The curves in this Application Data are to be used in conjunction with Application Data 29-160. Curves for standard and MARK 75® breakers have been combined on the same sheet.

To locate curves for particular breakers, refer to the index at right.

<table>
<thead>
<tr>
<th>Breaker Description</th>
<th>Curve No.</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types EB, EHB; MARK 75 Type HFB; 15-40 Amperes, 1 Pole</td>
<td>SC-3506-77</td>
<td>3</td>
</tr>
<tr>
<td>Types EB, EHB; MARK 75 Type HFB; 50-70 Amperes, 1 Pole</td>
<td>SC-3507-77</td>
<td>4</td>
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<tr>
<td>Types EB, EHB; MARK 75 Type HFB; 90-100 Amperes, 1 Pole</td>
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</tr>
<tr>
<td>Types EB, EHB, FB; MARK 75 Type HFB; 15-40 Amperes, 2, 3 Poles</td>
<td>SC-3509-77</td>
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<tr>
<td>Types EB, EHB, FB; MARK 75 Type HFB; 50-70 Amperes, 2, 3 Poles</td>
<td>SC-3510-77</td>
<td>7</td>
</tr>
<tr>
<td>Types EB, EHB; 90-100 Amperes, 2, 3 Poles</td>
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<td>8</td>
</tr>
<tr>
<td>Type FB; MARK 75 Type HFB; 90-150 Amperes, 2, 3 Poles</td>
<td>SC-3511-77</td>
<td>8</td>
</tr>
<tr>
<td>Type FB Magnetic Only with Current Limiter; 3-150 Amperes, 3 Poles</td>
<td>SC-3513-77</td>
<td>9</td>
</tr>
<tr>
<td>LFB Current Limiter for Type FB, 3 Pole. Thermal Magnetic Breakers</td>
<td>SC-3512-77A</td>
<td>10</td>
</tr>
<tr>
<td>Types J, KB; MARK 75 Type HKB; 70-250 Amperes, 2, 3 Poles</td>
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</tr>
<tr>
<td>Types J, KA; MARK 75 Type HKA; 125-225 Amperes, 2, 3 Poles</td>
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<tr>
<td>Type DA, 250-400 Amperes, 2, 3 Poles</td>
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<td>Types LBB, LB; MARK 75 Type HLB; 70-400 Amperes, 2, 3 Poles</td>
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<tr>
<td>Types LAB, LA; MARK 75 Type HLA; 125-400 Amperes, 2, 3 Poles</td>
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<tr>
<td>Type LA, MARK 75 Type HLA; 250-600 Amperes, 2, 3 Poles</td>
<td>SC-3517-77</td>
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<tr>
<td>Type MA, MARK 75 Type HMA; 125-250 Amperes, 2, 3 Poles</td>
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<tr>
<td>Type MA, MARK 75 Type HMA; 700-800 Amperes, 2, 3 Poles</td>
<td>SC-3522-77</td>
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<tr>
<td>Type NB, MARK 75 Type HNB; 800-1200 Amperes, 2, 3 Poles</td>
<td>SC-3524-77</td>
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<tr>
<td>Type PB, 600-1600 Amperes, 2, 3 Poles</td>
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<tr>
<td>Type PB, 1800-3000 Amperes, 2, 3 Poles</td>
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<td>Types LC, LCA, LCG, HLC, HLCG, 2-3 Poles</td>
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<td>22</td>
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<td>23</td>
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<td>Types LC, LCA, LCG, HLC, HLCG, 2-3 Poles</td>
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<td>Types LC, LCA, LCG, HLC, HLCG, 2-3 Poles</td>
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### AB DE-ION Circuit Breakers

<table>
<thead>
<tr>
<th>Breaker Description</th>
<th>Curve No.</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>Types PC, PCC, PCG, PCCG, PCF, PCCF, PCFG, PCCFG; 1000-2000 Amperes, 2-3 Poles</td>
<td>SC-3607-81A</td>
<td>44</td>
</tr>
<tr>
<td>Types PCA, PCCA, PCGA, PCCGA, PCFA, PCCFA, PCFGA, PCCFGA; 1000-2000 Amperes, 2-3 Poles</td>
<td>SC-3619-81A</td>
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</tr>
<tr>
<td>Types PC, PCC, PCG, PCG, PCF, PCFG, PCFG; 1400-2500 Amperes, 2-3 Poles</td>
<td>SC-3608-81A</td>
<td>46</td>
</tr>
<tr>
<td>Types PCA, PCCA, PCGA, PCCGA, PCFA, PCCFA, PCFGA, PCCFGA; 1400-2500 Amperes, 2-3 Poles</td>
<td>SC-3620-81A</td>
<td>47</td>
</tr>
<tr>
<td>Types PC, PCC, PCG, PCCG; 1600-3000 Amperes, 2-3 Poles</td>
<td>SC-3609-81A</td>
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<tr>
<td>Types PCA, PCCA, PCGA, PCCGA; 1600-3000 Amperes, 2-3 Poles</td>
<td>SC-3621-81A</td>
<td>49</td>
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<tr>
<td>Types PCG, PCGA, PCCG, PCCGA, PCFG, PCFGA, PCCFGA</td>
<td>SC-3610-81</td>
<td>50</td>
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<tr>
<td>Ground Fault Pick-up Curves</td>
<td>SC-3610-81</td>
<td>50</td>
</tr>
<tr>
<td>MCP Motor Circuit Protector, 3-150 Amperes, 600 Volts AC, with Current Limiter Attachment</td>
<td>SC-3505-76</td>
<td>51</td>
</tr>
<tr>
<td>MCP Motor Circuit Protector, 250 and 400 Amperes, 600 Volts AC</td>
<td>SC-3637-76</td>
<td>52</td>
</tr>
</tbody>
</table>

Individual oversize copies of curves listed above printed on onion-skin paper are available in limited quantity from:

Cutler-Hammer
Customer Support Center
Five Parkway Center
Pittsburgh, PA 15220

When ordering onion-skin curves, use number at bottom of page where curve appears, i.e., SC-3506-77. **Requests for full sets of curves will not be honored.**
Types EB, EHB; MARK 75 Type HFB; 15-40 Amperes, 1 Pole

**Curve No. SC-3506-77**

### Circuit Breaker Time/Current Curves

**Types EB, EHB, HFB Breakers, One Pole**

Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (60/75°C) per terminal. Tested in open air with current in all poles.

#### Maximum Volts

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>AC Volts</th>
<th>DC Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>120</td>
<td>125</td>
</tr>
<tr>
<td>EHB</td>
<td>277</td>
<td>125</td>
</tr>
<tr>
<td>HFB</td>
<td>277</td>
<td>125</td>
</tr>
</tbody>
</table>

#### Breaker Ratings

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>Continuous Amps</th>
<th>Instantaneous Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>15-40</td>
<td></td>
</tr>
<tr>
<td>EHB</td>
<td>10-150</td>
<td></td>
</tr>
<tr>
<td>HFB (15-30 Amps)</td>
<td>10,000-25,000</td>
<td></td>
</tr>
<tr>
<td>HFB (40 Amps)</td>
<td>10,000-25,000</td>
<td></td>
</tr>
</tbody>
</table>

#### Interrupting Rating (UL Listed)

- **Type**: EB, EHB, HFB
- **50 Hz**: 10,000 to 25,000 Amperes
- **60 Hz**: 10,000 to 20,000 Amperes

**Single pole test data at 25°C based on NEMA Procedure for verifying performance of Molded Case Circuit Breakers.**

---

**Current in Percent of Breaker Trip Unit Rating**

- Maximum Single Pole Trip Times at 25°C
- Minimum
- Maximum

**Maximum Interrupting Time**

**Interrupting Rating (See Tabulation Above)**

---

**October 1997**

---

**Application Data 29-168**

Page 3
AB DE-ION Circuit Breakers

Types EB, EHB; MARK 75 Type HFB; 50-70 Amperes, 1 Pole

**Circuit Breaker Time/Current Curves**

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>AC Volt, 60 Hz</th>
<th>DC Volt</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>120</td>
<td>125</td>
</tr>
<tr>
<td>EHB, HFB</td>
<td>277</td>
<td>125</td>
</tr>
</tbody>
</table>

**Interruption Rating (UL Listed)**

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>Symmetrical RMS</th>
<th>DC Amps</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>120 Volts</td>
<td>277 Volts</td>
</tr>
<tr>
<td>EB</td>
<td>10,000</td>
<td>5,000</td>
</tr>
<tr>
<td>EHB, HFB</td>
<td>14,000</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>25,000</td>
<td>10,000</td>
</tr>
</tbody>
</table>

- Single pole test data at 25°C based on NEMA Procedures for verifying performance of Molded Case Circuit Breakers.
Types EB, EHB; MARK 75 Type HFB; 90-100 Amperes, 1 Pole

Circuit Breaker Time/Current Curves

Types EB, EHB, HFB Breakers, One Pole
Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire at 45°F (7°C) per terminal. Tested in open air with current in all poles.

Maximum Volts

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>AC Volts</th>
<th>DC Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB, EHB, HFB</td>
<td>120</td>
<td>125</td>
</tr>
</tbody>
</table>

Minimum Interrupting Times

For verifying performance of Molded Case Circuit Breakers.

Maximum Interrupting Time

Interruption Rating (UL Listed)

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>Symmetrical RMS</th>
<th>DC Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>10,000</td>
<td>5,000</td>
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<tr>
<td>EHB</td>
<td>10,000</td>
<td>5,000</td>
</tr>
<tr>
<td>HFB</td>
<td>10,000</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Maximum Single Pole Trip Times at 25°C

Curve No. SC-3508-77

October 1997
AB DE-ION Circuit Breakers

Types EB, EHB, FB; MARK 75 Type HFB; 15-40 Amperes, 2, 3 Poles

Maximum Single Pole Trip Times at 25°C

Maximum Interrupting Time

Interrupting Rating (See Tabulation Above)

Circuit Breaker Time/Current Curves

Types EB, EHB, FB, HFB Breakers, Two and Three Poles

Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (60/75°C) per terminal. Tested in open air with current in all poles.

Maximum Volts

<table>
<thead>
<tr>
<th>Breaker</th>
<th>Ac Volts</th>
<th>Dc Volts</th>
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<tbody>
<tr>
<td>EB</td>
<td>240</td>
<td>125/250</td>
</tr>
<tr>
<td>EHB</td>
<td>480</td>
<td>250</td>
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<tr>
<td>FB</td>
<td>600</td>
<td>250</td>
</tr>
<tr>
<td>HFB</td>
<td>600</td>
<td>250</td>
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Breaker Ratings

Continuous Instantaneous

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<th>Commercial RMS Amperes</th>
<th>Dc Amps</th>
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<tr>
<td>EB</td>
<td>10,000</td>
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<tr>
<td>EHB</td>
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<tr>
<td>FB</td>
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<td>8,000</td>
</tr>
<tr>
<td>HFB</td>
<td>65,000</td>
<td>25,000</td>
</tr>
</tbody>
</table>

(1) Single pole test data at 25°C based on NEMA Procedures for verifying performance of Molded Case Circuit Breakers.

Curve No. SC-3509-77
Types EB, EHB, FB, MARK 75 Type HFB; 50-70 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire per terminal. Tested in open air with current in all poles.

Maximum Volts

<table>
<thead>
<tr>
<th>Type</th>
<th>Ac Volts</th>
<th>Dc Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB</td>
<td>240</td>
<td>125/250</td>
</tr>
<tr>
<td>EHB</td>
<td>480</td>
<td>250</td>
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<tr>
<td>FB, HFB</td>
<td>600</td>
<td>250</td>
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</table>

Maximum Single Pole Trip Times at 25°C

Maximum Interrupting Time

Interrupting Rating (UL Listed)

<table>
<thead>
<tr>
<th>Type</th>
<th>Symmetrical RMS Amperes</th>
<th>Dc Amps</th>
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</thead>
<tbody>
<tr>
<td>EB</td>
<td>10,000</td>
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<tr>
<td>EHB</td>
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<td>. . . . . .</td>
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<tr>
<td>FB</td>
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<tr>
<td>HFB</td>
<td>65,000</td>
<td>20,000</td>
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</table>

Single pole test data at 25°C based on NEMA Procedures for verifying performance of Molded Case Circuit Breakers.
AB DE-ION Circuit Breakers
Types EB, EHB; 90-100 Amperes, 2, 3 Poles Types FB; MARK 75 Type HFB; 90-150 Amperes, 2, 3 Poles

For application and coordination purposes only. Based on 48°C ambient, cold start. Connected with four (4) feet of rated wire per terminal. Tested in open air with current in all poles.

Circuit Breaker Time/Current Curves
Types EB, EHB, FB, HFB Breakers, Two and Three Poles
Westinghouse Electric Corporation

Maximum Single Pole Trip Times at 25°C

Interrupting Rating (UL Listed)
Breaker Type 240 Volts 480 Volts 600 Volts
EB 10,000 14,000 14,000
EHB 10,000 14,000 14,000
FB 80,000 18,000 10,000
HFB 400,000 25,000 20,000

Single pole test data at 25°C based on NEMA Procedures for verifying performance of Molded Case Circuit Breakers.

Curve No. SC-3511-77

October 1997
Type FB Magnetic Only with Current Limiter; 3-150 Amperes, 3 Poles

- Maximum Breaker Interrupting Time

<table>
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<th>Breaker Rating (Amps)</th>
<th>One Circuit Interrupter Rating Number</th>
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<td>2</td>
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<td>3</td>
<td>LFB3003MR</td>
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<td>5</td>
<td>LFB3005MR</td>
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<tr>
<td>10</td>
<td>LFB3010MR</td>
</tr>
<tr>
<td>20</td>
<td>LFB3020MR</td>
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<td>30</td>
<td>LFB3030MR</td>
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<td>70</td>
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<td>200</td>
<td>LFB3200MR</td>
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<td>LFB3900MR</td>
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<tr>
<td>10,000</td>
<td>LFB3100MR</td>
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Curve No. SC-3513-77

October 1997
AB DE-ION Circuit Breakers

LFB Current Limiter for Type FB, 3 Pole, Thermal Magnetic Breakers

Use This Curve in Conjunction With the Standard 3 Pole Thermal Magnetic FB Breaker Curves

Breaker Rating | Use Limiter
--- | ---
Up to 70 Amps | LFB3070R
80-150 Amps | LFB3150R

To Determine the Coordination of the Current Limiter and FB Breaker, Place the Specific Breaker Rating Below on the 100% Line of the Appropriate 3 Pole FB Curve

Curve No. SC-3512-77A
Types JB, KB, MARK 75 Type HKB, 70-250 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves

Types JB, KB, HKB Breakers, Two and Three Poles

Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (60/75°C up to 100 amps, 75°C above 100 amps) per terminal.

Maximum Ac Volts: 600 at 60 Hz

Maximum Dc Volts: 250

Breaker Ratings

<table>
<thead>
<tr>
<th>Continuous Amperes</th>
<th>Instantaneous Trip, Amperes</th>
<th>Trip Unit Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-250</td>
<td>500-1000%</td>
<td></td>
</tr>
</tbody>
</table>

Interrupting Rating (UL Listed)

<table>
<thead>
<tr>
<th>Breaker Symmetrical RMS Amperes</th>
<th>Dc Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 Volts</td>
<td>14,000</td>
</tr>
<tr>
<td>480 Volts</td>
<td>18,000</td>
</tr>
<tr>
<td>600 Volts</td>
<td>18,000</td>
</tr>
<tr>
<td>250 Volts</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Interrupting Time (See Tabulation Above)

Magnetic Trip Adjustable

Maximum Single Pole Trip Times at 25°C

- High (±10%)
- Low (±25%)
AB DE-ION Circuit Breakers

Types JA, KA; MARK 75 Type HKA; 70-225 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves

Types JA, KA, HKA Breakers, Two and Three Poles

Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (60°C up to 100 amps, 70°C above 100 amps) per terminal.

Maximum Ac Volts: 600 at 60 Hz
Maximum Dc Volts: 250

Breaker Ratings

<table>
<thead>
<tr>
<th>Type</th>
<th>Continuous Amperes</th>
<th>Instantaneous Trip, Amperes</th>
<th>Dc Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-225</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JA, KA</td>
<td>25,000</td>
<td>22,000</td>
<td></td>
</tr>
<tr>
<td>HLB</td>
<td>65,000</td>
<td>35,000</td>
<td></td>
</tr>
</tbody>
</table>

Adjustable Magnetic Trip

Maximum Single Pole Trip Times at 25°C

Interrupting Rating (UL Listed)

<table>
<thead>
<tr>
<th>Type</th>
<th>480 Volts</th>
<th>600 Volts</th>
<th>750 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>JA, KA</td>
<td>10,000</td>
<td>22,000</td>
<td>22,000</td>
</tr>
<tr>
<td>HLB</td>
<td>30,000</td>
<td>30,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

Note: Single pole test data at 25°C based on NEMA Procedures for verifying performance of Molded Case Circuit Breakers.
Types CA, CAH, HCA, 125-225 Amperes, 2 and 3 Poles

Circuit Breaker Time/Current Curves
Types CA, CAH and HCA Breakers, 2 and 3 Poles
For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (75°C) per terminal. Tested in open air with current in all poles.

Maximum As Volts
CA, CAH, HCA Breakers: 240 at 60 Hz

Breaker Rating
Continuous
Amperes
125-225 See Curve

Interrupting Rating (UL Listed)
Breaker Symmetrical RMS Amperes
Type
240 Volts
CA
20,000
CAH
22,000
HCA
22,000

† Single-pole test data at 25°C based on NEMA procedures for verifying performance of molded case circuit breakers.
Table 1: Type DA Breaker, Two and Three Poles

<table>
<thead>
<tr>
<th>Current (A)</th>
<th>Single Pole Trip Time (s) at 25°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0.05</td>
</tr>
<tr>
<td>200</td>
<td>0.1</td>
</tr>
<tr>
<td>300</td>
<td>0.2</td>
</tr>
<tr>
<td>400</td>
<td>0.3</td>
</tr>
<tr>
<td>500</td>
<td>0.4</td>
</tr>
<tr>
<td>600</td>
<td>0.5</td>
</tr>
<tr>
<td>700</td>
<td>0.6</td>
</tr>
<tr>
<td>800</td>
<td>0.7</td>
</tr>
<tr>
<td>900</td>
<td>0.8</td>
</tr>
<tr>
<td>1000</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Note: Single-pole test data at 25°C based on NEMA Procedure for verifying performance of Molded Case Circuit Breakers.
AB DE-ION Circuit Breakers
Types LBB, LB; MARK 75 Type HLB; 70-400 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves
Types LB, LBB, HLB Breakers, Two and Three Poles
Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (60/75°C up to 100 amps, 75°C above 100 amps) per terminal. Tested in open air with current in all poles.

Maximum Ac Volts: 600 at 60 Hz
Maximum Dc Volts: 250

Breaker Ratings

<table>
<thead>
<tr>
<th>Continuous Amperes</th>
<th>Instantaneous Trip, Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>70-400</td>
<td>500-1000% Trip Unit Rating</td>
</tr>
</tbody>
</table>

Interrupting Rating (UL Listed)

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>240 Volts</th>
<th>480 Volts</th>
<th>600 Volts</th>
<th>250 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>LB, LBB</td>
<td>62,000</td>
<td>35,000</td>
<td>22,000</td>
<td>20,000</td>
</tr>
<tr>
<td>HLB</td>
<td>45,000</td>
<td>25,000</td>
<td>20,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>

Single pole test data at 25°C based on NEMA Procedures for verifying performance of Molded Case Circuit Breakers.
Types LAB, LA; MARK 75 Type HLA; 70-400 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves

Type LAB-400, LA-400, HLA-400 Breakers, Two and Three Poles
Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C
ambient, cold start. Connected with four (4) feet of rated wire
(60°C up to 100 amps, 75°C above 100 amps) per terminal.
Tested in open air with current in all poles.

Maximum Ac Volts: 600 at 60 Hz
Maximum Dc Volts: 250

Breaker Ratings

<table>
<thead>
<tr>
<th>Continuous Amperes</th>
<th>Instantaneous Trip, Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-400</td>
<td>500-1000% Trip Unit Rating</td>
</tr>
</tbody>
</table>

Interrupting Rating (UL Listed)

<table>
<thead>
<tr>
<th>Type</th>
<th>Breaker</th>
<th>Interrupter RMS Amperes</th>
<th>Dc Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAB-400</td>
<td>62,000</td>
<td>30,000</td>
<td>22,000</td>
</tr>
<tr>
<td>LA-400</td>
<td>65,000</td>
<td>35,000</td>
<td>25,000</td>
</tr>
<tr>
<td>HLA-400</td>
<td>65,000</td>
<td>35,000</td>
<td>25,000</td>
</tr>
</tbody>
</table>

Single-pole test data at 25°C based on NEMA Procedures for
verifying performance of Molded Case Circuit Breakers.
AB DE-ION Circuit Breakers

Type LA, MARK 75 Type HLA; 250-600 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves

Type LA-600, HLA-600 Breakers, Two and Three Pole
Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°F ambient, cold start. Connected with full #6 feet of stranded wire.

Maximum Single Pole Trip Times at 25°C

Maximum Interrupting Time

Interrupting Rating (See Tabulation Above)

Adjustable Magnetic Trip

Current in Percent of Breaker Trip Unit Rating

Maximum Single Pole Trip Times at 25°C

Low (+25%)
High (+10%)

Single pole test data at 25°C based on NEMA Procedure for
verifying performance of Molded Case Circuit Breakers.
Type MA, MARK 75 Type HMA; 125-600 Amperes, 2, 3 Poles

### Circuit Breaker Time/Current Curves

Type MA, HMA Breakers, Two and Three Pole

Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (75°C) per terminal. Tested in open air with current in all poles.

Maximum Ac Volts:
- 600 at 60 Hz

Maximum Dc Volts: 250

#### Breaker Ratings

<table>
<thead>
<tr>
<th>Continuous Amperes</th>
<th>Instantaneous Trip, Amperes</th>
<th>Symmetrical RMS Amperes</th>
<th>DC Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>125-600</td>
<td>500-1000% Trip Unit Rating</td>
<td>240 Volt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>288 Volt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>320 Volt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>360 Volt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 Volt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>440 Volt</td>
<td></td>
</tr>
</tbody>
</table>

**Type HMA**


---

**Current IN PERCENT OF BREAKER TRIP UNIT RATING**

**Voltage IN PERCENT OF BREAKER TRIP UNIT RATING**

**Time IN SECONDS**

**Adjustable Magnetic Trip**

**Maximum Interrupting Time**

**Interpreting Rating (UL Listed)**

**Breaker Type**

- **MA**
  - 100,000
  - 80,000
  - 60,000
  - 90,000
  - 70,000
  - 50,000
  - 40,000
  - 30,000
  - 20,000
  - 10,000
  - 8,000
  - 6,000
  - 9,000
  - 7,000
  - 5,000
  - 4,000
  - 3,000
  - 2,000
  - 1,000

- **HMA**
  - 100,000
  - 80,000
  - 60,000
  - 90,000
  - 70,000
  - 50,000
  - 40,000
  - 30,000
  - 20,000
  - 10,000
  - 8,000
  - 6,000
  - 9,000
  - 7,000
  - 5,000
  - 4,000
  - 3,000
  - 2,000
  - 1,000
AB DE-ION Circuit Breakers

Type MA, MARK 75 Type HMA; 700-800 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves

For application and coordination purposes only. Based on 40°C ambient, cold start. Constrained with four (4) feet of rated wire, (75°C) per terminal. Tested in open air with current in all poles.

Maximum As Volt: 600 at 60 Hz

Breaker Ratings

<table>
<thead>
<tr>
<th>Type</th>
<th>Continuous Amperes</th>
<th>Instantaneous Trip, Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA</td>
<td>39,000</td>
<td>24,000</td>
</tr>
<tr>
<td>HMA</td>
<td>55,000</td>
<td>35,000</td>
</tr>
</tbody>
</table>

Interrupting Rating (UL Listed)

<table>
<thead>
<tr>
<th>Type</th>
<th>Symmetrical RMS Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA</td>
<td>25,000</td>
</tr>
<tr>
<td>HMA</td>
<td>25,000</td>
</tr>
</tbody>
</table>

Single pole test data at 25°C based on NEMA Procedures for verifying performance of Molded Case Circuit Breakers.
Type NB, MARK 75 Type HNB; 800-1200 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves

Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (75°C) per terminal. Tested in open air with current in all poles.

Maximum As Volts: 600 at 60 Hz

Breaker Ratings

<table>
<thead>
<tr>
<th>Continuous Amps</th>
<th>Instantaneous Trip, Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>700-1200</td>
<td>3000-6000</td>
</tr>
<tr>
<td>900-1200</td>
<td>4000-8000</td>
</tr>
<tr>
<td>1000-1200</td>
<td>5000-10000</td>
</tr>
</tbody>
</table>

Interrupting Rating (UL Listed)

<table>
<thead>
<tr>
<th>Breaker Type</th>
<th>Symmetrical RMS Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>240 Volts 600,000</td>
</tr>
<tr>
<td>HNB</td>
<td>450 Volts 900,000</td>
</tr>
</tbody>
</table>

Single pole test data at 25°C based on NEMA Procedures for verifying performance of Molded Case Circuit Breakers.
AB DE-ION Circuit Breakers

Type PB, 600-1600 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves
Type PB Breaker, Two and Three Poles
Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (75°C) per terminal. Tested in open air with current in all poles.

Maximum Ac Volts:
- 600 at 60 Hz

Breaker Ratings
Continuous Amperes

PB

Interrupting Rating (UL Listed)

Symmetrical RMS Amperes

PB

0.001
0.002
0.003
0.005
0.01
0.02
0.03
0.05
0.1
0.2
0.3
0.5
1
2
3
5
10
20
30
50
100
200
300
500
1000
2000
3000
4000
5000
6000
7000
8000
9000
10,000

Maximum Single Pole Trip Times at 25°C
(For 600-1600 Amp Ratings)

Maximum Single Pole Trip Times at 25°C
(For 1000-1600 Amp Ratings)

Adjustable Magnetic Trip
Low (±25%)
1000, 1200, 1400, 1600 Amps
600 Amps
600, 1400, 1600 Amps
1200 Amps
1000 Amps

Maximum Short Time Delay
Minimum Short Time Delay

Maximum Interrupting Time
Interrupting Rating (See Tabulation Above)

100, 1200, 1400, 1600 Amps
600 Amps
600 Amps
1000, 1200, 1400, 1600 Amps
2000-6000 (1200 Amps)
2500-7000 (1400 Amps)
3000-8000 (1600 Amps)

1000, 1400, 1600 Amps
600 Amps
600, 1400, 1600 Amps
1200 Amps
1000 Amps

Maximum
Minimum

October 1997
Type PB, 1800-3000 Amperes, 2, 3 Poles

Circuit Breaker Time/Current Curves

Type PB Breaker, Two and Three Poles

Westinghouse Electric Corporation

For application and coordination purposes only. Based on 40°C ambient, cold start. Connected with four (4) feet of rated wire (75°C) per terminal. Tested in open air with current in all poles.

Maximum Ac Volts:
- 600 at 60 Hz

Breaker Ratings
Continuous Amperes
- 1800-3000
- 4000-12,000

Interrupting Rating (UL Listed)
Breaker Symmetrical RMS Amperes
- 240 Volts: 125,000
- 480 Volts: 100,000
- 600 Volts: 100,000

Adjustable Magnetic Trip
- Low (±25%)
- High (±10%)

Maximum Single Pole Trip Times at 25°C
- 2000 Amps: 2500 Amps: 3000 Amps: 1800 Amps

Maximum Short Time Delay
- Adjustable

Interrupting Rating (See Tabulation Above)

Maximum Interrupting Time

Curve No. SC-3528-77
AB DE-ION Circuit Breakers
Types LC, LCG; MARK 75 Types HLC, HLCG; 75-150 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves
Types LC, LCG, HLC, HLCG Breakers, Two and Three Poles
Westinghouse Electric Corporation

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum Ac Volts 600, 50/60 Hz

Continuous Amperes
Short Delay Pickup Settings
75-150 3x to 10x rating plug value with calibration settings as shown on curves (Tolerance ±10%)

Interrupting Rating (UL/CSA Listed)
Frame 240 Volts 480 Volts 600 Volts
LC, LCG 24,000 30,000 22,000
HLC, HLCG 35,000 35,000 25,000

Rating Plugs Available
Continuous Amperes
Frame Range of Adjustment
240 Volts 480 Volts 600 Volts
LC, LCG 150 Amps Fixed 100% 120 Amps Fixed 100% 100 Amps Fixed 100% 90 Amps Fixed 100% 75 Amps Fixed 100%
HLC, HLCG 150 Amps 50 - 100% 125 Amps Fixed 100% 100 Amps 75 - 100% 90 Amps Fixed 100% 75 Amps Fixed 100%

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an Adjustable 150 Amp rating plug set at 50%, the short delay pickup setting at 4x is 150 x 50% x 4 = 300 Amps.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%)

The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time-current characteristics of LCG and HLCG, see curve No. SC-3603-81.
Types LCA, LCGA; MARK 75 Types HLCA, HLCGA; 75-150 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves

Types LCA, LCGA, HLCA, HLCGA Breakers, Two and Three Poles
Westinghouse Electric Corporation

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum As Volts 600, 50/60 Hz
Continuous Ampere Short Delay Pickup Settings
75-150 3x to 10x rating plug value with calibration settings as shown on curve (Tolerance ±10%)

Interrupting Rating (UL/CSA Listed)

<table>
<thead>
<tr>
<th>Frame</th>
<th>240 Volts</th>
<th>480 Volts</th>
<th>600 Volts</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCA</td>
<td>42,000</td>
<td>30,000</td>
<td>22,000</td>
</tr>
<tr>
<td>HLCA</td>
<td>65,000</td>
<td>35,000</td>
<td>25,000</td>
</tr>
</tbody>
</table>

Rating Plugs Available

<table>
<thead>
<tr>
<th>Continuous Ampere</th>
<th>Range of Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 Amps Fixed</td>
<td>100%</td>
</tr>
<tr>
<td>150 Amps 50 - 100%</td>
<td></td>
</tr>
<tr>
<td>125 Amps Fixed</td>
<td>100%</td>
</tr>
<tr>
<td>125 Amps 70 - 100%</td>
<td></td>
</tr>
<tr>
<td>100 Amps Fixed</td>
<td>100%</td>
</tr>
<tr>
<td>100 Amps 75 - 100%</td>
<td></td>
</tr>
<tr>
<td>90 Amps Fixed</td>
<td>100%</td>
</tr>
<tr>
<td>75 Amps Fixed</td>
<td>100%</td>
</tr>
</tbody>
</table>

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 150 Amp at 50%, the short delay pickup is 150 x 0.5 = 75 Amps.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown (Tolerance ±15%).

The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time-current characteristics of LCGA and HLCGA, see curve No. SC-3603-81.
AB DE-ION Circuit Breakers
Types LC, LCG; MARK 75 Types HLC, HLCG; 150-300 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves
Types LC, LCG, HLC, HLCG Breakers, Two and Three Poles
Westinghouse Electric Corporation
Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum Ac Volts 600, 50/60 Hz
Continuous Amperes
Short Delay Pickup Settings
150-300 3x to 10x rating plug value with calibration settings as shown on curve (Tolerance ±10%)
Interrupting Rating (UL/CSA Listed)
Breaker Symmetrical RMS Amperes
Frame 240 Volts 480 Volts 600 Volts
DC-DE-ION 15,000 12,000 9,000
HLC, HLCG 25,000 20,000 15,000

Rating Plugs Available
Continuous Amperes Range of Adjustment
300 Amps Fixed 100% 100% 100%
300 Amps 50 - 100% 75 - 100%
275 Amps Fixed 100% 100% 100%
275 Amps 70 - 100% 70 - 100%
250 Amps Fixed 100% 100% 100%
250 Amps 70 - 100% 70 - 100%
225 Amps Fixed 100% 100% 100%
225 Amps 70 - 100% 70 - 100%
200 Amps Fixed 100% 100% 100%
175 Amps Fixed 100% 100% 100%
150 Amps Fixed 100% 100% 100%

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 300 Amp rating plug set at 50% and the short delay pickup set at 4x, the short delay pickup is 300 x 50% x 4 = 600 Amperes.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%)
The end of the curve is determined by the interrupting rating and/or the specific application.
For ground fault time-current characteristics of LCG and HLCG, see curve No. SC-3603-81.

Expanded view in short circuit area with short time adjustment set at minimum
150 Amp Rating Plug
300 Amp Rating Plug

Curve No. SC-3601-81A
Types LCA, LCGA; MARK 75 Types HLCA, HLCGA; 150-300 Ampere, 2-3 Poles

Circuit Breaker Time/Current Curves
Types LCA, LCGA, HLCA, HLCGA Breakers, Two and Three Poles
Westinghouse Electric Corporation

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum Ac Volts 600, 50/60 Hz
Continuous Amperes 3x to 10x rating plug value with calibration settings as shown on curve (Tolerance ±15%)

Interrupting Rating (UL/CSA Listed)
Breaker 1,000 500 300 200 100
Frame 480 V 600 V 600 V 480 V 240 V
HCA 82,000 82,000 50,000 25,000 12,500
HLCA 95,000 40,000 25,000 12,500

Rating Plugs Available
Continuous Amperes Range of Adjustment
300 Amps Fixed 100%
275 Amps Fixed 100%
250 Amps Fixed 100%
225 Amps Fixed 100%
200 Amps Fixed 100%
175 Amps Fixed 100%
150 Amps Fixed 100%

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 300 Amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 300 x 50% x 4 = 600 Amps.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%)

The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time-current characteristics of LCGA and HLCGA, see curve No. SC-3603-81.
AB DE-ION Circuit Breakers

Types LC, LCG; MARK 75 Types HLC, HLCG; 200-400 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves

Types LC, LCG, HLC, HLCG Breakers, Two and Three Poles
Westinghouse Electric Corporation

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum Ac Volts 600, 50/60 Hz

Continuous Amperes
Short Delay Pickup Settings
UL/CSA (listed)

Maximum Total Clearing Time

Standard Fixed Rating Plug
Optional Adjustable Rating Plug

Minimum Total Clearing Time

Maximum Total Clearing Time

Minimum Total Clearing Time

Continuous Amperes
Range of Adjustment

400 Amps 100%

350 Amps 100%

300 Amps 100%

250 Amps 100%

225 Amps 100%

200 Amps 100%

400 Amps 50 - 100%

350 Amps 70 - 100%

300 Amps 70 - 100%

250 Amps 70 - 100%

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. The trip level for each rating plug is shown. (Tolerance ±15%) The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time-current characteristics of LCG and HLCG, see curve No. SC-3603-81.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±10%)
Types LCA, LCGA; MARK 75 Types HLCA, HLCGA; 200-400 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves

- Types LCA, LCGA, HLCA, HLCGA Breakers, Two and Three Poles
- Westinghouse Electric Corporation

**Breaker Ratings**
- Maximum Ac Volts: 600, 50/60 Hz
- Continuous Amperes
  - 200-400: 3x to 10x rating plug value with calibration settings as shown on curve (Tolerance ±10%)

**Interrupting Rating (UL/CSA Listed)**

<table>
<thead>
<tr>
<th>Frame</th>
<th>480 V/60 Hz</th>
<th>600 V/50 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLCA, HLCGA</td>
<td>65,000</td>
<td>35,000</td>
</tr>
<tr>
<td>LCA, LCGA</td>
<td>42,000</td>
<td>22,000</td>
</tr>
</tbody>
</table>

**Rating Plugs Available**

- Continuous Amperes
  - 400 Amps: Fixed 100%
  - 350 Amps: Fixed 100%
  - 300 Amps: Fixed 100%
  - 250 Amps: Fixed 100%
- When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. The trip level for each rating plug is shown. (Tolerance ±15%)
- The end of the curve is determined by the interrupting rating and/or the specific application.
- For ground fault time-current characteristics of LCGA and HLCGA, see curve No. SC-3603-81.

**Current vs. Time Curves**

- Maximum Total Clearing Time
  - 0.13 Seconds with Short Delay Time Adjust Set to Minimum
  - 0.34 Seconds with Short Delay Time Adjust Set to Maximum

- Minimum Total Clearing Time
  - Standard Fixed Rating Plug
  - Optional Adjustable Rating Plug

- Standard Fixed Rating Plug
- Optional Adjustable Rating Plug

**Expanded View in Short Circuit Area**

- Short Delay Pickup Settings
  - Fixed
  - Override

**Current in Multiples of Rating Plug**

- 200 Amp Rating Plug
- 400 Amp Rating Plug

**Curve No. SC-3623-81**
AB DE-ION Circuit Breakers

Types LCA, LCGA; MARK 75 Types HLCA, HLCGA; 300-600 Amperes, 2-3 Poles
### Types LCA, LCGA; MARK 75 Types HLCA, HLCGA; 300-600 Amperes, 2-3 Poles

**Circuit Breaker Time/Current Curves**

Types LCA, LCGA, HLCA, HLCGA Breakers, Two and Three Poles
Westinghouse Electric Corporation

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

**Breaker Ratings**

<table>
<thead>
<tr>
<th>Maximum Ac Volts 600, 50/60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Amperes</td>
</tr>
<tr>
<td>300-600</td>
</tr>
</tbody>
</table>

**Interrupting Rating (UL/CSA Listed)**

<table>
<thead>
<tr>
<th>Breaker</th>
<th>Interrupting Rating (AMS Amperes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCA</td>
<td>35,000 30,000 22,000</td>
</tr>
<tr>
<td>HLCA</td>
<td>65,000 35,000 25,000</td>
</tr>
</tbody>
</table>

**Rating Plugs Available**

<table>
<thead>
<tr>
<th>Continuous Amperes</th>
<th>Range of Adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 Amps Fixed</td>
<td>100%</td>
</tr>
<tr>
<td>600 Amps 50 - 100%</td>
<td>50 - 100%</td>
</tr>
<tr>
<td>500 Amps Fixed</td>
<td>100%</td>
</tr>
<tr>
<td>500 Amps 70 - 100%</td>
<td>70 - 100%</td>
</tr>
<tr>
<td>450 Amps Fixed</td>
<td>100%</td>
</tr>
<tr>
<td>450 Amps 70 - 100%</td>
<td>70 - 100%</td>
</tr>
<tr>
<td>400 Amps Fixed</td>
<td>100%</td>
</tr>
<tr>
<td>400 Amps 75 - 100%</td>
<td>75 - 100%</td>
</tr>
</tbody>
</table>

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug.

For example, with an adjustable 600 Amp rating plug set at 60%, and the short delay pickup set at 4x, the short delay pickup is 600 x 60% x 4 = 1440 Amps.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%)

The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time-current characteristics of LCGA and HLCGA, see curve No. SC-3603-81.

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**Curve No. SC-3614-81A**

Expanded view in short circuit area with short time adjustment set at minimum

- **300 Amp Rating Plug**
- **600 Amp Rating Plug**
AB DE-ION Circuit Breakers

Types LCG, LCGA, HLCG, HLCGA Ground Fault Pick-up Curves

* Minimum Setting on 150 Amp Frames is 50 Amps
Type LCLG 250 Ground Fault Pick-up Curves

- **Minimum Pickup**: (±20%)
- **Maximum Pickup**: (+0 -20%)
- **Minimum Time**: (±20%)
- **Maximum Time**: (±20%)
Type LCLG 400 Ground Fault Pick-up Curves

Minimum Pickup (±20%)

Maximum Pickup (+20%)

Minimum Time (±20%)

Maximum Time (+20%)
Type LCG 150 Ground Fault Pick-up Curves

**Minimum Pickup (±20%)**

**Maximum Pickup (±20%)**

**Minimum Time (±20%)**

**Maximum Time (±20%)**

**Curve No. SC-4124-87**
AB DE-ION Circuit Breakers

Type LCG 300 Ground Fault Pick-up Curves

Curve No. SC-4125-87

Application Data

October 1997
Type LCG 400 Ground Fault Pick-up Curves

Maximum Pickup

Minimum Pickup

Minimum Time

Maximum Time

Curve No. SC-4126-87
AB DE-ION Circuit Breakers

Type LCG 600 Ground Fault Pick-up Curves

Curve No. SC-4127-87

AMPERES

Minimum Pickup (±20%)

Maximum Pickup (±20%)

Minimum Time (±20%)

Maximum Time (±20%)

October 1997
Types MCA, MCGA; MARK 75 Types HMCA, HMCGA; 400-800 Ampere, 2-3 Poles

Circuit Breaker Time/Current Curves

- Types MCA, MCGA, HMCA, HMCGA Breakers, Two and Three Poles
- Westinghouse Electric Corporation

- Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere de-rating for ambients above +40°C refer to Westinghouse.

- Maximum Ac Volts 600, 50/60 Hz

- Standard Fixed Rating Plug

- Optional Adjustable Rating Plug

- When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 800 Amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 800 x 50% x 4 = 1600 Amps.

- For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%)

- The end of the curve is determined by the interrupting rating and/or the specific application.

- For ground fault time-current characteristics of MCGA and HMCGA, see curve No. SC-3606-81.

- Interrupting Rating (UL/CSA Listed)
  - Standard Fixed Rating Plug
  - Optional Adjustable Rating Plug

- Time/Current Curves
  - Maximum Total Clearing Time
    - Standard Fixed Rating Plug
    - Optional Adjustable Rating Plug
  - Minimum Total Clearing Time
  - Maximum Total Clearing Time
    - 0.42 Seconds with Short Delay Time Adjust Set to Maximum
    - 0.14 Seconds with Short Delay Time Adjust Set to Minimum
  - Short Delay Pickup Settings

- Current in Multiples of Rating Plug

- Time in Seconds

- Amps x 100

- Current in Multiples of Rating Plug

- Curve No. SC-3616-81A
AB DE-ION Circuit Breakers

Types MC, MCG; MARK 75 Types HMC, HMCG; 400-800 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves

Types MC, MCG, HMC, HMCG Breakers, Two and Three Poles
Westinghouse Electric Corporation

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Minimum Total Clearing Time

Maximum Total Clearing Time

Standard Fixed Rating Plug

Optional Adjustable Rating Plug

Interrupting Rating (UL/CSA Listed)

Standard Fixed Rating Plug

Optional Adjustable Rating Plug

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 800 Amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 800 x 50% x 4 = 1600 Amps.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%)

The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time-current characteristics of MCG and HMCG, see curve No. SC-3606-81.
Types MCG, MCGA, HMCG, HMCGA; NCG, NCGA, HNCG, HNCGA Ground Fault Pick-up Curves

Minimum Pick-Up (±20%)

Maximum Pick-Up (50%)

Minimum Time (±20%)

Maximum Time (±20%)

Current in Percent of Breaker Trip Unit Rating

Time in Seconds

1 HOUR1 MINUTE 2 HOURS
AB DE-ION Circuit Breakers

Type MCG 800 Ground Fault Pick-up Curves

Curve No. SC-4128-87

October 1997
Types NCA, NCGA; MARK 75 Types HNCA, HNCGA; 800-1200 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves
Types NCA, NCGA, HNCA, HNCGA Breakers, Two and Three Poles
Westinghouse Electric Corporation

Current accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum AC Volts 600, 50/60 Hz
 Continuous Ampere 800-1200

Interrupting Rating 600/800 A

Standard Fixed Rating Plug
Optional Adjustable Rating Plug

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 1200 Amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 1200 x 50% x 4 = 2400 Amps.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%)

The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time current characteristics of NCA and HNCA, see curve No. SC-3606-81.
**AB DE-ION Circuit Breakers**

**Types NC, NCG, MARK 75**

**Types HNC, HNCG; 800-1200 Amperes, 2-3 Poles**

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**Circuit Breaker Time/Current Curves**

- **Types NC, NCG, HNC, HNCG Breakers, Two and Three Poles**

  - **Breaker Ratings**
    - **Maximum Ac Volts 600, 50/60 Hz**
    - **Continuous Amperes**
      - 800-1200: 2x to 8x rating plug value with calibration settings as shown on curve (Tolerance ±10%)
    - **Interrupting Rating (UL/CSA Listed)**
      - | Breaker                     | Symmetrical AMS Amperes |
         |                           | 240 V | 480 V | 600 V |
         | NC, NCG                   | 42,000 | 30,000 | 22,000 |
         | HNC, HNCG                 | 65,000 | 50,000 | 25,000 |

  - **Rating Plugs Available**
    - **Continuous Amperes**
      - 1200 Amps: Fixed 100%
      - 1100 Amps: Fixed 100%
      - 1000 Amps: Fixed 100%
      - 900 Amps: Fixed 100%
      - 800 Amps: Fixed 100%
      - 700 Amps: Fixed 100%
      - 600 Amps: Fixed 100%
      - 500 Amps: Fixed 100%
      - 400 Amps: Fixed 100%
      - 300 Amps: Fixed 100%
      - 200 Amps: Fixed 100%
      - 100 Amps: Fixed 100%

  - **When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug.**

    - For example, with an adjustable 1200 Amp rating plug set at 50%, and the short delay pickup set at 4X, the short delay pickup is 1200 x 50% x 4 = 2400 Amps.

  - **For high fault current levels, a fixed instantaneous override is provided.** The trip level for each rating plug is shown. (Tolerance ±15%)

  - **The end of the curve is determined by the interrupting rating and/or the specific application.**

    - For ground fault time-current characteristics of NCG and HNCG, see curve No. SC-3606-81.

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**Graphical Representation**

- **Expanded view in short circuit area with short time adjustment set at minimum 600 Amp Rating Plug**

  - **1200 Amp Rating Plug**

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**October 1997**
Type NCG 1200 Ground Fault Pick-up Curves

Maximum Pickup (+20%)

Minimum Pickup (-20%)

Maximum Time (±20%)

Minimum Time (±20%)
AB DE-ION Circuit Breakers
Types PC, PCC, PCG, PCCG, PCF, PCCF, PCFG, PCCFG; 1000-2000 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves
Types PC, PCC, PCG, PCCG, PCF, PCCF, PCFG, PCCFG Breakers, Two and Three Poles
Westinghouse Electric Corporation

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum Ac Volts 600, 50/60 Hz
Continuous Amperes
Short Delay Pickup Settings
1000-2000 2x to 8x rating plug value with calibration settings as shown on curve (Tolerance ±10%)

Interrupting Rating (UL/CSA Listed)
Breaker Symmetrical AMS Amperes
Frame 240 Volts 480 Volts 600 Volts
125,000 100,000 100,000

Rating Plugs Available
Continuous Amperes
Range of Adjustment
2000 Amps Fixed 100%
2000 Amps 50 - 100%
1800 Amps Fixed 100%
1800 Amps 70 - 100%
1600 Amps Fixed 100%
1600 Amps 70 - 100%
1400 Amps Fixed 100%
1200 Amps Fixed 100%
1000 Amps Fixed 100%

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 2000 Amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 2000 x 50% x 4 = 4000 Amps.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown (Tolerance ±15%).

For ground fault time-current characteristics of PCG, PCCG, PCFG, and PCCFG, see curve No. SC-3610-81.
Types PCA, PCCA, PCGA, PCCGA, PCFA, PCCFA, PCFGA, PCCFGA; 1000-2000 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves

Type PCA, PCCA, PCGA, PCCGA, PCFA, PCCFA, PCFGA, PCCFGA
Breakers, Two and Three Pole
Westinghouse Electric Corporation

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum Ac Volts 600, 50/60 Hz

Continuous Amperes

Short Delay Pickup Settings
1000-2000 2x to 8x rating plug value with calibration settings as shown on curve (Tolerance ±10%)

Interrupting Rating (UL/CSA Listed)

Breaker Symmetrical AMS Amperes
Frame 240 Volts 480 Volts 600 Volts

All above 125,000 100,000 100,000

Rating Plugs Available

Continuous Amperes Range of Adjustment
2000 Amps Fixed 100%
2000 Amps 50 - 100% (with adjustable rating plug)
1800 Amps Fixed 100%
1800 Amps 70 - 100%
1600 Amps Fixed 100%
1600 Amps 70 - 100%
1400 Amps Fixed 100%
1200 Amps Fixed 100%
1000 Amps Fixed 100%

When adjustable rating plugs are used, short delay pickup

pickup settings track the selected position of the adjustable rating plug.

For example, with an adjustable 2000 Amp rating plug set at 50%,

and the short delay pickup is set at 4x, the short delay pickup is

(2000 x 50%) x 4 = 4000 Amps.

For high fault current levels, a fixed instantaneous override

is provided. The trip level for each rating plug is shown.

(Tolerance ±15%)

The end of the curve is determined by the interrupting rating

and/or the specific application.

For ground fault time-current characteristics of PCGA, PCCGA, PCFGA,

and PCCFGA, see curve No. SC-3610-81.
AB DE-ION Circuit Breakers

Types PC, PCC, PCG, PCCG, PCF, PCCF, PCFG, PCCFG; 1400-2500 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves

Types PC, PCC, PCG, PCCG, PCF, PCCF, PCFG, PCCFG Breakers, Two and Three Poles

Westinghouse Electric Corporation

Current accuracy applies from -20° to +55° C ambient. For possible continuous ampere derating for ambients above +40° C refer to Westinghouse.

Breaker Ratings

- Maximum Ac Volts 600, 50/60 Hz
- Continuous Amperes
- Short Delay Pickup Settings
- Interrupting Rating (UL/CSA Listed)
- Rating Plugs Available

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%)

The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time-current characteristics of PCG, PCCG, PCFG, and PCCFG, see curve No. SC-3610-81.
Types PCA, PCCA, PCGA, PCCGA, PCFA, PCCFA, PCFGA, PCCFGA; 1400-2500 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves
Types PCA, PCCA, PCGA, PCCGA, PCFA, PCCFA, PCFGA, PCCFGA
Breakers, Two and Three Poles
Westinghouse Electric Corporation
Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum Ac Volts 600, 50/60 Hz
Continuous Amperes
Short Delay Pickup Settings
1400-2500 2x to 8x rating plug value with calibration settings as shown on curve (Tolerance ±10%)
Interrupting Rating (UL/CSA Listed)

Rating Plugs Available
Continuous Amperes Range of Adjustment
2500 Amps Fixed 100%
2500 Amps 50 - 100% (T)
2000 Amps Fixed 100%
2000 Amps 70 - 100% (T)
1800 Amps Fixed 100%
1800 Amps 70 - 100% (T)
1600 Amps Fixed 100%
1400 Amps Fixed 100%

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 2500 Amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 2500 x 50% x 4 = 5000 Amps.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%) The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time-current characteristics of PCGA, PCCGA, PCFGA, and PCCFGA, see curve No. SC-3610-81.

Expanded view in short circuit area with short time adjustment set at minimum
1400 Amp Rating Plug
2500 Amp Rating Plug

Curve No. SC-3620-81A
# Application Data

## AB DE-ION Circuit Breakers

**Types PC, PCC, PCG, PCCG; 1600-3000 Amperes, 2-3 Poles**

### Circuit Breaker Time/Current Curves

Types PC, PCC, PCG, PCCG Breakers, Two and Three Poles
Westinghouse Electric Corporation

Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

#### Breaker Ratings

- **Maximum Ac Volts**: 600, 50/60 Hz

#### Continuous Amperes

- Short Delay Pickup Settings
  - 1600-3000: 2x to 8x rating plug value with calibration settings as shown on curve (Tolerance ±10%)

#### Interrupting Rating (UL/CSA Listed)

<table>
<thead>
<tr>
<th>Circuit Breaker Type</th>
<th>Standard Fixed Rating Plug</th>
<th>Fixed Override</th>
<th>Optional Adjustable Rating Plug</th>
<th>Fixed Override</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600 Amps</td>
<td>Fixed 100%</td>
<td></td>
<td>Fixed 100%</td>
<td></td>
</tr>
<tr>
<td>2000 Amps</td>
<td>Fixed 100%</td>
<td></td>
<td>Fixed 100%</td>
<td></td>
</tr>
<tr>
<td>2500 Amps</td>
<td>Fixed 100%</td>
<td></td>
<td>Fixed 100%</td>
<td></td>
</tr>
<tr>
<td>3000 Amps</td>
<td>Fixed 100%</td>
<td></td>
<td>Fixed 100%</td>
<td></td>
</tr>
</tbody>
</table>

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 3000 Amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 3000 x 50% x 4 = 6000 Amps.

- **For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown.** (Tolerance ±15%)
- **The end of the curve is determined by the interrupting rating and/or the specific application.**
- **For ground fault time-current characteristics of PCG and PCCG, see curve No. SC-3610-81.**

### Expanded view in short circuit area with short time adjustment set at minimum

- **1600 Amp Rating Plug**
- **3000 Amp Rating Plug**

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*Curve No. SC-3609-81A*
Types PCA, PCCA, PCGA, PCCGA; 1600-3000 Amperes, 2-3 Poles

Circuit Breaker Time/Current Curves
Types PC, PCC, PCG, PCCG Breakers, Two and Three Poles
Westinghouse Electric Corporation
Curve accuracy applies from -20°C to +55°C ambient. For possible continuous ampere derating for ambients above +40°C refer to Westinghouse.

Breaker Ratings
Maximum Ac Volts 600, 50/60 Hz
Continuous Amperes

Short Delay Pickup Settings
1600-3000 2x to 8x rating plug value with calibration settings as shown on curve (Tolerance ±15%)

Interrupting Rating (UL/CSA Listed)

<table>
<thead>
<tr>
<th>Breaker</th>
<th>Symmetrical AMS Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 V</td>
<td>100,000</td>
</tr>
<tr>
<td>480 V</td>
<td>100,000</td>
</tr>
<tr>
<td>600 V</td>
<td>125,000</td>
</tr>
</tbody>
</table>

Rating Plugs Available
Continuous Amperes: Range of Adjustment

| 3000 Amps | Fixed 100% |
| 2500 Amps | Fixed 150% |
| 2200 Amps | Fixed 150% |
| 1900 Amps | Fixed 100% |
| 1600 Amps | Fixed 100% |

When adjustable rating plugs are used, short delay pickup settings track the selected position of the adjustable rating plug. For example, with an adjustable 3000 Amp rating plug set at 50%, and the short delay pickup set at 4x, the short delay pickup is 3000 x 0.5 x 4 = 6000 Amps.

For high fault current levels, a fixed instantaneous override is provided. The trip level for each rating plug is shown. (Tolerance ±15%)

The end of the curve is determined by the interrupting rating and/or the specific application.

For ground fault time-current characteristics of PCGA, PCCGA, PCFGA, and PCCFGA, see curve No. SC-3610-81.
AB DE-ION Circuit Breakers
Types PCG, PCGA, PCCG, PCCGA, PCFG, PCFGA, PCCFG, PCCFGA Ground Fault Pick-up Curves

Curve No. SC-3610-81
MCP Motor Circuit Protector, 3-150 Amperes, 600 Volts AC with Current Limiter Attachment

Curve No. SC-3505-76

Maximum MCP Interrupting Time
EL3003R and EL3007R

MCP Catalog Number    Use Limiter Catalog No.    Maximum MCP Interrupting Time
7  22A  MCP0322R  EL3003R
18  58A  MCP0358R  EL3007R
50  150A MCP03150R  EL3015R
100  300A MCP03300R  EL3030R
160  480A MCP03480R  EL3050R
275 1000A MCP031000R  EL3100R
450 1550A MCP031550R  EL3150R
575 1800A MCP031800R  EL3150R

(Tolerance ±10% on High or Low Setting)