High Intensity Discharge Lighting

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High Intensity Discharge Lighting

High performance, energy-efficient, long life lamps

Philips MasterColor® Integrated 25W PAR38 Lamps feature an integrated ballast that fits into existing PAR38 fixtures for instant retrofit. These long lasting lamps consume up to three times less energy compared to PAR38 halogen lamps with comparable light output.

Philips Mini MasterColor Lamps The smallest 20W ceramic metal halide lamp, is visually pleasing and financially rewarding. This easy-to-install system uses up to 66% less energy and lasts three times longer than standard 90W halogen lamps.

Philips MasterColor Ceramic Metal Halide HPS-Retro White™ Lamps are optimized for operation on HPS ballasts and ideal for 24-hour a day, 7-day a week operations.

Philips MasterColor Pulse Start Ceramic Metal Halide Lamps offer improved lumen maintenance, excellent color rendering (90 CRI) and superior color stability over life (within ±200K) for high bay applications.

Philips Protected Metal Halide "O" Rated Lamps provide safe operation in open fixtures and are ideal for 24-hour a day, 7-day a week operations.

Philips QL Induction Lighting System Lamps are virtually maintenance free with 100,000 hours rated average life and the ability to operate in hot and cold environments.
**MasterColor® Ceramic Metal Halide Lamps featuring ALTO® Lamp Technology**

The latest breakthrough in the field of metal halide technology, MasterColor lamps provide unparalleled uniformity and consistency in lamp-to-lamp color—both initial and throughout life—as well as higher efficacy than any other low-wattage metal halide source available. The secret to MasterColor’s unequalled performance is its ceramic discharge tube, which combines the white light and high efficacy of metal halide lamps with the color stability and reliable, long life of polycrystalline alumina (PCA) technology.

- Excellent color rendition (up to 96 CRI)
- Superior Color Stability over life of lamp ±200K vs. up to ±600K for standard metal halide lamps
- Increased efficacy—up to 93 LPW—results in reduced energy consumption
- Universal operation—can operate in any position
- Lamps operate on standard metal halide ballasts offers simple retrofit options
- FadeBlock™—lamps feature integrated UV blocking medium for reduced fading of photo sensitive materials

**ANSI Code:**

- E = Enclosed Fixture Rated
- O = Open Fixture Rated;
- S = Open or Enclosed Fixture Rated

**Explanation of suffix in ordering code**

(no suffix = clear):

- /C Coated
- /M Medium Base
- /SP Spot 10°
- /FL Flood 30°
- /MP Protected

**Operating Position**—Universal, unless otherwise noted

**Descriptive symbols for MasterColor:**

- CDM Ceramic Discharge Metal Halide
- MHC Metal Halide Ceramic
- G General Lighting

---

**Philips Mini MasterColor® Tubular Single-Ended T-4 Lamps**

Enclosed luminaires only; lifetime color stability within ±200K

PGj5 twist and lock base miniaturized low wattage ceramic metal halide lamps; to be operated on Advance e-Vision® RMH-20-E-LF electronic ballast only

FadeBlock UV filtering

No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)

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**Mini MasterColor Ceramic Metal Halide Tubular Single-Ended BT-5 Lamps**

For Warnings, Cautions and Operating Instructions, see page 106

**MasterColor Ceramic Metal Halide Tubular Single-Ended T-4 Lamps**

Enclosed luminaires only; lifetime color stability within ±200K

- G8.5 bipin based low wattage ceramic metal halide lamps; operate on specified ANSI compatible electronic ballasts only
- FadeBlock UV filtering
- No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)

For Warnings, Cautions and Operating Instructions, see page 106

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For the most current product information, go to the e-catalog on www.philips.com

HID symbols and footnotes located on page 104
### MasterColor Ceramic Metal Halide Tubular Single-Ended T-6 Lamps

Enclosed luminaires only; lifetime color stability within ±200K

- G12 bipin based low wattage ceramic metal halide lamps
- FadeBlock™ UV filtering
- No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)

For **Warnings, Cautions and Operating Instructions**, see page 106

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### MasterColor Ceramic Metal Halide Tubular Double-Ended Lamps

Double-Ended TD-6 & TD-7 Style; enclosed luminaires only; lifetime color stability within ±200K

- RX7s single-pin based low wattage ceramic metal halide lamps
- FadeBlock™ UV filtering

For **Warnings, Cautions and Operating Instructions**, see page 106

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<td>37370-4</td>
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For the most current product information, go to the e-catalog on [www.philips.com](http://www.philips.com)

HID symbols and footnotes located on page 104
# Philips MasterColor® Integrated PAR Lamps

These lamps may be used in open fixtures; Do not use in totally enclosed recessed fixtures; Lifetime color stability within ±200K

FadeBlock UV filtering

Do not operate with an additional ballast since ballast is integrated in the lamp itself

No shut off required in 24-hour-a-day/7-day-a-week operations

Lamp should not be operated with dimmers

Lamp should be used in dry locations only

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**MasterColor Integrated PAR Lamps**

For Warnings, Cautions and Operating Instructions, see page 105

<table>
<thead>
<tr>
<th>Lamp</th>
<th>Watts</th>
<th>Bulb</th>
<th>Base</th>
<th>Product Symbols, Ordering Code</th>
<th>Description (Position—Universal, unless otherwise indicated)</th>
<th>Pkg. Qty</th>
<th>MOL (In.)</th>
<th>Rated Avg. Life, Hrs. (351)</th>
<th>Approximate Lumens, (352)</th>
<th>CRI (K)</th>
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<td>Med.</td>
<td>14477-4</td>
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<td>G, PAR Spot 10° (396, 406)</td>
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<td>5%</td>
<td>10,500</td>
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**Protected MasterColor Ceramic Metal Halide R111 Lamps**

Open or Enclosed luminaires; lifetime color stability within ±200K

GX8.5 twist and lock base low wattage ceramic metal halide lamps; operate on specified ANSI compatible electronic ballasts only

FadeBlock UV filtering

No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)

For Warnings, Cautions and Operating Instructions, see page 106

<table>
<thead>
<tr>
<th>Lamp</th>
<th>Watts</th>
<th>Bulb</th>
<th>Base</th>
<th>Product Symbols, Ordering Code</th>
<th>Description (Position—Universal, unless otherwise indicated)</th>
<th>Pkg. Qty</th>
<th>MOL (In.)</th>
<th>Rated Avg. Life, Hrs. (351)</th>
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<td>CDM-R111/35W/830/24DG</td>
<td>R111, N. Flood 24° (391, 392, 397)</td>
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<td>1600</td>
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<td>CDM-R111/35W/830/40DG</td>
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<th>Description (Position—Universal, unless otherwise indicated)</th>
<th>Pkg. Qty</th>
<th>MOL (In.)</th>
<th>Rated Avg. Life, Hrs. (351)</th>
<th>Approximate Lumens, (352)</th>
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<td>1850</td>
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**Protected MasterColor Ceramic Metal Halide PAR Lamps**

Open or enclosed luminaires; lifetime color stability within ±200K

FadeBlock UV filtering

No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)

For Warnings, Cautions and Operating Instructions, see page 106

<table>
<thead>
<tr>
<th>Lamp</th>
<th>Watts</th>
<th>Bulb</th>
<th>Base</th>
<th>Product Symbols, Ordering Code</th>
<th>Description (Position—Universal, unless otherwise indicated)</th>
<th>Pkg. Qty</th>
<th>MOL (In.)</th>
<th>Rated Avg. Life, Hrs. (351)</th>
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For the most current product information, go to the e-catalog on www.philips.com

HID symbols and footnotes located on page 104
### Protected MasterColor Ceramic Metal Halide PAR Lamps, continued

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### Protected MasterColor Ceramic Metal Halide Lamps

ED-17P sleeved arc tube; open or enclosed luminaires; lifetime color stability within ±200K; pulse start

- FadeBlock™ UV filtering
- No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)
- Protective quartz sleeve surrounds the arc tube
- MP designation indicates lamps are suitable for open fixture applications

For Warnings, Cautions and Operating Instructions, see page 107

For the most current product information, go to the e-catalog on www.philips.com

This product utilizes ALTO™ Lamp Technology

Philips Lighting Company SAG100 2006 93
## MasterColor Ceramic Metal Halide ED-17, ED-28 Lamps

**Enclosed luminaires only; lifetime color stability within ±200K; pulse start**
- No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)
- For **Warnings, Cautions and Operating Instructions**, see page 107

### Table

<table>
<thead>
<tr>
<th>Watts Bulb Base</th>
<th>Product Number</th>
<th>Ballast Ref.</th>
<th>ANSI Code/Lamp</th>
<th>CRI (K)</th>
<th>Footnotes</th>
<th>Description (Operating Position—Universal, unless otherwise indicated) (401)</th>
<th>LCL (In.)</th>
<th>MOL (In.)</th>
<th>Rated Avg. Lumens (352)</th>
<th>CCT</th>
<th>Approx. Life, Hrs.</th>
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</thead>
<tbody>
<tr>
<td>50</td>
<td>ED-17 Med.</td>
<td>36020-6</td>
<td>MHC500/U/M48/ M3K/ALTO</td>
<td>12</td>
<td>G, Clear</td>
<td>(39, 392, 399)</td>
<td>3 %</td>
<td>5 %</td>
<td>10,000</td>
<td>4100</td>
<td>2750 85 3000</td>
</tr>
<tr>
<td></td>
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<td>36022-2</td>
<td>MHC500/C/U/M48/ M3K/ALTO</td>
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<td>G, Coated</td>
<td>(39, 392, 399)</td>
<td>—</td>
<td>5 %</td>
<td>10,000</td>
<td>4100</td>
<td>2750 85 3000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36023-0</td>
<td>MHC500/U/M48/ M4K/ALTO</td>
<td>12</td>
<td>G, Clear</td>
<td>(39, 392, 399)</td>
<td>3 %</td>
<td>5 %</td>
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<td>3750</td>
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<td>20,000</td>
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<td>G, Coated</td>
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<td>5 %</td>
<td>16,000</td>
<td>6200</td>
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<td>G, Clear</td>
<td>(39, 392, 399)</td>
<td>3 %</td>
<td>5 %</td>
<td>16,000</td>
<td>9500</td>
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<td>—</td>
<td>5 %</td>
<td>16,000</td>
<td>9500</td>
<td>7125 85 3000</td>
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<td>G, Clear</td>
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<td>5 %</td>
<td>20,000</td>
<td>9000</td>
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</tr>
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<td>—</td>
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<td>20,000</td>
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<td>6750 92 4000</td>
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<tr>
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<td>ED-17 Med.</td>
<td>13022-9</td>
<td>MHC150/U/M142/ M3K/ALTO</td>
<td>12</td>
<td>G, Clear</td>
<td>(39, 392, 399)</td>
<td>3 %</td>
<td>5 %</td>
<td>16,000</td>
<td>14000</td>
<td>10,500 85 3000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13023-7</td>
<td>MHC150/C/U/M142/ M3K/ALTO</td>
<td>12</td>
<td>G, Coated</td>
<td>(39, 392, 399)</td>
<td>—</td>
<td>5 %</td>
<td>16,000</td>
<td>14000</td>
<td>10,500 85 3000</td>
</tr>
<tr>
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<td>37720-0</td>
<td>MHC150/U/M142/ M4K/ALTO</td>
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<td>G, Clear</td>
<td>(39, 392, 399)</td>
<td>3 %</td>
<td>5 %</td>
<td>20,000</td>
<td>13000</td>
<td>9750 92 4000</td>
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<td>37721-8</td>
<td>MHC150/C/U/M142/ M4K/ALTO</td>
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<td>G, Coated</td>
<td>(39, 392, 399)</td>
<td>—</td>
<td>5 %</td>
<td>20,000</td>
<td>13000</td>
<td>9750 92 4000</td>
</tr>
</tbody>
</table>

For the most current product information, go to the e-catalog on www.philips.com
HID symbols and footnotes located on page 104
This product utilizes ALTO® Lamp Technology
Protected MasterColor Pulse Start Ceramic Metal Halide Lamps

Satisfies the 2005 NEC for use in open luminaries.

- Higher Lumen maintenance and 80% of initial lumens at 8000 hours
- For operation on Metal Halide Pulse Start ballasts
- No shut off required in 24-hours/day/7-day-a-week operations (relamp fixtures at or before the end of rated life)
- Patented coil design offers protection for open fixture rating

For Warnings, Cautions and Operating Instructions, see page 107

MasterColor Ceramic Metal Halide HPS-Retro White™

Satisfies the 2005 NEC for use in open luminaries.

- Replace yellow light with white light with just a simple twist!
- For operation on HPS ballasts; 80% lumen maintenance
- No shut off required in 24-hours/day/7-day-a-week operations (relamp fixtures at or before the end of rated life)
- Patented coil design offers protection for open fixture rating

For Warnings, Cautions and Operating Instructions, see page 108
High Intensity Discharge Lamps

Metal Halide

<table>
<thead>
<tr>
<th>Metal Halide Lamps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgrade to crisp, white light with Metal Halide</td>
</tr>
<tr>
<td>White light source offers improved color rendition over HPS and all dimmable down to 50%</td>
</tr>
<tr>
<td>For color critical applications always consider Philips MasterColor® Ceramic Metal Halide</td>
</tr>
</tbody>
</table>

Examination of suffix in ordering code (no suffix = clear, mogul base):

- I = Coated
- M = Medium Base
- MP = Protected

ANSI Code:

- E = Enclosed Fixture Rated
- O = Open Fixture Rated
- S = Open or Enclosed Fixture Rated (if used in open fixtures, operating instructions should be strictly followed)

Protected Pulse Start Metal Halide “O” Rated Lamps

Satisfies the 2005 NEC for use in open luminaries.*

Open or enclosed luminaires; pulse start metal halide is designed for operation on only specified ANSI compatible ballasts with metal halide pulse ignitors, offering:

- Quicker start/restrike (2 minute start/5–10 minute restrike vs. 4 minute start/15 minute restrike for standard metal halide lamps)
- No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)
- Longer life (20,000+ hours)
- Improved lumen maintenance (20%) increase
- Increased efficacy (up to 100 LPW)

For Warnings, Cautions and Operating Instructions, see page 109

Pulse Start Metal Halide Lamps

Enclosed luminaires only unless otherwise noted; base up operation ± 15º unless otherwise noted.

Pulse start metal halide is designed for operation on only specified ANSI compatible ballasts with metal halide pulse ignitors, offering:

- Quicker start/restrike (2 minute start/4 minute restrike vs. 4 minute start/15 minute restrike for standard metal halide lamps)
- Longer life (15,000–20,000+ hours)
- Improved lumen maintenance (20%) increase
- Increased efficacy (up to 120 LPW); more energy savings

For Warnings, Cautions and Operating Instructions, see page 108

Descriptive symbols for Metal Halide:

- MH = Metal Halide
- PS = Pulse Start
- MS = High Output Metal Halide
- MHT = Safety Lifeguard Metal Halide
- MP = Protected Metal Halide

Operating Position:

- /A = Universal
- /BU = Base up ±15º unless specified otherwise
- /BD = Base down ±15º unless specified otherwise
- /HOR = Horizontal

For more information regarding use of Type-O, S, and E metal halide systems, please refer to the NEMA white paper on this subject that is freely available at www.nema.org

* The 2005 NEC states that luminaires that use a metal halide lamp shall be provided with either a containment barrier that encloses the lamp (historically referred to as an enclosed luminaire) or shall be provided with a means, typically a special lampholder, that will only accept ANSI Type-O metal halide lamp. (Exception—this requirement will not apply to open luminaries with thick-glass parabolic reflector PAR lamps.) For more information regarding use of Type-O, S, and E metal halide systems, please refer to the NEMA white paper on this subject that is freely available at www.nema.org
## Pulse Start Metal Halide Lamps, continued

<table>
<thead>
<tr>
<th>Lamp Watts</th>
<th>Bulb Number</th>
<th>Base Symbols</th>
<th>Ordering Code</th>
<th>ANSI Code/ Ballast Ref.</th>
<th>Pkg.* Qty</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL MOL Life, Hrs. (351)</th>
<th>Rated Avg. Life, Hrs.</th>
<th>Approximate Lumens</th>
<th>CCT (K)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2362-2</td>
<td><strong>MS400/C/BU/PS</strong></td>
<td>M15/S/M12/S</td>
<td>6</td>
<td>G, Coated, Base Up ± 15°, Pulse Start (372, 374, 391)</td>
<td>11 US 20,000</td>
<td>41,500</td>
<td>29,050</td>
<td>66,3700</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lamp Watts</th>
<th>Bulb Number</th>
<th>Base Symbols</th>
<th>Ordering Code</th>
<th>ANSI Code/ Ballast Ref.</th>
<th>Pkg.* Qty</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL MOL Life, Hrs. (351)</th>
<th>Rated Avg. Life, Hrs.</th>
<th>Approximate Lumens</th>
<th>CCT (K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>BT-37 Mog.</td>
<td>1350-0</td>
<td><strong>MT50/BU/PS</strong></td>
<td>M149/E</td>
<td>6</td>
<td>G, Clear, Base Up ± 15°, Pulse Start (372, 374, 391)</td>
<td>11 US 16,000</td>
<td>82,000</td>
<td>61,500</td>
<td>65,4000</td>
</tr>
</tbody>
</table>

## Protected Metal Halide “O” Rated Lamps
Satisfies the 2005 NEC for use in open luminaries.
- Protective quartz sleeve surrounds the arc tube
- No shut off required in 24-hour-a-day/7-day-a-week operations (relamp fixtures at or before the end of rated life)
- MP designation indicates lamps are suitable for open fixture applications

For Warnings, Cautions and Operating Instructions, see page 109.

<table>
<thead>
<tr>
<th>Lamp Watts</th>
<th>Bulb Number</th>
<th>Base Symbols</th>
<th>Ordering Code</th>
<th>ANSI Code/ Ballast Ref.</th>
<th>Pkg.* Qty</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL MOL Life, Hrs. (351)</th>
<th>Rated Avg. Life, Hrs.</th>
<th>Approximate Lumens</th>
<th>CCT (K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>175</td>
<td>ED-28 EX39</td>
<td>28119-6</td>
<td><strong>MP175/BU</strong></td>
<td>M57/O</td>
<td>12</td>
<td>Base Up ± 15°, Clear (372, 374, 391)</td>
<td>8 US 5 10,000</td>
<td>15,000</td>
<td>12,000</td>
<td>65,3800</td>
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<tr>
<td>250</td>
<td>ED-28 EX39</td>
<td>28124-5</td>
<td><strong>MP250/BU</strong></td>
<td>M58/O</td>
<td>12</td>
<td>Base Up ± 15°, Clear (372, 374, 391)</td>
<td>8 US 5 10,000</td>
<td>22,000</td>
<td>16,500</td>
<td>62,3800</td>
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<td>360</td>
<td>ED-37 EX39</td>
<td>13067-4</td>
<td><strong>MP360/BU/EW</strong></td>
<td>M59/O</td>
<td>6</td>
<td>Base Up ± 15°, Clear (372, 374, 391)</td>
<td>11 US 20,000</td>
<td>34,200</td>
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<td>400</td>
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<td>13332-2</td>
<td><strong>MP400/BU</strong></td>
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<td>Base Up ± 15°, Clear (372, 374, 391)</td>
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<td>Excl. Mog.</td>
<td>13330-0</td>
<td><strong>MP400/C/BU</strong></td>
<td>M59/O</td>
<td>6</td>
<td>Base Up ± 15°, Coated (372, 374, 391)</td>
<td>— 11 US 20,000</td>
<td>34,500</td>
<td>22,425</td>
<td>67,3700</td>
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<td>1000</td>
<td>BT-56 EX39</td>
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<td><strong>MP1000/BU</strong></td>
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<td>Base Up ± 15°, Clear (372, 374, 391)</td>
<td>9 US 15 12,000</td>
<td>107,000</td>
<td>75,000</td>
<td>65,3900</td>
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</table>

## Safety Lifeguard Metal Halide Lamps
Open or enclosed luminaires.
- For Warnings, Cautions and Operating Instructions, see page 111.

Safety Lifeguard lamps are designed to reduce the danger of possible injury from shortwave ultraviolet radiation. The lamp will self-extinguish automatically within 15 minutes after the outer envelope is broken by any means, accidental or intentional.

These lamps are particularly suited for use in open luminaires where the outer envelope is vulnerable to breakage and the risk of exposure to ultraviolet radiation is present. However, the lamp’s ability to self-extinguish does not protect against the danger of breakage itself. Accordingly, the users are advised to follow the good lamping practices noted in the Operating Instructions for Metal Halide Lamps.

In case of lamp failure, for safety and to preserve ballast life, turn off electric power and replace lamp promptly.

<table>
<thead>
<tr>
<th>Lamp Watts</th>
<th>Bulb Number</th>
<th>Base Symbols</th>
<th>Ordering Code</th>
<th>ANSI Code/ Ballast Ref.</th>
<th>Pkg.* Qty</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL MOL Life, Hrs. (351)</th>
<th>Rated Avg. Life, Hrs.</th>
<th>Approximate Lumens</th>
<th>CCT (K)</th>
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<tbody>
<tr>
<td></td>
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<td>34601-5</td>
<td><strong>MHT400/C/U</strong></td>
<td>M59/Pk-T400/U/S</td>
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<td>G, S, Coated (364, 372, 377)</td>
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<td>32,500</td>
<td>25,000</td>
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</table>

## Double-Ended Metal Halide Lamps
Enclosed luminaires (387).
- For Warnings, Cautions and Operating Instructions, see page 106.

<table>
<thead>
<tr>
<th>Lamp Watts</th>
<th>Bulb Number</th>
<th>Base Symbols</th>
<th>Ordering Code</th>
<th>ANSI Code/ Ballast Ref.</th>
<th>Pkg.* Qty</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL MOL Life, Hrs. (351)</th>
<th>Rated Avg. Life, Hrs.</th>
<th>Approximate Lumens</th>
<th>CCT (K)</th>
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</thead>
<tbody>
<tr>
<td>70</td>
<td>TD-6 RX7s</td>
<td>30350-3</td>
<td><strong>MNH70/TD/40</strong></td>
<td>M85/F</td>
<td>12</td>
<td>G, Hor. ± 15°, (372, 387, 391, 392)</td>
<td>2 US 4 4 9000</td>
<td>5700</td>
<td>45600</td>
<td>80,4200</td>
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<tr>
<td>150</td>
<td>TD-7 RX7s</td>
<td>30355-2</td>
<td><strong>MNH150/TD/40</strong></td>
<td>M81/F</td>
<td>12</td>
<td>G, Hor. ± 15°, (372, 387, 391, 392)</td>
<td>2 US 5 9000</td>
<td>12,900</td>
<td>9675</td>
<td>85,4200</td>
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<td>1800</td>
<td>TD PS-C20-6</td>
<td>31360-1</td>
<td><strong>MHD1800W</strong></td>
<td>—</td>
<td>4</td>
<td>Sports Ltg, Spot Hor. ± 15°, (374, 387, 391)</td>
<td>4 US 14 4500</td>
<td>150,000</td>
<td>—</td>
<td>92,5600</td>
</tr>
</tbody>
</table>

For the most current product information, go to the e-catalog on www.philips.com

HID symbols and footnotes located on page 104.

* The 2005 NEC states that luminaires that use a metal halide lamp shall be provided with either a containment barrier that encloses the lamp (historically referred to as an enclosed luminaire) or shall be provided with a means, typically a special lampholder, that will only accept ANSI Type-O metal halide lamp. (Exception—this requirement will not apply to open luminaires with thick-glass parabolic reflector PAR lamps.) For more information regarding use of Type-O, S, and E metal halide systems, please refer to the NEMA white paper on this subject that is freely available at www.nema.org.
# High Intensity Discharge Lamps

## Metal Halide

<table>
<thead>
<tr>
<th>Lamp Watts</th>
<th>Bulb</th>
<th>Base</th>
<th>Product Number</th>
<th>046677</th>
<th>Symbols</th>
<th>Ordering Code</th>
<th>ANSI Code</th>
<th>Ballast Ref.</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL (kV)</th>
<th>MOL (kV)</th>
<th>Rated Avg. Life, Hrs. (351)</th>
<th>Approximate Lumens, (352)</th>
<th>CCT (K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>BD-17 Med.</td>
<td>35462-1</td>
<td>★ MH150/U/M</td>
<td>M107/E</td>
<td>12</td>
<td>G, Clear</td>
<td>(372, 385, 400)</td>
<td>3 %</td>
<td>5 %</td>
<td>10,000</td>
<td>12,500</td>
<td>8500</td>
<td>65</td>
<td>3700</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35463-9</td>
<td>★ MH150/C/U/M</td>
<td>M107/E</td>
<td>12</td>
<td>G, Coated</td>
<td>(372, 385, 400)</td>
<td>—</td>
<td>5 %</td>
<td>10,000</td>
<td>12,000</td>
<td>7900</td>
<td>65</td>
<td>3400</td>
</tr>
<tr>
<td>175</td>
<td>BD-17 Med.</td>
<td>31358-5</td>
<td>★ MH175/U/M</td>
<td>M57/E</td>
<td>12</td>
<td>G, Clear</td>
<td>(372, 377, 385, 393)</td>
<td>3 %</td>
<td>5 %</td>
<td>10,000</td>
<td>13,500</td>
<td>9100</td>
<td>65</td>
<td>4000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>31359-3</td>
<td>★ MH175/C/U/M</td>
<td>M57/E</td>
<td>12</td>
<td>G, Coated</td>
<td>(372, 377, 385)</td>
<td>—</td>
<td>5 %</td>
<td>10,000</td>
<td>13,000</td>
<td>8380</td>
<td>65</td>
<td>3700</td>
</tr>
<tr>
<td>250</td>
<td>ED-28 Mog.</td>
<td>28733-4</td>
<td>★ MH175/U</td>
<td>M57/E</td>
<td>12</td>
<td>G, Clear</td>
<td>(372, 377, 385, 393)</td>
<td>5 %</td>
<td>8 %</td>
<td>10,000</td>
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<td>G, Coated</td>
<td>(372, 377, 385)</td>
<td>—</td>
<td>8 %</td>
<td>10,000</td>
<td>13,000</td>
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<td>31287-6</td>
<td>★ MH175/3K/BU</td>
<td>M57/E</td>
<td>12</td>
<td>G, Base Up ± 15º, Coated</td>
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<td>5 %</td>
<td>8 %</td>
<td>10,000</td>
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<td>ED-37 Mog.</td>
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<td>8 %</td>
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<td>15 %</td>
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<td>—</td>
<td>15 %</td>
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<td>15 %</td>
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<td>15 %</td>
<td>10,000</td>
<td>120,000</td>
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For the most current product information, go to the e-catalog on www.philips.com
HID symbols and footnotes located on page 104
### Ceramalux® High Pressure Sodium Lamps

**Explanation of suffix in ordering code**

- /C: Comfort Color
- /D: Diffuse Coated
- /LV: Low Volt
- /M: Medium Base

- To replace yellow light of HPS with white light with just a simple twist, consider MasterColor® Ceramic Metal Halide HPS-Retro White™ (See Page 95).

#### Descriptive symbols for High Pressure Sodium Lamps:

- G: General
- W: Wide Beam
- EW: Econ-o-watt®
- S: Street Lighting
- VW: Very Wide

#### Operating Position:

- /U: Universal

#### Mini WhiteSON® High Pressure Sodium Lamps

- Incandescent color quality
- Excellent color rendering of 83–85 CRI; perfect for applications where red is a prominent color
- Longer white lifetime of 10,000 hours
- GX12-1 base compact T-6 high pressure sodium lamps to be operated on Advance e-Vision® IWSN100CLF and IWSN100CBLS electronic ballasts only
- For Warnings, Cautions and Operating Instructions, see page 111

<table>
<thead>
<tr>
<th>Lamp Watts</th>
<th>Bulb Base</th>
<th>Product Number</th>
<th>Symbols</th>
<th>Ordering Code</th>
<th>ANSI Code/ Ballast Ref.</th>
<th>Plg. Qty.</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL (In.)</th>
<th>MOL (In.)</th>
<th>Rated Avg. Life, Hrs. (351)</th>
<th>Approximate Lumens, (352)</th>
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<th>CCT (K)</th>
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<td>83</td>
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#### White SON® High Pressure Sodium Lamps

- Incandescent color quality
- Excellent color rendering of 83–85 CRI; perfect for applications where red is a prominent color
- Small compact source
- Incandescent color appearance of 2700K
- Long life—10,000 hours
- For Warnings, Cautions and Operating Instructions, see page 111

<table>
<thead>
<tr>
<th>Lamp Watts</th>
<th>Bulb Base</th>
<th>Product Number</th>
<th>Symbols</th>
<th>Ordering Code</th>
<th>ANSI Code/ Ballast Ref.</th>
<th>Plg. Qty.</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL (In.)</th>
<th>MOL (In.)</th>
<th>Rated Avg. Life, Hrs. (351)</th>
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<td>83</td>
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#### Ceramalux® Comfort High Pressure Sodium Lamps

- Improved color rendition of 65 CRI
- High efficacy
- Warm white color appearance
- Operates on standard HPS ballasts
- For Warnings, Cautions and Operating Instructions, see page 112

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<th>Lamp Watts</th>
<th>Bulb Base</th>
<th>Product Number</th>
<th>Symbols</th>
<th>Ordering Code</th>
<th>ANSI Code/ Ballast Ref.</th>
<th>Plg. Qty.</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL (In.)</th>
<th>MOL (In.)</th>
<th>Rated Avg. Life, Hrs. (351)</th>
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<th>CCT (K)</th>
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For the most current product information, go to the e-catalog on www.philips.com.

HID symbols and footnotes located on page 104.
## High Pressure Sodium Lamps

### CeramALTO® High Pressure Sodium Lamps Featuring ALTO® Lamp Technology
- **Low total cost of ownership**
- **Long life—up to 24,000 hours**
- **High efficacy up to 140 LPW**
- **ALTO™ Lamp Technology passes EPA’s TCLP test for non-hazardous waste**
- For **Warnings, Cautions and Operating Instructions**, see page 112

<table>
<thead>
<tr>
<th>Lamp Watts</th>
<th>Bulb Base</th>
<th>Product Number</th>
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<td>S55</td>
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<td>(360, 373, 376) 3 ½</td>
<td>24,000+ 16,000 14,400 21 2100</td>
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<td>24,000+ 15,000 13,500 21 2100</td>
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<td>⭐</td>
<td>C200S66/ALTO</td>
<td>S66MN-200</td>
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<td>24,000+ 21,400 19,260 21 2100</td>
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<td>S</td>
<td>C225S50/ EW</td>
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<td>250</td>
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<td>S50</td>
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<td>360</td>
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<td>C360S51/ EW</td>
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<td>23982-2</td>
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<td>C600S106</td>
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<td>1000</td>
<td>Med.</td>
<td>36883-7</td>
<td>S S</td>
<td>C1000S52/ALTO</td>
<td>S52X8-1000</td>
<td>6 G</td>
<td>(359, 360, 362, 373, 376) 8 ⅞</td>
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<td>32386-5</td>
<td>⭐</td>
<td>C1000S52/ED17</td>
<td>S52</td>
<td>6 G</td>
<td>(360, 373, 376) 7 11/16</td>
<td>24,000+ 125,000 112,000 21 2100</td>
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</tbody>
</table>

For the most current product information, go to the e-catalog on [www.philips.com](http://www.philips.com). HID symbols and footnotes located on page 104.

This product utilizes ALTO™ Lamp Technology.
Horticulture Lamps—High Pressure Sodium Lamps for Plant Growth

- Ideal for growing vegetables and flowers
- Supplements daylight in greenhouses with “growth-light”
- “Growth-light” output is best measured by PPF—micromol value

*The micromol value expresses the amount of light particles (photons) between 400 and 700 nm that are sent out by a light source (=Photosynthetic Photon Flux) per second. The amount that the plant absorbs determines the rate of photosynthesis and as a result the rate of plant growth. Therefore, the micromol value is also called “growth-light.” In general, an increase of 22% in growth-light means an increase of 22% in plant growth.

### Agrolite XT High Pressure Sodium Lamps

- Enhanced spectrum Xtreme grow lamp
- Offers 22% more micromols
- Excellent lumen maintenance at 97% (405)
- Features ALTO® Lamp Technology, environmentally responsible lamps.

Note: Best practice suggests grow lamps to be replaced at maximum 40% of their rated average life in order to maintain same level of growth-light on plants over time.

### Ceramalux® Instant Restrike High Pressure Sodium Lamps

- Extra arc tube offers light instantly after momentary power interruption and will provide 80% light output within 1–2 minutes
- For applications where instant restrike is not required, rated average life is 40,000 hours
- Operates on standard HPS ballasts and auxiliary equipment

**For Warnings, Cautions and Operating Instructions, see page 112**

### Ceramalux® RetroLux High Pressure Sodium Lamps

For operation on all mercury vapor and metal halide ballasts of similar wattage

- Operating position: universal
  - 150W retrofits 175 watt mercury vapor or metal halide
  - 220W retrofits 250 watt mercury vapor or metal halide
  - 360W retrofits 400 watt mercury vapor or metal halide

**For Warnings, Cautions and Operating Instructions, see page 112**

---

### Table: Representative Spectral Power Distribution

<table>
<thead>
<tr>
<th>Wavelength (nanometers)</th>
<th>Relative Power</th>
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<tbody>
<tr>
<td>400</td>
<td>415</td>
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<td>490</td>
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<tr>
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<td>505</td>
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<tr>
<td>670</td>
<td>700</td>
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</tbody>
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### Representative Spectral Power Distribution

- For the most current product information, go to the e-catalog on www.philips.com
- HID symbols and footnotes located on page 104
- For Plant Growth: Horticulture Lamps—High Pressure Sodium Lamps
# High Intensity Discharge Lamps

## Mercury Vapor Lamps

Lifeguard lamps with Weather Duty® bulbs, except as noted. Lamps may be operated in any position.

**Explanation of suffix in ordering code:**
- (no suffix = clear, non-phosphor coated):
  - /D: Deluxe White
  - /M: Medium Base

**WARNING:** “These lamps can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available.” See Safety Lifeguard Mercury Vapor Lamps for those applications where the lamps are to be used or punctured and where prolonged exposure of a population confined to the area can occur.

## Product Information

### Low Pressure Sodium Lamps—SOX

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>18</td>
<td>T-17 D.C. Bay 23404-7</td>
<td>SOX-E18</td>
<td>L69</td>
<td>12</td>
<td>Clear Base Up ± 110°</td>
<td>5½</td>
<td>8½</td>
<td>18,000</td>
<td>1800</td>
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<tr>
<td>35</td>
<td>T-17 D.C. Bay 32781-7</td>
<td>SOX35</td>
<td>L70</td>
<td>12</td>
<td>Clear Base Up ± 110°</td>
<td>—</td>
<td>12½</td>
<td>18,000</td>
<td>4550</td>
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<tr>
<td>55</td>
<td>T-17 D.C. Bay 32151-3</td>
<td>SOX55</td>
<td>L71</td>
<td>12</td>
<td>Clear Base Up ± 110°</td>
<td>9½</td>
<td>16½</td>
<td>18,000</td>
<td>7800</td>
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<td>90</td>
<td>T-21 D.C. Bay 32152-1</td>
<td>SOX90</td>
<td>L72</td>
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<td>Clear Hor. ± 20°</td>
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<td>20½</td>
<td>18,000</td>
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<td>L73</td>
<td>12</td>
<td>Clear Hor. ± 20°</td>
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<td>30½</td>
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<td>22,600</td>
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<td>Clear Hor. ± 20°</td>
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<td>44½</td>
<td>18,000</td>
<td>32,000</td>
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### Descriptive symbols for Mercury Vapor Lamps:
- B: Black Light
- FF: Frosted Face
- G: General Lighting
- K: Kleen-Beam
- RF: Reflector Flood
- SR: Semi Reflector
- S: Street Lighting
- VW: Very Wide
- V: Wide

For the most current product information, go to the e-catalog on [www.philips.com](http://www.philips.com).

HID symbols and footnotes located on page 104.
QL Induction Lighting Systems

QL Induction Lighting is based on a technology which is fundamentally different from that of incandescent lamps or today’s conventional gas discharge lamps. Instead of the glowing filaments of incandescent lamps, or the electrodes used in conventional gas discharge lamps, light generation is by means of induction—the transmission of energy via a magnetic field—combined with a gas discharge.

Induced Current In Lamp Bulb (Vessel)

In the QL induction lighting system, the energy source—equivalent to the primary coil of the transformer—is the lamp’s induction coil, which is powered by the high-frequency electronics in the HF generator. The secondary coil is represented by the low-pressure gas and metal vapor inside the lamp bulb. The induced current causes the acceleration of charged particles in the metal vapor. These particles collide, resulting in excitation and ionization of the metal vapor atoms and raising the energy level of the free electrons from these atoms to a higher, unstable state. As these excited electrons fall back to their stable, lower-energy state, they emit ultraviolet radiation. This falls on the fluorescent coating inside the lamp bulb, causing light to be emitted.

QL System Components

The QL lamp system consists of three main components (see illustration), each of which can be replaced separately if service is required.

- The vessel or discharge bulb is a closed glass bulb containing a low-pressure inert gas filling with a small amount of mercury vapor. The walls of the vessel are coated on the inside with a fluorescent powder of any of the modern three-line phosphor types, providing a choice of color temperatures. At present, the colors /830 (3000K) and /840 (4000K) are available. The discharge vessel is fixed to the power coupler by the plastic lamp cap with a click system. These two components normally never need to be disassembled, due to the ultra-long lifetime of the system.

- The HF generator produces the 2.65 MHz alternating current supply needed to transfer energy from the HF generator to the discharge inside the glass bulb, using an antenna that comprises the primary induction coil and its ferrite core. Other parts of the power coupler are a plastic support for the antenna, a 40 cm coaxial connecting cable carrying current from the HF generator and a heat conducting rod with mounting flange. The mounting flange allows the QL lamp system to be mechanically attached to the luminaire and removes waste heat to a heat sink which forms part of the luminaire.

- The power coupler transfers energy from the HF generator to the discharge inside the glass bulb, using an antenna that comprises the primary induction coil and its ferrite core. Other parts of the power coupler are a plastic support for the antenna, a 40 cm coaxial connecting cable carrying current from the HF generator and a heat conducting rod with mounting flange. The mounting flange allows the QL lamp system to be mechanically attached to the luminaire and removes waste heat to a heat sink which forms part of the luminaire.

### QL Induction Lighting System

<table>
<thead>
<tr>
<th>Watts</th>
<th>Bulb Base</th>
<th>Product Number</th>
<th>Ordering Code</th>
<th>Plgs. Qty.</th>
<th>Description (Operating Position—Universal, unless otherwise indicated)</th>
<th>LCL (In.)</th>
<th>MOL (In.)</th>
<th>Rated Avg. Life, Hrs. (351)</th>
<th>Approximate Lumens (352)</th>
<th>CCT (K)</th>
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<td>13452-6</td>
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<td>55W Generator: 120V 0</td>
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<td>---</td>
<td>100,000</td>
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<td>55W Power Coupler</td>
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<td>85W Generator: 120V 0</td>
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<td>85W Generator: 277V 00</td>
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<td>100,000</td>
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</table>

#### Operating Positions
- Universal
- Power Factor > 9
- Total Harmonic Distortion (THD) < 10%
- QL System Listings: UL, CSA, FCC, Class A
- Vessel maximum diameter: 55W=85mm; 85W=111mm; 165W=131mm
- For detailed system operating instructions see QL OEM Guide at [www.philips.com](http://www.philips.com) > Professional Lighting > Browse Literature > Catalogs/Brochures
- For the most current product information, go to the e-catalog on [www.philips.com](http://www.philips.com)
High Intensity Discharge Lamps

Footnotes

For the most current product information, go to the e-catalog on www.philips.com.

- Exclusive to Philips Lighting Company
- Quantity shown is minimum shipping container — refer to Net Price Schedule for number of lamps to qualify as a standard case.
- Can be used in open luminaire, only if operated vertically ± 15°.
- G = General Lighting
- S = Street Lighting
- PAR-38 (one piece)
- ▲ Aluminum base.
- ■ Nickel plated brass base.
- ★ Heat resisting glass bulb.
- $ Energy Saving Product
- X Orders will be shipped until inventory is depleted; no longer manufactured
- † New since last printing
- © This Bulb Meets US Federal Minimum Efficiency Standard

(351) Rated average life is the life obtained, on the average, from large representative groups of lamps in laboratory tests under controlled conditions at 10 or more operating hours per start. It is based on survival of at least 50% of the lamps and allows for individual lamps or groups of lamps to vary considerably from the average. For HPS lamps with a rated average life of 24,000 hours, life is based on survival of 67% of the lamps.

(352) Measured at 100 hrs. life. Approximate lumen values listed are for vertical operation of the lamp.

(353) Approximate lumen output at 40% of lamp rated average life.

(355) Separate filter is required for black light application.

(356) Opaque coating on reflecting section of bulb.

(357) Protect bulb from moisture when used in base down position.

(359) Electrically insulated support for bulb may be required, especially in horizontal and nearly horizontal operating positions.

(360) Follow fixture manufacturer’ recommendations regarding proximity of ballast to bulb.

(362) This lamp should be shielded from moisture to prevent breakage.

(363) These ordering codes generally conform to the designation system of the American National Standards Institute (ANSI).

(364) Rated average life: vertical ± 30° 20,000 hours; other positions, 15,000 hours.

(365) Supply voltage must be held to ± 10 volts of rated lamp voltage.

(367) Lamps will start down to –10°F.

(368) Supply voltage must be held to ± 5 volts of rated lamp voltage.

(369) Lamps will start down to 0°F.

(370) C150S55 and C150S56 lamps are not electrically interchangeable. Different ballasts are required for the proper operation of each lamp type. ANSI type S55 ballast is for the 55-volt (normal) lamp and the ANSI type S56 ballast is for the 100 volt (nominal) lamp.

(371) Lamp color characteristics may change after long use of lamps. When the lamp is subjected to excess vibration or shock, lamp color characteristics may change after long accumulate operating time.

(372) Performance may not be satisfactory unless operated within specified operating positions.

(373) If specified operating position is base up or base down to horizontal, this permits 15° beyond the horizontal.

(374) For use in fixtures which do not redirect a substantial portion of the energy toward the arc tube, otherwise very early failure is anticipated.

(377) Requires a ballast specified or approved for Philips metal halide lamps, or one that is designed to operate all popular brands of metal halide lamps. 100W types will operate from H36 conventional lag type ballast for Mercury Vapor lamps at ambient temperatures of 50°F or higher. 1000W types must not be operated at 1500W.

(378) Requires auxiliary 10KV pulse ignitor for instant restrike.

(379) It is a characteristic of phosphor-coated vapor lamps to require a few hundred hours of operation to gradually reach normal characteristic color. New lamps may have a slight pink appearance during this initial operating period.

(380) Though made of heat-resistant glass, breakage may result if moisture falls on bulb. Use in well ventilated housing.

(381) For indoor and outdoor use; if outdoors, in base down operation, lamp should be protected by a fully enclosed fixture, adequately ventilated. In base up operation, lamp can be used in open face fixture, 40° below horizontal. All fixtures should protect the lamp and wiring from water and corrosive atmospheric gases. The fixture, holder or shield should provide adequate ventilation near the socket and base of the lamp.

(382) For 40W operation use H4S ballast.

(383) Rated average life: vertical ± 15°. Other positions 75% of vertical life.

(387) This lamp can cause serious skin burns and eye inflammation from shortwave ultraviolet radiation and must be fully enclosed in a fixture with an appropriate UV filter. To protect against possible risk of property damage or personal injury due to an arc tube rupture, the fixture enclosure must be capable of withstanding particles of glass having temperatures up to 1000°F. DO NOT USE THIS LAMP IF THE UV FILTER IS MISSING.

(388) Operates at rated output on ANSI 430W 5145 SON AGRO ballasts.

(389) Where instant restrike is not required, rated lamp life is 40,000+ hours.

(390) Requires a ballast specified or approved for Philips Metal Halide lamp or one designed to the indicated ANSI Standard. A pulse ignitor is required. Sockets and wiring must withstand starting pulse.

(392) Supply volts must be ±5% of rated ballast line volts for reactor type and ±10% for CWA or electronic ballasts.

(393) Vertical luminous. Horizontal luminous: 6%—10% lower.

(394) To maintain color consistency within 250K, group relamp at 7500 hours.

(395) Lamp color may change temporarily if the lamp is subjected to excessive vibration or shock.

(396) UV filtered design (FadeBlock®).

(397) Operate only on thermally protected ballasts.

(398) Rated average life: vertical operation = 10,000 hours; horizontal = 12,000 hours.

(399) This product utilizes ALTO® Lamp Technology. ALTO products pass the US EPA’s Toxicity Characteristic Leaching Procedure (TCLP) for non-hazardous waste status.

(400) Energy-saver retrofit for 175W M107 ballast.

(401) MasterColor® Metal Halide Lamps are not recommended for use on dimmers and are not warranted if used on dimmer systems.

(402) Primarily used for sports-lighting applications. Life, initial and mean luminous are for horizontal operation. In vertical position and at 10 or more hours per start, lamp life is extended to 6000 hours. Initial luminous are 170,000 and mean luminous are 136,000.

(403) Not to be used in compact Wall Pack or Flood Light type fixtures. Maximum temperature limit of outer bulb may be exceeded in these applications and can lead to premature lamp failure.

(404) Luminaire photometric distributions may be impacted due to difference in arc length vs. HPS lamp arc length.

(405) 97% Lumen maintenance at 10% of rated average life. 93% lumen maintenance at 40% of rated average life.

(406) CAUTION: Beware of inadvertent circuit overload in new construction. Because of power factor of 0.57 in the ballast of the lamp, the lamp uses 0.36 amps.
**Base Types (Not Actual Sizes)**

- Medium Med. E26
- Admedium Admed.
- Mogul Mog. E39
- Extended Eyelid Mogul Base EX39 Excl. Mog. (Protected Lamp Base)
- Position Oriented Mogul Base POMB
- Medium Skirted Med. Skt. E26/50X39
- Recessed Single Contact RX7s
- Double Contact Bayonet, Med. D.C. Bay
- PG-12
- G-12
- G8.5
- PGJ5
- GX8.3

**Bulb Shapes (Not Actual Sizes)**

- BF-55
- BD-17
- BT-37
- BT-56
- E-25
- ED-17
- ED-18
- ED-23½
- ED-28
- ED-37
- CDM-Tm
- T-14
- T-17
- T-21
- TD
- Special

**WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS**

**Warnings, Cautions and Operating Instructions**

**WARNING:** These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp complies with FDA radiation performance standard 21 CFR subchapter J, (USA:21CFR 1040.30  Canada:SOR/DORS/80-381)

If the outer bulb is broken or punctured, turn off at once and replace the lamp to avoid possible injury from hazardous short wave ultraviolet radiation. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the envelope is struck.

**WARNING:** The arc-tube of metal halide lamps are designed to operate under high pressure and at temperatures up to 1000°C and can unexpectedly rupture due to internal or external factors such as a ballast failure or misapplication. If the arc-tube ruptures for any reason, the outer bulb may break and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.

This lamp contains an arc tube with a filling gas containing less than 41 nCi of Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

**CAUTION:** TO REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED.

**LAMP OPERATING INSTRUCTIONS:**

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.
2. At high lighting levels or when illuminating light-sensitive materials the use of an extra UV filter is recommended.
3. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.
4. Time should be allowed for lamps to stabilize in color when turned on for the first time. This may require several hours of operation, with more than one start. Lamp color is also subject to change under conditions of excess vibration or shock, and color appearance may vary between individual lamps.
5. Lamps may require up to 10 minutes to re-light if there is a power interruption.
6. Do not operate with an additional ballast, since a ballast is integrated in the lamp itself.
7. Do not use in totally enclosed recessed fixtures.
8. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.
9. Lamp should not be used with dimmers.
10. Protect lamp, lamp socket and wiring against moisture, corrosive atmosphere and excessive heat. Lamp should be used in dry locations only. These lamps may be used in open fixtures.

**Hg - LAMP CONTAINS MERCURY**

Manage in Accord with Disposal Laws See: www.lamprecycle.org or 1-800-555-0050
**WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for MasterColor® (Elite) Ceramic Metal Halide Lamps: Single Ended CDM-T G12, CDM-TC G8.5 and CDM-Tm PGJ5 (Universal); Double-Ended CDM-TD RX7 (Horizontal ± 45°, Enclosed Fixtures Only)**

**WARNINGS, Cautions and Operating Instructions**

**REQUESTED OPERATIONS:**

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

**CAUTION:** REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE. THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

**CAUTION:** REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE. THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

**CAUTION:** REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE. THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

**CAUTION:** REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE. THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

**CAUTION:** REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE. THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

**CAUTION:** REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE. THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.
High Intensity Discharge Lamps
Warnings, Cautions and Operating Instructions

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for MasterColor® Ceramic Metal Halide Lamps ED-17 (Enclosed Fixtures); Protected MasterColor® Ceramic Metal Halide Lamps ED-17P (Open or Enclosed Fixtures)

Warnings, Cautions and Operating Instructions

WARNING: These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp complies with FDA radiation performance standard 21 CFR subchapter J. (USA21 CFR 1040.30 CanadaSOR/DOIRS80-381)

If the outer bulb is broken or punctured, turn off at once and replace the lamp to avoid possible injury from hazardous short wave ultraviolet radiation. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the envelope is struck.

WARNING: The arc-tube of metal halide lamps are designed to operate under high pressure and at temperatures up to 1000°C and can unexpectedly rupture due to internal or external factors such as a ballast failure or misapplication. If the arc-tube ruptures for any reason, the outer bulb may break and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.

Use ED-17 lamps in enclosed luminaires ONLY that are capable of withstanding particles of glass having temperatures up to 1000°C. ED-17P types are designed to retain all the glass particles should an arc tube rupture occur.

RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

CAUTION: TO REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE, THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

LAMP OPERATING INSTRUCTIONS:

1. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

2. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.

3. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.

4. Operate lamp only within specified limits of operation.

5. For total supply load refer to ballast manufacturers electrical data.

6. Periodically inspect the outer envelope. Replace any lamps that show scratches, cracks or damage.

7. If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass.

8. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.

9. Lamp color is also subject to change under conditions of excess vibration or shock, and color appearance may vary between individual lamps.

10. Lamps may require 4 to 8 minutes to re-light if there is a power interruption.

11. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Protected MasterColor® Pulse Start Ceramic Metal Halide Lamps ED-37 and ED-38 (Vertical Operation ± 15°, Open or Enclosed Fixtures)

Warnings, Cautions and Operating Instructions

WARNING: These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

CAUTION: TO REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE, THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

LAMP OPERATING INSTRUCTIONS:

A. Operate lamp only within specified limits of operation.

B. For total supply load refer to ballast manufacturers electrical data.

C. All Pulse Start mogul based lamps require a socket rated to withstand a 4000 volt pulse.

D. Periodically inspect the outer envelope. Replace any lamps that show scratches, cracks or damage.

E. If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass.

F. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.

G. Lamp color is also subject to change under conditions of excess vibration or shock, and color appearance may vary between individual lamps.

H. Lamps may require 10 to 20 minutes to re-light if there is a power interruption.

I. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.

J. Use this lamp only in fixtures that contain Pulse Start metal halide ballasts and are specifically designed for use with Pulse Start metal halide lamps.
Warnings, Cautions and Operating Instructions

**WARNING:** These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp complies with FDA radiation performance standard 21 CFR subchapter J. (USA: 21 CFR 1040.30 Canada:SOR/DORS/80-381)

If the outer bulb is broken or punctured, turn off at once and replace the lamp to avoid possible injury from hazardous short wave ultraviolet radiation. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the envelope is struck.

**WARNING:** The arc-tube of metal halide lamps are designed to operate under high pressure and at temperatures up to 1,000°C and can unexpectedly rupture due to internal or external factors such as a ballast failure or misapplication. If the arc-tube ruptures for any reason, the outer bulb may break and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BUMNS AND FIRE.**

These lamps are designed to retain all the glass particles should an arc tube rupture occur. The following operating instructions are recommended to minimize these occurrences.

**RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE.** Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

This lamp contains an arc tube with a filling gas containing Kr-85 and is distributed by Philips Lighting Company, a division of Philips Electronics North America Corporation, Somerset, New Jersey, 08875.

**CAUTION:** TO REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

**LAMP OPERATING INSTRUCTIONS:**

1. **RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE.** Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

2. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.

**INJURY, PROPERTY DAMAGE, BUMNS AND FIRE.**

Certain lamps that will retain all the glass particles should inner arc-tube rupture occur are commercially available from Philips Lighting Company.

**RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE.** Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

**CAUTION:** TO REDUCE THE RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE RESULTING FROM AN ARC-TUBE RUPTURE THE FOLLOWING LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED:

**LAMP OPERATING INSTRUCTIONS:**

1. Turn off lamps at least once a week for at least 15 minutes in systems which are operating on a continuous basis (24 hours/day-7 days/week). FAILURE TO TURN OFF LAMPS FOR THE MINIMUM RECOMMENDED TIME MAY INCREASE THE POSSIBILITY OF AN INNER ARC-TUBE RUPTURE.

2. **RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE.** Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

3. Use only in an enclosed fixture capable of withstanding particles of glass having temperatures up to 1,000°C, unless otherwise noted.

4. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.

5. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.

A. Operate lamp only within specified limits of operation.

B. For total supply load refer to ballast manufacturers electrical data.

6. Periodically inspect the outer envelope. Replace any lamps that show scratches, cracks or damage.

7. If a lamp bulb support is used, use sure to insulate the support electrically to avoid possible decomposition of the bulb glass.

8. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.

9. Time should be allowed for lamps to stabilize in color when turned on for the first time. This may require several hours of operation, with more than one start. Lamp color is also subject to change under conditions of excess vibration or shock and color appearance may vary between individual lamps.

10. Lamps may require 4 to 20 minutes to re-light if there is a power interruption.

11. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.

12. Use this lamp only in fixtures that contain a Pulse Start metal halide ballast and are specifically designed for use with Pulse Start metal halide lamps.
WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Protected Pulse Start Metal Halide Lamps
(Base Up Operation ± 15° Unless Noted; Open or Enclosed Fixtures)

Warnings, Cautions and Operating Instructions

**WARNING:** These lamps can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp complies with FDA radiation performance standard 21 CFR subchapter J. (USA: 21 CFR 1040.30 Canada:SOR/DORS/80-381)

If the outer bulb is broken or punctured, turn off at once and replace the lamp to avoid possible injury from hazardous shortwave ultraviolet radiation. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the envelope is struck.

**WARNING:** The arc-tube of metal halide lamps are designed to operate under high pressure and at temperatures up to 1000° C and can unexpectedly rupture due to internal or external factors such as a ballast failure or misapplication. If the arc-tube ruptures for any reason, the outer bulb may break and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.** These lamps are designed to retain all the glass particles should an arc tube rupture occur. The following operating instructions are recommended to minimize these occurrences.

**RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE.** Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

**CAUTION:** To reduce the risk of personal injury, property damage, burns and fire resulting from an arc-tube rupture the following Lamp Operating Instructions must be followed:

**LAMP OPERATING INSTRUCTIONS:**
1. **RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE.** Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.
2. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.
3. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.

**A.** Operate lamp only within specified limits of operation.
**B.** For total supply load refer to ballast manufacturer’s electrical data.
**C.** All Pulse Start mogul based lamps require a socket rated to withstand a 4000 volt pulse.

4. Periodically inspect the outer envelope. Replace any lamps that show scratches, cracks or damage.

5. If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass.

6. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.

7. Time should be allowed for lamps to stabilize in color when turned on for the first time. This may require several hours of operation, with more than one start. Lamp color is also subject to change under conditions of excess vibration or shock and color appearance may vary between individual lamps.

8. Lamps may require 2 to 4 minutes to re-light if there is a power interruption.

9. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.

10. Use this lamp only in fixtures that contain a Pulse Start metal halide ballast and are specifically designed for use with Pulse Start metal halide lamps.
**WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Standard Metal Halide Lamps (Enclosed Fixtures Only Unless Otherwise Noted)**

**Warnings, Cautions and Operating Instructions**

**WARNING:** These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp complies with FDA radiation performance standard 21 CFR subchapter J. (USA) 21 CFR 1040.30 (Canada SOR/DORS/80-381)

If the outer bulb is broken or punctured, turn off at once and replace the lamp to avoid possible injury from hazardous short wave ultraviolet radiation. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the envelope is struck.

**WARNING:** The arc-tube of metal halide lamps are designed to operate under high pressure and at temperatures up to 1000º C and can unexpectedly rupture due to internal or external factors such as a ballast failure or misapplication. If the arc-tube ruptures for any reason, the outer bulb may break and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

Certain lamps that will retain all the glass particles should inner arc-tube rupture occur are commercially available from Philips Lighting Company.

**RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE.** Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

**CAUTION:** To reduce the risk of personal injury, property damage, burns and fire resulting from an arc-tube rupture, the following: **LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED.**

**LAMP OPERATING INSTRUCTIONS:**

1. Turn off lamps at least once a week for at least 15 minutes in systems which are operating on a continuous basis (24 hours/day-7 days/week). FAILURE TO TURN OFF LAMPS FOR THE MINIMUM RECOMMENDED TIME MAY INCREASE THE POSSIBILITY OF AN INNER ARC-TUBE RUPTURE.
2. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.
3. Use only in an enclosed fixture capable of withstanding particles of glass having temperatures up to 1000º C.
4. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.
5. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturers.
6. Operate lamp only within specified limits of operation.
7. For total supply load refer to ballast manufacturers electrical data.

**WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Standard Metal Halide Lamps (Open or Enclosed Fixtures; S Rated Lamps; Open Fixture Use Restricted to Base Up ± 15º [Base Down, BD ± 15º])**

**Warnings, Cautions and Operating Instructions**

**WARNING:** These lamps can cause serious skin burn and eye inflammation from short wave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Certain lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp complies with FDA radiation performance standard 21 CFR subchapter J. (USA) 21 CFR 1040.30 (Canada SOR/DORS/80-381)

If the outer bulb is broken or punctured, turn off at once and replace the lamp to avoid possible injury from hazardous short wave ultraviolet radiation. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the envelope is struck.

**WARNING:** The arc-tube of metal halide lamps are designed to operate under high pressure and at temperatures up to 1000º C and can unexpectedly rupture due to internal or external factors such as a ballast failure or misapplication. If the arc-tube ruptures for any reason, the outer bulb may break and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**

Certain lamps that will retain all the glass particles should inner arc-tube rupture occur are commercially available from Philips Lighting Company.

**RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE.** Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

**CAUTION:** To reduce the risk of personal injury, property damage, burns and fire resulting from an arc-tube rupture, the following: **LAMP OPERATING INSTRUCTIONS MUST BE FOLLOWED.**

**LAMP OPERATING INSTRUCTIONS:**

1. Turn off lamps at least once a week for at least 15 minutes in systems which are operating on a continuous basis (24 hours/day-7 days/week). FAILURE TO TURN OFF LAMPS FOR THE MINIMUM RECOMMENDED TIME MAY INCREASE THE POSSIBILITY OF AN INNER ARC-TUBE RUPTURE.
2. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.
3. Use only in an enclosed fixture capable of withstanding particles of glass having temperatures up to 1000º C.
4. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.
5. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturers.
6. Operate lamp only within specified limits of operation.
7. For total supply load refer to ballast manufacturers electrical data.

**6. Periodically inspect the outer envelope. Replace any lamps that show scratches, cracks or damage.**
8. If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass.
9. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.
10. Temperature should be allowed for lamps to stabilize in color when turned on for the first time. This may require several hours of operation, with more than one start. Lamp color is also subject to change under conditions of excess vibration or shock and color appearance may vary between individual lamps.
11. Lamps may require 10 to 20 minutes to re-light if there is a power interruption.
12. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.
13. Do not use this lamp:
A. In a fixture that contains a Pulse Start metal halide ballast.
B. In a fixture that is specifically designed for use with Pulse Start metal halide lamps. Operation of these lamps on Pulse Start Metal Halide systems may increase the chance of an outer bulb rupture and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, **THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.**
**WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS** for Safety Lifeguar Metal Halide Lamps
(Open or Enclosed Fixtures)

**WARNING:** This lamp should self extinguish within 15 minutes after outer envelope is broken or punctured. If such damage occurs, turn off and remove lamp to avoid possible injury from hazardous shortwave ultraviolet radiation. This lamp complies with FDA radiation standard 21 CFR subchapter J. (USA:21CFR 1040.30 Canada:SOR/DORS/80-381)

This lamp should not be used on dimmers and is not warranted if used on dimming systems.

If the outer bulb is broken or punctured, turn off at once and replace the lamp to avoid possible injury from hazardous short wave ultraviolet radiation. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the envelope is struck.

**WARNING:** The arc-tube of metal halide lamps are designed to operate under high pressure and at temperatures up to 1000°C and can unexpectedly rupture due to internal or external factors such as a ballast failure or misapplication. If the arc-tube ruptures for any reason, the outer bulb may break and pieces of extremely hot glass might be discharged into the surrounding environment. If such a rupture were to happen, THERE IS A RISK OF PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.

Certain lamps that will retain all the glass particles should inner arc-tube rupture occur are commercially available from Philips Lighting Company.

**RELPAM FIXTURES AT OR BEFORE THE END OF RATED LIFE:** Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

**CAUTION:** To reduce the risk of personal injury, property damage, burns and fire resulting from an arc-tube rupture. The following lamp operating instructions must be followed:

**LAMP OPERATING INSTRUCTIONS:**

1. Turn off lamps at least once a week for at least 1.5 minutes in systems which are operating on a continuous basis (24 hours/day, 7 days/week). Failure to turn off lamps for the minimum recommended time may increase the possibility of an inner arc-tube rupture.

2. RELAMP FIXTURES AT OR BEFORE THE END OF RATED LIFE. Allowing lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.

3. If operated other than vertical ± 15°, use only in an enclosed fixture capable of withstanding particles of glass having temperatures up to 1000°C.

4. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards.

5. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer:
   - Operate lamp only within specified limits of operation.
   - For total supply load refer to ballast manufacturers electrical data.

**WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS** for Mini WhiteSON and White SON High Pressure Sodium Lamps

**WARNING:** These lamps must be operated in fixtures designed for use with High Pressure Sodium lamps. The fixture wattage rating must match the wattage indicated on the outer glass bulb. Do not scratch the outer bulb or subject it to pressure as this could cause the outer bulb to crack or shatter. A partial vacuum in the outer bulb may cause glass to fly if the glass is struck. Operating the lamp improperly may result in PERSONAL INJURY, PROPERTY DAMAGE, BURNS AND FIRE.

1. If the outer glass bulb is broken, shut off power immediately and remove the lamp after it has cooled.

2. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer:
   - Operate lamp only within specified limits of operation.
   - For total supply load refer to ballast manufacturers electrical data.
   - Operate Mini WhiteSON lamps only on approved electronic ballasts.

3. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.

4. Replace the lamp if the outer glass bulb has been scratched, cracked or damaged in any way.

5. If a lamp bulb support is used, be sure to insulate the support electrically so as to avoid possible decomposition of the bulb glass.

6. Do not use this lamp in a fixture which redirects a substantial portion of the energy toward the arc tube and its immediate vicinity, as this may lead to very early lamp failure.

7. Take care in handling and disposing of lamps. If an arc tube is broken, avoid skin contact with any of the contents or fragments.

8. The arc tube of this lamp contains sodium and mercury. Dispose of in accordance with federal, state and local requirements.

9. It is possible that the light color will suddenly change. After some time the lamp will regain its old color.

10. In order to prevent damage to the ballast, the lamp should be replaced as quickly as possible at the end of its lifetime (lamp color turns yellow, lamp flickers and fails to start).

11. For Mini WhiteSON lamps, after 10,000 hours of burning the light color will become yellow. The lamp must then be replaced.

12. For WhiteSON lamps, after 7,500 hours of burning the light color will become yellow. The lamp must then be replaced.
High Intensity Discharge Lamps
Warnings, Cautions and Operating Instructions

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Ceramalux® High Pressure Sodium Lamps

1. If the outer glass bulb is broken, shut off power immediately and remove the lamp after it has cooled.
2. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.
   A. Operate lamp only within specified limits of operation.
   B. For total supply load refer to ballast manufacturer's electrical data.
3. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.
4. Replace the lamp if the outer glass bulb has been scratched, cracked or damaged in any way.
5. If a lamp bulb support is used, be sure to insulate the support electrically so as to avoid possible decomposition of the bulb glass.
6. Do not use this lamp in a fixture which redirects a substantial portion of the energy toward the arc tube and its immediate vicinity, as this may lead to very early lamp failure.
7. Take care in handling and disposing of lamps. If arc tube is broken, avoid skin contact with any of the contents or fragments.
8. The arc tube of this lamp contains sodium and mercury. Dispose of in accordance with federal, state and local requirements.

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Ceramalux® RetroLux High Pressure Sodium Lamps

1. If the outer glass bulb is broken, shut off power immediately and remove the lamp after it has cooled.
2. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.
   A. Operate lamp only within specified limits of operation.
   B. For total supply load refer to ballast manufacturer's electrical data.
3. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.
4. Replace the lamp if the outer glass bulb has been scratched, cracked or damaged in any way.

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Low Pressure Sodium Lamps—SOX

1. If the outer glass bulb is broken, shut off power immediately and remove the lamp after it has cooled.
2. Use only auxiliary equipment meeting Philips and/or ANSI standards. Use within voltage limits recommended by ballast manufacturer.
   A. Operate lamp only within specified limits of operation.
   B. For total supply load refer to ballast manufacturer's electrical data.
3. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.
4. Replace the lamp if the outer glass bulb has been scratched, cracked or damaged in any way.
5. Take care in handling and disposing of lamps. If arc tube is broken, avoid skin contact with any of the contents or fragments.
6. The arc tube of this lamp contains sodium. Sodium can generate a high degree of heat when exposed to water. Dispose of in accordance with federal, state and local requirements.

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Mercury Vapor Lamps

**WARNING:** This lamp can cause serious skin burn and eye inflammation from shortwave ultraviolet radiation if outer envelope of the lamp is broken or punctured. Do not use where people will remain for more than a few minutes unless adequate shielding or other safety precautions are used. Lamps that will automatically extinguish when the outer envelope is broken or punctured are commercially available. This lamp complies with FDA radiation performance standard 21 CFR subchapter J. (USA 21 CFR 1040.30 CanadaSOR/DORS IO-381)

**WARNING:** The following GOOD LAMP PRACTICES are recommended to reduce the possibility of an arc tube rupture and the associated risk of property damage or personal injury.

1. TURN LAMPS OFF AT LEAST ONCE PER WEEK FOR AT LEAST 15 MINUTES, in systems which are otherwise operating on a continuous basis (24 hours/day-7 days/week).
2. RELAMP FIXTURES AT OR BEFORE END OF RATED LIFE. Allowing such lamps to operate until they fail is not advised and may increase the possibility of inner arc tube rupture.
3. OPERATE LAMP WITH PROPER CIRCUITS AND AUXILIARY EQUIPMENT.
   **CAUTION:** Electric discharge lamp—use only with proper circuits and auxiliary equipment designed to produce established electrical values for this lamp. Operating the lamp improperly may result in damage to equipment or personal injury for which the lamp manufacturer does not assume any responsibility.
4. Replace the lamp if the outer glass bulb has been scratched, cracked or damaged in any way.
5. Take care in handling and disposing of lamps. If arc tube is broken, avoid skin contact with any of the contents or fragments.
6. The arc tube of this lamp contains sodium. Sodium can generate a high degree of heat when exposed to water. Dispose of in accordance with federal, state and local requirements.

**NOTICE:** For total supply load, add auxiliary (ballast) watts to lamp watts.