
Photo by Jeff MacWright of MacWright Studios

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.

Photography by Jeff MacWright of MacWright Studio.


Lighting Design by Compact Lighting. Photography by Peter Smith.


Photography courtesy of Boeing.

High Intensity Discharge Lamps

MasterColor® Ceramic Metal Halide

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)

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

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

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
22	BT-5	PGJ5	14040-0	† ★	**CDM20/ TM/830**	/E	12	G, Clear, FadeBlock (391, 392, 396, 397)	0.87	1 ¾	12,000	1625	1050	83	3000

NEW!

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

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
39	T-4	G8.5	37372-0	★	**CDM35/ TC/830**	M130/E	12	G, Clear, FadeBlock (391, 392, 396, 397)	2	3 ½	9000	3300	2640	81	3000
70	T-4	G8.5	37373-8	★	**CDM70/ TC/830**	M139/E	12	G, Clear, FadeBlock (391, 392, 396, 397)	2	3 ½	7500	6400	5300	83	3000

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

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
39	T-6	G12	22328-9	★	**CDM35/ T6/830**	M130/E	12	G, Clear, FadeBlock (391, 392, 396, 397)	2 7/32	3 15/16	12,000	3300	2600	81	3000
70	T-6	G12	22337-0	★	**CDM70/ T6/830**	M139/E	12	G, Clear, FadeBlock (391, 392, 396, 397)	2 7/32	3 15/16	12,000	6600	4950	81	3000
			28137-8	★	**CDM70/ T6/942**	M139/E	12	G, Clear, FadeBlock (391, 392, 396, 397)	2 7/32	3 15/16	12,000	6600	4620	92	4200
150	T-6	G12	23272-8	★	**CDM150/ T6/830**	M142/E	12	G, Clear, FadeBlock, also ANSI M102 (391, 392, 396, 397)	2 7/32	4 1/32	12,000	14,000	9800	85	3000
			37369-6	★	**CDM150/ T6/942**	M142/E	12	G, Clear, FadeBlock, also ANSI M102 (391, 392, 396, 397)	2 7/32	4 1/32	12,000	12,700	8900	96	4200

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
- 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

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
70	TD-6	RX7s	23160-5	★	**CDM70/ TD/83**	M139/ M85/E	12	G, Clear, FadeBlock, Hor. ± 45° (374, 391, 392, 396)	2 1/4	4 1/16	15,000	6500	5200	82	3000
			37370-4	★	**CDM70/ TD/942**	M139/ M85/E	12	G, Clear, FadeBlock, Hor. ± 45° (374, 391, 392, 396)	2 1/4	4 1/16	15,000	6000	4500	92	4200
150	TD-7	RX7s	23167-0	★	**CDM150/ TD/83**	M142/ M102/M81E	12	G, Clear, FadeBlock, Hor. ± 45° (374, 391, 392, 396)	2 13/32	5 7/16	15,000	13,250	11,260	88	3000
			37371-2	★	**CDM150/ TD/942**	M142/ M102/M81E	12	G, Clear, FadeBlock, Hor. ± 45° (374, 391, 392, 396)	2 13/32	5 7/16	15,000	14,200	12,070	96	4200

For the most current product information, go to the e-catalog on **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

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	MBCP	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
MasterColor Integrated PAR Lamps														
◗ For Warnings, Cautions and Operating Instructions, see page 105														
25	PAR-38	Med.	14477-4	† ▢ ★	**CDM-i25W/830/PAR38/10**	6	G, PAR Spot 10° (396, 406)	26,000	5 ½	10,500	1220	850	87	3000
NEW!			14478-2	† ▢ ★	**CDM-i25W/830/PAR38/25**	6	G, PAR Flood 25° (396, 406)	5600	5 ½	10,500	1220	850	87	3000
			14479-0	† ▢ ★	**CDM-i25W/830/PAR38/40**	6	G, PAR W. Flood 40° (396,406)	2100	5 ½	10,500	1220	850	87	3000

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
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															
38	R111	GX8.5	13554-1	† ▢ ★	**CDM-R111/ 35W/830 10DG**	M130/O	6	G, R111, Spot 10°, (391, 392, 396, 397)	35,000	3¾	9000	1400	900	81	3000
			13556-6	† ▢ ★	**CDM-R111/ 35W/830 24DG**	M130/O	6	G, R111, N. Flood 24°, (391, 392, 396, 397)	8500	3¾	9000	1600	1040	81	3000
			13921-2	† ▢ ★	**CDM-R111/ 35W/830 40DG**	M130/O	6	G, R111, Flood 40°, (391, 392, 396, 397)	4000	3¾	9000	1800	1170	81	3000
70	R111	GX8.5	14754-6	† ▢ ★	**CDM-R111/ 70W/830 10DG**	M139/O	6	G, R111, Spot 10°, (391, 392, 396, 397)	50,000	3¾	9000	2850	1850	84	3000
NEW!			14755-3	† ▢ ★	**CDM-R111/ 70W/830 24DG**	M139/O	6	G, R111, N. Flood 24°, (391, 392, 396, 397)	15,000	3¾	9000	2850	1850	84	3000
			14795-8	† ▢ ★	**CDM-R111/ 70W/830 40DG**	M139/O	6	G, R111, Flood 40°, (391, 392, 396, 397)	9000	3¾	9000	2850	1850	84	3000

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
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															
39	PAR-20	Med.	23365-0	★	**CDM35/PAR20 /M/SP**	M130/O	12	G, PAR WISO Spot 10° (391, 392, 396, 397)	23,000	3 ¾	9000	2000	1300	81	3000
			23364-3	★	**CDM35/PAR20 /M/FL**	M130/O	12	G, PAR WISO Flood 30° (391, 392, 396, 397)	5000	3 ¾	9000	2000	1300	81	3000
	PAR-30L	Med.	22329-7	★	**CDM35/PAR30L /M/SP**	M130/O	6	G, PAR WISO Spot 10° (391, 392, 396, 397)	44,000	4 ¾	9000	2200	1430	81	3000
			22330-5	★	**CDM35/PAR30L /M/FL**	M130/O	6	G, PAR WISO Flood 30° (391, 392, 396, 397)	7400	4 ¾	9000	2200	1430	81	3000

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

HID symbols and footnotes located on page 104

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	MBCP	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
Protected MasterColor Ceramic Metal Halide PAR Lamps, continued															
70	PAR-30L	Med.	23224-9	★	**CDM70/PAR30L /M/SP**	M143/ M98/O	6	G, PAR WISO Spot 10° (391, 392, 396)	68,000	4 ¾	11000	5000	3050	83	3000
			23221-5	★	**CDM70/PAR30L /M/FL**	M143/ M98/O	6	G, PAR WISO Flood 40° (391, 392, 396)	10,000	4 ¾	11000	5000	3050	83	3000
	PAR-38	Med.	22250-5	★	**CDM70/PAR38 /SP/3K/ALTO**	M143/ M98/O	12	G, PAR WISO Spot 15° (391, 392, 396, 399)	42,000	5 7/16	12,500	4100	2870	85	3000
			22249-7	★	**CDM70/PAR38 /FL/3K/ALTO**	M143/ M98/O	12	G, PAR WISO Flood 25° (391, 392, 396, 399)	18,000	5 7/16	12,500	4100	2870	85	3000
			28872-0	▢★	**CDM70/PAR38 /SP/4K/ALTO**	M143/ M98/O	12	G, PAR WISO Spot 15° (391, 392, 396, 399)	40,000	5 7/16	12,500	3700	2590	92	4000
			28873-8	▢★	**CDM70/PAR38 /FL/4K/ALTO**	M143/ M98/O	12	G, PAR WISO Flood 25° (391, 392, 396, 399)	15,000	5 7/16	12,500	3700	2590	92	4000
100	PAR-38	Med.	24477-2	★	**CDM100/PAR38 /SP/3K/ALTO**	M140/ M90/O	12	G, PAR WISO Spot 15° (391, 392, 396, 399)	65,000	5 7/16	12,500	6200	4340	85	3000
			24476-4	★	**CDM100/PAR38 /FL/3K/ALTO**	M140/ M90/O	12	G, PAR WISO Flood 25° (391, 392, 396, 399)	24,000	5 7/16	12,500	6200	4340	85	3000
			28876-1	▢★	**CDM100/PAR38 /SP/4K/ALTO**	M140/ M90/O	12	G, PAR WISO Spot 15° (391, 392, 396, 399)	52,000	5 7/16	12,500	5700	3990	92	4000
			28878-7	▢★	**CDM100/PAR38 /FL/4K/ALTO**	M140/ M90/O	12	G, PAR WISO Flood 25° (391, 392, 396, 399)	19,000	5 7/16	12,500	5700	3990	92	4000

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
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															
50	ED-17P	Med.	36891-0	▢★	**MHC50/U/ MP/3K/ALTO**	M148/ M110/O	12	G, Clear, FadeBlock (391, 392, 396, 399)	3 7/16	5 7/16	10,000	4000	2680	85	3000
			36893-6	▢★	**MHC50/U/ MP/4K/ALTO**	M148/ M110/O	12	G, Clear, FadeBlock (391, 392, 396, 399)	3 7/16	5 7/16	20,000	3600	2450	92	4000
70	ED-17P	Med.	23366-8	★	**MHC70/U/ MP/3K/ALTO**	M143/ M98/O	12	G, Clear, FadeBlock (391, 392, 396, 399)	3 7/16	5 7/16	16,000	5900	4365	85	3000
			23367-6	★	**MHC70/C/U/ MP/3K/ALTO**	M143/ M98/O	12	G, Coated, FadeBlock (391, 392, 396, 399)	—	5 7/16	16,000	5400	3995	85	3000
			36057-8	▢★	**MHC70/U/ MP/4K/ALTO**	M143/ M98/O	12	G, Clear, FadeBlock (391, 392, 396, 399)	3 7/16	5 7/16	20,000	5800	4060	92	4000
			36059-4	▢★	**MHC70/C/U/ MP/4K/ALTO**	M143/ M98/O	12	G, Coated, FadeBlock (391, 392, 396, 399)	—	5 7/16	20,000	5200	3640	92	4000
100	ED-17P	Med.	23368-4	★	**MHC100/U/ MP/3K/ALTO**	M140/ M90/O	12	G, Clear, FadeBlock (391, 392, 396, 399)	3 7/16	5 7/16	16,000	8600	6450	85	3000
			23444-3	★	**MHC100/C/U/ MP/3K/ALTO**	M140/ M90/O	12	G, Coated, FadeBlock (391, 392, 396, 399)	—	5 7/16	16,000	7900	5925	85	3000
			36060-2	▢★	**MHC100/U/ MP/4K/ALTO**	M140/ M90/O	12	G, Clear, FadeBlock (391, 392, 396, 399)	3 7/16	5 7/16	20,000	8200	6150	92	4000
			36061-0	▢★	**MHC100/C/U/ MP/4K/ALTO**	M140/ M90/O	12	G, Coated, FadeBlock (391, 392, 396, 399)	—	5 7/16	20,000	7500	5625	92	4000
150	ED-17P	Med.	13463-5	† ★	**MHC150/U/ MP/3K/ALTO**	M142/ M102/O	12	G, Clear, FadeBlock (391, 392, 396, 399)	3 7/16	5 7/16	16,000	12,900	9545	85	3000
			13464-3	† ★	**MHC150/C/U/ MP/3K/ALTO**	M142/ M102/O	12	G, Coated, FadeBlock (391, 392, 396, 399)	—	5 7/16	16,000	11,900	8805	85	3000
			37724-2	▢★	**MHC150/U/ MP/4K/ALTO**	M142/ M102/O	12	G, Clear, FadeBlock (391, 392, 396, 399)	3 7/16	5 7/16	20,000	12,000	9000	92	4000
			37726-7	▢★	**MHC150/C/U/ MP/4K/ALTO**	M142/ M102/O	12	G, Coated, FadeBlock (391, 392, 396, 399)	—	5 7/16	20,000	11,000	8250	92	4000

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

High Intensity Discharge Lamps

MasterColor® Ceramic Metal Halide

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg. Qty. •	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approx. Lumens (352) Initial	Mean(353)	CRI	CCT (K)
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															
50	ED-17	Med.	36020-6	▢★	**MHC50/U/M/3K/ALTO**	M148/ M110/E	12	G, Clear (391, 392, 399)	3 7/16	5 7/16	10,000	4100	2750	85	3000
			36022-2	▢★	**MHC50/C/U/M/3K/ALTO**	M148/ M110/E	12	G, Coated (391, 392, 399)	—	5 7/16	10,000	3800	2545	85	3000
			36023-0	▢★	**MHC50/U/M/4K/ALTO**	M148/ M110/E	12	G, Clear (391, 392, 399)	3 7/16	5 7/16	20,000	3750	2550	92	4000
			36024-8	▢★	**MHC50/C/U/M/4K/ALTO**	M148/ M110/E	12	G, Coated (391, 392, 399)	—	5 7/16	20,000	3600	2450	92	4000
70	ED-17	Med.	20884-3	★	**MHC70/U/M/3K/ALTO**	M143/ M98/E	12	G, Clear (391, 392, 399)	3 7/16	5 7/16	16,000	6200	4585	85	3000
			20887-6	★	**MHC70/C/U/M/3K/ALTO**	M143/ M98/E	12	G, Coated (391, 392, 399)	—	5 7/16	16,000	5800	4290	85	3000
			28129-5	▢★	**MHC70/U/M/4K/ALTO**	M143/ M98/E	12	G, Clear (391, 392, 399)	3 7/16	5 7/16	20,000	5900	4130	92	4000
			28133-7	▢★	**MHC70/C/U/M/4K/ALTO**	M143/ M98/E	12	G, Coated (391, 392, 399)	—	5 7/16	20,000	5500	3850	92	4000
100	ED-17	Med.	20888-4	★	**MHC100/U/M/3K/ALTO**	M140/ M90/E	12	G, Clear (391, 392, 399)	3 7/16	5 7/16	16,000	9500	7125	85	3000
			20889-2	★	**MHC100/C/U/M/3K/ALTO**	M140/ M90/E	12	G, Coated (391, 392, 399)	—	5 7/16	16,000	8800	6600	85	3000
			28135-2	▢★	**MHC100/U/M/4K/ALTO**	M140/ M90/E	12	G, Clear (391, 392, 399)	3 7/16	5 7/16	20,000	9000	6750	92	4000
			28136-0	▢★	**MHC100/C/U/M/4K/ALTO**	M140/ M90/E	12	G, Coated (391, 392, 399)	—	5 7/16	20,000	8400	6300	92	4000
	ED-28	Mog.	36543-7	▢★	**MHC100/U/ED28/HR/4K**	M140/ M90/E	12	G, Clear (372, 377, 378)	5	8 5/16	10,000	8500	6800	92	4100
150	ED-17	Med.	13022-9	† ▢★	**MHC150/U/M/3K/ALTO**	M142/ M102/E	12	G, Clear (391, 392, 399)	3 1/32	5 7/16	16,000	14,000	10,500	85	3000
			13023-7	† ▢★	**MHC150/C/U/M/3K/ALTO**	M142/ M102E	12	G, Coated (391, 392, 399)	—	5 7/16	16,000	12,500	9375	85	3000
			37720-0	▢★	**MHC150/U/M/4K/ALTO**	M142/ M102/E	12	G, Clear (391, 392, 399)	3 7/16	5 7/16	20,000	13,000	9750	92	4000
			37721-8	▢★	**MHC150/C/U/M/4K/ALTO**	M142/ M102/E	12	G, Coated (391, 392, 399)	—	5 7/16	20,000	12,000	9000	92	4000

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.*

Open or Enclosed luminaires; lifetime color stability within ±200K; V = Vertical Operation ±15°

- 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-hour-a-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

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	MBCP	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
320	ED-28	EX39	13291-0	† ★	**CDM320/V/O/ PS/4K/ALTO**	M170/ M132/O	12	G, Clear, Vertical ±15° (374, 391, 392, 399)	5	8 1/2	20,000	28,800	23,000	90	4200
			13256-3	† ★	**CDM320/C/V/O/ PS/4K/ALTO**	M170/ M132/O	12	G, Coated, Vertical ±15° (374, 391, 392, 399)	–	8 1/2	20,000	28,000	22,400	90	4200
350	ED-37	EX39	13257-1	† ★	**CDM350/V/O/ PS/4K/ALTO**	M171/ M131/O	6	G, Clear, Vertical ±15° (374, 391, 392, 399)	7	11 1/2	20,000	31,500	25,200	90	4200
			13292-8	† ★	**CDM350/C/V/O/ PS/4K/ALTO**	M171/ M131/O	6	G, Coated, Vertical ±15° (374, 391, 392, 399)	–	11 1/2	20,000	30,600	24,500	90	4200
400	ED-28	EX39	14598-6	† ★	**CDM400/V/O/PS 4K/ED28/ALTO**	M172/ M155/O	12	G, Clear, Vertical ±15° (374, 391, 392, 399)	5	8 1/2	20,000	36,000	28,800	90	4200
	ED-37	EX39	13290-2	† ★	**CDM400/V/O/ PS/4K/ALTO**	M172/ M155/O	6	G, Clear, Vertical ±15° (374, 391, 392, 399)	7	11 1/2	20,000	36,000	28,800	90	4200
			13293-6	† ★	**CDM400/C/V/O/ PS/4K/ALTO**	M172/ M155/O	6	G, Coated, Vertical ±15° (374, 391, 392, 399)	–	11 1/2	20,000	35,000	27,900	90	4200

NEW!

MasterColor Ceramic Metal Halide HPS-Retro White™

Satisfies the 2005 NEC for use in open luminaries.*

ED-18, open or enclosed luminaires; lifetime color stability within ±200K

- 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-hour-a-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

HPS-Retro White™ Lamps Rated for Vertical Operation Only (V = Vertical Operation ± 15°)

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	MBCP	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
250	ED-18	Mog.	13093-0	★	**CDM250S50 /V/O/4K/ALTO**	M168/O S50	12	G, Clear, Vertical ± 15° (374, 399, 404)	5 3/4	9 3/4	20,000	20,750	16,600	85	4000
400	ED-18	Mog.	13094-8	★	**CDM400S51 /V/O/4K/ALTO**	M169/O S51	12	G, Clear, Vertical ± 15° (374, 399, 404)	5 3/4	9 3/4	20,000	34,800	27,840	85	4000

HPS-Retro White™ Lamps Rated for Horizontal Operation Only (HOR = Horizontal Operation ± 15°)

Lamp Watts	Bulb	Base	Product Number	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	MBCP	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
250	ED-18	Mog.	14649-8	★	**CDM250S50 /HOR/4K/ALTO**	M168 S50	12	G, Clear, Horizontal ± 15° (374, 399, 404)	5 3/4	9 3/4	15,000	20,750	17,600	85	4000
400	ED-18	Mog.	14650-6	★	**CDM400S51 /HOR/4K/ALTO**	M169 S51	12	G, Clear, Horizontal± 15° (374, 399, 403, 404)	5 3/4	9 3/4	15,000	34,800	29,600	85	4000

NEW!

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

* 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

Metal Halide Lamps

- Upgrade to crisp, white light with Metal Halide
- White light source offers improved color rendition over HPS and all dimmable down to 50%
- For color critical applications always consider Philips MasterColor® Ceramic Metal Halide

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

/C 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)

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:

/U Universal
/BU Base up ±15° unless specified otherwise
/BD Base down ±15° unless specified otherwise
/HOR Horizontal

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
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															
320	ED-37	EX39 Excl.	13039-3	■★	**MP320/ BU/PS**	M154/ M132/O	6	G, Clear, Base Up ± 15° Pulse Start (372, 374, 391)	7	11½	20,000	29,500	20,650	65	3800
		Mog.	13040-1	■★	**MP320/C/ BU/PS**	M154/ M132/O	6	Coated, Base Up ± 15° Pulse Start (372, 374, 391)	—	11½	20,000	27,200	19,040	65	3700
350	ED-37	EX39 Excl.	39101-1	■★	**MP350/ BU/PS**	M131/O	6	Clear, Base Up ± 15° Pulse Start (372, 374, 391)	7	11½	20,000	34,000	23,800	64	4000
		Mog.	39102-9	■★	**MP350/C/ BU/PS**	M131/O	6	Coated, Base Up ± 15° Pulse Start (372, 374, 391)	—	11½	20,000	31,000	21,700	67	3700
400	ED-37	EX39 Excl.	13334-8	■★	**MP400/ BU/PS**	M155/M128/ M135/O	6	G, Clear, Base Up ± 15° Pulse Start (372, 374, 391)	7	11½	20,000	40,000	28,000	65	3800
		Mog.	13335-5	■★	**MP400/C/ BU/PS**	M155/M128/ M135/O	6	G, Coated, Base Up ± 15° Pulse Start (372, 374, 391)	—	11½	20,000	36,000	23,400	68	3600
Pulse Start Metal Halide Lamps															
Enclosed luminaires only unless otherwise noted; base up operation ± 15° 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															
175	ED-28	Mog.	27662-6	■★	**MS175/ BU/PS**	M152/ M137/E	12	G, Base Up ±15°, Pulse Start (372, 374, 391)	5	8 5/16	15,000	16,000	11,200	62	3700
250	ED-28	Mog.	27661-8	■★	**MS250/ BU/PS**	M153/ M138/E	12	G, Base Up ± 15°, Pulse Start (372, 374, 391)	5	8 5/16	15,000	23,750	16,625	65	4300
320	ED-28	Mog.	38381-0	■★	**MS320/ U/PS**	M154/ M132/E	12	G, Clear, Pulse Start (372, 374, 391)	5	8 5/16	20,000	30,000	21,000	62	4100
			38386-9	■★	**MS320/ C/U/PS**	M154/ M132/E	12	G, Coated, Pulse Start (372, 374, 391)	—	8 5/16	20,000	29,000	16,000	70	3600
350	ED-37	Mog.	38387-7	■★	**MS350 /BU/PS**	M131/E	12	G, Clear, Base Up ± 15°, Pulse Start (372, 374, 391)	7	11½	20,000	36,000	25,200	62	4000
			38388-5	■★	**MS350/ C/BU/PS**	M131/E	6	G, Coated, Base Up ± 15°, Pulse Start (372, 374, 391)	—	11½	20,000	35,000	24,500	65	3600

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

Pulse Start Metal Halide Lamps, continued

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
400	ED-37	Mog.	27816-8	)■★	**MS400/ BU/PS**	M155/M128/ M135/S	6	G, Clear, Base Up ± 15°, Pulse Start (372, 374, 391)	7	11½	20,000	42,600	29,820	62	4100
			28362-2	)■★	**MS400/ C/BU/PS**	M155/M128/ M135/S	6	G, Coated, Base Up ± 15°, Pulse Start (372, 374, 391)	—	11½	20,000	41,500	29,050	66	3700
400			14475-8	†■★	**MS400/ HOR/PS**	M155/M135/ M128/E	6	G, Clear, Horizontal, Pulse Start (372, 374, 391)	7	11½	15,000	36,800	25,760	62	4300
750	BT-37	Mog.	13540-0	†■★	**MS750/BU/ BT37/PS**	M149/E	6	G, Clear, Base Up ± 15°, Pulse Start (372, 374, 391)	7	11½	16,000	82,000	61,500	65	4000
1000	BT-37	Mog.	36019-8	■★	**MS1000/BU/ BT37/PS**	M141/E	6	G, Clear, Base Up ± 15°, Pulse Start (372, 374, 391)	7	11½	15,000	120,000	96,000	65	3700

NEW!

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

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
175	ED-28	EX39 Excl. Mog.	28119-6	■★	**MP175/BU**	M57/O	12	Base Up ±15°, Clear (372, 374, 377)	5	8 3/16	10,000	15,000	12,000	65	3800
250	ED-28	EX39 Excl. Mog.	28124-6	■★	**MP250/BU**	M58/O	12	Base Up ±15°, Clear (372, 374, 377)	5	8 3/16	10,000	22,000	16,500	62	3800
360	ED-37	EX39 Excl. Mog.	13067-4	■$★	**MP360BU/ EW**	M165/ M59/O	6	Base Up ±15° (372, 374, 377)	7	11½	20,000	34,200	23,940	65	4000
			13068-2	■$★	**MP360/C/ BU/EW**	M165/ M59/O	6	Base Up ±15°, Coated (372, 374, 377)	—	11½	20,000	31,700	20,605	68	3600
400	ED-37	EX39 Excl. Mog.	13332-2	■★	**MP400/BU**	M59/O	6	Base Up ±15°, Clear (372, 374, 377)	7	11½	20,000	38,000	26,600	65	4000
			13333-0	■★	**MP400/C/BU**	M59/O	6	Base Up ±15°, Coated (372, 374, 377)	—	11½	20,000	34,500	22,425	67	3700
1000	BT-56	EX39 Excl. Mog.	28118-8	■★	**MP1000/BU**	M47/O	6	Base Up ±15°, Clear (372, 374, 377)	9½	15 3/8	12,000	107,000	75,000	65	3900

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.

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
400	ED-37	Mog.	34598-3	★	**MHT400/U**	M59PJ-T400/U/S	6	G, S, Clear (364, 372, 377)	7	11½	20,000	34,200	27,400	65	4000
			34601-5	★	**MHT400/C/U**	M59PK-T400/U/S	6	G, S, Coated (364, 372, 377)	—	11½	20,000	32,500	25,000	65	3700

Double-Ended Metal Halide Lamps Enclosed luminaires (387).

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

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
70	TD-6	RX7s	30350-3	★	**MHN70/ TD/840**	M85/F	12	G, Hor. ± 15° (372, 374, 387, 391, 392)	2 1/4	4 11/16	9000	5700	4560	80	4200
150	TD-7	RX7s	30355-2	▢★	**MHN150/ TD/840**	M81/F	12	G, Hor. ± 15° (372, 374, 387, 391, 392)	2 19/32	5 13/32	9000	12,900	9675	85	4200
1800	TD Special	PSFc20-6 SFc20-6	31360-1		**MHD1800W**	—	4	Sports Ltg. Spot Hor. ± 15° (374, 387, 391)	4 1/4	14	4500	150,000	—	92	5600

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

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
Metal Halide Lamps Enclosed luminaires only unless otherwise noted.															
◗ For **Warnings, Cautions and Operating Instructions,** see page 108															
150	BD-17	Med.	35462-1	★	**MH150/U/M**	M107/E	12	G, Clear (372, 385, 400)	3 7/16	5 7/16	10,000	12,500	8500	65	3700
			35463-9	★	**MH150/C/ U/M**	M107/E	12	G, Coated (372, 385, 400)	—	5 7/16	10,000	12,000	7900	65	3400
175	BD-17	Med.	31358-5	★	**MH175/U/M**	M57/E	12	G, Clear (372, 377, 385, 393)	3 7/16	5 7/16	10,000	13,500	9100	65	4000
			31359-3	★	**MH175/C/ U/M**	M57/E	12	G, Coated (372, 377, 385)	—	5 7/16	10,000	13,000	8380	65	3700
	ED-28	Mog.	28733-4	★	**MH175/U**	M57/E	12	G, S, Clear (372, 377, 385, 393)	5	8 5/16	10,000	13,500	8775	65	4000
			28728-4	★	**MH175/C/U**	M57/E	12	G, S, Coated (372, 374, 377, 385)	—	8 5/16	10,000	13,000	8200	70	3700
			31287-6	★	**MH175/ 3K/BU**	M57/E	12	G, Base Up ± 15°, Coated (372, 374, 377)	—	8 1/4	10,000	12,000	7560	70	3200
			24725-4	★	**MS175/BU**	M57/E	12	G, Base Up ± 15° (372, 374, 377)	5	8 1/4	10,000	15,000	9400	65	4000
	PAR-38	Med.	30858-5	▼★	**MH175/RFL**	M57/E	6	G, Clear, 55° Beam (372, 377)	—	5 13/16	7500	10,000	—	55	3700
250	ED-28	Mog.	27484-5	★	**MH250/U**	M58/E	12	G, S, Clear (372, 377, 385, 393)	5	8 5/16	10,000	20,500	13,500	65	4000
			29169-0	★	**MH250/C/U**	M58/E	12	G, S, Coated (372, 377, 385, 393)	—	8 5/16	10,000	19,475	12,500	70	3700
			31137-3	★	**MH250/ 3K/BU**	M58/E	12	G, Base Up ± 15°, Coated (372, 377, 393)	—	8 1/4	10,000	18,000	11,300	70	3200
360	ED-37	Mog.	39065-8	)$ ★	**MS360/ BU/EW**	M165/ M59/S	6	High Efficacy, Base Up ± 15°, Clear (372, 374, 377)	7	11 1/2	20,000	36,000	24,500	60	4300
			39066-6	)$ ★	**MS360/C/ BU/EW**	M165/ M59/S	6	High Efficacy, Base Up ± 15°, Coated (372, 374, 377)	—	11 1/2	20,000	34,200	22,600	65	4000
400	ED-28	Mog.	27862-2	★	**MH400/U /ED28**	M59/E	12	G, Clear (372, 377, 385, 393)	5	8 5/16	20,000	36,000	24,000	63	4000
			24673-6	★	**MS400/BU /ED28**	M59/E	12	G, Clear, Base Up ± 15° (372, 374, 377)	5	8 5/16	20,000	40,000	26,000	62	4100
	ED-37	Mog.	34415-0	)★	**MH400/U**	M59/S	6	G, S, Clear (372, 377, 385, 393)	7	11 1/2	20,000	36,000	24,000	65	4000
			34416-8	)★	**MH400/C/U**	M59/S	6	G, S, Coated (372, 377, 385, 393)	—	11 1/2	20,000	34,200	22,300	70	3700
			31285-0	)★	**MH400/3K/U**	M59/S	6	G, Coated (372, 377, 385)	—	11 1/2	20,000	34,400	22,360	63	3300
			30170-5	)★	**MS400/BU**	M59/S	6	High Efficacy, Base Up ± 15° Clear (372, 374, 377)	7	11 1/2	20,000	40,000	26,500	65	4000
			30172-1	)★	**MS400/C/BU**	M59/S	6	High Efficacy, Base Up ± 15° Coated (372, 374, 377)	—	11 1/2	20,000	39,200	27,440	65	3900
			31135-7	)★	**MS400/3K/BU**	M59/S	6	G, Base Up ± 15°, Coated (372, 374, 377)	—	11 1/2	20,000	36,800	23,920	67	3200
1000	BT-37	Mog.	32150-5	★	**MH1000/ U/BT37**	M47/E	6	G, Clear (359, 372, 377, 385, 393)	7	11 1/2	10,000	110,000	71,500	65	3700
	BT-56	Mog.	29826-5	)★	**MH1000/U**	M47/S	6	G, S, Clear (372, 377, 385, 393)	9 1/2	15 3/8	12,000	110,000	71,000	65	3700
			29827-3	)★	**MH1000/C/U**	M47/S	6	G, S, Coated (372, 377, 385, 393)	—	15 3/8	12,000	104,500	65,800	70	3400
			25093-6	)★	**MS1000/BU**	M47/S	6	High Efficacy, Base Up ± 15° Clear (372, 374, 377)	9 1/2	15 3/8	10,000	120,000	78,000	65	3700
			25130-6	)★	**MS1000/BD**	M47/S	6	High Efficacy, Base Down ± 15° Clear (372, 374, 377)	9 1/2	15 3/8	10,000	120,000	78,000	65	3700
			25137-1	)★	**MS1000/C/BU**	M47/S	6	High Efficacy, Base Up ± 15° Coated (372, 374, 377)	—	15 3/8	10,000	115,000	72,500	70	3400
1500	BT-56	Mog.	13162-3	★	**MH1500/U**	M48/E	6	G, S, Clear (359, 372, 374, 375, 377, 402)	9 1/2	15 3/8	3000	155,000	124,000	60	3700

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
(no suffix = clear, mogul base, std. color):

/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

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)

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

100	T-6	GX12-1	13425-4	†▢★	**SDW-TG 100W/T6/825**	S167	12	G, (360, 373, 376)	2 1/5	4 11/32	10,000	4900	4165	83	2550

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

50	T-10	PG-12	30229-9	▢★	**SDW-T 50W/LV**	S104	12	G (360, 373, 376, 394)	3 3/16	5 7/8	10,000	2300	2070	83	2500
	BD-17	Med.	31344-5	■▢★	**SDW-50W/ LV/D**	S104	12	G (360, 373, 376, 394)	—	5 7/16	10,000	2350	2000	85	2700
100	T-10	PG-12	30228-1	▢★	**SDW-T 100W/LV**	S105	12	G (360, 373, 376, 394)	3 3/16	5 7/8	10,000	5000	4250	83	2550
	BD-17	Med.	31346-0	■▢★	**SDW-100W/ LV/D**	S105	12	G (360, 373, 376, 394)	—	5 7/16	10,000	4900	4170	85	2700

Ceramalux® Comfort High Pressure Sodium Lamps Improved color rendering

◗ 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

70	BD-17	Med.	30617-5	★	**C70S62/ C/M**	S62	12	G (360, 373, 376)	3 3/16	5 7/16	15,000	4400	3960	60	2200
100	BD-17	Med.	30635-7	★	**C100S54/ C/M**	S54	12	G (360, 373, 376)	3 3/16	5 7/16	15,000	7800	7020	60	2200
	ED-23½	Mog.	30637-3	★	**C100S54/C**	S54	12	G (360, 373, 376)	5	7 3/4	15,000	7900	7110	60	2200
150	BD-17	Med.	30647-2	★	**C150S55/ C/M**	S55	12	G (360, 373, 376)	3 3/16	5 7/16	15,000	12,000	10,800	60	2200
	ED-23½	Mog.	30643-1	★	**C150S55/C**	S55	12	G (360, 373, 376)	5	7 3/4	15,000	12,000	10,800	60	2200
250	ED-18	Mog.	30245-5	★	**C250S50/C**	S50	12	G (360, 373, 376)	5 3/4	9 3/4	15,000	23,000	20,700	65	2200
400	ED-18	Mog.	30652-2	★	**C400S51/C**	S51	12	G (360, 373, 376)	5 3/4	9 3/4	15,000	37,500	33,750	65	2200

For the most current product information, go to the e-catalog on **www.philips.com**
HID symbols and footnotes located on page 104

High Intensity Discharge Lamps

High Pressure Sodium Lamps

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
Ceramalux® 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															
35	BF-55	Med.	30632-4	★	**C35S76/M**	S76	12	G (360, 373, 376)	3 7/16	5 7/16	24,000+	2250	2025	21	2100
			30633-2	★	**C35S76/ D/M**	S76	12	G (360, 373, 376)	—	5 7/16	24,000+	2150	1935	21	2100
50	BF-55	Med.	30336-2	★	**C50S68/M**	S68	12	G (360, 373, 376)	3 7/16	5 7/16	24,000+	4000	3600	21	2100
			30337-0	★	**C50S68/ D/M**	S68	12	G (360, 373, 376)	—	5 7/16	24,000+	3800	3420	21	2100
	ED-23½	Mog.	36867-0	★	**C50S68/ ALTO**	S68	12	G, S (360, 373, 376)	5	7 3/4	24,000+	4000	3600	21	2100
			33154-6	★	**C50S68/ D/ALTO**	S68	12	G, S (360, 373, 376)	—	7 3/4	24,000+	3800	3420	21	2100
70	BD-17	Med.	33192-6	★	**C70S62/M**	S62	12	G (360, 373, 376)	3 7/16	5 7/16	24,000+	6300	5850	21	2100
			33214-8	★	**C70S62/D/M**	S62	12	G (360, 373, 376)	—	5 7/16	24,000+	5860	5270	21	2100
	ED-23½	Mog.	36869-6	★	**C70S62/ ALTO**	S62	12	G, S (360, 373, 376)	5	7 3/4	24,000+	6500	5670	21	2100
	PAR-38	Med.	30620-9	▼★	**C70S62 /RFL**	S62	12	G, VW, 50 (360, 373) 125° Beam	—	5 13/16	16,000	5000	3960	21	2100
100	BD-17	Med.	34446-5	★	**C100S54/M**	S54S	12	G (360, 373, 376)	3 ½	5 7/16	24,000+	9500	8550	21	2100
			34448-1	★	**C100S54/ D/M**	S54S	12	G (360, 373, 376)	—	5 7/16	24,000+	8800	7920	21	2100
	ED-23½	Mog.	36872-0	★	**C100S54/ ALTO**	S54	12	G, S (360, 373, 376)	5	7 3/4	24,000+	9400	8460	21	2100
			33227-0	★	**C100S54/ D/ALTO**	S54	12	G, S (360, 373, 376)	—	7 3/4	24,000+	8610	7750	21	2100
150	BD-17	Med.	30347-9	★	**C150S55/M**	S55	12	G (360, 373, 376)	3 ½	5 7/16	24,000+	16,000	14,400	21	2100
			30348-7	★	**C150S55/ D/M**	S55	12	G (360, 373, 376)	—	5 7/16	24,000+	15,000	13,500	21	2100
	ED-23½	Mog.	36874-6	★	**C150S55/ ALTO**	S55	12	G, S (360, 370, 373, 376)	5	7 3/4	24,000+	15,800	14,220	21	2100
	ED-28	Mog.	36876-1	★	**C150S56/ ALTO**	S56	12	G, S (360, 370, 373, 376)	5	8 15/16	24,000+	15,000	13,950	21	2100
200	ED-18	Mog.	36877-9	★	**C200S66/ ALTO**	S66MN-200	12	G, S (360, 373, 376)	5 3/4	9 3/4	24,000+	21,400	19,260	21	2100
225	ED-18	Mog.	32291-7	$★	**C225S50/ EW**	S50	12	EW, G, S (360, 373, 376)	5 3/4	9 3/4	24,000+	27,300	24,620	21	2100
250	ED-18	Mog.	36879-5	★	**C250S50/ ALTO**	S50	12	G, S (360, 373, 376)	5 3/4	9 3/4	24,000+	27,000	24,300	21	2100
360	ED-18	Mog.	32292-5	$★	**C360S51/ EW**	S51	12	EW, G, S (360, 373, 376)	5 3/4	9 3/4	24,000+	46,000	41,450	21	2100
400	ED-18	Mog.	36881-1	★	**C400S51/ ALTO**	S51	12	G, S (360, 373, 376)	5 3/4	9 3/4	24,000+	50,000	45,000	21	2100
600	T-14	Mog.	23982-2	■★	**C600S106**	S106	12	G (360, 373, 376)	6 7/8	11 1/8	24,000+	90,000	81,000	21	2100
1000	ED-25	Mog.	36883-7	■★	**C1000S52/ ALTO**	S52XB-1000	6	G, S (359, 360, 362, 373, 376)	8 3/4	15 1/16	24,000	140,000	126,000	21	2100
	ED-37	Mog.	32386-5	■★	**C1000S52/ ED37**	S52	6	G, S (360, 373, 376)	7	11 ½	24,000	125,000	112,000	21	2100

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

HID symbols and footnotes located on page 104

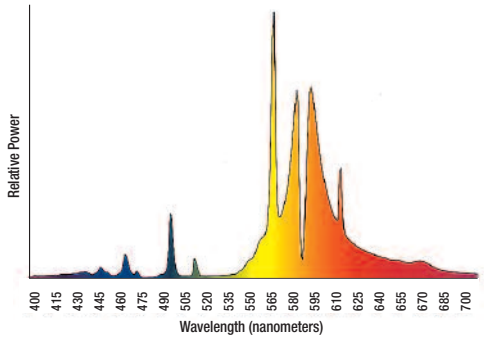
This product utilizes ALTO® Lamp Technology

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.

Representative Spectral Power Distribution



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.

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	PPF* (µmol/ sn)	CCT (K)	
1000	E-25	Mog.	14064-0	† ■★	**C1000S52 / AGROLITE XT**	S52	6	AGRO (359, 360, 362, 373, 376)	8 ¾	15 1⁄16	15,000	146,000	135,780	1850	2100	NEW!
430	ED-18	Mog.	31710-7	★	**SON AGRO 430W**	S145/S51	12	AGRO (360, 373, 389, 396)	5 ¾	9 ¾	16,000	54,000	48,600	670	2100	

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

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

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
50	ED-23½	Mog.	35467-0	■★	**C50S68/2**	S68	12	G, S (360, 373, 376)	5	7 ¾	24,000+	3800	3450	21	2100
70	ED-23½	Mog.	26541-3	■★	**C70S62/2**	S62	12	G, S (360, 373, 376)	5	7 ¾	24,000+	5600	5050	21	2100
100	ED-23½	Mog.	26560-3	■★	**C100S54/2**	S54	12	G, S (360, 373, 376)	5	7 ¾	24,000+	9100	8190	21	2100
150	ED-23½	Mog.	26561-1	■★	**C150S55/2**	S55	12	G, S (360, 373, 376)	5	7 ¾	24,000+	15,600	14,000	21	2100
250	ED-18	Mog.	37717-6	■★	**C250S50/2**	S50	12	G, S (360, 373, 376)	5 ¾	9 ¾	24,000+	27,500	24,750	21	2100
400	ED-18	Mog.	37688-9	■★	**C400S51/2**	S51	12	G, S (360, 373, 376)	5 ¾	9 ¾	24,000+	49,000	44,000	21	2100
1000	E-25	Mog.	20412-3	■★	**C1000S52/2**	S52	6	G, S (360, 373, 376)	8 ¾	15 1⁄16	24,000+	140,000	126,000	21	2100

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

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Approximate Lumens, (352) Mean(353)	CRI	CCT (K)
150	BT-28	Mog.	39194-6	$★	**C150S63/ Retrolux**	S63	12	G, S	5 9⁄64	8 5⁄16	24,000	15,000	13,500	25	2100
220	BT-28	Mog.	39195-3	$★	**C220S65/ Retrolux**	S65	12	G, S	5 9⁄64	8 5⁄16	24,000	25,000	22,500	25	2100
360	BT-37	Mog.	39196-1	$★	**C360S64/ Retrolux**	S64	6	G, S	7⅛	11 ½	24,000	45,000	40,500	25	2100

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

HID symbols and footnotes located on page 104

High Intensity Discharge Lamps

Mercury Vapor Lamps

Low Pressure Sodium Lamps—SOX

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

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	ANSI Code/ Ballast Ref.	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated) (401)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
18	T-17	D.C. Bay	23404-7	▢	**SOX-E18**	L69	12	Clear Base Up ± 110°	5 ½	8 ½	18,000	1800	1620	—	1700
35	T-17	D.C. Bay	32781-7		**SOX35**	L70	12	Clear Base Up ± 110°	—	12 3⁄16	18,000	4550	4095	—	1700
55	T-17	D.C. Bay	32151-3		**SOX55**	L71	12	Clear Base Up ± 110°	9 ½	16 ¾	18,000	7800	7800	—	1700
90	T-21	D.C. Bay	32152-1		**SOX90**	L72	12	Clear Hor. ± 20°	—	20 ¾	18,000	14,300	12,155	—	1700
135	T-21	D.C. Bay	32153-9		**SOX135**	L73	12	Clear Hor. ± 20°	—	30 ½	18,000	22,600	19,210	—	1700
180	T-21	D.C. Bay	15116-7		**SOX180**	L74	6	Clear Hor. ± 20°	—	44 ⅛	18,000	32,000	22,400	—	1700

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):

/DX 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 in luminaires to light areas where activities are conducted that can result in the outer envelope being broken or punctured and where prolonged exposure of a population confined to the area can occur.

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
W Wide

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

Lamp Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code (363)	ANSI Code	Pkg.• Qty.	Description	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens, (352) Initial	Mean(353)	CRI	CCT (K)
50	BD-17	Med.	35664-2	★	**H46DL-40-50/DX**	H46	12	G, (379, 384)	—	5 ⅛	24,000+	1580	1260	45	3200
75	BD-17	Med.	27524-8	★	**H43AV-75/DX**	H43	12	G, S, (379)	—	5 7⁄16	24,000+	2800	2250	45	3200
100	A-23	Med.	35658-4	★	**H38MP-100/DX**	H38	24	G, (379)	—	5 7⁄16	24,000+	4300	3700	45	3700
	ED-23½	Mog.	33712-1	X ★	**H38HT-100**	H38	12	G, S, B (355)	5	7 ½	24,000+	4100	3450	20	7000
			33713-9	★	**H38JA-100/DX**	H38	12	G, S (379)	—	7 ½	24,000+	4400	3400	45	3700
	R-40	Med.	31947-5	★	**H38BP-100/DX**	H38	12	RF, FF, VW (379) 145° Beam	—	7 ½	24,000+	3300	2300	45	4400
175	ED-28	Mog.	31965-7	★	**H39KB-175**	H39	12	G, S, B (355)	5	8 7⁄16	24,000+	7900	7400	20	6800
			24805-4	★	**H39KC-175/DX**	H39	12	G, S (379)	—	8 7⁄16	24,000+	7900	7600	45	3700
	R-40	Med.	30105-1	★	**H39BP-175/DX**	H39	12	RF, FF, VW (379) 105° Beam	—	7 ½	24,000+	6000	4800	40	4300
250	ED-28	Mog.	31985-5	★	**H37KB-250**	H37	12	G, S, B (355)	5	8 7⁄16	24,000+	12,100	10,500	20	6700
			24814-6	★	**H37KC-250/DX**	H37	12	G, S (379)	—	8 7⁄16	24,000+	13,000	10,700	45	3700
400	ED-37	Mog.	25205-6	X ★	**H33CD-400**	H33	6	G, S, B (355)	7	11 ½	24,000+	21,000	18,900	20	6500
			24842-7	★	**H33GL-400/DX**	H33	6	G, S (379)	—	11 ½	24,000+	23,000	19,100	45	3700
	R-60	Mog.	35661-8	★	**H33FS-400/DX**	H33	6	K, FF, RF (379) 146° Beam	—	10 ⅞	24,000+	15,000	12,400	45	3800
1000	BT-56	Mog.	25107-4	★	**H36GV-1000**	H36	6	G, S (359)	9 ½	15 ⅜	24,000+	57,500	48,400	20	6300
			39707-5	★	**H36GW-1000/DX**	H36	6	G, S (359, 379)	—	15 ⅜	24,000+	63,000	47,500	45	3700

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

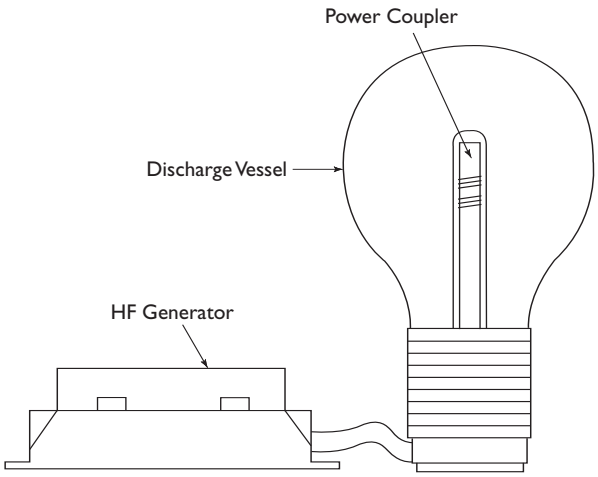
HID symbols and footnotes located on page 104

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 **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.
- The **HF generator** produces the 2.65 MHz alternating current supply to the antenna.

Watts	Bulb	Base	Product Number 046677-	Symbols, Footnotes	Ordering Code	Pkg.• Qty.	Description (Operating Position—Universal, unless otherwise indicated)	LCL (In.)	MOL (In.)	Rated Avg. Life, Hrs. (351)	Approximate Lumens (352) Initial	Mean(353)	CRI	CCT (K)
55			13542-6	☐	**QL55W/GEN 100–120V 6PK**	6	55W Generator 120V ◊	—	—	100,000	—	—	—	—
			13543-4	☐	**QL55W/GEN 200–277V 6PK**	6	55W Generator 277V ◊◊	—	—	100,000	—	—	—	—
			13544-2	☐	**QL55W/PC TWIST BASE 6PK**	6	55W Power Coupler	—	—	100,000	—	—	—	—
	P-26	Twist	14736-3	☐	**QL55W/827 TWIST BASE**	6	55W Lamp 2700K	—	5 ½	100,000	3500	2800	80	2700
			13545-9	☐	**QL55W/830 TWIST BASE**	6	55W Lamp 3000K	—	5 ½	100,000	3500	2800	80	3000
			13546-7	☐	**QL55W/840 TWIST BASE**	6	55W Lamp 4000K	—	5 ½	100,000	3500	2800	80	4000
85			13547-5	☐	**QL85W/GEN 100–120V 6PK**	6	85W Generator, 120V ◊	—	—	100,000	—	—	—	—
			13548-3	☐	**QL85W/GEN 200–277V 6PK**	6	85W Generator 277V ◊◊	—	—	100,000	—	—	—	—
			13549-1	☐	**QL85W/PC TWIST BASE 6PK**	6	85W Power Coupler	—	—	100,000	—	—	—	—
	P-35	Twist	14737-1	☐	**QL85W/827 TWIST BASE**	6	85W Lamp 2700K	—	7 ⅛	100,000	6000	4800	80	2700
			13550-9	☐	**QL85W/830 TWIST BASE**	6	85W Lamp 3000K	—	7 ⅛	100,000	6000	4800	80	3000
			13551-7	☐	**QL85W/840 TWIST BASE**	6	85W Lamp 4000K	—	7 ⅛	100,000	6000	4800	80	4000
			14428-7	☐	**QL85R/840 TWIST BASE**	6	85W Reflector Lamp 4K	—	8 ⅛	100,000	6000	4800	80	4000
165			37799-4	☐	**QL165W/GEN 200–277V 6PK**	6	165W Generator 277V ◊◊◊	—	—	100,000	—	—	—	—
			36916-5	☐	**QL165W/PC TWIST BASE 6PK**	6	165W Power Coupler	—	—	100,000	—	—	—	—
	P-41	Twist	36917-3	☐	**QL165W/830 TWIST BASE**	6	165W Lamp 3000K	—	8 ⅛	100,000	12,000	9600	80	3000
			36918-1	☐	**QL165W/840 TWIST BASE**	6	165W Lamp 4000K	—	8 ⅛	100,000	12,000	9600	80	4000

NEW!

Operating Position: Universal
Power Factor > .9
Total Harmonic Distortion (THD) < 10%
QL System Listings: UL, CSA, FCC Class A
Note: QL System requires all three components to operate (order 3 product numbers)
Vessel maximum diameter: 55W=85mm; 85W=111mm; 165W=131mm
For detailed system operating instructions see QL OEM Guide at **www.philips.com > Professional Lighting > Browse Literature > Catalogs/Brochures**

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

HID symbols and footnotes located on page 104

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.

(372) Color characteristics may vary somewhat from one lamp type to another. Time should be allowed for the lamp to stabilize in color when it is turned on for the first time or if for any reason its operating position is changed. This may require several hours' operation, with more than one start. Lamp color and output may change temporarily if the lamp is subjected to excess vibration or shock. Lamp color characteristics may change after long accumulate operating time.

(373) Fixtures should be designed so that sockets and wiring withstand starting pulse up to 5000 volts for 1000 watts and WHITE SON® types and 4000 volts for other sizes.

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

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

(376) 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. 1000W 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.

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

(383) 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.

(384) For 40W operation use H45 ballast.

	Approx. Lumens	
Ordering Code	Initial	Mean
H46DL-40-50/DX	1140	910

(385) 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° C. DO NOT USE THIS LAMP IF THE UV FILTER IS MISSING.

(389) Operates at rated output on ANSI 430W S145 SON AGRO ballasts.

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

(391) 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 lumens. Horizontal lumens 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 lumens are for horizontal operation. In vertical position and at 10 or more hours per start, lamp life is extended to 6000 hours, initial lumens are 170,000 and mean lumens are 136,000.

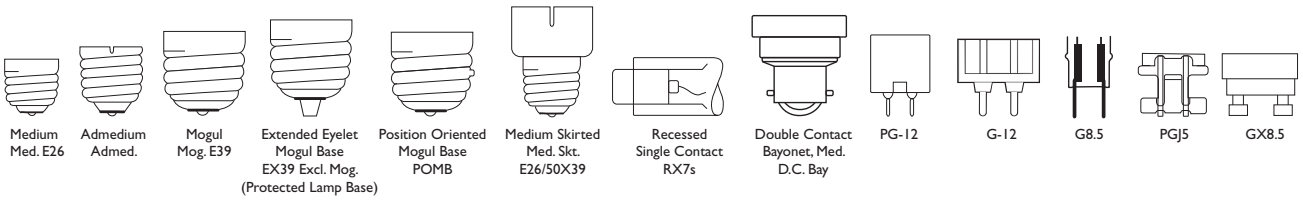
(403) Not to be used in compact Wall Pack or Flood Light type fixtures. Maximum temperature limit of outer bulb may be exceeded in these applications and can lead to premature lamp failure.

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

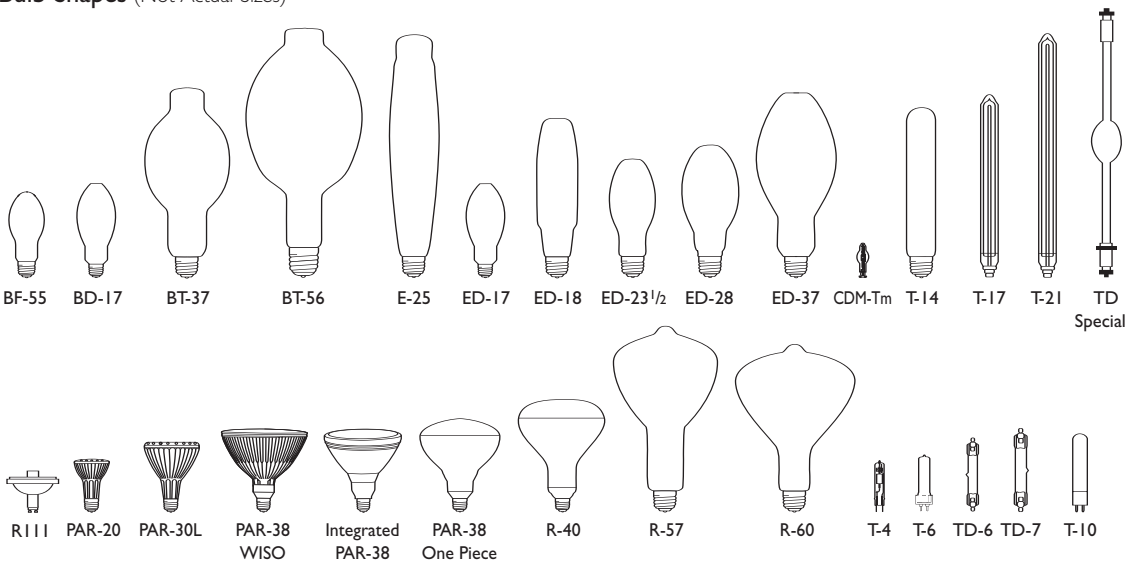
(405) 97% Lumen maintenance at 10% of rated average life. 93% lumen maintenance at 40% of rated average life.

(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)



Bulb Shapes (Not Actual Sizes)



WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for MasterColor® Integrated PAR 38 Lamps

Warnings, Cautions and Operating Instructions

R "**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

High Intensity Discharge Lamps

Warnings, Cautions and Operating Instructions

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

"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.**

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.

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. Use only in fully enclosed fixtures capable of withstanding particles of glass having temperatures up to 1000° C. Lens/diffuser material must be heat resistant. Consult fixture manufacturer regarding the suitability of the fixture for this lamp.
3. Do not operate a fixture with a missing or broken lens/diffuser. At high lighting levels or when illuminating light-sensitive materials the use of an extra UV filter is recommended.
4. Operate lamp only within specified limits of operating position.
5. Before lamp installation/replacement, shut power off and allow lamp and fixture to cool to avoid electrical shock and potential burn hazards. When inserting a new CDM-Tm lamp, twist the lamp 45° clock-wise in the holder to ensure proper electrical and mechanical connection.
6. 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.
   C. Operate CDM-T (G12 base), CDM-TC (G8.5 base) and CDM-Tm (PGJ5 base) lamps only on thermally protected ballasts.
   D. Operate CDM-TC lamps (G8.5 base) and CDM-Tm (PGJ5 base) only on electronic ballasts.
7. 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. 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.
11. Lamps may require 4 to 8 minutes (10-15 minutes for CDM-Tm) 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.

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Protected MasterColor® Ceramic Metal Halide PAR and CDM-R111 Lamps (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. (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. 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.
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 manufacturers electrical data.
   C. Operate 39W PAR-20 and PAR-30L lamps only on thermally protected ballast.
   D. Operate CDM-R111 lamp only on approved thermally protected electronic ballast.
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 up to 10 minutes (4–8 minutes for CDM-R111) 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. For proper installation and removal, lamp should be handled by the sides of the reflector and not by the aluminum front anti-glare cap.

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. (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.**

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.
   A. Operate lamp only within specified limits of operation.
   B. For total supply load refer to ballast manufacturers electrical data.
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 4 to 8 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.

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 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.**

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.
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 manufacturers 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 10 to 20 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 Pulse Start metal halide ballasts and are specifically designed for use with Pulse Start metal halide lamps.

High Intensity Discharge Lamps

Warnings, Cautions and Operating Instructions

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Protected MasterColor® Ceramic Metal Halide HPS-Retro White™ Lamps ED-18 (Vertical Operation ± 15°, Open or Enclosed Fixtures or Horizontal Operation ±15°)

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.**

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.
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 manufacturers electrical data.
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 10 to 20 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.

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Pulse Start Metal Halide Lamps (Base Up Operation ±15° Unless Otherwise Noted; Enclosed Fixtures Only Unless Otherwise Noted)

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: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 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.**

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-7days/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 1000° 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.
   C. All Pulse Start mogul based lamps require a socket rated to withstand a 4,000 volt pulse.
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. 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 2 to 4 minutes to relight 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

R **"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: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 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 manufacturers 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 relight 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 Protected Metal Halide Lamps (Base Up Operation ± 15° Unless Noted; Open or Enclosed Fixtures)

Warnings, Cautions and Operating Instructions

R **"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.**

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 manufacturers electrical data.
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 10 to 20 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. 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.**

High Intensity Discharge Lamps

Warnings, Cautions and Operating Instructions

WARNINGS, CAUTIONS AND OPERATING INSTRUCTIONS for Standard Metal Halide Lamps (Enclosed Fixtures Only Unless Otherwise Noted)

Warnings, Cautions and Operating Instructions

R**"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 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.

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-7days/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 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:
   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, 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. 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 10 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. 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 Standard Metal Halide Lamps (Open or Enclosed Fixtures; S Rated Lamps; Open Fixture Use Restricted to Base Up ± 15° [Base Down, BD ± 15°])

Warnings, Cautions and Operating Instructions

R**"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 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.

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-7days/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:
   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, 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. 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 10 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. 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 Lifeguard Metal Halide Lamps (Open or Enclosed Fixtures)

Warnings, Cautions and Operating Instructions

T"**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 performance 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.

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-7days/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.
   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, 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. 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 10 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. 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 Mini WhiteSON and White SON High Pressure Sodium Lamps

Warnings, Cautions and Operating Instructions

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.
   A. Operate lamp only within specified limits of operation.
   B. For total supply load refer to ballast manufacturers electrical data.
   C. 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 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

Warnings, Cautions and Operating Instructions

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.
   A. Operate lamp only within specified limits of operation.
   B. For total supply load refer to ballast manufacturers 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

Warnings, Cautions and Operating Instructions

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.

If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass. Do not scratch the bulb or subject it to pressure, as it could fail violently. If the outer bulb is broken, turn off the lamp and replace it promptly.

The arc tube of this lamp contains sodium and mercury. Use appropriate care in disposal. Protect lamp base, socket and wiring against moisture, corrosive atmospheres and excessive heat.

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.

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

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

Warnings, Cautions and Operating Instructions

WARNING: These lamps must be operated in fixtures designed for use with Low 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.

Operating the lamp improperly and not following operating instructions 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.
   A. Operate lamp only within specified limits of operation.
   B. For total supply load refer to ballast manufacturers 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

Warnings, Cautions and Operating Instructions

R**"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:21CFR 1040.30 Canada:SOR/DORS/80-381)

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.

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If a lamp bulb support is used, be sure to insulate the support electrically to avoid possible decomposition of the bulb glass. Do not scratch the bulb or subject it to pressure, as it could fail violently. If the outer bulb is broken, turn off the lamp and replace it promptly.

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.

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