td>
</tr>
<tr>
<td>20-Inches (508.0 mm) Wide x 21-Inches (533.4 mm) Back-to-Back Mounted</td>
<td>4719A91G38</td>
</tr>
<tr>
<td>24-Inches (609.6 mm) Wide x 16-Inches (406.4 mm) Front Mounted</td>
<td>4719A91G39</td>
</tr>
<tr>
<td>24-Inches (609.6 mm) Wide x 21-Inches (533.4 mm) Front Mounted</td>
<td>4719A91G40</td>
</tr>
</tbody>
</table>

### Blank Unit Door with Mounting Hardware

#### Table 28. Blank Unit Door with Mounting Hardware

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-Inches (152.4 mm) High x 15-1/2 Inches (393.7 mm) Wide</td>
<td>4719A91G20</td>
</tr>
<tr>
<td>12-Inches (304.8 mm) High x 15-1/2 Inches (393.7 mm) Wide</td>
<td>4719A91G21</td>
</tr>
<tr>
<td>18-Inches (457.2 mm) High x 15-1/2 Inches (393.7 mm) Wide</td>
<td>4719A91G22</td>
</tr>
<tr>
<td>24-Inches (609.6 mm) High x 15-1/2 Inches (393.7 mm) Wide</td>
<td>4719A91G23</td>
</tr>
<tr>
<td>30-Inches (762.0 mm) High x 15-1/2 Inches (393.7 mm) Wide</td>
<td>4719A91G24</td>
</tr>
<tr>
<td>36-Inches (914.4 mm) High x 15-1/2 Inches (393.7 mm) Wide</td>
<td>4719A91G25</td>
</tr>
</tbody>
</table>

### Shutter Kit

#### Table 29. Shutter Kit

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit includes shutter, spring loaded coupler and mounting screws.</td>
<td>4719A91G15</td>
</tr>
</tbody>
</table>

### Touch-up Paint Kit

#### Table 30. Touch-up Paint Kit

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit includes three spray cans of ANSI-61 Gray.</td>
<td>4719A91G10</td>
</tr>
</tbody>
</table>

For more information visit: [www.cutler-hammer.eaton.com](http://www.cutler-hammer.eaton.com)
### Advantage Structure Parts

**Horizontal Bus Bar**

65,000 ampere rms bus bracing

#### Table 31. Horizontal Bus Bar — Tin-Plated Copper

<table>
<thead>
<tr>
<th>Structures Number</th>
<th>Bar Size Inches (mm)</th>
<th>Bars/Phase</th>
<th>Ampere Rating UL (50°C)</th>
<th>Ampere Rating NEMA (65°C)</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20 (508.0)</td>
<td>1/4 x 2</td>
<td>1</td>
<td>600</td>
<td>4719A97G28</td>
</tr>
<tr>
<td>2</td>
<td>40 (1016.0)</td>
<td></td>
<td></td>
<td>600</td>
<td>4719A97G29</td>
</tr>
<tr>
<td>3</td>
<td>60 (1524.0)</td>
<td></td>
<td></td>
<td>600</td>
<td>4719A97G30</td>
</tr>
<tr>
<td>1</td>
<td>20 (508.0)</td>
<td>1/4 x 2</td>
<td>1</td>
<td>—</td>
<td>800</td>
</tr>
<tr>
<td>2</td>
<td>40 (1016.0)</td>
<td></td>
<td></td>
<td>800</td>
<td>4719A97G31</td>
</tr>
<tr>
<td>3</td>
<td>60 (1524.0)</td>
<td></td>
<td></td>
<td>800</td>
<td>4719A97G32</td>
</tr>
<tr>
<td>1</td>
<td>20 (508.0)</td>
<td>1/4 x 3</td>
<td>2</td>
<td>—</td>
<td>1200</td>
</tr>
<tr>
<td>2</td>
<td>40 (1016.0)</td>
<td></td>
<td></td>
<td>1200</td>
<td>4719A97G33</td>
</tr>
<tr>
<td>3</td>
<td>60 (1524.0)</td>
<td></td>
<td></td>
<td>1200</td>
<td>4719A97G34</td>
</tr>
</tbody>
</table>

**Description**

Kit includes divider pan, guide rails with mounting hardware.

**Style Number**

4719A91G02

### Divider Pan/Guide Rails with Mounting Hardware

#### Table 34. Divider Pan/Guide Rails with Mounting Hardware

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divider pan/guide rails with mounting hardware.</td>
<td>4719A91G05</td>
</tr>
</tbody>
</table>

### Vertical Wireway Door Kit

#### Table 35. Vertical Wireway Door Kit

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit includes 4 x 45 (101.6 x 1143.0) door, hinges, hinge pins and mounting hardware.</td>
<td>4719A91G17</td>
</tr>
</tbody>
</table>

**Horizontal Wireway Door Kit**

#### Table 32. Horizontal Wireway Door Kit

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 (228.6) High x 15-1/2 (393.7) Wide (Standard Kit of 2)</td>
<td>4719A91G18</td>
</tr>
<tr>
<td>(1) 15 (381.0) High x 15-1/2 (393.7) Wide, (1) 3 (76.2) High</td>
<td>4719A91G19</td>
</tr>
</tbody>
</table>

Kit includes door, hinges, hinge pins and mounting hardware

**Horizontal Bus Barrier Kit**

#### Table 33. Horizontal Bus Barrier Kit

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 (228.6) High, Front Mounted</td>
<td>4719A91G02</td>
</tr>
<tr>
<td>15 (381.0) High, Front Mounted</td>
<td>4719A91G03</td>
</tr>
<tr>
<td>15 (381.0) High, Rear Mounted</td>
<td>4719A91G04</td>
</tr>
</tbody>
</table>

Kit includes divider pan, horizontal and vertical barriers, junction piece, and mounting hardware.
Advantage Structure Parts

Horizontal to Vertical Bus Connection Kit

**Table 36. Horizontal to Vertical Bus Connection Kit**

<table>
<thead>
<tr>
<th>Description</th>
<th>Horizontal Bus</th>
<th>Vertical Bus</th>
<th>Material</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit includes bus spacers with mounting hardware.</td>
<td>Ampere Rating</td>
<td>Bars/Phase</td>
<td>Ampere Rating</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>1</td>
<td>300</td>
<td>Cu</td>
<td>4719A97G64</td>
</tr>
<tr>
<td>800</td>
<td>2</td>
<td>300</td>
<td>Cu</td>
<td>4719A97G72</td>
</tr>
<tr>
<td>1200</td>
<td>3</td>
<td>300</td>
<td>Cu</td>
<td>4719A97G80</td>
</tr>
</tbody>
</table>

**Table 37. Horizontal Bus Splice Kit — Tin-Plated Copper**

<table>
<thead>
<tr>
<th>Description</th>
<th>UL (50°C)</th>
<th>NEMA (65°C)</th>
<th>Bus Size Inches (mm)</th>
<th>Bars/Phase</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit includes bus splice plates with mounting hardware.</td>
<td>600</td>
<td>600</td>
<td>2 (50.8)</td>
<td>1</td>
<td>4719A97G86</td>
</tr>
<tr>
<td>800</td>
<td>800</td>
<td>3 (76.2)</td>
<td>1</td>
<td>4719A97G87</td>
<td></td>
</tr>
<tr>
<td>1000</td>
<td>1000</td>
<td>3 (76.2)</td>
<td>1</td>
<td>4719A97G88</td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>1200</td>
<td>2-1/2 (63.5)</td>
<td>2</td>
<td>4719A97G91</td>
<td></td>
</tr>
</tbody>
</table>

**Horizontal Bus Insulator Kit**

**Table 38. Horizontal Bus Insulator Kit**

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit includes 2 insulators with mounting hardware.</td>
<td>4719A91G11</td>
</tr>
</tbody>
</table>

**Door Mounting Hardware Kit**

**Table 39. Door Mounting Hardware Kit**

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit includes 2 hinges, hinge pins and (2) 1/4 turn latches.</td>
<td>4719A91G26</td>
</tr>
</tbody>
</table>
Advantage Unit Parts

Table 40. Unit Parts

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Operating Handle Mechanism Kit</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>Unit Drawout Top Rail</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>Terminal Blocks</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 41. Operating Handle Mechanism Kit

Kit includes operating arm, adjustable linkage and mounting hardware.

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit Breaker Units</td>
<td></td>
</tr>
<tr>
<td>FB/MCP</td>
<td>4719A92G43</td>
</tr>
<tr>
<td>KB</td>
<td>4719A92G05</td>
</tr>
<tr>
<td>HFD/HMCP</td>
<td>4719A88G01</td>
</tr>
<tr>
<td>HMCPE</td>
<td>4700A99G69</td>
</tr>
<tr>
<td>HLD</td>
<td>4700A99G65</td>
</tr>
<tr>
<td>HJD/HKD</td>
<td></td>
</tr>
<tr>
<td>LB</td>
<td>4719A99G01</td>
</tr>
<tr>
<td>MA/MC</td>
<td>4719A92G06</td>
</tr>
<tr>
<td>NB</td>
<td>4719A92G07</td>
</tr>
<tr>
<td>FCL</td>
<td></td>
</tr>
<tr>
<td>LCL</td>
<td>4719A92G08</td>
</tr>
<tr>
<td>HFD/HMCP</td>
<td>4719A92G44</td>
</tr>
<tr>
<td>6-inch (152.4 mm) Unit</td>
<td>4719A92G45</td>
</tr>
<tr>
<td>Fusible Switch Units</td>
<td></td>
</tr>
<tr>
<td>30/60/100A K Switch</td>
<td>5A10098G01</td>
</tr>
<tr>
<td>200A K Switch</td>
<td>5A10098G03</td>
</tr>
<tr>
<td>400A K Switch</td>
<td>5A10098G05</td>
</tr>
</tbody>
</table>
Advantage Unit Parts

Unit Drawout Top Rail

Terminal Blocks

Table 42. Unit Drawout Top Rail

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Top Rail with Hardware</td>
<td>4719A92G02</td>
</tr>
</tbody>
</table>

Table 43. Terminal Blocks

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>White, 7 Circuit, Pull-apart</td>
<td>4719A92G57</td>
</tr>
</tbody>
</table>

Primary/Secondary Fuse Holder Kit

Table 44. Primary/Secondary Fuse Holder Kit

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kit includes fuse block, mounting bracket and screws.</td>
<td>4719A92G59</td>
</tr>
</tbody>
</table>

Control Transformers (480/240V to 120V Single-Phase)

Table 45. Control Transformers (480/240V to 120V Single-Phase)

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 VA</td>
<td>4719A92G46</td>
</tr>
<tr>
<td>100 VA</td>
<td>4719A92G48</td>
</tr>
<tr>
<td>150 VA</td>
<td>4719A92G49</td>
</tr>
<tr>
<td>200 VA</td>
<td>4719A92G50</td>
</tr>
<tr>
<td>250 VA</td>
<td>4719A92G51</td>
</tr>
<tr>
<td>300 VA</td>
<td>4719A92G52</td>
</tr>
<tr>
<td>350 VA</td>
<td>4719A92G53</td>
</tr>
<tr>
<td>500 VA</td>
<td>4719A92G54</td>
</tr>
</tbody>
</table>

Device Panel/Pivot Tube with Mounting Hardware

Table 46. Device Panel/Pivot Tube with Mounting Hardware

<table>
<thead>
<tr>
<th>Description</th>
<th>Style Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device panel/pivot tube with mounting hardware.</td>
<td>4719A92G03</td>
</tr>
<tr>
<td>1 ACM and 2 Pilot Device Knockouts</td>
<td>1161D43H03</td>
</tr>
<tr>
<td>1 ACM Knockouts</td>
<td>1161D43H02</td>
</tr>
</tbody>
</table>

K-SW Clip Change Over Information

Fuse Clip Kits are the parts you will need to order to change out the fuse clips on an order.

The kits include clips and hardware for the switch and fuse block. Refer to VISTA for pricing.

Table 47. Fuse Clip Kits

<table>
<thead>
<tr>
<th>Need</th>
<th>Order Kit Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 Ampere 600V/R</td>
<td>C351KC21R</td>
</tr>
<tr>
<td>30A 600V/J</td>
<td>C351KD71</td>
</tr>
<tr>
<td>30A 600V/R</td>
<td>C351KD22-61R</td>
</tr>
<tr>
<td>30A Form II</td>
<td>C351KD81</td>
</tr>
<tr>
<td>60A 250V/R</td>
<td>C351KD22-61R</td>
</tr>
<tr>
<td>60A 600V/J</td>
<td>C351KD72</td>
</tr>
<tr>
<td>60A 600V/R</td>
<td>C351KD62R</td>
</tr>
<tr>
<td>60A Form II</td>
<td>C351KD82</td>
</tr>
<tr>
<td>100 Ampere 600V/R</td>
<td>C351KE23-63</td>
</tr>
<tr>
<td>100A 600V/J</td>
<td>C351KE73</td>
</tr>
<tr>
<td>100A 600V/R</td>
<td>C351KE23-63</td>
</tr>
<tr>
<td>100A Form II</td>
<td>C351KE83</td>
</tr>
<tr>
<td>200 Ampere 600V/R</td>
<td>C351KF24-64</td>
</tr>
<tr>
<td>200A 600V/J</td>
<td>C351KF74</td>
</tr>
<tr>
<td>200A 600V/R</td>
<td>C351KF24-64</td>
</tr>
<tr>
<td>200A Form II</td>
<td>C351KF84</td>
</tr>
</tbody>
</table>
How to Create a Catalog Number

After selecting the circuit device required, create a Dual Mounted feeder unit catalog number based on the following:

**Note:** Catalog number varies in length based on single or dual mounted unit.

**Table 48. Catalog Numbering System Example**

```
<table>
<thead>
<tr>
<th>Type MCC</th>
<th>Device Type</th>
<th>Type of Unit</th>
<th>Trip or Clip Rating</th>
<th>Trip or Clip Rating for Dual Mounted Only</th>
<th>Unit Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>FZ = F2100</td>
<td>F = HFD</td>
<td>1 = Single</td>
<td>A = 15</td>
<td>M = 125</td>
<td>06 = 6-inch (152.4 mm)</td>
</tr>
<tr>
<td>FK = Advantage</td>
<td>J = HJD</td>
<td>2 = Dual</td>
<td>B = 20</td>
<td>N = 150</td>
<td>12 = 12-inch (304.8 mm)</td>
</tr>
<tr>
<td>FS = Series 2100/S Star</td>
<td>K = HKD</td>
<td></td>
<td>C = 25</td>
<td>P = 175</td>
<td>14 = 14-inch (355.6 mm)</td>
</tr>
<tr>
<td>FD = Freedom Unitrol</td>
<td>L = HLD</td>
<td></td>
<td>D = 30</td>
<td>Q = 200</td>
<td>18 = 18-inch (457.2 mm) or 18-2/3 inch (474.2 mm)</td>
</tr>
<tr>
<td>FR = F10 Unitrol</td>
<td>F = Switch</td>
<td></td>
<td>E = 40</td>
<td>R = 225</td>
<td>24 = 24-inch (609.6 mm)</td>
</tr>
<tr>
<td>FT = Type W</td>
<td></td>
<td></td>
<td>F = 50</td>
<td>S = 250</td>
<td>28 = 28-inch (711.2 mm)</td>
</tr>
<tr>
<td>FN = 9800 Unitrol</td>
<td></td>
<td></td>
<td>G = 60</td>
<td>T = 300</td>
<td>30 = 30-inch (762.0 mm)</td>
</tr>
<tr>
<td>FJ = 11-300</td>
<td></td>
<td></td>
<td>H = 70</td>
<td>W = 350</td>
<td>36 = 36-inch (914.4 mm)</td>
</tr>
</tbody>
</table>
```

NEMA is the registered trademark and service mark of the National Electrical Manufacturers Association. UL is a registered trademark of Underwriters Laboratories Inc.
Replacement Feeder Units

Product Description
Each Feeder Unit consists of a single mounted 3-pole molded case circuit breaker or fusible switch (dual mounted are also available). Each unit includes a new wrapper, stab assembly, door, handle mechanism and customer specific disconnect device. They are shipped assembled and ready to install into the existing motor control center.

The following are simple steps to select and order a new feeder unit:

Step 1
Select the circuit device required from the Table 49 below.

Step 2
Verify the amount of space available.

Step 3
Create a catalog number from the formula on Table 48 on Page 25.

Unit options and modifications for replacement feeder units:
For factory installed molded case circuit breaker modifications or additional unit options, contact the factory for prices and availability.

Table 49. Electrical Characteristics and Space Requirements of Molded Case Circuit Breakers and Fusible Switch Replacement Feeder Units — Inches (mm)

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Maximum Ampere(s)</th>
<th>Interrupting Rating (kAIC)</th>
<th>Trip Rating or Clip</th>
<th>Freedom 2100 Series 2100/5 Star Advantage</th>
<th>Freedom Unitrol</th>
<th>F10</th>
<th>Type W</th>
<th>9800</th>
<th>11-300</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>240V</td>
<td>480V</td>
<td>600V</td>
<td>Single</td>
<td>Dual</td>
<td>Dual</td>
<td>Single</td>
<td>Dual</td>
<td>Single</td>
</tr>
<tr>
<td>HFD 150</td>
<td>100</td>
<td>65</td>
<td>25</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6  6  (152.4)</td>
<td>6  6  (152.4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>90</td>
<td></td>
<td></td>
<td>12 12 (304.8)</td>
<td>12 12 (304.8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12 12 (304.8)</td>
<td>12 12 (304.8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
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1 Combined ampacity no greater than 150A for 12-inch (304.8 mm) height. For greater than 150A, 18-inch (457.2 mm) required.
2 100A maximum.
3 Available in 18-inch (457.2 mm) height.
4 Cable in/cable out, no stab assembly.
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