

INDOOR 2018

**INDOOR  
HORTICULTURE**

*Separating Myth from Reality*

KNOW YOUR SPECTRUM

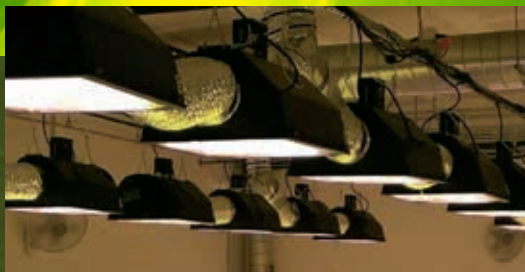
**CONVEX  
TECHNOLOGY**

*What is it?*

**SHEDDING  
LIGHT ON THE  
HORTICULTURE  
MARKET**

# HORT

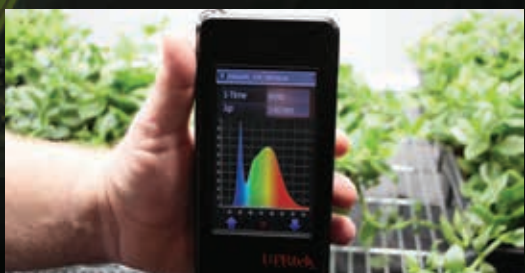
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*"Over 100 years of lighting experience"*

**Growlite** and **Barron Lighting Group** together represent over 100 years of lighting experience with the vision and innovative ideas to challenge the status quo in this niche industry. Their mission is simple; to provide the highest quality, safest products in the market and educate the indoor grow market with the latest and greatest technologies emerging from the lighting industry. **Growlite** will continue to push the limits of innovation and technology to deliver state-of-the-art lamps, ballasts and fixtures engineered specifically for the indoor horticulture market.



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# SHEDDING LIGHT ON THE INDOOR HORTICULTURE MARKET

*Published in  
Electrical Products  
& Solutions Magazine*

For over a hundred years plants have been grown indoors; to cook with, to purify the air, for medicinal purposes or just for pleasure. While the methods have certainly changed, the need to provide food and medicine for an expanding population is becoming even more pronounced today. Combined with a sharper focus on organically grown materials, non-GMO's and the legalization of medical and recreational cannabis business, and you get an understanding of how much this market is worth to the electrical industry.

Lighting applications can vary from multi-acre greenhouses to small indoor grows, all the way to restaurants now offering farm-to-market menus. The total indoor horticulture market was expected to reach more than \$13B in 2016. According to Fortune magazine, the growing medical and recreational cannabis industry currently sweeping the nation was expected to account for more than half of that. Many news agencies are reporting it will top \$40B by 2020. Through August 2016, Colorado recorded \$846.5M in sales and collected roughly \$125M in new tax revenue, which it will use for educational construction grants and health programs. You can believe that other states are taking notice.

What the horticultural industry has been lacking is the traditional electrical channels supporting it. The lighting specifiers, engineers, distributors and electricians were not participating in this very large space and needed the knowledge and tools for these new applications. That made Alan Tracy, owner and President of **Barron Lighting Group**, sit up and take notice. The Indoor Grow Science brand was formed and quickly began gaining traction. This is where Tracy thrives, finding a need and creating a solution. **Barron** has a long history of solving lighting challenges, initially developing the first LED exit sign which launched the **Exitronix** brand of exit and emergency lighting and again with **Trace-lite**, featuring solutions for commercial and industrial lighting. The **Specialty LED** brand was developed to sell specification quality decorative LED lighting, followed by the launch of Indoor Grow Science, which was an exciting expansion of **Barron Lighting Group's** solution package.

Three years of continued growth and success in the horticultural market encouraged **Barron Lighting Group** to strengthen its position in horticulture lighting by acquiring a leading brand, **Growlite**. **Barron** can now deploy its lighting expertise in engineering, research and product development as well as its UL certified test lab to design fixtures with state-of-the art technologies for this quickly expanding horticultural industry.

***There is a lot more to horticulture lighting than just running a lamp over a plant.***

Choosing between various fixture types, light sources, color spectrums, PAR outputs, distribution footprints, CRI's and CCT's can make entry into this market sector very intimidating. Lighting professionals can help cut through a lot of the confusion with their in-depth product knowledge, but the real opportunities are gained from combining the product expertise of lighting professionals with the real-world, practical application experience



and knowledge of the indoor grow experts. The ultimate goal of indoor grows and greenhouse facilities is to re-create a sustainable, consistent growing environment in indoor spaces. The most important element is the lighting since it is the engine that powers all of the plant's photosynthetic processes including cell development, nutrient generation and fruit/flower creation. The light that plants utilize is measured as PAR (photosynthetic active radiation) and is expressed in units called umols (you moles), however while PAR may be king of metrics in horticulture lighting it is not the only measurement that should be used when selecting grow lighting. Critically important considerations are the SPD (spectral power distribution) curves, the intensity measured in foot-candles or lumens, as well as CRI and CCTs. With the enormous amount of money being spent on these indoor grow facilities, investors are going to require safety certifications like ETL and UL/cUL, open-rated lamps and the use of specification grade materials and production practices to provide the

assurance of product safety and continuing product innovation for the grow industry.

It is equally important that manufacturers offer support and education to contractors, distributors, counter personnel, growers, and to the engineering specification community. By providing the trained resources to assist with the lighting layouts, performance comparisons and par value distribution charts, a manufacturer like **Barron** can help choose the right fixture and create the optimal lighting design for any grower's specific needs. Case studies, white papers, webinars and even Facebook live tips and examples, provide the training and support people need when working within the unique horticultural community.

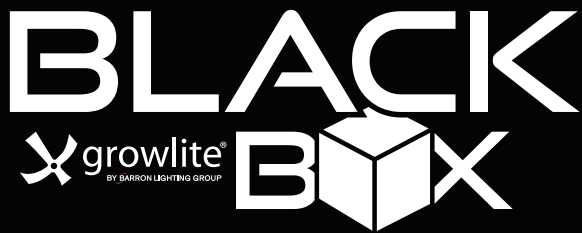
### ***You have to be responsible too.***

As growers, sustainability is also important. Grow facilities typically consume huge numbers of HID lamps each year, and manufacturers

servicing this industry should provide programs that make it easy for them to be recycled properly and responsibly. **Barron** is innovating a special program to divert these lamps from landfills by including free recycling with the purchase of replacement **Growlite** lamps.

Having the tools to service every level of the electrical channel is necessary to take advantage of this thriving industry. For lighting solutions covering everything from outside of the building to the inside lobby, and grow rooms from seed to harvest including design, operations and compliance, **Barron** is here to help. **Growlite**, now powered by **Barron Lighting Group**, is committed to deploying its wealth of experience and resource to service the horticultural market with forward-looking products and programs designed to increase crop yield and earning potential.





## PROFESSIONAL HORTICULTURE CONTROLS

### MASTER CONTROL PANEL

The Black Box standard Master Control Panel (MCP) contains 16 individually controlled rooms/zones with the capability to control up to 3,072 fixtures or lamp circuits (up to 192 lamps/room or zone, depending on sensor configurations).

A color touch screen provides the interface to control the on/off timing of the connected lights as well as the display of the ambient temperature, relative humidity, and CO2 levels in each room/zone. The Master Control Panel (MCP) is powered with a 120VAC power supply and draws less than five (5) amps.

### LIGHTING POWER DISTRIBUTION PANEL

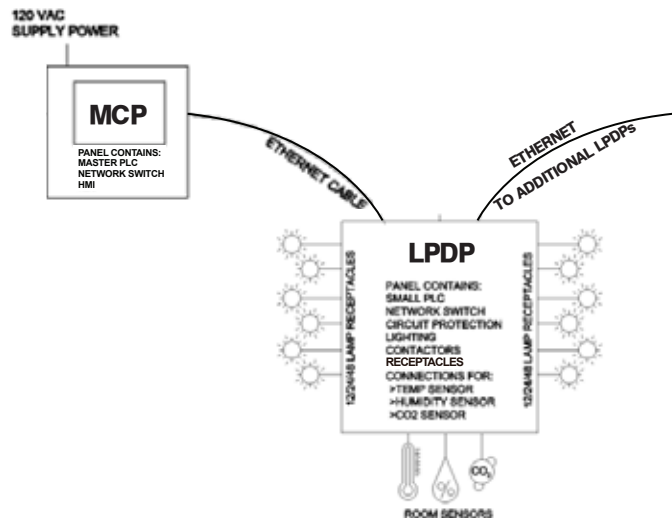
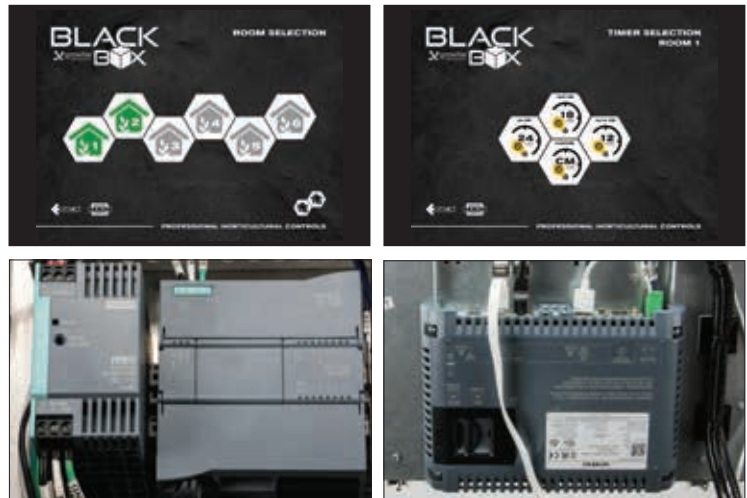
The Black Box Lighting Power Distribution Panel (LPDP) allows for lamp circuits powered at 120, 240 or 277VAC. Each lamp circuit consists of:

- Circuit Protection
- Electrically held lighting contractor with line voltage coil
- Side mounted receptacle suitable for the voltage and current requirements of the connected lamp

All Lighting Power Distribution Panels have three (3) inputs for:

- Ambient Temperature thermocouple (type J)\*
- Relative Humidity sensor (0-10VDC)\*
- CO2 sensor (0-10VDC)\*
- The inputs can be used to control additional LPDPs panels within the room/zone in place of sensor(s)
- One (1) Year Warranty

\*Sensor provided by others



### MASTER CONTROL PANEL

Item No. **GLC-BBMCP-\*** (\* = 7", 9", or 12")

### LIGHTING POWER DISTRIBUTION PANEL

Item No. **GLC-BBLPDP-\*-#**

(\* = 12, 24, or 48), (# = 120, 240 or 277)





PROFESSIONAL HORTICULTURAL CONTROLS



## Standard System Software:

1. Each Lighting Power Distribution Panel (LPDP) has the capability to display:
  - a. Ambient Temperature
  - b. Relative Humidity
  - c. Co2
2. Lighting control based on time of day and day of week for each room/zone.
3. For each room/zone, there will be a "Grow Start" with hours, days and weeks from that time being tracked and displayed for each room/zone.
4. Lamp hours will be tracked for each. Warnings can be sent each time lamps exceed a set number of optional hours.
5. Monitoring and alarming based on analog data collected by the sensors.
6. A setup screen(s) can be password protected and will allow for the setting of setpoints such as alarm points and lamp life expectancy.



**1 YEAR**  
WARRANTY

# HDE-E

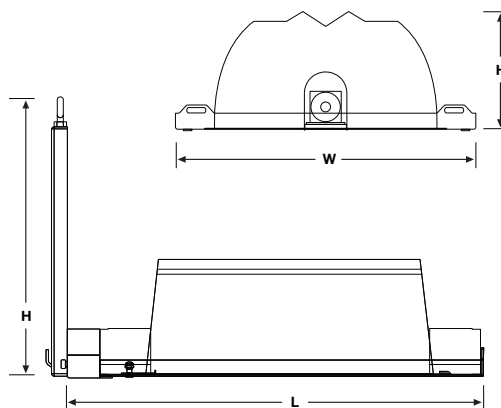
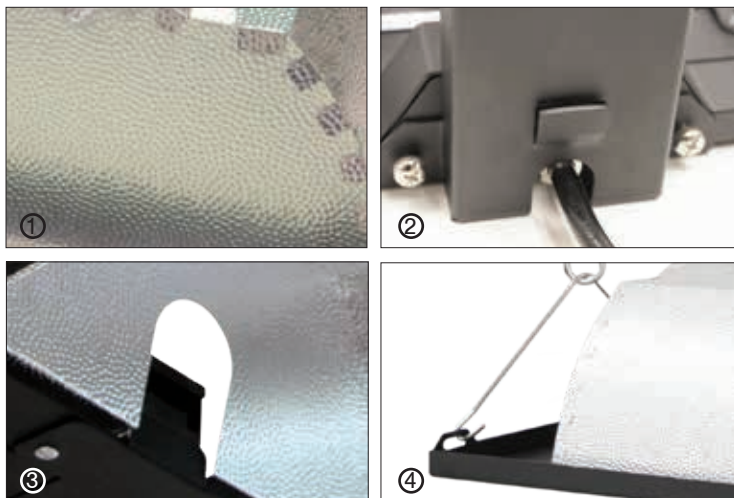
HORTICULTURAL DOUBLE ENDED - ECONOMY

## 315W / 600W-1000W Horticultural Double-ended (DE) Lamp Economy Reflector

A versatile open-style grow light that combines exceptional double-ended HID lamp performance with an extremely compact, economical design. The HDE-E continues the tradition of versatility with the ability to mount the ballast remotely or right on the reflector; a 15' cord and an integral ballast mounting bracket are included with every unit. Top accessibility to the reflector and the lamp combined with our re-designed socket reduce re-lamping mishaps and make maintenance easy. The HDE-E's versatility on functionality allows this product to work in many environments.

### FEATURES

- Fine hammertone textured reflector with 95% ① reflectance provides even and intense light coverage
- Standard removable universal ballast bracket ② allows for integral or remote mounting of your ballast
- Self-leveling design makes mounting quick and easy
- Re-designed sockets make re-lamping easy ③
- Exceptional housing quality ensures reliability and durability, minimizing down time due to maintenance and cleaning
- Durable black powder coated finish
- Constructed of heavy-duty 22 gauge steel
- 12" 16AWG ballast connector for integral ballast mount
- 15' 16AWG lamp to ballast extension cord for remote ballast mount
- One (1) pair of V-hooks for mounting ④
- 315W CMH / 600-1000W HPS DE standard or high frequency lamps
- ETL Listed for damp location
- Five (5) Year Warranty



**Dimensions:** L 17.5" x W 11.5" x H 4.5"

**Bracket Included:** L 17.5" x W 11.5" x H 19"

**Packaged Weight:**

9.9 lbs / 4.5 kgs

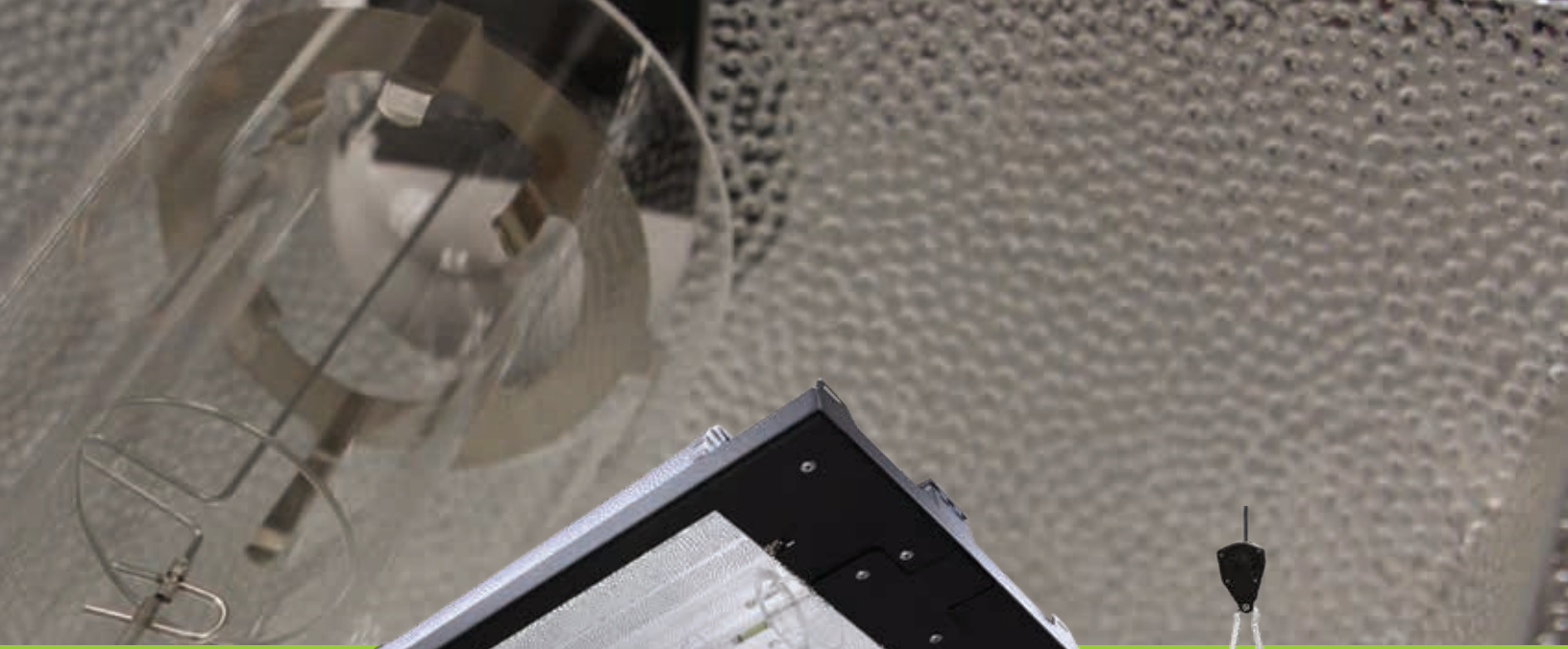
**Installed Weight with Integral Ballast:**

12.25 lbs / 5.5 kgs

**Installed Weight without Integral Ballast:**

4.5 lbs / 2.0 kgs





Shown with included removable  
universal ballast mounting bracket



#### COMPATIBLE BALLASTS

<b>SIS</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
✗	✗

#### COMPATIBLE LAMPS

<b>SIS</b>		<b>REAL RED®</b>		<b>REAL RED® TRU BLUE®</b>		
315W SE	315W DE	1000W DE	1000W DA	1000W SE	600W SE	400W SE
	✗	✗				

\* Ballasts and lamps sold separately



See a greenhouse layout with this luminaire on page 58

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**GREENHOUSE LIGHTING**

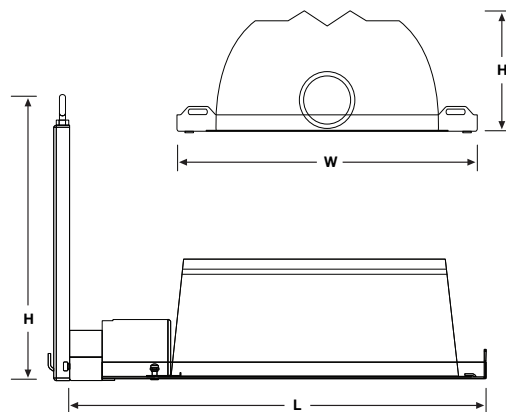
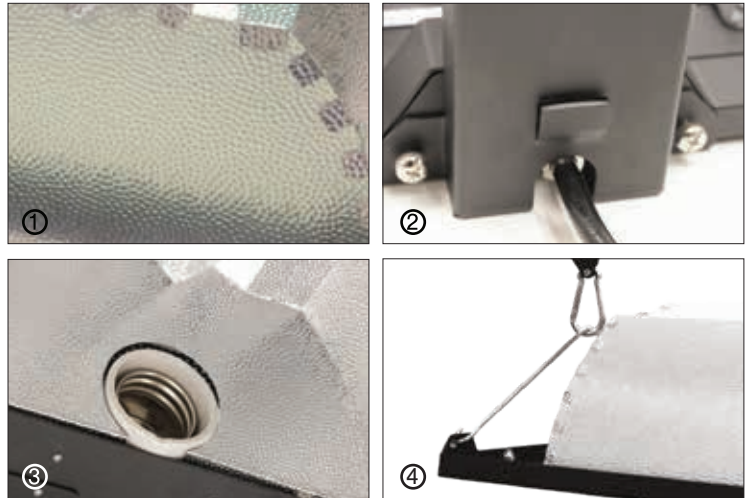


## 315W, 400W, 600W, & 1000W Horticultural Single-ended Lamp Convex Premium Technology Reflector

The HSE is the smallest sized fixture currently on the market. Ability to spread light evenly across an area makes this unique product perfect for greenhouse and supplemental lighting applications. A versatile grow light that combines the convenience and selection of widely available single-ended mogul base HID lamps with an extremely compact, economical design. The HSE has versatility right out of the box, with a 15' ballast cord for remote ballast mounting and an integral ballast mounting bracket both included standard with every unit allowing the end user installation choices without the need for additional accessories.

### FEATURES

- Fine hammertone textured reflector with 95% ① reflectance provides even and intense light coverage
- Standard removable universal ballast bracket allows for integral or remote mounting of the ballast ②
- Self-leveling design makes mounting quick and easy
- Exceptional housing quality ensures reliability and durability, minimizing down time due to maintenance and cleaning.
- Durable black powder coated finish
- Constructed of heavy-duty 22 gauge steel
- 12" 16AWG ballast connector for integral ballast mount
- 15' 16AWG lamp to ballast extension cord for remote ballast mount
- Mogul base socket allows the HSE to use commonly available lamps ③
- Convex technology precisely positions the lamp envelope just below the horizontal plane to provide more even light distribution
- One (1) pair of V-hooks for mounting ④
- 315W CMH / 400W-1000W HPS/MH lamps
- ETL Listed for damp location
- Five (5) year warranty



**Dimensions:** L 16" x W 11.5" x H 4.5"

**Bracket Included:** L 16" x W 11.5" x H 19"

**Packaged Weight:**

9.5 lbs / 4.3 kgs

**Installed Weight with Integral Ballast:**

11.8 lbs / 5.35 kgs

**Installed Weight without Integral Ballast:**

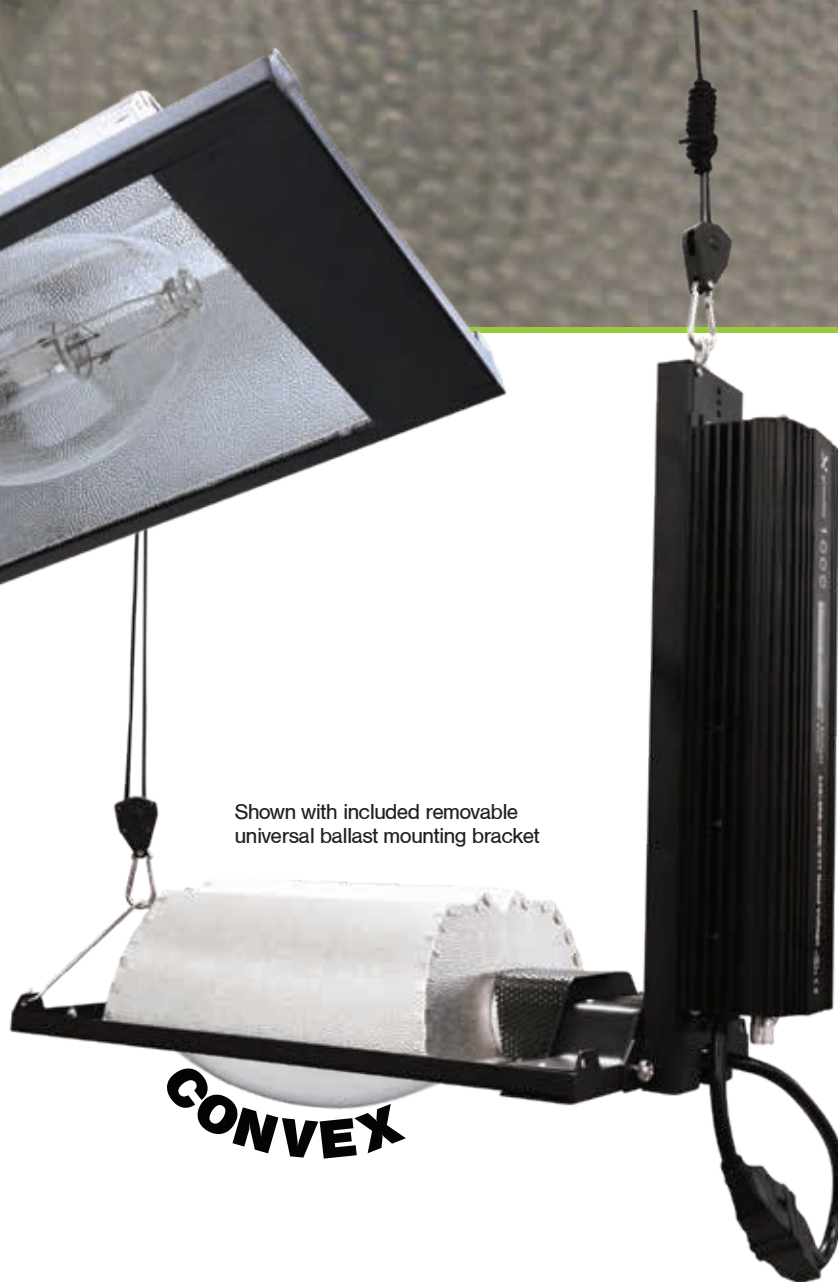
4.05 lbs / 1.84 kgs

**Item No. GLH-HSE**



## WHAT IS CONVEX TECHNOLOGY?

CONVEX patent pending technology positions the lamp within the reflector in such a way that the outer envelope of the lamp is precisely positioned below the horizontal plane of the reflector. This configuration allows the lower portion of the lamp to spread light evenly across the plant canopy while still allowing the reflector to control the light distribution on to and through the plant canopy. When combined with our exclusive Double-Arc 1000W HPS lamp, the HSE CONVEX is the smallest mogul based grow light on the market.



Shown with included removable universal ballast mounting bracket

## COMPATIBLE BALLASTS

<b>SIS</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
✗	✗

## COMPATIBLE LAMPS

<b>SIS</b>		<b>REAL RED®</b>		<b>REAL RED® TRU BLUE®</b>		
315W SE	315W DE	1000W DE	1000W DA	1000W SE	600W SE	400W SE
✗			✗		✗	✗

\* Ballasts and lamps sold separately



For more information on Convex technology, see page 68

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**GREENHOUSE LIGHTING**

# OPEN RATED

MOGUL CERAMIC METAL HALIDE

# 315

CERAMIC SPECTRUM INTEGRATION

## 315W Single-ended Full Spectrum Ceramic Metal Halide Lamp

**Growlite's** 315W mogul base, full spectrum, ceramic metal halide (CMH) lamp is unique as the only CMH lamp on the market specifically designed to work seamlessly with all existing mogul base grow lights. It is an ideal retrofit solution for growers wanting to upgrade the light quality produced by their existing grow lights.

### PERFORMANCE

Initial Lumens: 32,000

Lamp Lumens Per Watt: 102

Rated Life: 20,000 hours

Color Temperature: 4000K

Color Rendering Index (CRI): 95

Burning Position: Universal

Bulb Designation: ED37

Fixture Rating: Open/Enclosed

To 90% Warm Up Time: 2 min

Hot Restart Time: 10 min

ANSI Designation: C182/O

### PHYSICAL DATA / REQUIREMENTS

Base Designation: EX39

Bulb Diameter: 121 mm (max)

Max Overall Length (MOL): 292 mm (max)

Light Center Length (LCL):  $178 \pm 5$  mm

Max Base Temperature: 250°C

Max Bulb Temperature: 400°C

Socket Pulse Rating (KV):  $\leq 5$ KVA

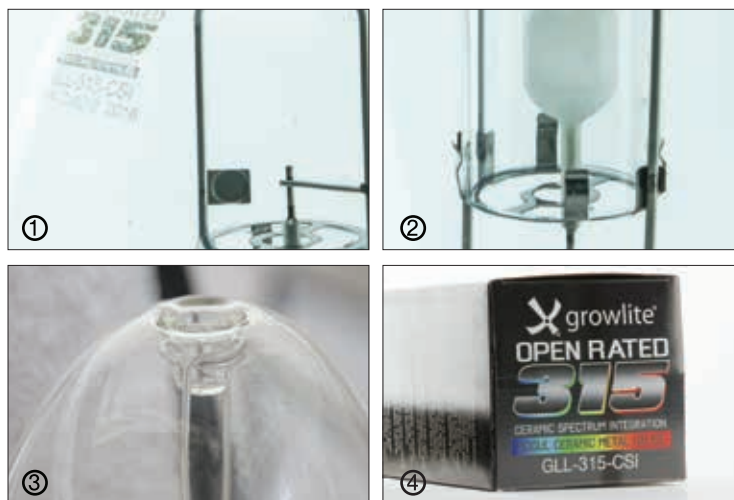
Socket Style: MOGUL

### ELECTRICAL DATA / REQUIREMENTS

Lamp Wattage: 315W

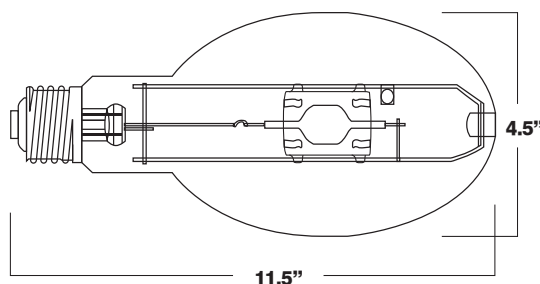
Operating Voltage: 100V

Operating Current: 3.15A



- ① Etched branding
- ② Open-rated
- ③ Superior lamp construction
- ④ Packaging

The 315W CMH lamp was developed in conjunction with the 315W electronic ballast. Our lamp and ballast are tuned to work together at over 99% efficiency when operated together, resulting in longer life, less color shifts, lower lamp temperatures, and less frequency humming.



**Dimensions:** L 11.5" x W 4.5" x H 4.5"

**Weight:** 1 lbs / .5 kgs

**Item No. GLL-315-CSI**



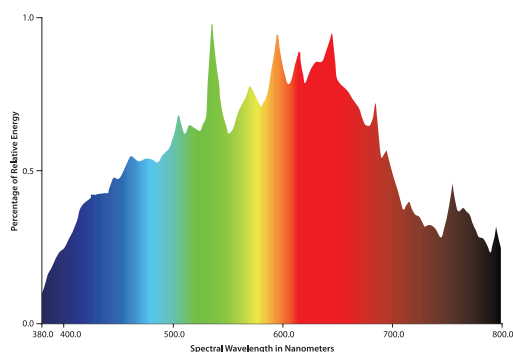
**CLONE**

**VEGETATIVE**

**FLOWER**

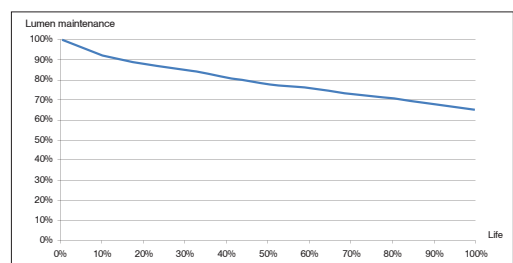
**MOTHER**

# SPECTRUM CHART



**OPEN RATED**  
**MOGUL CERAMIC METAL HALIDE**  
**315**

# LUMEN MAINTENANCE



\*Lamp Rated Life = 20,000 Hrs

# COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
<b>X</b>	

# COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
		<b>X</b>	<b>X</b>	<b>X</b>

\* Ballasts and reflectors sold separately



For more information on CMH technology, see page 60

**GROWLITE.COM**

**315 CMH** 11

# OPEN RATED

DOUBLE ENDED CERAMIC METAL HALIDE

# 315

CERAMIC SPECTRUM INTEGRATION

## 315W Double-ended (DE) Full Spectrum Ceramic Metal Halide Lamp

**Growlite** offers another industry exclusive, our 315W double-ended (DE) full spectrum, ceramic metal halide (CMH) lamp with an Open-rated design that is safe to operate in non-lensed grow lights. Designed to utilize the entire light spectrum for a quality of light that more closely replicates natural sunlight for complete vegetative and flower production.

### PERFORMANCE

Initial Lumens: 28,500

Lamp Lumens Per Watt: 20

Rated Life: 20,000 hours

Color Temperature: 4000K

Color Rendering Index (CRI): 95

Burning Position: Universal

Bulb Designation: T

Fixture Rating: Open/Enclosed

To 90% Warm Up Time: 2 min

Hot Restart Time: 10 min

### PHYSICAL DATA / REQUIREMENTS

Base Designation: K12x30s

Bulb Diameter: 61 mm (max)

Max Overall Length (MOL): 394 mm (max)

Light Center Length (LCL):  $195 \pm 5$  mm

Max Base Temperature: 300°C

Max Bulb Temperature: 650°C

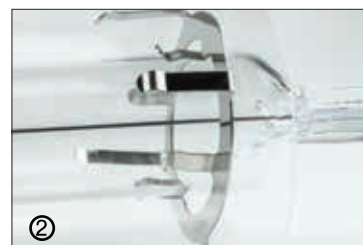
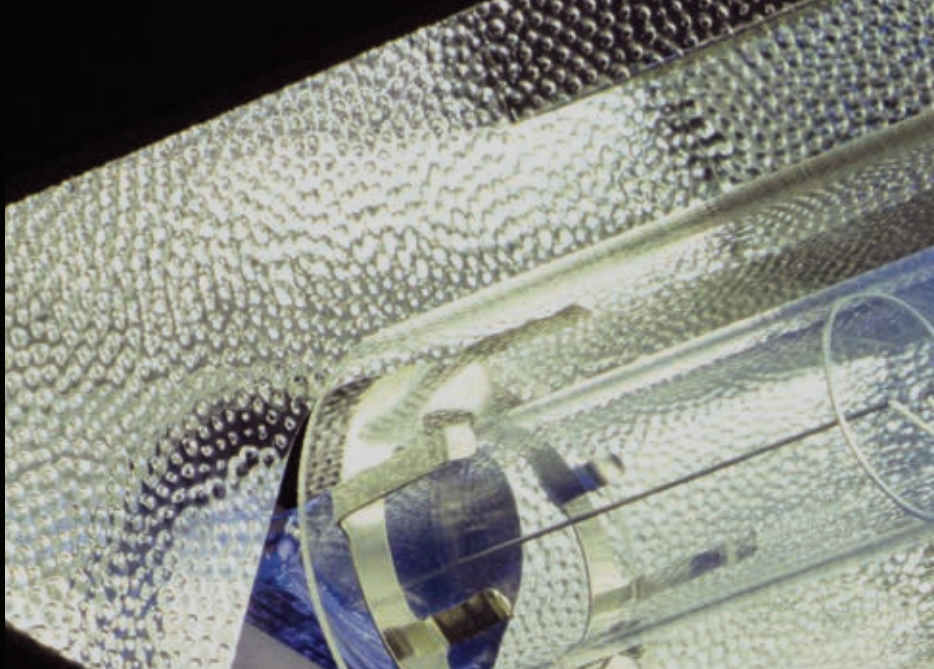
Socket Pulse Rating (KV):  $\leq 5$ KVA

### ELECTRICAL DATA / REQUIREMENTS

Lamp Wattage: 315W

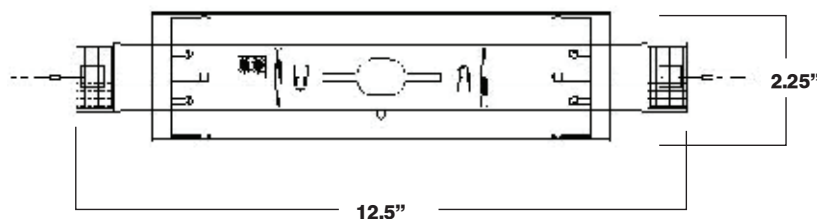
Operating Voltage: 100V

Operating Current: 3.15A



- ① Etched branding
- ② Open-rated
- ③ Superior lamp construction
- ④ Packaging

The 315W CMH double-ended (DE) lamp was developed in conjunction with the 315W electronic ballast. Our lamp and ballast are tuned to work together at over 99% efficiency when operated together, resulting in longer life, less color shifts, lower lamp temperatures, and less frequency humming.



**Dimensions:** L 12.5" x W 2.5" x H 2.5"

**Weight:** 1 lbs / .5 kgs

**Item No. GLL-315-CSI-DE**



BY BARRON LIGHTING GROUP



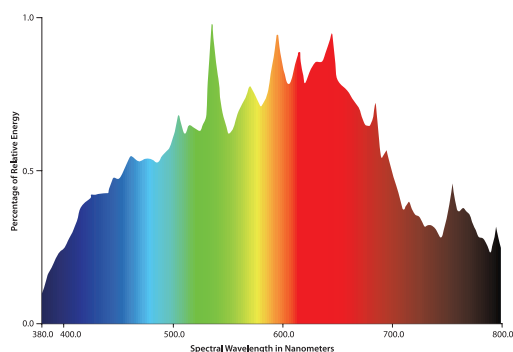
**CLONE**

**VEGETATIVE**

**FLOWER**

**MOTHER**

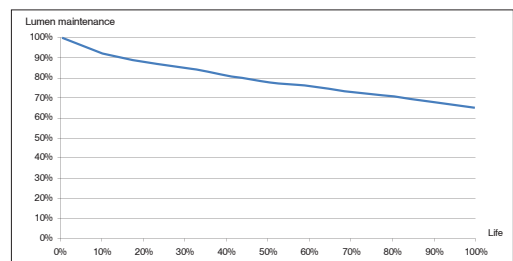
### SPECTRUM CHART



**OPEN RATED**  
MOGUL CERAMIC METAL HALIDE  
**315**



### LUMEN MAINTENANCE



\*Lamp Rated Life = 20,000 Hrs

### COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
<b>X</b>	

### COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
<b>X</b>	<b>X</b>			

\* Ballasts and reflectors sold separately

For more information on CMH technology, see page 60

**GROWLITE.COM**

**315 CMH** 13

# 315

315W Electronic Ballast  
CERAMIC SPECTRUM INTEGRATION  
**120~277VAC**

315W Ceramic Metal Halide (CMH)  
Electronic Ballast

## FEATURES

- Operates all 315W CMH lamps ①
- Soft Start stabilizes start-up loads and extends lamp life and performance
- LED status displays voltage and wattage in normal operation ③
- 6' 120VAC power cord provided ②
- 120/208/240/277VAC voltage sensing input
- Standard S-Type lamp connector ④
- UL Listed for damp location
- Three (3) year warranty

## PROTECTIONS

- Short Circuit
- Open Circuit
- End of Lamp Life (EOL)
- Hot-Start
- Ignition Failure
- Overheat
- Over/Under Voltage

## PERFORMANCE

Rated Voltage: AC90-305VAC

Input Frequency: 50/60Hz

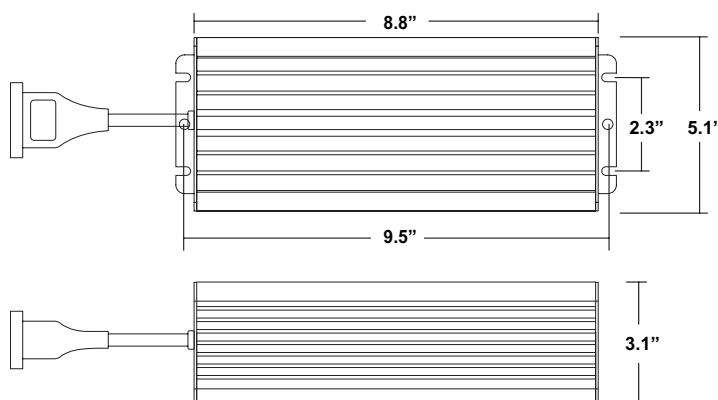
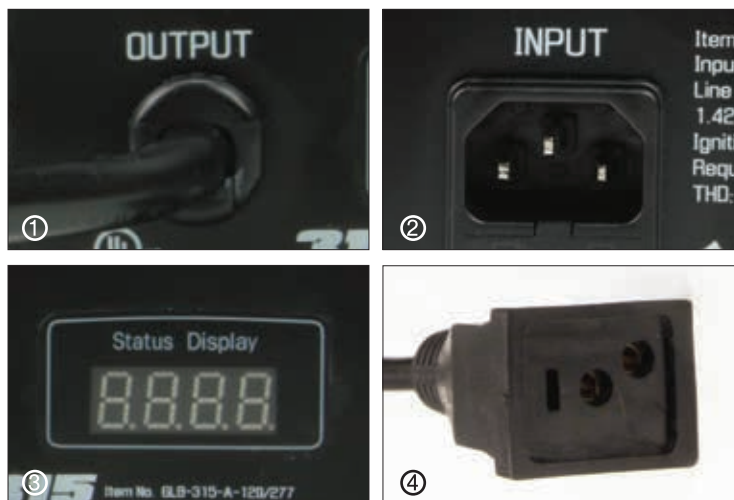
Ambient Operating Temperature (TA): -25°C~50°C

Crest Factor (CF): <1.5

Power Factor (PF): ≥0.95

Total Harmonic Distortion (THD): <20%

Current Draw: 3.84A @ 120VAC, 1.42A @ 240V,  
1.23A @ 277VAC



**Dimensions:** L 8.8" x W 5.1" x H 3.1"

**Packaged Weight:**  
6.25 lbs / 2.8 kgs

**Installed Weight:**  
5.5 lbs / 2.5 kgs

**Item No. GLB-315-A-120/277**





The 315W electronic ballast was developed in conjunction with the 315W CMH lamp. Our lamp and ballast are tuned to work together at over 99% efficiency when operated together, resulting in longer life, longer warranty, lower price, less color shifts, lower lamp temperatures, and less frequency humming.



#### COMPATIBLE REFLECTORS

HDE	HDE-E	HSE	og	KARMA
X	X	X	X	X

#### COMPATIBLE LAMPS

315		REAL RED®		REAL RED® TRU BLUE®		
315W SE	315W DE	1000W DE	1000W DA	1000W SE	600W SE	400W SE
X	X					

\* Lamps and reflectors sold separately



For more information on CMH technology, see page 60

**GROWLITE.COM**

**315 CMH** 15

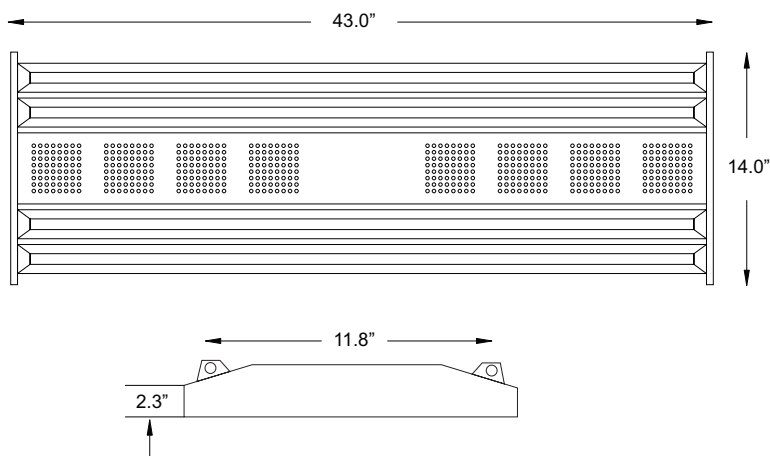
# CLONER 200 WATTS

200W high output linear LED grow light replaces T5HO fixtures in cloning and vegetative applications.

**Growlite** has developed leading edge LED grow light technology that replaces traditional fluorescent and HID lighting in the beginning growth stages of the plant. The CLONER is a 200W LED fixture that is designed to replace 6-lamp and 8-lamp T5HO fixtures on a one for one basis.

## FEATURES

- Low-profile housing is ideal for applications with limited overhead space, such as vertical racks
- Full spectrum white light provides better spectral performance than traditional 54W T5HO lamps or metal halide (MH) lamps
- Extruded aluminum heatsink promotes cooler operation and extended life ①
- Durable die-formed heavy gauge steel housing with powder coated white finish
- Diffused lens provides gentle, even illumination for juvenile or leafy plants ②
- Vented driver compartment for optimized thermal management ③
- Class 1 power supply, 120~277VAC voltage sensing input
- Standard 1-10V dimming is compatible with aftermarket lighting controllers
- Can be mounted in vertical racks or hanging applications using the two (2) cable hangers included with every unit ④
- Standard 10' line cord with 120VAC plug
- UL Listed for dry location
- Operating temperature: -40°C to 50°C (-40°F to 122°F)
- Five (5) year warranty



**Dimensions:** L 43.0" x W 14.0" x H 2.3"

**Packaged Weight:**  
21.0 lbs / 9.5 kgs

**Installed Weight:**  
15.0 lbs / 6.8 kgs

**Item No. CLN-200L**



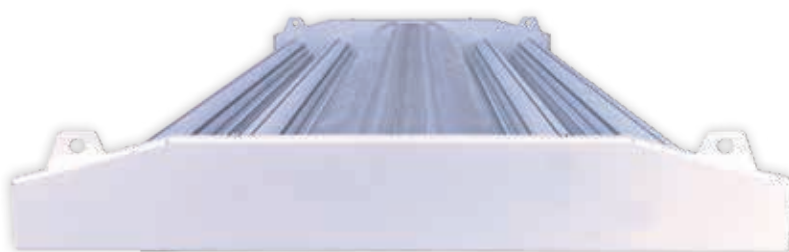
**CLONE**

**VEGETATIVE**

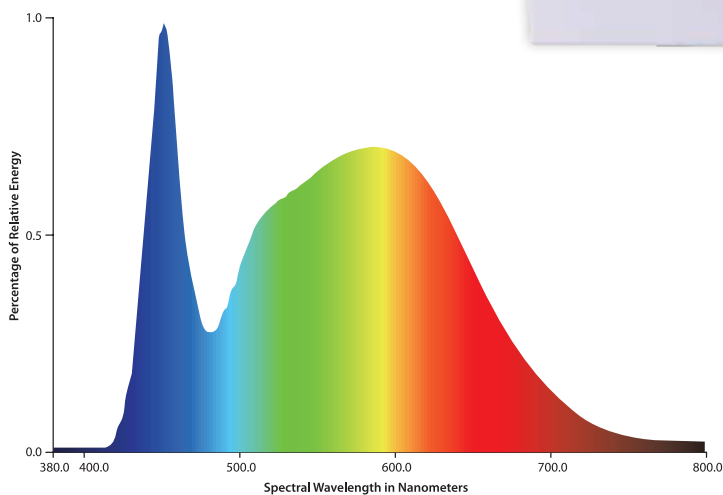
**MOTHER**



## LED LIGHTING FOR STRONG HEALTHY CLONES!



**SPECTRUM CHART**



**120~277VAC**



**5 YEAR  
WARRANTY**

**GROWLITE.COM**

**LED LIGHTING** 17

# GERMINATOR

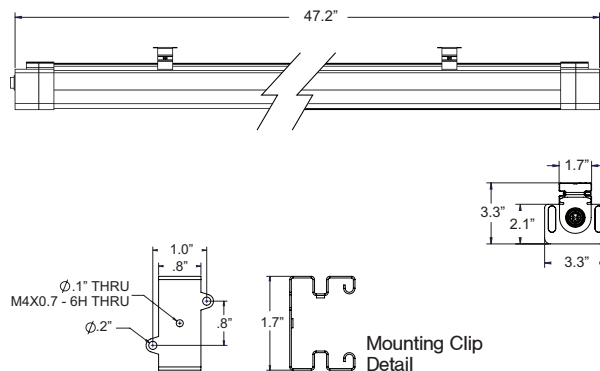
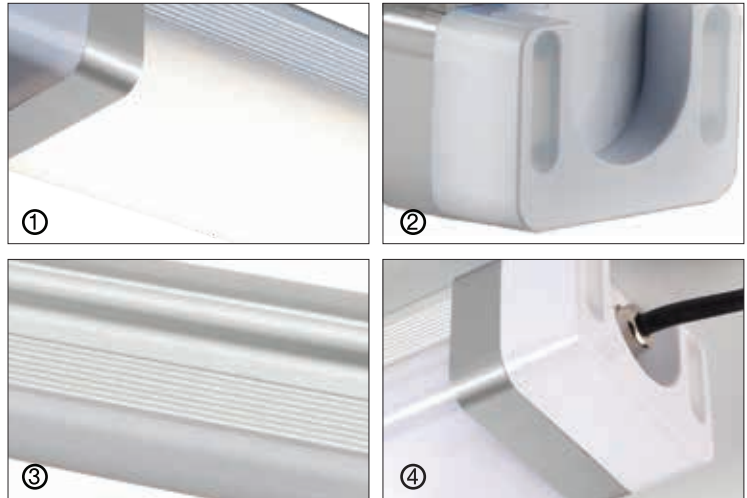
## 40 WATTS

40W LED grow light for germination and cloning applications.

**Growlite** created the GERMINATOR with clone racks in mind. The heavy blue spike produced by this grow light combined with a sealed moisture resistant housing makes the GERMINATOR the perfect choice for cloning racks and as light maintenance in small hoop houses. Drawing only 40W (0.35 amps at 120VAC), the GERMINATOR is an energy saving alternative to T5HO fixtures.

### FEATURES

- Full-spectrum white LED light provides perfect ① spectral performance for germination and cloning
- Low 41W energy consumption produces over 4100 lumens
- Precision optical lens efficiently delivers light to the leaf surface ③
- IP66 Rated making it ideal for indoor growing ② environments
- 120~277VAC voltage input
- Standard 6' line cord with 120VAC plug ④
- UL Listed for wet location
- Operating temperature: -4°F to 104°F (-20°C to 40°C)
- Five (5) year warranty



**Dimensions:** L 47.24" x W 3.29" x H 2.12"

**Packaged Weight:**  
6.3 lbs / 2.8 kgs

**Installed Weight:**  
5.5 lbs / 2.5 kgs

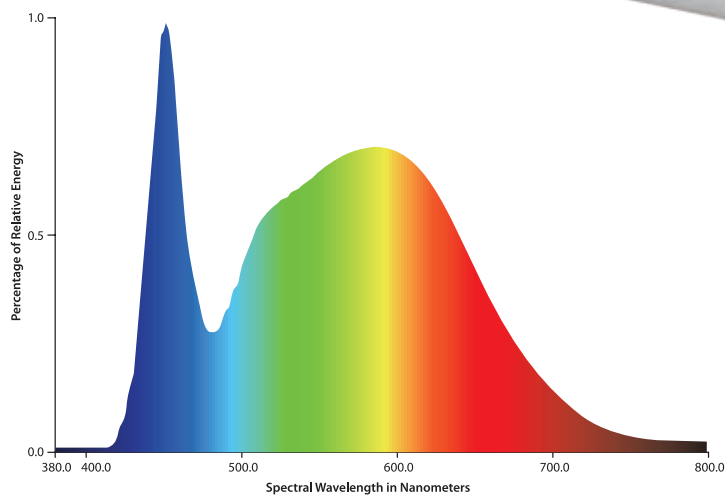
**Item No. GRM-40L**



**STRONGER  
ROOTS!**



**SPECTRUM CHART**



**120~277VAC**



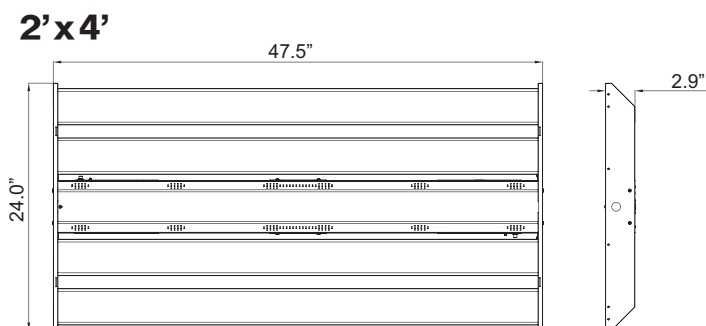
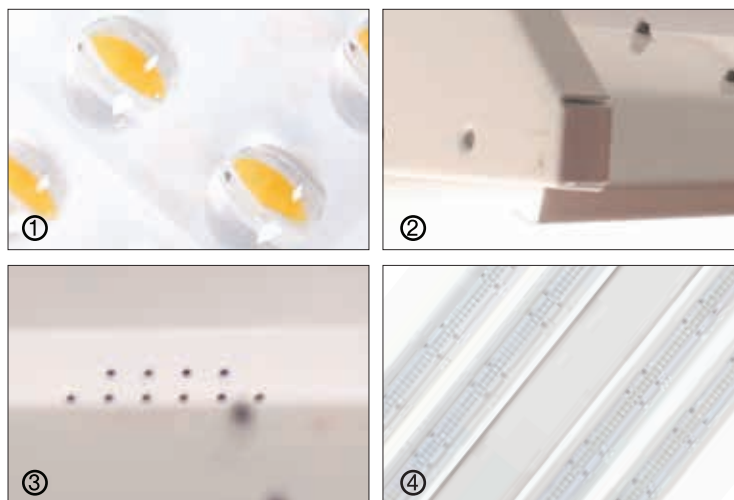
# wide body VEG 320 WATTS

320W linear LED grow light great for veg applications and wide coverage.

**Growlite** has developed cutting edge LED grow light technology that replaces traditional fluorescent and HID lighting in the beginning growth stages of the plant. The WIDE BODY VEG is a 320W LED fixture that is designed to replace a 400W MH of a 10-lamp T5HO fixture on a one for one basis. Wide distribution and coverage make the WIDE BODY VEG the logical choice for veg and mother rooms.

## FEATURES

- Full-spectrum white LED light provides perfect spectral performance for vegetative and mother juvenile or leafy plants
- Low watt energy consumption
- Over 70% of lighting intensity concentrated within the 120 degree beam angle ①
- Premium build quality to withstand rigorous environments ②
- Isolated, vented driver compartment optimizes thermal dissipation ③
- Wide body design ensures smooth, even light distribution perfect for vegetating plants ④
- Hook and chain included
- Can be mounted with included chain
- 120~277VAC voltage input
- Standard 6' line cord with 120VAC plug
- 0-10V dimming
- UL Listed for damp location
- Operating temperature: -40°C to 55°C (-40°F to 131°F)
- Five (5) year warranty



**Dimensions:** L 47.5" x W 24.0" x H 2.9"

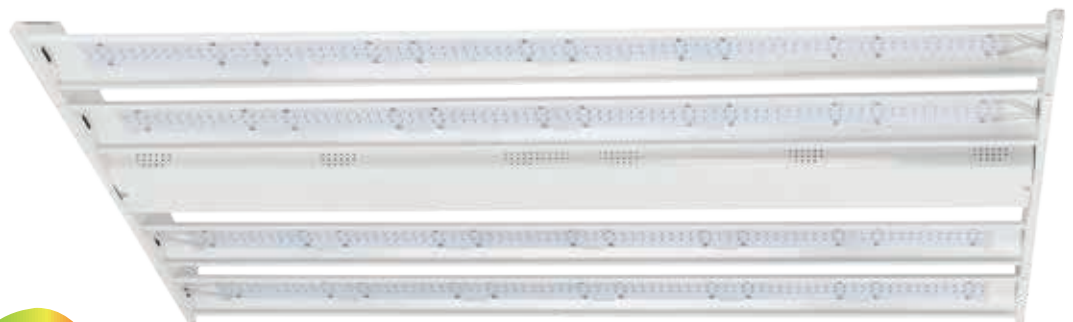
**Packaged Weight:**  
30.0 lbs / 13.6 kgs

**Installed Weight:**  
27.0 lbs / 12.2 kgs

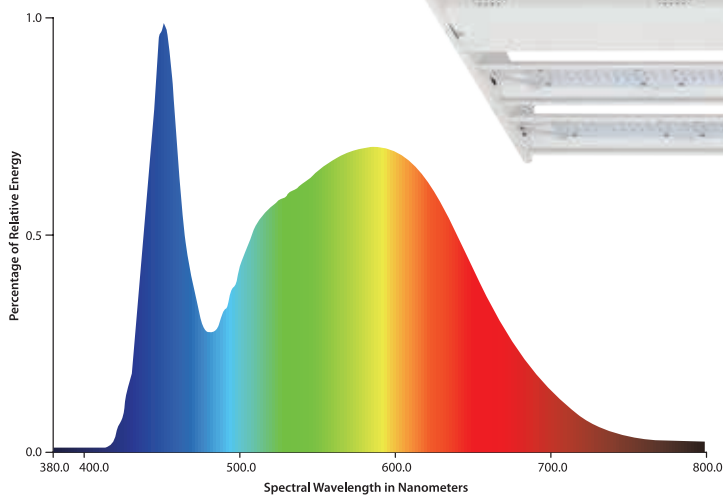
**Item No. WBV-320L**



# OPTIMAL PERFORMANCE!



**SPECTRUM CHART**



**120~277VAC**

**UL**  
LISTED

**DAMP**

**5 YEAR  
WARRANTY**

# FLAT PANEL VEG

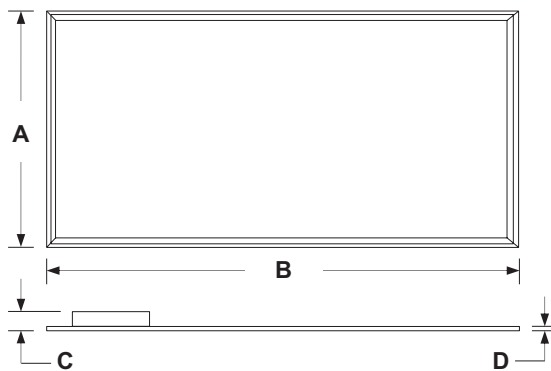
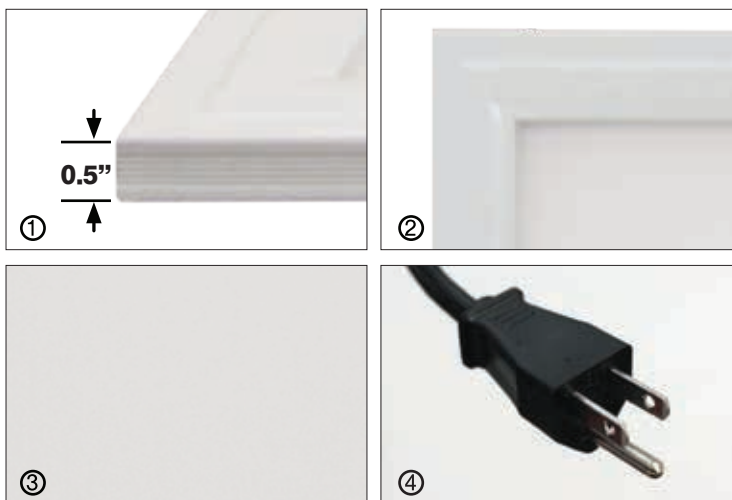
## 40 & 68 WATTS

40W and 68W flat panel LED cloning lights.

**Growlite's** FPV offers incredible performance in an energy-efficient, slim profile package ideal for clone racks and small veg rooms. It includes 0-10V dimming standard, and is equipped with a 10' 120VAC line cord.

### FEATURES

- Ideal for clone racks and small veg rooms
- Precision die-formed aluminum housing
- Low profile design easily fits standard clone racks ①
- White polyester powder coated finish ②
- Suitable for Damp Locations
- 120VAC, 50-60Hz
- UV-stabilized PMMA lens ③
- Dimmable 0-10VDC
- FPV14 40W
- FPV22 40W
- FPV24 68W
- Includes 10' 120VAC line cord ④
- ETL Listed for damp location
- Operating Temperature: -25°C to 45°C (-13°F to 113°F)
- Five (5) year warranty



	A	B	C	D
FPV14	11.9"	47.8"	2.0"	0.5"
FPV22	23.7"	23.7"	2.0"	0.5"
FPV24	23.7"	47.8"	2.0"	0.5"

**Dimensions:** **FPV14** - L 47.8" x W 11.9" x H 2.0"  
**FPV22** - L 23.7" x W 23.7" x H 2.0"  
**FPV24** - L 47.8" x W 23.7" x H 2.0"

#### Packaged Weight:

**FPV14** - 9 lbs / 4.1 kgs

**FPV22** - 9.5 lbs / 4.3 kgs

**FPV24** - 18 lbs / 8.2 kgs

#### Installed Weight:

**FPV14** - 7.25 lbs / 3.3 kgs

**FPV22** - 7.5 lbs / 3.4 kgs

**FPV24** - 15.5 lbs / 7.0 kgs





**CLONE**

**VEGETATIVE**

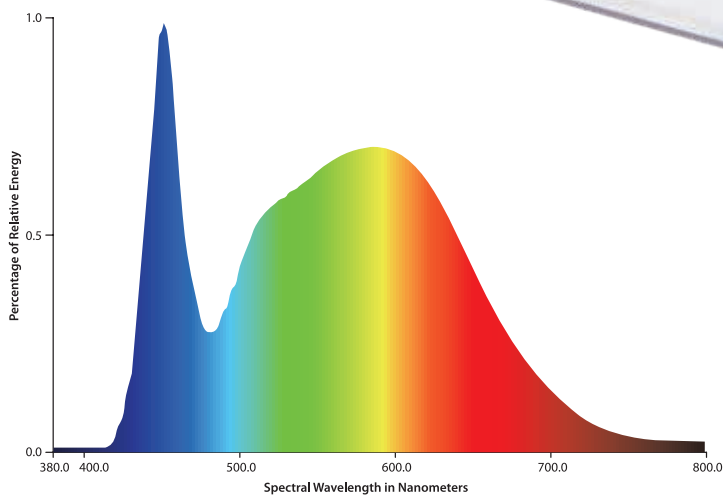
**ULTRA-THIN,  
ENERGY EFFICIENT!**

FPV14

FPV22

FPV24

**SPECTRUM CHART**



**GROWLITE.COM**



**LED LIGHTING** 23

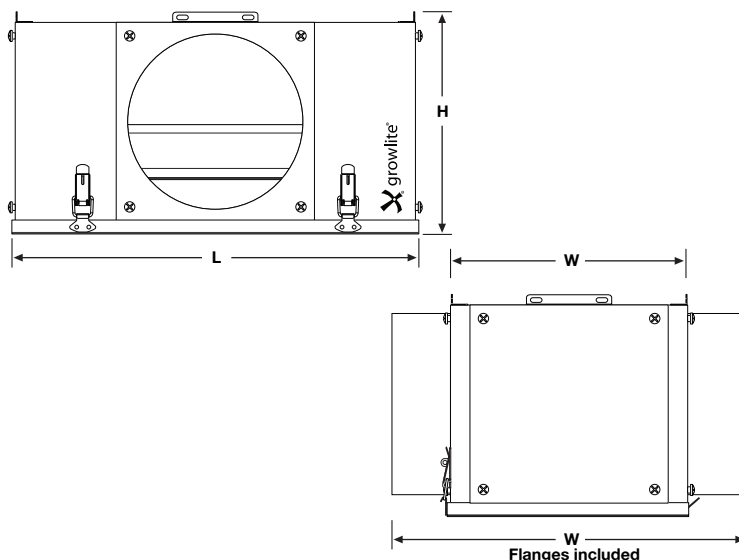
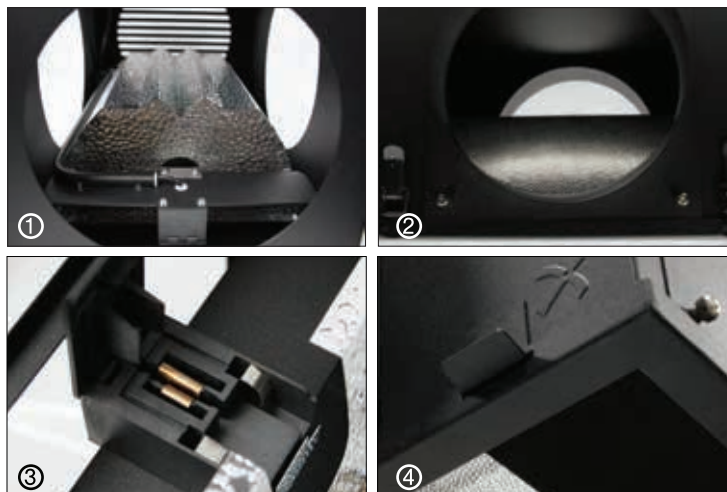


## 315W / 600W-1000W Horticultural Double-ended (DE) Lamp Concealed Vacuum Airflow Technology® Reflector

The only double-ended horticultural reflector with Concealed Vacuum Airflow Technology®, the HDE combines proven lamp performance with the ability to transfer heat easily from the grow environment. The HDE has flexibility and versatility built into the design with 4-way 8" ducting and included adapters. Growers can customize the HDE as needed for specific grow room applications. A-hinged lens, UL Listed sockets and innovative reflector installation make cleaning and maintenance of the HDE extremely easy.

### FEATURES

- Patented Concealed Vacuum Airflow Technology® (CVAT) maximizes the hood's photometric performance and thermal dissipation ②
- Includes 4-way, field-selectable 8" removable flanges, solid plates, and louvered plates for fully sealed air-cooled or non air-cooled operations ①
- Redesigned sockets make re-lamping easy ③
- Removable 1/8" thick tempered glass door for optional air-cooled or non air-cooled operation
- Durable black powder coated finish
- Constructed of heavy-duty 22 gauge steel
- Removable door for easy lamp access and cleaning ④
- Standard with 15' cord and ballast plug
- One (1) pair of V-hooks for mounting
- 315W / 600W-1000W HPS DE standard or high frequency lamps
- ETL Listed for damp location
- Five (5) year warranty



**Dimensions:** L 17.5" x W 10.5" x H 9.8"  
(Add 5" if 8" ducts are used)

**Packaged Weight:** 18.6 lbs / 8.4 kgs  
**Installed Weight:** 16.6 lbs / 7.5 kgs

**Item No. GLH-HDE-8**





## WHAT IS CONCEALED VACUUM AIRFLOW TECHNOLOGY® ?

The patented Concealed Vacuum Airflow Technology® utilizes 100% of the hood's reflective surface to maximize the distribution of the lumens provided by the lamp. No open duct in the reflective surfaces increase the reflective area by 30% when compared to standard air-cooled designs. This patented reflector technology creates more uniform light distributions, promoting larger yields at harvest.



## COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
✗	✗

## COMPATIBLE LAMPS

<b>315</b>		<b>REAL RED®</b>		<b>REAL RED® TRU BLUE®</b>		
315W SE	315W DE	1000W DE	1000W DA	1000W SE	600W SE	400W SE
	✗	✗				

\*Ballasts and lamps sold separately



For more information on CVAT® and Universal Ducting see page. 62

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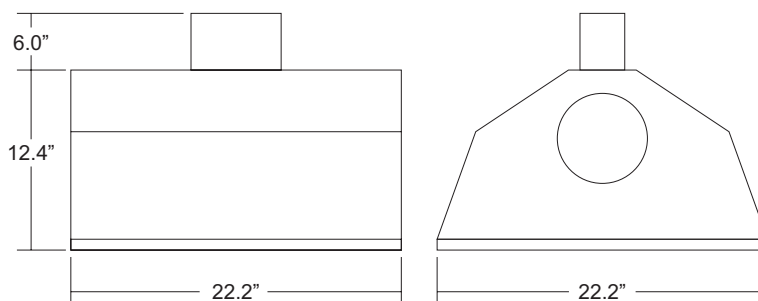
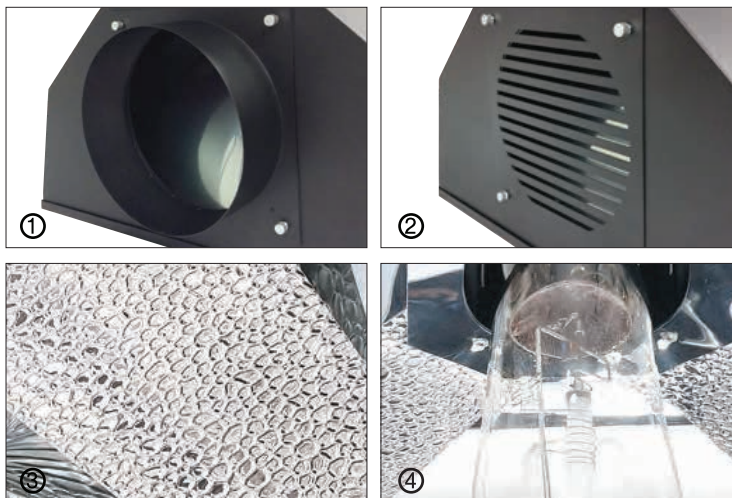
**CVAT® HID REFLECTORS** 25



## 315W-1000W Vertical Lamp Concealed Vacuum Airflow Technology® Reflector

### FEATURES

- Vertical lamp orientation provides longer lamp life, resulting in more cycles and less lumen depreciation between lamp changes ④
- Provides even lumen distribution without excessive dissipation, eliminating the “pyramid” effect
- Superior photometric performance creates a greater amount of uniform light nutrients
- Patented reflector design creates a more than 30% improvement in light output over traditional, vented hoods ③
- 8” removable ducts maintain 100% reflective ① capability and improve airflow efficiency which allows more hoods to be vented using fewer fans
- 8” removable louvered plates for use with no fans ②
- Cooler lamps and housings reduce heat load issues and the costs associated with resolving them
- Exceptional housing quality ensures reliability and durability, minimizing down time due to maintenance and cleaning
- Durable black powder coated finish
- Constructed of heavy-duty 22 gauge steel
- 1/8” thick tempered glass lens
- Removable door for easy lamp access and cleaning
- Standard with 15’ cord and ballast plug
- 315W-1000W MH/HPS
- GLA-SE socket recommended for 315W, 400W, and 600W lamps
- One (1) pair of V-hooks for mounting
- UL Listed for damp location
- Five (5) year warranty



**Dimensions:** L 22.2" x W 22.2" x H 12.4"

**Flanges & Top Housing Included:** L 27.2" x W 22.2" x H 18.2"

**Packaged Weight:**  
33.0 lbs / 15.0 kgs

**Installed Weight:**  
28.0 lbs / 12.7 kgs

**Item No. GLH-OG-8**





### WHY USE A VERTICAL LAMP?

The OG reflector is engineered with a vertical lamp for the even light distribution and use of all lumens. Exceptional photometric performance and maximized thermal dissipation results in more consistent growing environments and higher yields. The OG reflector is uniquely designed to take advantage of all of the lamp's available output.

### WHAT IS CONCEALED VACUUM AIRFLOW TECHNOLOGY®?

The patented Concealed Vacuum Airflow Technology® utilizes 100% of the hood's reflective surface to maximize the distribution of the lumens provided by the lamp. No open duct in the reflective surfaces increase the reflective area by 30% when compared to standard air-cooled designs. This patented reflector technology creates more uniform light distributions, promoting larger yields at harvest.



### COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
✗	✗

### COMPATIBLE LAMPS

<b>315</b>		<b>REAL RED®</b>		<b>REAL RED® TRU BLUE®</b>		
315W SE	315W DE	1000W DE	1000W DA	1000W SE	600W SE	400W SE
✗			✗	✗	✗	✗

\*Ballasts and lamps sold separately



For more information on OG® and CVAT® see page. 64

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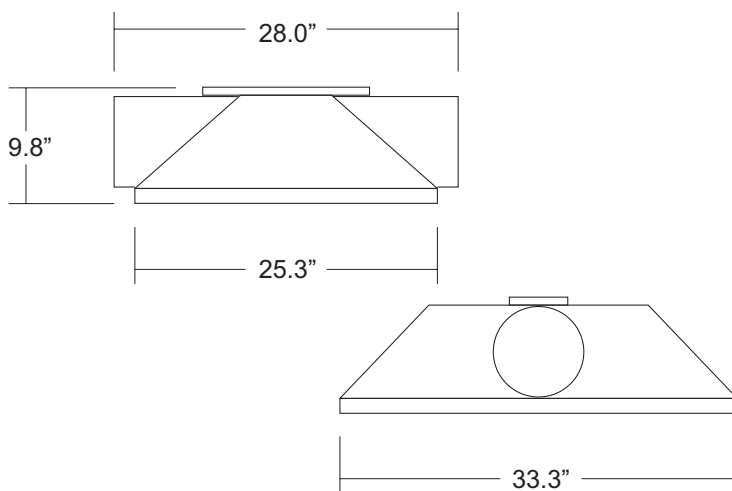
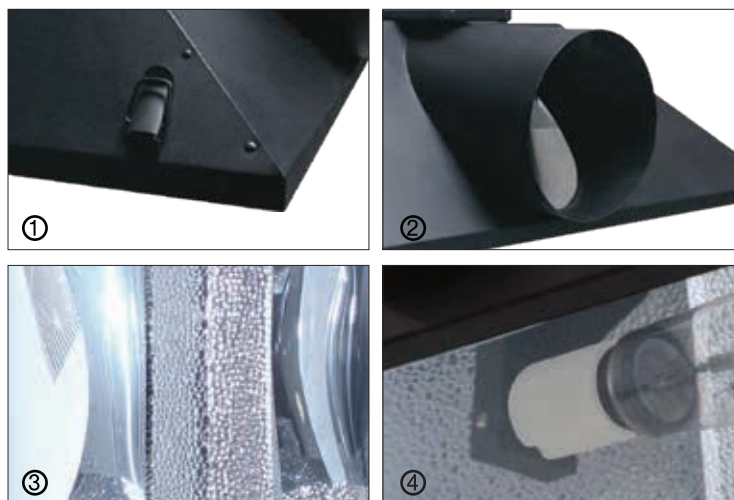
**CVAT® HID REFLECTORS**

# KARMA®

## 315W-1000W Horizontal Lamp Concealed Vacuum Airflow Technology® Reflector

### FEATURES

- Horizontal lamp with 100% light distribution allows for a low-profile hood for applications with limited overhead space ④
- Provides even lumen distribution without excessive dissipation, eliminating the “pyramid” effect
- Superior photometric performance creates a greater amount of uniform light nutrients
- 8” push/pull duct openings maintain 100% reflective capability and improve airflow efficiency which allows more hoods to be vented using fewer fans ②
- Patented reflector design creates a more than 30% improvement in light output over traditional, vented hoods ③
- Cooler lamps and housings reduce heat load issues and the costs associated with resolving them
- Exceptional housing quality ensures reliability and durability, minimizing down time due to maintenance and cleaning
- Durable black powder coated finish
- Constructed of heavy-duty 22 gauge steel ①
- 1/8” thick tempered glass lens
- Removable door for easy lamp access and cleaning
- Standard with 15’ cord and ballast plug
- 315W-1000W MH/HPS
- One (1) pair of V-hooks for mounting
- UL Listed for damp location
- Five (5) year warranty



**Dimensions:** L 33.3" x W 25.3" x H 9.8"

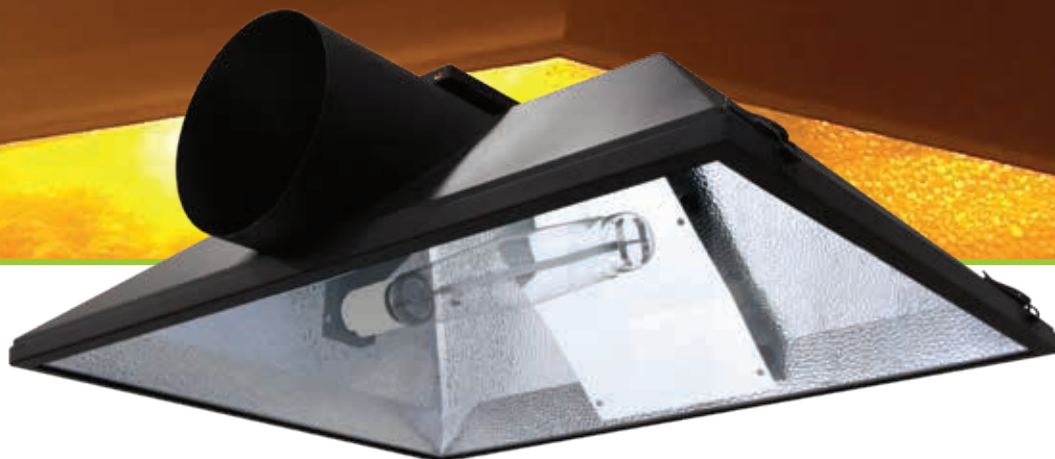
**Flanges & Top Housing included:** L 33.3" x W 28.0" x H 9.8"

**Packaged Weight:**  
39.0 lbs / 17.7 kgs

**Installed Weight:**  
32.0 lbs / 14.5 kgs

**Item No. GLH-KARMA-8**





### WHAT IS CONCEALED VACUUM AIRFLOW TECHNOLOGY®?

The patented Concealed Vacuum Airflow Technology® utilizes 100% of the hood's reflective surface to maximize the distribution of the lumens provided by the lamp. No open duct in the reflective surfaces increase the reflective area by 30% when compared to standard air-cooled designs. This patented reflector technology creates more uniform light distributions, promoting larger yields at harvest.



### COMPATIBLE BALLASTS

<b>SIS</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
✗	✗

### COMPATIBLE LAMPS

<b>SIS</b>		<b>REAL RED®</b>		<b>REAL RED® TRU BLUE®</b>		
315W SE	315W DE	1000W DE	1000W DA	1000W SE	600W SE	400W SE
✗			✗	✗	✗	✗

\*Ballasts and lamps sold separately



For more information on KARMA® and CVAT® see page. 66

**GROWLITE.COM**

**CVAT® HID REFLECTORS**

# 1000 DE

1000W 120~277VAC  
Electronic Switchable Ballast

## FEATURES

- F.A.T. Frequency Adapting Technology fires ALL single-ended (SE) and double-ended (DE) lamps including high-frequency DE lamps
- MH/HPS switchable up to 1000W
- Generator ready
- Delayed ignition stabilizes start-up loads and extends lamp life
- Four (4) switchable wattage settings (400W SE, 600W SE, 1000W SE, 1000W DE) ①
- 120/208/240/277VAC voltage sensing input ②
- Standard S-Type lamp connector ④
- LED status/wattage indicators
- Built-in fan for cooling
- 6' 120VAC power cord provided
- UL Listed for damp location ③
- Three (3) year warranty

## PROTECTIONS

- Short circuit
- Ignition failure
- Overheat
- Over voltage
- Fan failure
- Open circuit
- End of Lamp Life (EOL)
- Soft-start
- Low voltage

## PERFORMANCE

Rated Voltage: AC90-305VAC

Input Frequency: 50/60Hz

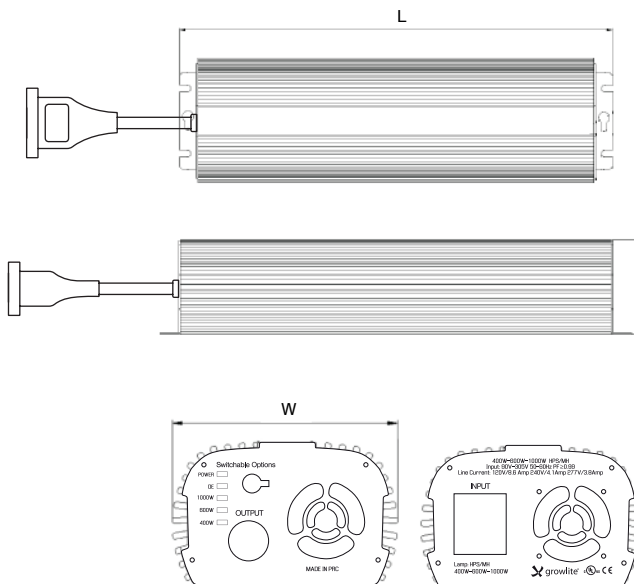
Ambient operating temperature (TA): -40°C to 50°C

Crest Factor (CF): <1.5

Power Factor (PF): ≥0.99

Total Harmonic Distortion (THD): <10%

Current draw: 8.6A @ 120VAC, 4.1A @ 240VAC,  
3.8A @ 277VAC



**Dimensions:** L 15.2" x W 4.4" x H 2.8"

**Packaged Weight:**  
7.4 lbs / 3.3 kgs

**Installed Weight:**  
6.6 lbs / 3.0 kgs

**Item No. GLB-1000-DE-120/277**





### 1000W 120~277VAC ELECTRONIC SWITCHABLE BALLAST

1000W electronic switchable ballast is highly efficient and energy-saving. It is equipped with LED Power System indicator, short circuit protection, open circuit protection, ignition failure protection, and end of lamp life protection technology.



### COMPATIBLE REFLECTORS

HDE	HDE-E	HSE	og	KARMA
X	X	X	X	X

### COMPATIBLE LAMPS

SIS		REAL RED®		REAL RED® TRU BLUE®		
315W SE	315W DE	1000W DE	1000W DA	1000W SE	600W SE	400W SE
		X	X	X	X	X

**120~277VAC**



**3 YEAR WARRANTY**

\* Lamps and reflectors sold separately

**GROWLITE.COM**

**ELECTRONIC BALLASTS**

# 315

315W Electronic Ballast  
CERAMIC SPECTRUM INTEGRATION  
**120~277VAC**

315W Ceramic Metal Halide (CMH)  
Electronic Ballast

## FEATURES

- Operates all 315W CMH lamps ①
- Soft Start stabilizes start-up loads and extends lamp life and performance
- LED status displays voltage and wattage in normal operation ③
- 6' 120VAC power cord provided ②
- 120/208/240/277VAC voltage sensing input
- Standard S-Type lamp connector ④
- UL Listed for damp location
- Three (3) year warranty

## PROTECTIONS

- Short Circuit
- Open Circuit
- End of Lamp Life (EOL)
- Hot-Start
- Ignition Failure
- Overheat
- Over/Under Voltage

## PERFORMANCE

Rated Voltage: AC90-305VAC

Input Frequency: 50/60Hz

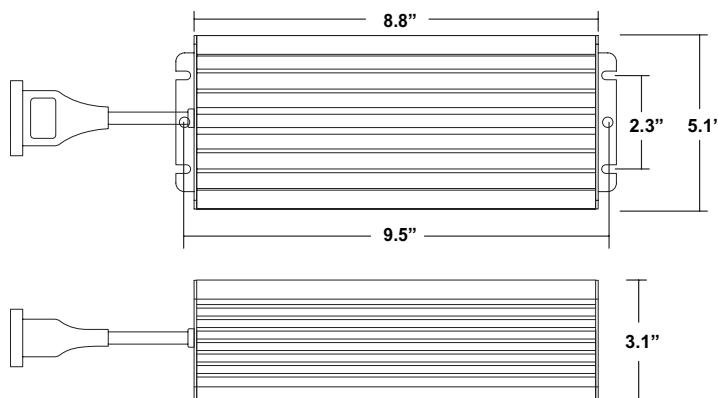
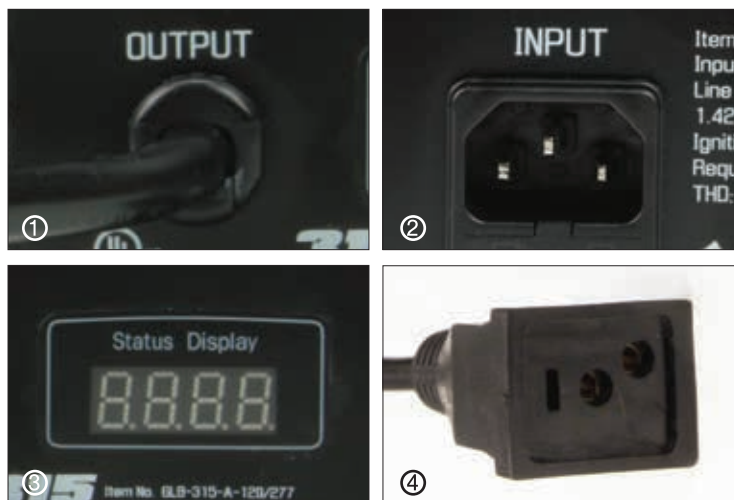
Ambient Operating Temperature (TA): -25°C~50°C

Crest Factor (CF): <1.5

Power Factor (PF): ≥0.95

Total Harmonic Distortion (THD): <20%

Current Draw: 3.84A @ 120VAC, 1.42A @ 240V,  
1.23A @ 277VAC



**Dimensions:** L 8.8" x W 5.1" x H 3.1"

**Packaged Weight:**  
6.25 lbs / 2.8 kgs

**Installed Weight:**  
5.5 lbs / 2.5 kgs

**Item No. GLB-315-A-120/277**



The 315W electronic ballast was developed in conjunction with the 315W CMH lamp. Our lamp and ballast are tuned to work together at over 99% efficiency when operated together, resulting in longer life, longer warranty, lower price, less color shifts, lower lamp temperatures, and less frequency humming.



#### COMPATIBLE REFLECTORS

HDE	HDE-E	HSE	og	KARMA
X	X	X	X	X

#### COMPATIBLE LAMPS

315		REAL RED		REAL RED TRU BLUE		
315W SE	315W DE	1000W DE	1000W DA	1000W SE	600W SE	400W SE
X	X					

\* Lamps and reflectors sold separately

120~277VAC



3 YEAR WARRANTY

For more information on CMH technology, see page 60

**GROWLITE.COM**

**ELECTRONIC BALLASTS**

# REAL RED<sup>®</sup> 1000W H P S DOUBLE ENDED

1000W Real Red<sup>®</sup> 2000K  
Double-ended Real Red<sup>®</sup>  
High Pressure Sodium Lamp

## PERFORMANCE

Initial Lumens: 140,000  
Lamp Lumens Per Watt: 140  
Rated Life: 20,000 Hours  
Color Temperature: 2000K  
Color Rendering Index (CRI): 25  
Burning Position: Universal  
Bulb Designation: T10  
Fixture Rating: Open/Closed  
To 90% Warm Up Time: 4 min  
Hot Restart Time: 3-5 min  
ANSI Designation: S52

## PHYSICAL DATA / REQUIREMENTS

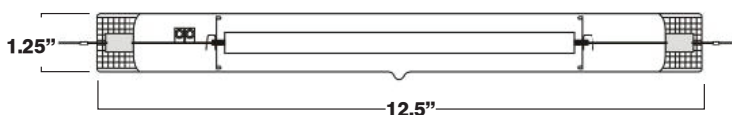
Base Designation: K12x30s  
Bulb Diameter: 32 mm (max)  
Max Overall Length (MOL): 323 ± 3 mm (max)  
Light Center Length (LCL): 197 ± 2 mm  
Max Base Temperature: 250°C  
Max Bulb Temperature: 700°C  
Socket Pulse Rating: ≥5KVA

## ELECTRICAL DATA / REQUIREMENTS

Lamp Wattage: 1000W  
Operating Voltage: 250V  
Operating Current: 4.7A



- ① Etched branding
- ② Arc tube & getters
- ③ Superior lamp construction
- ④ Packaging

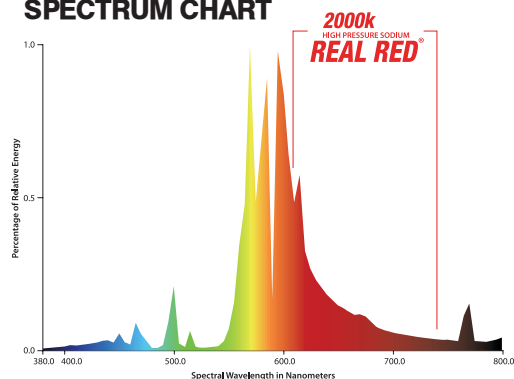


**Dimensions:** L 12.5" x W 1.25" x H 1.25"

**Weight:** 1 lbs / .45 kgs

**Item No. GLL-1000-HDEL-HPS**

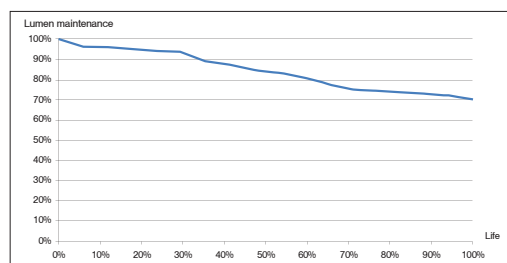
# SPECTRUM CHART



**OPEN RATED**  
**REAL RED® 1000W**  
**DOUBLE ENDED**



# LUMEN MAINTENANCE



\*Lamp Rated Life = 20,000 Hrs

# COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
	X

# COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
X	X			

\* Ballasts and reflectors sold separately

# OPEN RATED DOUBLE ARC LAMP REAL RED® 1000W H P S

1000W Real Red® 2000K  
Open Rated Double-arc  
High Pressure Sodium Lamp

**Growlite** developed the double-arc 1000W HPS lamp for greenhouse growers. Designed specifically for light maintenance applications in greenhouses. The 1000W double-arc HPS is 3.5" shorter than a traditional 1000W HPS lamp to fit in a much smaller fixture.

## PERFORMANCE

Initial Lumens: 127,000

Lamp Lumens Per Watt: 127

Color Temperature (CCT): 2000K

Rated Life: 20,000 Hours

Color Rendering Index (CRI): 22

Burning Position: Universal

Bulb Designation: ED37

Fixture Rating: Open/Enclosed

To 90% Warm Up Time: 5 min

Hot Restart Time: 1-2 min

## PHYSICAL DATA / REQUIREMENTS

Base Designation: E39

Bulb Diameter: 121 mm (max)

Max Overall Length (MOL): 292 mm (max)

Light Center Length (LCL):  $190 \pm 5$  mm

Effective Arc Length: 180 mm

Max Base Temperature: 210°C

Max Bulb Temperature: 400°C

Socket Pulse Rating (KV):  $\geq 5$ KVA

Socket Style: MOGUL

## ELECTRICAL DATA / REQUIREMENTS

Lamp Wattage: 1000W

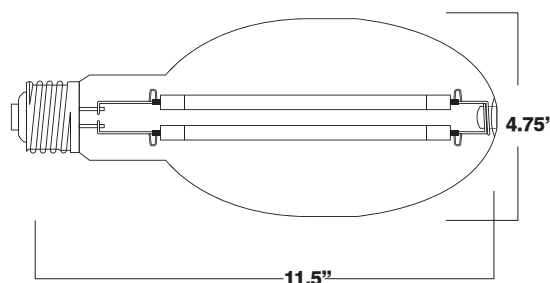
Operating Voltage: 250V

Strike Voltage: 3 - 5KV

Operating Current: 4.7A



- ① Etched branding
- ② Double-arc tubes
- ③ Superior lamp construction
- ④ Packaging



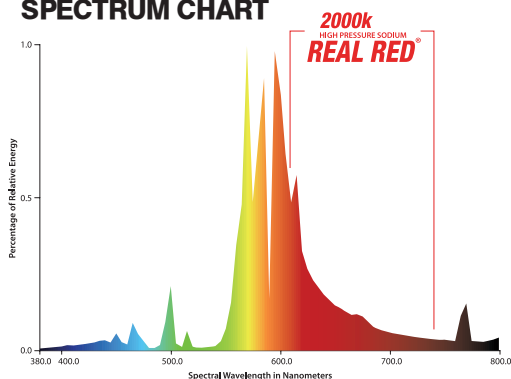
**Dimensions:** L 11.5" x W 4.75" x H 4.75"

**Weight:** 1 lbs / .45 kgs

**Item No. GLL-1000-HPS-DA**

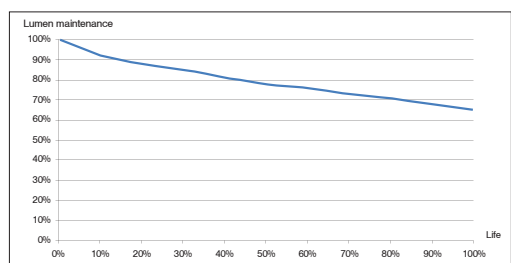


# SPECTRUM CHART



# OPEN RATED DOUBLE ARC LAMP REAL RED® 1000W H P S

# LUMEN MAINTENANCE



\*Lamp Rated Life = 20,000 Hrs

# COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
	X

# COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
		X	X	X

\* Ballasts and reflectors sold separately

**GROWLITE.COM**



**REAL RED® LAMPS** 37

# REAL RED<sup>®</sup> 1000W H P S

1000W Real Red<sup>®</sup> 2000K  
High Pressure Sodium Lamp

## PERFORMANCE

Initial Lumens: 150,000  
Lamp Lumens Per Watt: 150  
Rated Life: 24,000 Hours  
Color Temperature: 2000K  
Color Rendering Index (CRI): 25  
Burning Position: Universal  
Bulb Designation: ET25  
Fixture Rating: Open/Closed  
To 90% Warm Up Time: 4 min  
Hot Restart Time: 3-5 min  
ANSI Designation: S52

## PHYSICAL DATA / REQUIREMENTS

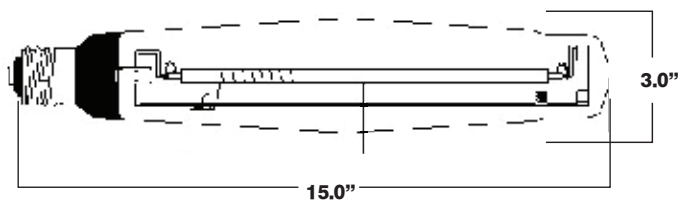
Base Designation: E39  
Bulb Diameter: 79 mm (max)  
Max Overall Length (MOL): 382 mm (max)  
Light Center Length (LCL): 225 ± 5 mm  
Max Base Temperature: 210°C  
Max Bulb Temperature: 400°C  
Socket Pulse Rating: ≥5KVA  
Socket Style: MOGUL

## ELECTRICAL DATA / REQUIREMENTS

Lamp Wattage: 1000W  
Operating Voltage: 250V  
Operating Current: 4.7A



- ① Etched branding
- ② Arc tube & getters
- ③ Superior lamp construction
- ④ Packaging

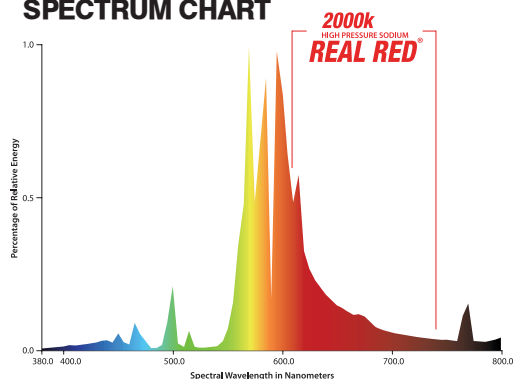


**Dimensions:** L 15.0" x W 3.0" x H 3.0"

**Weight:** 1 lbs / .45 kgs

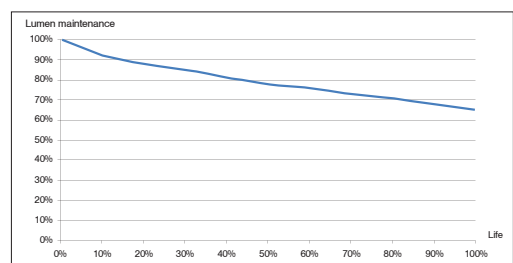
**Item No. GLL-1000-HPS**

# SPECTRUM CHART



# OPEN RATED REAL RED® 1000W HPS

# LUMEN MAINTENANCE



\*Lamp Rated Life = 24,000 Hrs

# COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
	X

# COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
			X	X

\* Ballasts and reflectors sold separately

**GROWLITE.COM**

**REAL RED® LAMPS** 39



# REAL RED<sup>®</sup> 600W H P S

600W Real Red<sup>®</sup> 2000K  
High Pressure Sodium Lamp

## PERFORMANCE

Initial Lumens: 90,000

Lamp Lumens Per Watt: 145

Rated Life: 24,000 Hours

Color Temperature: 2000K

Color Rendering Index (CRI): 25

Burning Position: Universal

Bulb Designation: T15

Fixture Rating: Open/Closed

To 90% Warm Up Time: 4 min

Hot Restart Time: 3-5 min

ANSI Designation: S106

## PHYSICAL DATA / REQUIREMENTS

Base Designation: E39

Bulb Diameter: 47 mm (max)

Max Overall Length (MOL): 392 mm (max)

Light Center Length (LCL): 175 ± 5 mm

Max Base Temperature: 210°C

Max Bulb Temperature: 400°C

Socket Pulse Rating: ≥5KVA

Socket Style: MOGUL

## ELECTRICAL DATA / REQUIREMENTS

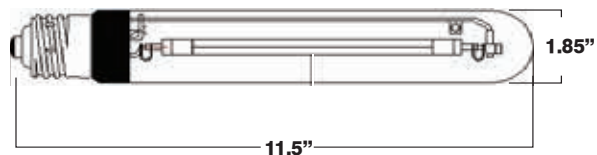
Lamp Wattage: 600W

Operating Voltage: 110V

Operating Current: 6.2A



- ① Etched branding
- ② Arc tube & getters
- ③ Superior lamp construction
- ④ Packaging



**Dimensions:** L 11.5" x W 1.85" x H 1.85"

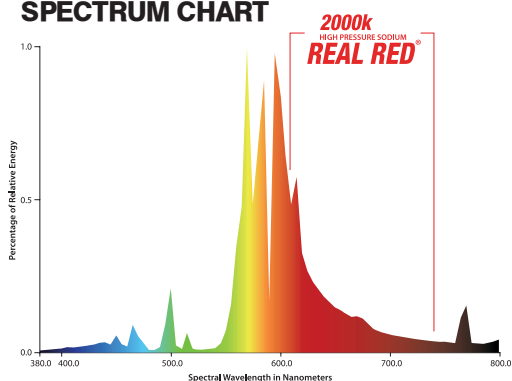
**Weight:** 1 lbs / .45 kgs

**Item No. GLL-600-HPS**



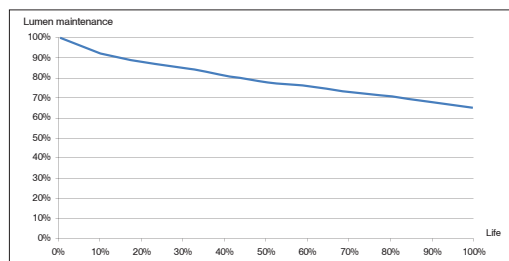


### SPECTRUM CHART



**OPEN RATED**  
**REAL RED® 600W**  
H P S

### LUMEN MAINTENANCE



\*Lamp Rated Life = 24,000 Hrs

### COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
	X

### COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
		X	X	X

\* Ballasts and reflectors sold separately



**GROWLITE.COM**

**REAL RED® LAMPS**

# REAL RED<sup>®</sup> 400W H P S

400W Real Red<sup>®</sup> 2000K  
High Pressure Sodium Lamp

## PERFORMANCE

Initial Lumens: 48,000

Lamp Lumens Per Watt: 150

Rated Life: 20,000 Hours

Color Temperature: 2000K

Color Rendering Index (CRI): 25

Burning Position: Universal

Bulb Designation: ET18

Fixture Rating: Open/Closed

To 90% Warm Up Time: 4 min

Hot Restart Time: 3-5 min

ANSI Designation: S51

## PHYSICAL DATA / REQUIREMENTS

Base Designation: E39

Bulb Diameter: 60 mm (max)

Max Overall Length (MOL): 248 mm (max)

Light Center Length (LCL):  $146 \pm 5$  mm

Max Base Temperature: 210°C

Max Bulb Temperature: 400°C

Socket Pulse Rating:  $\geq 5$ KVA

Socket Style: MOGUL

## ELECTRICAL DATA / REQUIREMENTS

Lamp Wattage: 400W

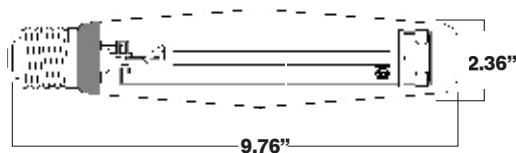
Operating Voltage: 100V

Operating Current: 4.6A

**WHILE SUPPLIES LAST**  
**LIMITED STOCK**



- ① Etched branding
- ② Arc tube & getters
- ③ Superior lamp construction
- ④ Packaging



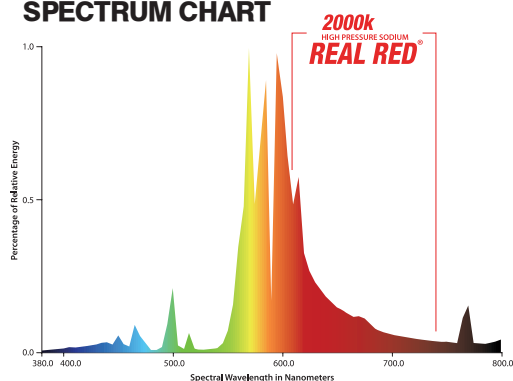
**Dimensions:** L 9.76" x W 2.36" x H 2.36"

**Weight:** 1 lbs / .45 kgs

**Item No. GLL-400-HPS**

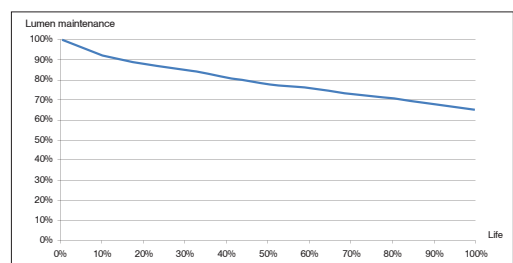


# SPECTRUM CHART



**OPEN RATED**  
**REAL RED® 400W**  
H P S

# LUMEN MAINTENANCE



\*Lamp Rated Life = 20,000 Hrs

# COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
	X

# COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
		X	X	X

\* Ballasts and reflectors sold separately



# REAL RED<sup>®</sup> T5HO

54W & 24W Real Red<sup>®</sup> 3000K  
T5 High Output Lamps

## 54WT5HO/3000K PERFORMANCE

Initial Lumens: 5,000

Rated Life: 20,000 Hours

Color Temperature: 3000K

Color Rendering Index (CRI): 85

Diameter: 0.625 in

Length (MOL): 45.2 in

Base Type: Miniature Bi-Pin

## 24WT5HO/3000K PERFORMANCE

Initial Lumens: 2,000

Rated Life: 20,000 Hours

Color Temperature: 3000K

Color Rendering Index (CRI): 85

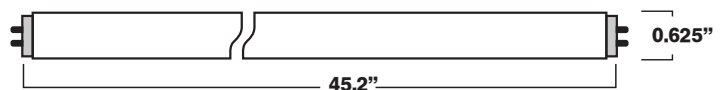
Diameter: 0.625 in

Length (MOL): 21.61 in

Base Type: Miniature Bi-Pin



- ① Printed branding
- ② Miniature Bi-Pin base
- ③ Superior lamp construction
- ④ Packaging



**Dimensions:** L 45.2" x W .625" x H .625"

**Weight:** .06 lbs / .02 kgs

**Item No. GLL-3-T5HO-54** \* Compatible fixture by others



**Dimensions:** L 21.61" x W .625" x H .625"

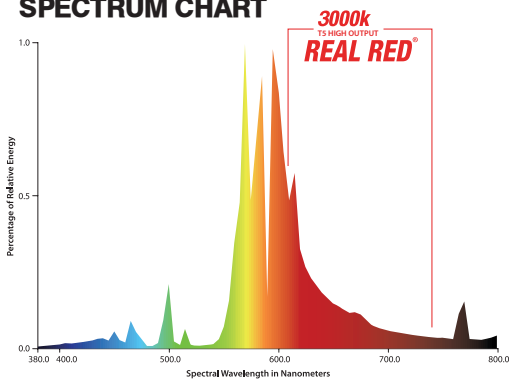
**Weight:** .03 lbs / .01 kgs

**Item No. GLL-3-T5HO-24** \* Compatible fixture by others



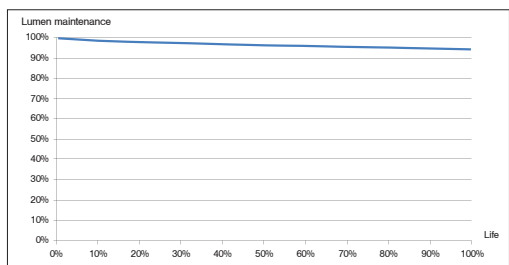


### SPECTRUM CHART



**REAL RED<sup>®</sup>** T5HO

### LUMEN MAINTENANCE



\*Lamp Rated Life = 20,000 Hrs



# TRU BLUE<sup>®</sup> 1000W METAL HALIDE

1000W Tru Blue<sup>®</sup> 6500K  
Open-rated Metal Halide Lamp

## PERFORMANCE

Initial Lumens: 107,000

Lamp Lumens Per Watt: 107

Rated Life: 12,000 Hours

Color Temperature: 6500K

Color Rendering Index (CRI): 60

Burning Position: Universal

Bulb Designation: BT37

Fixture Rating: Open/Closed

To 90% Warm Up Time: 4 min

Hot Restart Time: 10-15 min

ANSI Designation: M47

## PHYSICAL DATA / REQUIREMENTS

Base Designation: EX39

Bulb Diameter: 121 mm (max)

Max Overall Length (MOL): 292 mm (max)

Light Center Length (LCL): 178 ± 5 mm

Effective Arc Length: 94 mm

Max Base Temperature: 210°C

Max Bulb Temperature: 400°C

Socket Pulse Rating (KV): ≥5KVA

Socket Style: MOGUL

## ELECTRICAL DATA / REQUIREMENTS

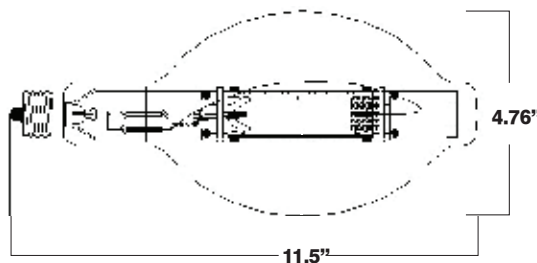
Lamp Wattage: 1000W

Operating Voltage: 263V

Operating Current: 4.1A



- ① Etched branding
- ② Open-rated
- ③ Superior lamp construction
- ④ Packaging

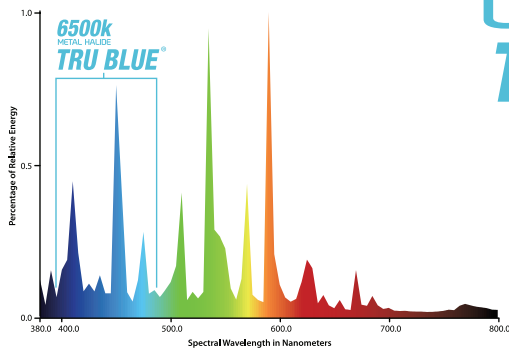


**Dimensions:** L 11.5" x W 4.76" x H 4.76"

**Weight:** 1 lbs / .45 kgs

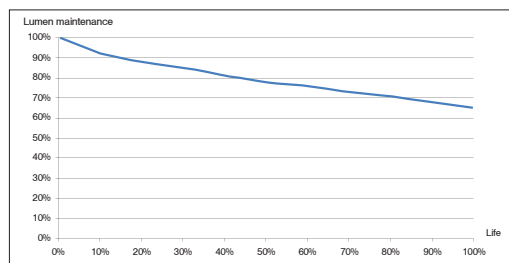
**Item No. GLL-1000-MH**

## SPECTRUM CHART



## OPEN RATED **TRU BLUE** 1000W METAL HALIDE

## LUMEN MAINTENANCE



\*Lamp Rated Life = 12,000 Hrs

## COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
	X

## COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
		X	X	X

\* Ballasts and reflectors sold separately

**GROWLITE.COM**



**TRU BLUE® LAMPS** 47

# TRU BLUE<sup>®</sup> 600W METAL HALIDE

600W Tru Blue<sup>®</sup> 6500K  
Open-rated Metal Halide Lamp

## PERFORMANCE

Initial Lumens: 58,000

Lamp Lumens Per Watt: 97

Rated Life: 10,000 hours

Color Temperature: 6500K

Color Rendering Index (CRI): 60

Burning Position: Universal

Bulb Designation: BT37

Fixture Rating: Open/Closed

To 90% Warm Up Time: 4 min

Hot Restart Time: 10-15 min

ANSI Designation: S106

## PHYSICAL DATA / REQUIREMENTS

Base Designation: EX39

Bulb Diameter: 121 mm (max)

Max Overall Length (MOL): 292 mm (max)

Light Center Length (LCL): 178 ± 5 mm

Effective Arc Length: 52.5 mm

Max Base Temperature: 210°C

Max Bulb Temperature: 430°C

Socket Pulse Rating (KV): ≥5KVA

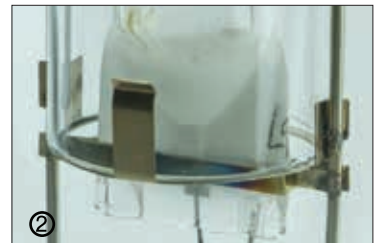
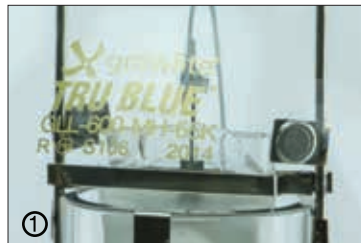
Socket Style: MOGUL

## ELECTRICAL DATA / REQUIREMENTS

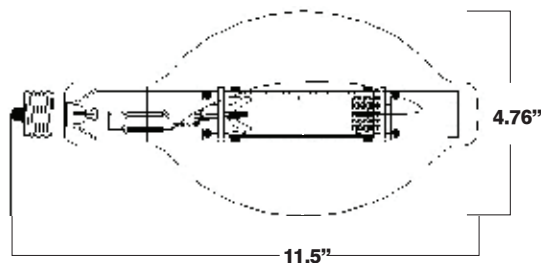
Lamp Wattage: 600W

Operating Voltage: 135V

Operating Current: 6.2A



- ① Etched branding
- ② Open-rated
- ③ Superior lamp construction
- ④ Packaging



**Dimensions:** L 11.5" x W 4.76" x H 4.76"

**Weight:** 1 lbs / .45 kgs

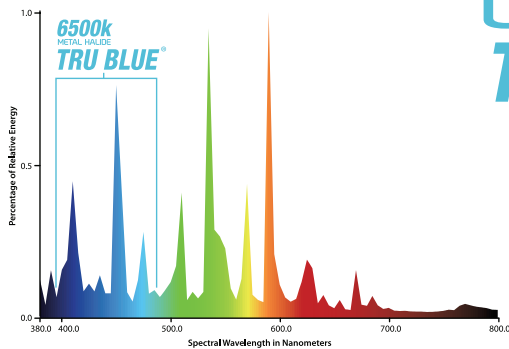
**Item No. GLL-600-MH**



**VEGETATIVE**

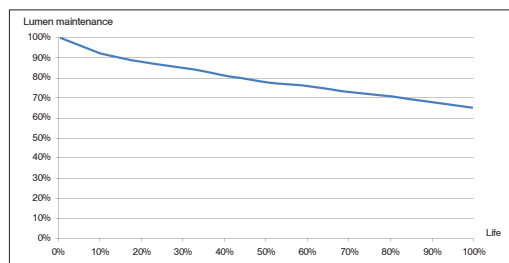
**MOTHER**

### SPECTRUM CHART



**OPEN RATED**  
**TRU BLUE® 600W**  
 METAL HALIDE

### LUMEN MAINTENANCE



\*Lamp Rated Life = 10,000 Hrs

### COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
	X

### COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
		X	X	X

\* Ballasts and reflectors sold separately



**GROWLITE.COM**

**TRU BLUE® LAMPS** 49

# TRU BLUE<sup>®</sup> 400W METAL HALIDE

400W Tru Blue<sup>®</sup> 6500K  
Open-rated Metal Halide Lamp

## PERFORMANCE

Initial Lumens: 32,000

Lamp Lumens Per Watt: 80

Rated Life: 10,000 Hours

Color Temperature: 6500K

Color Rendering Index (CRI): 70

Burning Position: Vertical Only (Base-Up)

Bulb Designation: BT37

Fixture Rating: Open/Closed

To 90% Warm Up Time: 3-5 min

Hot Restart Time: 10-15 min

ANSI Designation: M59

## PHYSICAL DATA / REQUIREMENTS

Base Designation: EX39

Bulb Diameter: 121 mm (max)

Max Overall Length (MOL): 292 mm (max)

Light Center Length (LCL): 178 ±5 mm

Effective Arc Length: 42 mm

Max Base Temperature: 210°C

Max Bulb Temperature: 400°C

Socket Pulse Rating (KV): ≥5KVA

Socket Style: MOGUL

## Electrical Data / Requirements

Lamp Wattage: 400W

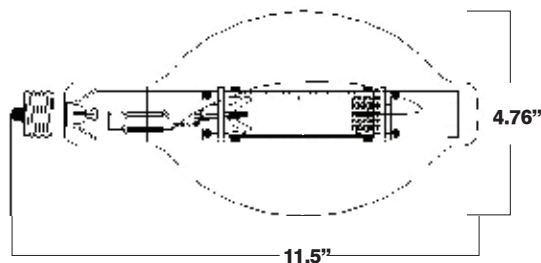
Operating Voltage: 135V

Operating Current: 3.25A

**WHILE SUPPLIES LAST  
LIMITED STOCK**



- ① Etched branding
- ② Open-rated
- ③ Superior lamp construction
- ④ Packaging



**Dimensions:** L 11.5" x W 4.76" x H 4.76"

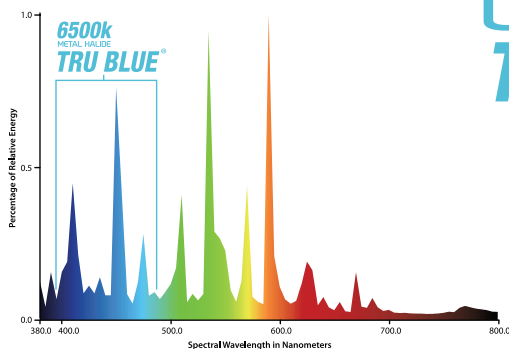
**Weight:** 1 lbs / .45 kgs

**Item No. GLL-400-MH**



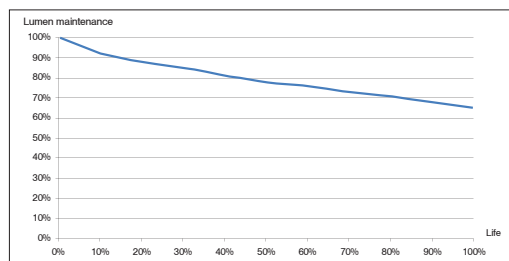


## SPECTRUM CHART



## OPEN RATED TRU BLUE® 400W METAL HALIDE

## LUMEN MAINTENANCE



\*Lamp Rated Life = 10,000 Hrs

## COMPATIBLE BALLASTS

<b>315</b>	<b>1000DE</b>
315W 120-277VAC	1000W 120-277VAC
	X

## COMPATIBLE REFLECTORS

<b>HDE</b>	<b>HDE-E</b>	<b>HSE</b>	<b>og</b>	<b>KARMA</b>
		X	X	X

\* Ballasts and reflectors sold separately

**GROWLITE.COM**



**TRU BLUE® LAMPS** 51

# TRU BLUE® T5HO

54W & 24W Tru Blue® 6500K  
T5 High Output Lamps

## 54WT5HO/6500K

### PERFORMANCE

Initial Lumens: 5,000

Rated Life: 20,000 Hours

Color Temperature: 6500K

Color Rendering Index (CRI): 85

Diameter: 0.625 in

Length (MOL): 45.2 in

Base Type: Miniature Bi-Pin

## 24WT5HO/6500K

### PERFORMANCE

Initial Lumens: 2,000

Rated Life: 20,000 Hours

Color Temperature: 6500K

Color Rendering Index (CRI): 85

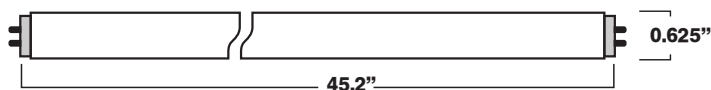
Diameter: 0.625 in

Length (MOL): 21.61 in

Base Type: Miniature Bi-Pin



- ① Printed branding
- ② Miniature Bi-Pin base
- ③ Superior lamp construction
- ④ Packaging



**Dimensions:** L 45.2" x W .625" x H .625"

**Weight:** .06 lbs / .02 kgs

**Item No. GLL-65-T5HO-54** \* Compatible fixture by others



**Dimensions:** L 21.61" x W .625" x H .625"

**Weight:** .03 lbs / .01 kgs

**Item No. GLL-65-T5HO-24** \* Compatible fixture by others

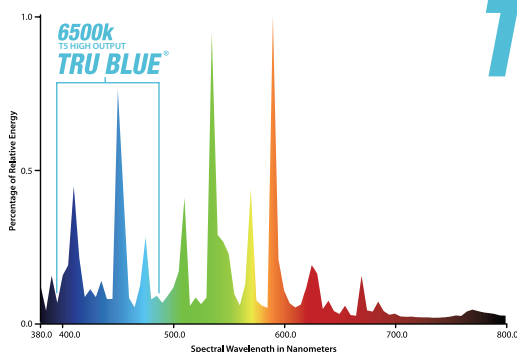


**CLONE**

**VEGETATIVE**

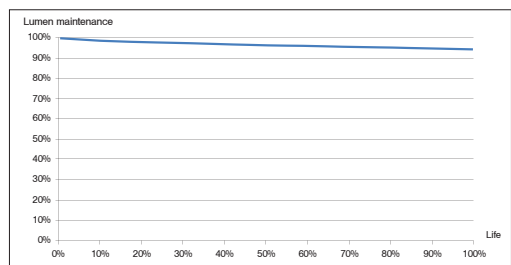
**MOTHER**

### SPECTRUM CHART



**TRU BLUE®** T5HO

### LUMEN MAINTENANCE



\*Lamp Rated Life = 20,000 Hrs



**GROWLITE.COM**

**TRU BLUE® LAMPS** 53

# ACCESSORIES



## SOCKET EXTENDER

MOGUL TO MOGUL PULSE-RATED PORCELAIN

### FEATURES

- Mogul to mogul socket extender
- Extends lamp 1-1/8"
- Designed to be used with HID lamps only
- Recommended for use with 400W and 600W lamps

**Weight:** 1 lbs / .454 kgs

**Item No. GLA-SE**



## HEAVY DUTY ROPE RATCHETS

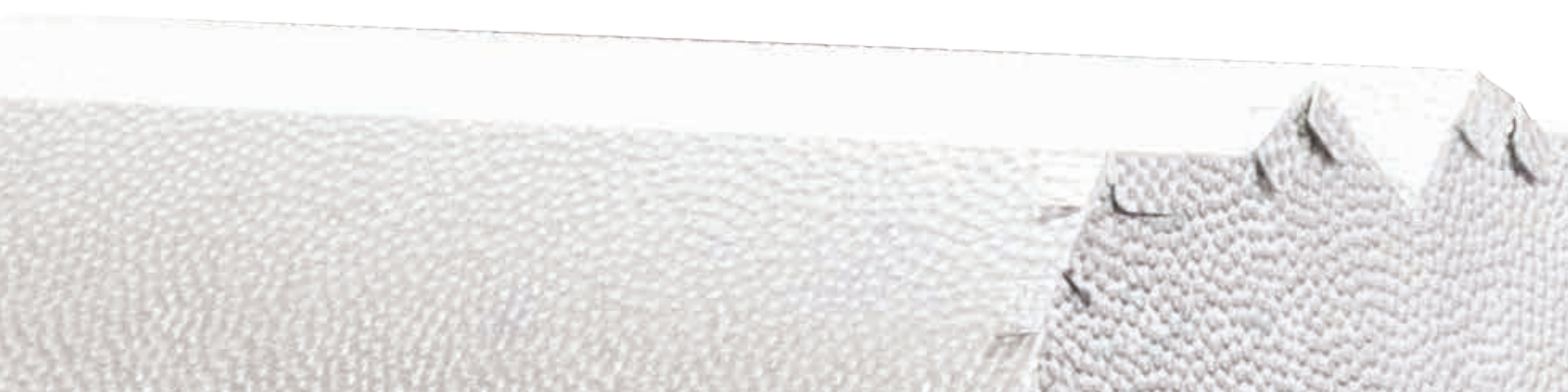
### FEATURES

- (2) 1/8" Rope Ratchets
- Holds reflectors, carbon filters, light fixtures and ventilation equipment
- Suited for large reflectors
- Max weight capacity - 150 lbs. (68 Kgs.)
- 8' rope

**Weight:** .5 lbs / .227 kgs

**Item No. GLA-HDH**





## SOLID COVER 8

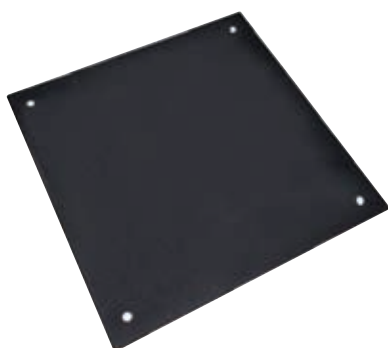
8" REMOVABLE SOLID COVER PLATE

### FEATURES

- Constructed of heavy-duty 22 gauge steel
- Quick 8" replaceable or add-on solid cover for the HDE reflector
- Allows for modular placement on HDE reflector

**Weight:** .5 lbs / .23 kgs

**Item No. GLA-SC-8**



## LOUVERED COVER 8

8" REMOVABLE LOUVERED COVER PLATE

### FEATURES

- Constructed of heavy-duty 22 gauge steel
- Quick 8" louvered cover add-on or replacement for OG & HDE reflectors
- Allows for modular placement on HDE reflector

**Weight:** .45 lbs / .2 kgs

**Item No. GLA-LC-8**



## DUCT 8

8" REMOVABLE DUCT / FLANGE

### FEATURES

- Constructed of heavy-duty 22 gauge steel
- Quick 8" duct add-on or replacement for OG & HDE reflectors
- Allows modular placement of 8" ducts on HDE reflector

**Weight:** .75 lbs / .34 kgs

**Item No. GLA-DUCT-8**



# INDOOR HORTICULTURE

*Separating Myth from  
Reality.*

## THE DEBATE

The quantity and quality of the light we create for our indoor gardens has been a topic for debate since growers began the scientific art of indoor horticulture. The debate topics typically includes the merits or deficiencies of different light sources including metal halide, high pressure sodium, ceramic metal halide, LED, induction and even plasma.

As these new light sources begin to develop into viable horticultural lighting, the measurement of the light being produced, how that light compares to competing light sources, as well as our understanding of those measurements becomes increasingly important. Photometry is the study and the measurement of lights. The first measurements used to measure the quantity and quality of the light produced by any given light source were created to define how the human eye gathers light and how the human brain interprets the information gathered by the eye. The human eye can see light produced in the 400 nanometer to 700 nanometer spectral range that is commonly referred to as the “visible light spectrum.” Plant life also utilizes the light in the visible light spectrum, however a plant’s use of light extends a little below 400nm into the UV range and a little above 700nm into the IR range. UV and blue light aid the plant in general health as well as resin and sap production while IR and red light allows the plant to regulate photoperiod sensitivity and seasonal awareness. Since humans and plants essentially “see” the same part of the spectrum, early light measurement methods skewed towards defining the way humans perceive light and apply it to various activities and applications. These first measurements of light intensity, candelas, lumens, lux and foot-candles measured only the total illuminance (or quantity) produced by a light source and did not define any color or spectral qualities of the light.

## QUALITY OF LIGHT

Quality specialized applications created the necessity to equally define and compare the qualities of light produced by these various lamp types. Some of the units used define the relative qualities of various light sources when compared to an ideal natural light source are CRI color rendering index and CCT correlated color temperature. We will talk about each separately even though the two metrics are very closely related.

CRI, or color rendering index, is rated from 1 – 100 and measures the ability of a light source to accurately render (or reveal) the colors of various objects in comparison with an ideal or natural light source. The lower the CRI rating of a given lamp, the less accurately colors will be reproduced when illuminated by that lamp. The higher the CRI rating, the better that lamp will allow the human eye to accurately perceive the true color of objects.

Color temperature can most simply be described as the metric to define the color characteristics of light. Warmer, yellowish colors are at the lower end of the scale, around 2800K to 3200K; think of your standard 60W warm white incandescent lamp. Cooler, bluish colors are at the higher end, around 5600K to 6500K and would be similar to the light produced by the noon day sun.

A more technical definition of CCT would be that it assigns a value to the color emitted by light source measured in degrees of Kelvin (K).

## LIGHTING PLANTS

We measure light for human perceptions and applications, but how do we measure light for plant's? Plants, as mentioned before, "see" light in a slightly expanded section of the visible spectrum, they also have different sensitivities to different parts of the visible spectrum. Humanity's evolution from hunter/gatherers to agriculturists made human eyes particularly sensitive to greens in order to differentiate edible plants from poisonous ones and to better locate and identify predators or prey in dense green foliage. Since plants reflect most of the green light they receive, they are more sensitive to the red and blue portions of the spectrum. The plant response curve commonly used today was created by Keith J. McCree in 1972 and defines how plants perceive and utilize light. The McCree curve showed that the blue and red portions of the visible spectrum had much more effect on a plant's growth and development than

those light waves in the green portion of the spectrum. Blue light is vital to the health and proper growth, while red light aids the plant in determining photoperiod cycles as well as regulating the fruiting or flowering stages of plant development.

Knowing the importance of not only the right quantity of light but the appropriate wavelengths and colors of light, horticulturists and plant biologists measure light by the amount of photosynthetically active radiation or PAR energy, which is measured in micromoles, or  $\mu\text{mol/s}$ , and is called out as either PPF or PPF. PAR energy is the amount of light produced within the plant response curve and measures the amount of light photons ( $\mu\text{mol}$ ) striking a one square meter area over one second of time. Since PAR energy measures and adds up ALL of the wavelengths within the visible spectrum, including greens, it is not the most complete metric for determining a grow light's performance. For instance, a green LED light might have a very high PAR number, but since it doesn't produce any blues or reds, this green light would not perform well as a

horticulture light despite its high PAR.

## A MATTER OF MEASURE

As the understanding of how light affects both humans as well as plants expands and evolves, it is evident that a single metric cannot be used to determine a grow luminaire's efficacy. It takes an understanding of many different measurements and how each of them impact plant development and growth to effectively select the most appropriate grow light for specific crops and growing methods. The ultimate goal of horticulture lighting is to unlock the full genetic potential of a plant in both the quality of the product produced and the quantity harvested, while at the same time reducing the overhead costs needed to produce it. This goal will be accomplished by reducing overall wattage consumption and luminaire maintenance, while increasing the quality of the light being utilized; reducing energy costs while not sacrificing harvests.

**Growlite** is closing the debate, separating the myths from reality by dedicating their time to educate the public and provide all the resources for this evolving industry.



# PROJECT LAYOUT

KINGMAN, ARIZONA

## Know what to ask for...

Be sure you're getting all the accurate information you need. A lighting layout conveys complex information and arming yourself with these simple questions can ensure you are getting what you are paying for.

### What units of light are used?

PAR is measured in  $\mu\text{mol}/\text{m}^2/\text{s}$  and is unique to horticulture applications. Foot-candles measure the intensity of a light striking a surface.

### What is the luminaire vs workplane height?

The luminaire height is the distance from the floor to the light source. The workplane height is basically equal to the canopy height. The difference between the workplane and the luminaire height is the distance from the plants to the light source.

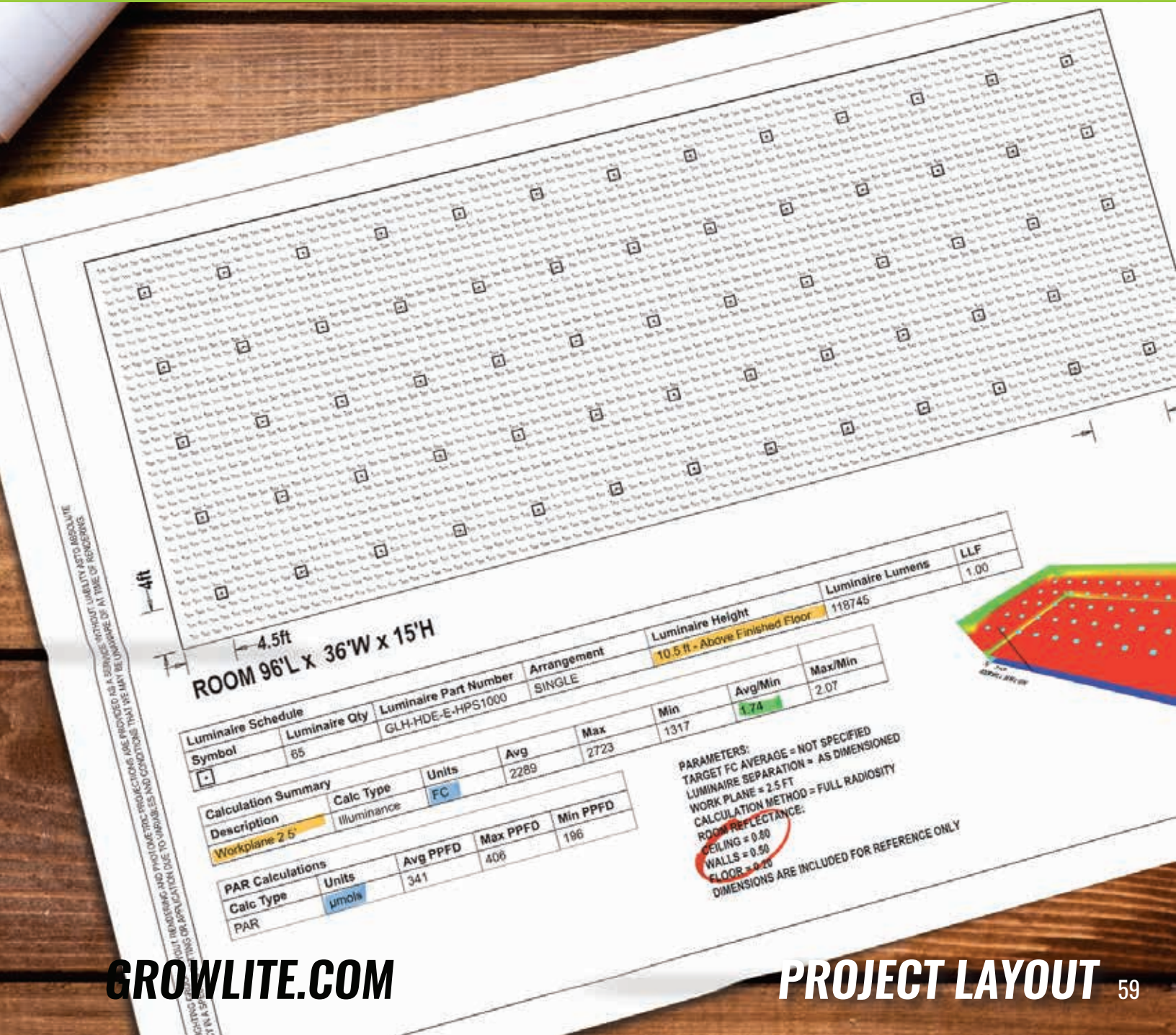
### Why is the AVG/MIN ratio so important?

The AVG/MIN ratio shows how evenly the light is distributed across the canopy. The lower the AVG/MIN number is the more even the illumination will be, generally this number should be less than 2.4.

### What is the reflectance value?

A reflectance value indicates how much light adjacent surfaces will reflect. A mirror is 100% reflective. Reflectance values should be realistic. Standard values are 80% for ceilings, 50% for walls and 20% for floors.



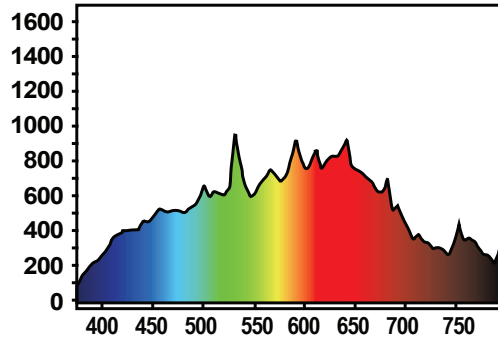


# SPECTRUM MATTERS

*Know your full spectrum.*

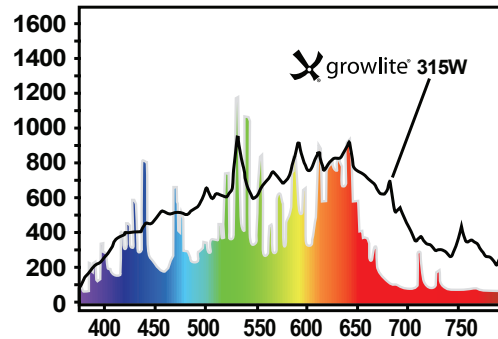
**Growlite's** 315W mogul base, full spectrum, ceramic metal halide (CMH) lamp is unique as the only CMH lamp on the market specifically designed to work seamlessly with all existing mogul base grow lights. It is an ideal retrofit solution for growers wanting to upgrade the light quality produced by their existing grow lights.

**growlite®** GLL-315-CSI  
GLL-315-CSI-DE



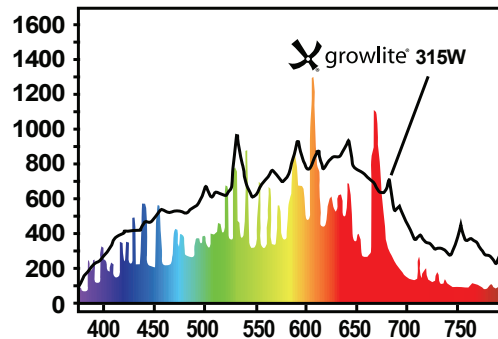
**PHILIPS**

CDM 315/U/O/942 (4200°K Lamp)



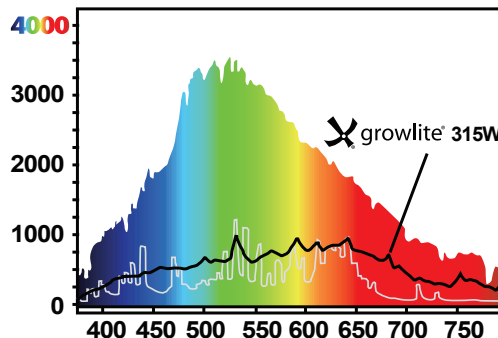
**PHILIPS**

CDM 315/U/O/930 (3100°K Lamp)



**NATURAL SUNLIGHT**

FULL SPECTRUM CHART



**growlite®**  
BY BARRON LIGHTING GROUP

# MOGUL vs BI-PIN

## 315 SOLUTION

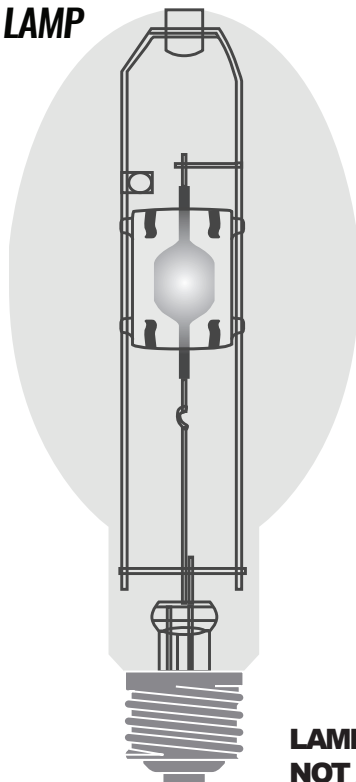
*Know the difference.*

### OPEN RATED

MOGUL CERAMIC METAL HALIDE

#### 315W CMH MOGUL BASE LAMP

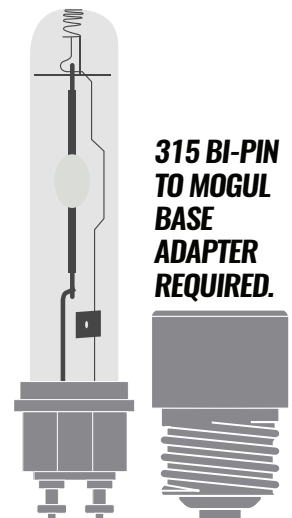
- RETROFIT ANY MOGUL FIXTURE
- HIGHLY SUPPORTIVE OF THE MEDICAL CANNABIS INDUSTRY
- SPECIFICALLY DESIGNED AND TUNED FOR THE HORTICULTURAL MARKET
- SUPERIOR SPECTRAL OUTPUT
- OPEN RATED LAMP = SAFE FOR USE IN ALL REFLECTOR TYPES



### PHILIPS

#### 315W CMH BI-PIN BASE LAMP

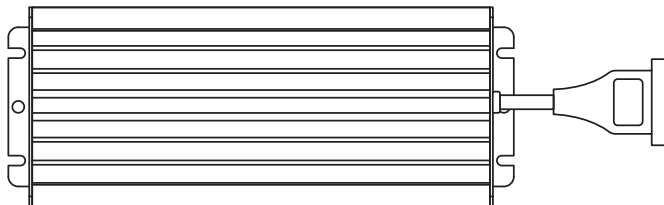
- REQUIRES ADAPTER
- LIMITED COMPATIBILITY
- DOES NOT SUPPORT THE MEDICAL CANNABIS INDUSTRY
- DESIGNED FOR RETAIL STORE LIGHTING



LAMPS SCALED DOWN  
NOT ACTUAL SIZE

### 315W Electronic Ballast

120~277VAC Rated Voltage



- FULLY COMPATIBLE WITH CMH LAMPS 315W.
- HIGH QUALITY COMPONENTS FOR LESS HEAT.
- OPEN/SHORT CIRCUIT PROTECTION.

PRODUCT NAMES, LOGOS, BRANDS, PART NUMBERS AND OTHER TRADEMARKS DISPLAYED ARE THE PROPERTY OF THEIR RESPECTIVE TRADEMARK HOLDERS.

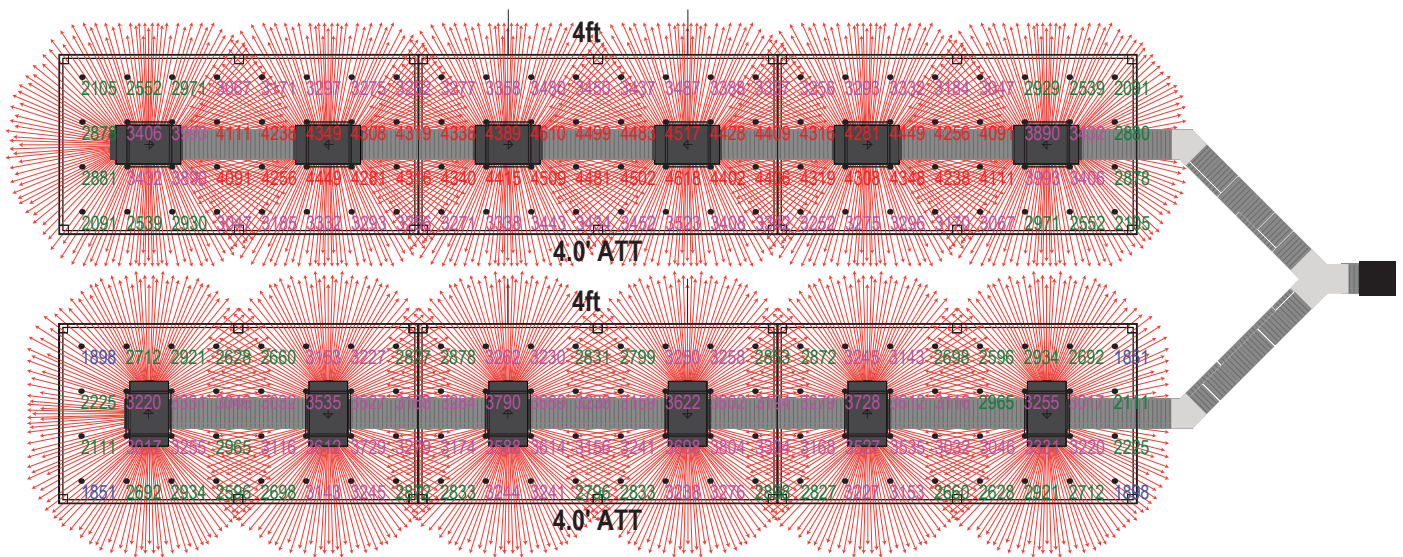
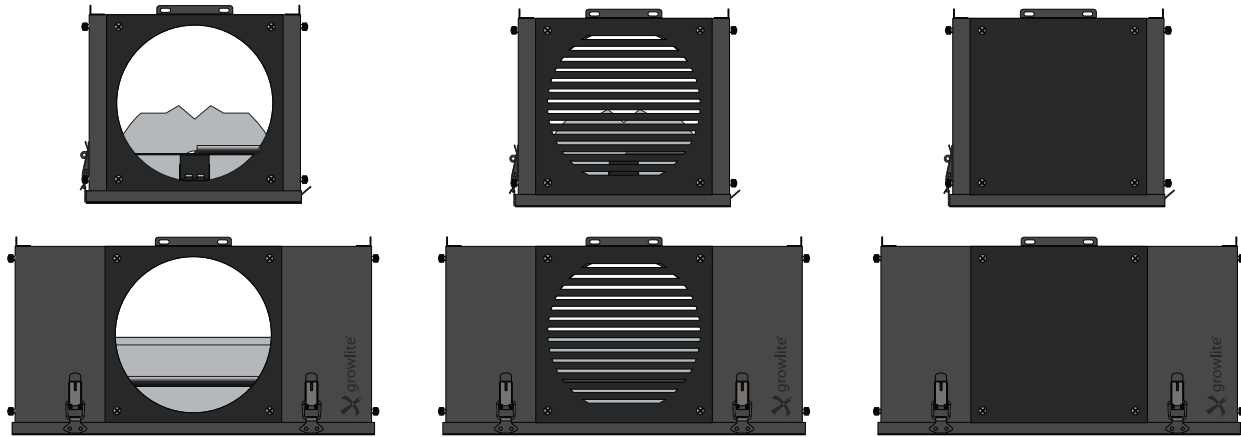


# ***PATENTED CONCEALED VACUUM AIRFLOW TECHNOLOGY®***

*Controlled light  
distribution.*



# Universal Ducting for Maximum Flexibility.



## BUILT FOR VERSATILITY

The first double-ended horticultural reflector with Concealed Vacuum Airflow Technology, combining proven lamp performance with the ability to transfer heat easily from the grow environment. With 4-way 8" ducting and included duct flanges, louvers, and solid plates, flexibility and versatility are built-in so the grower can customize the HDE as needed for specific applications. A hinged lens, re-designed sockets, and innovative reflector installation make cleaning and maintenance of the HDE extremely easy. State of the art production, quality materials, and meticulous quality control ensure years of end-user functionality for this one of a kind product.



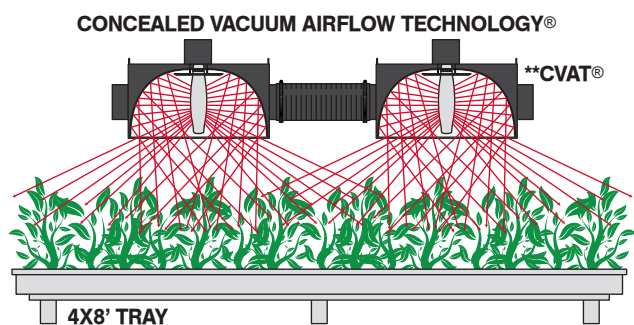
# ***PATENTED CONCEALED VACUUM AIRFLOW TECHNOLOGY®***

*Vertical Reflector.*

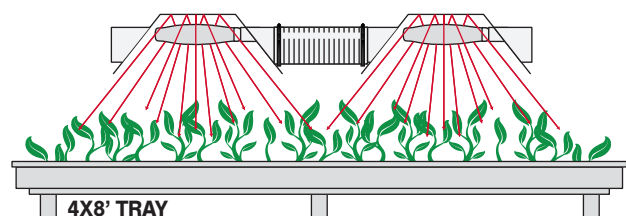
The OG reflector is engineered with a vertical lamp for the even light distribution and use of all lumens. Exceptional photometric performance and maximized thermal dissipation results in more consistent growing environments and higher yields. The OG reflector is uniquely designed to take advantage of all of the lamp's available output.



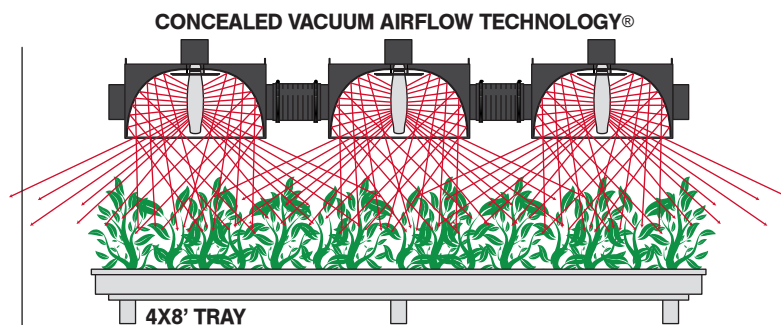
# Advantages of our Vertical Concealed Vacuum Air-flow Technology Reflector vs. Traditional Horizontal Reflectors on a 4'x8' Tray.



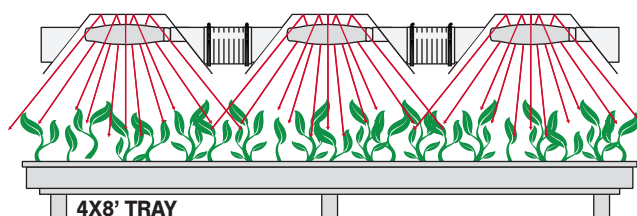
**4X8' TRAY**  
**2 - (400-1000 WATT) LAMPED OG VERTICAL REFLECTORS**  
 Vertical lamp orientation produces more cross lumens for better canopy penetration.



**4X8' TRAY**  
**2 - (400-1000 WATT) LAMPED STANDARD HORIZONTAL REFLECTORS**  
 Horizontal lamp orientation traps light in the fixture, reducing light on the table.

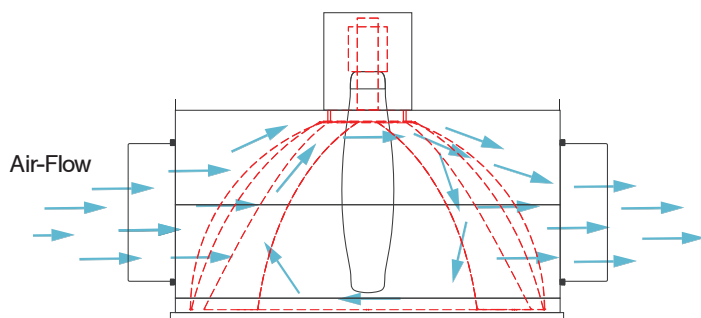


**4X8' TRAY**  
**3 - (400-1000 WATT) LAMPED OG VERTICAL REFLECTORS**  
 Concealed Vacuum Airflow Technology® removes heat more efficiently and pulls air away from lamps.

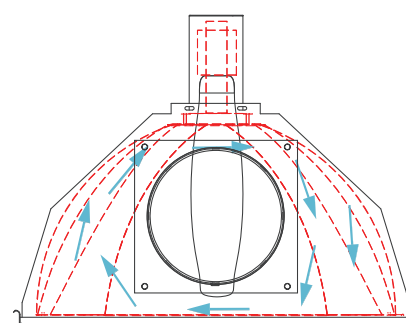


**4X8' TRAY**  
**3 - (400-1000 WATT) LAMPED STANDARD HORIZONTAL REFLECTORS**  
 Direct airflow over lamp pushes superheated air from one fixture into the next.

## Airflow thru duct.



OG® Reflector air-cooled with 8" duct showing patented Concealed Vacuum Airflow Technology® - Side View.



OG® Reflector air-cooled with 8" duct showing patented Concealed Vacuum Airflow Technology® - End View.

# KARMA<sup>®</sup>

## **PATENTED CONCEALED VACUUM AIRFLOW TECHNOLOGY<sup>®</sup>**

*Horizontal Reflector.*

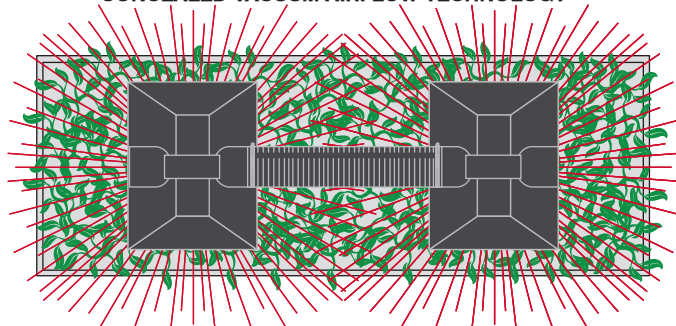
### **WHAT IS CONCEALED VACUUM AIRFLOW TECHNOLOGY<sup>®</sup> ?**

The patented Concealed Vacuum Airflow Technology utilizes 100% of the hood's reflective surface to maximize the distribution of the lumens provided by the lamp. No open duct in the reflective surfaces increase the reflective area by 30% when compared to standard air-cooled designs. This patented reflector technology creates more uniform light distributions, promoting larger yields at harvest.



# Advantages of our Horizontal Concealed Vacuum Air-flow Technology Reflector vs. Traditional Horizontal Reflectors on a 4'x8' Tray.

## CONCEALED VACUUM AIRFLOW TECHNOLOGY®

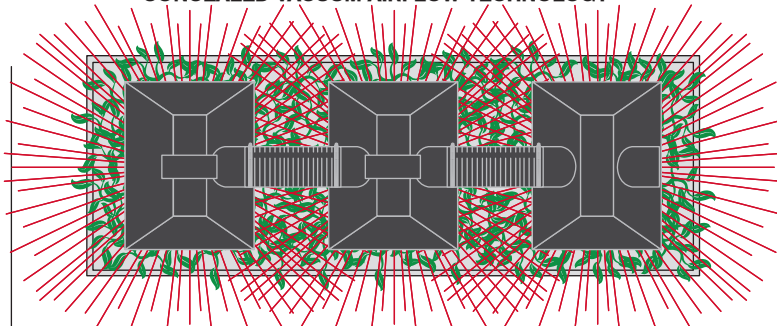


4X8' TRAY

### 2 - (400-1000 WATT) LAMPED KARMA HORIZONTAL REFLECTORS

Horizontal lamp orientation with covered duct holes produces more cross lumens for better canopy penetration.

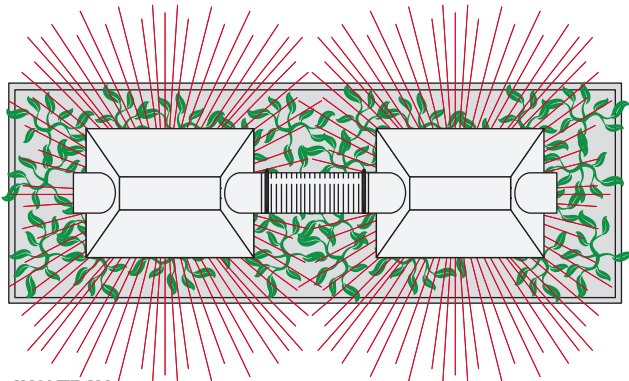
## CONCEALED VACUUM AIRFLOW TECHNOLOGY®



4X8' TRAY

### 3 - (400-1000 WATT) LAMPED KARMA HORIZONTAL REFLECTORS

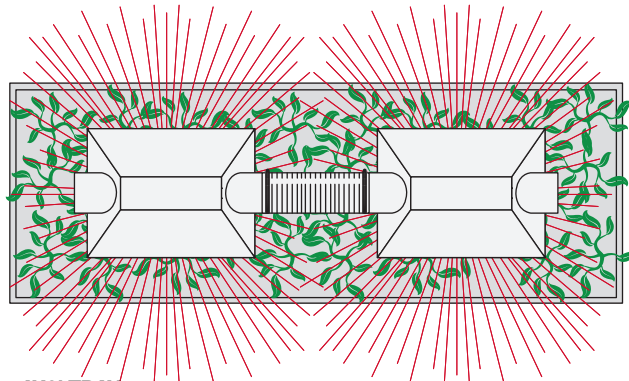
Concealed Vacuum Airflow Technology® removes heat more efficiently and pulls air away from lamps.



4X8' TRAY

### 2- (250-1000 WATT) LAMPED STANDARD REFLECTORS

Horizontal lamp orientation traps light in the fixture, reducing light on the table.

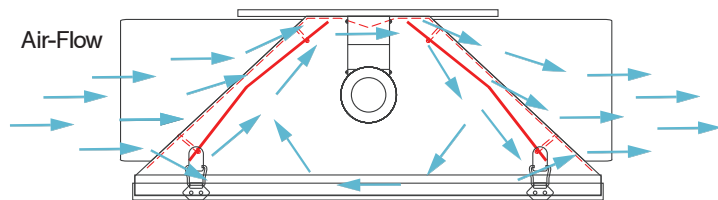


4X8' TRAY

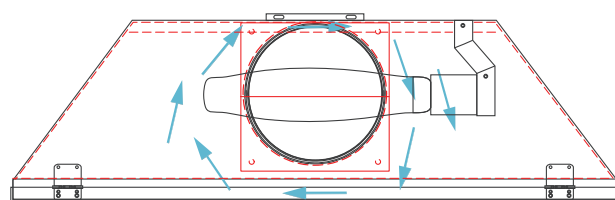
### 2- (250-1000 WATT) LAMPED STANDARD REFLECTORS

Direct airflow over lamp pushes superheated air from one fixture into the next.

## Airflow thru duct.



KARMA® Reflector air-cooled with 8" duct showing patented Concealed Vacuum Airflow Technology® - Side View.



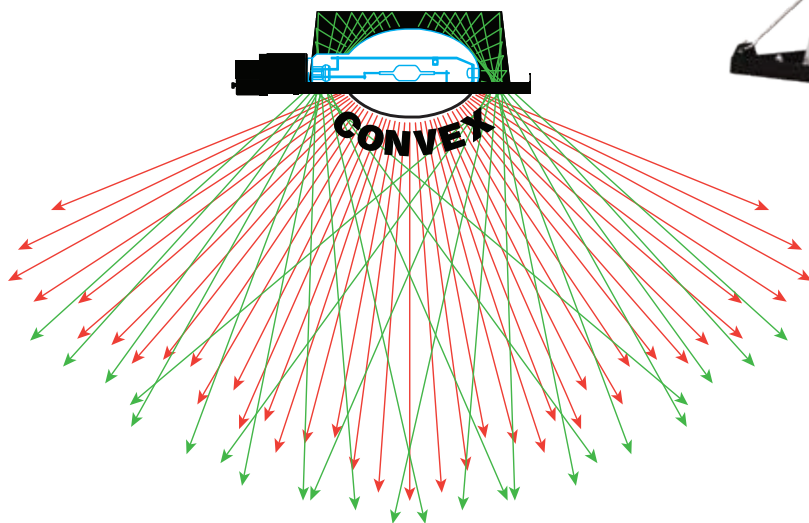
KARMA® Reflector air-cooled with 8" duct showing patented Concealed Vacuum Airflow Technology® - End View.

# CONVEX TECHNOLOGY PATENT PENDING

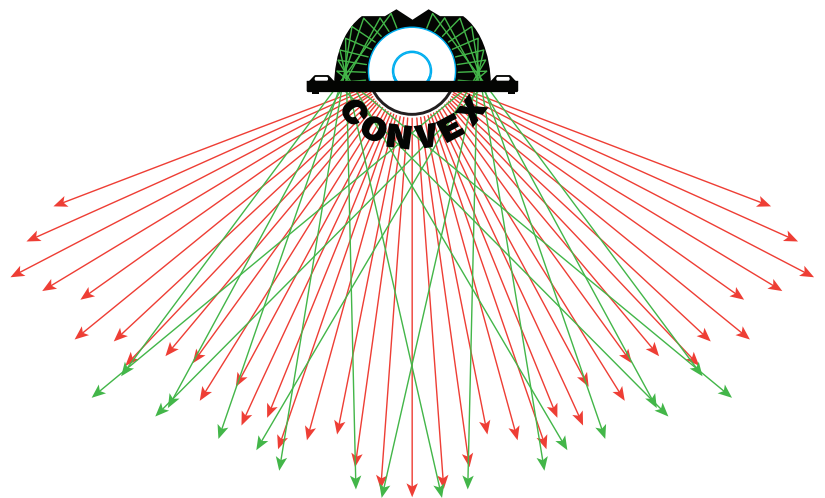
*Maximize overall  
performance.*

The HSE is the smallest sized fixture currently on the market. Its ability to spread light evenly across an area makes this unique product perfect for greenhouse and supplemental lighting applications. A versatile grow light that combines the convenience and selection of widely available single-ended mogul base HID lamps with an extremely compact, economical design. The HSE has versatility right out of the box, with a 15' ballast cord for remote ballast mounting and an integral ballast mounting bracket both included standard with every unit allowing the end user installation choices without the need for additional accessories.





Shown with included removable universal ballast mounting bracket.



## WHAT IS CONVEX TECHNOLOGY?

CONVEX technology positions the lamp within the reflector in such a way that the outer envelope of the lamp is precisely positioned below the horizontal plane of the reflector. This configuration allows the lower portion of the lamp to spread light evenly across the plant canopy while still allowing the reflector to control the light distribution onto and through the plant canopy. When combined with our exclusive Double-Arc 1000W HPS lamp, the HSE CONVEX is the smallest mogul based grow light on the market.

# PAR CHART

*Lux/Fc to Umol, PPF,  
PAR Conversion Chart.*



# Lux/Fc to Umol, PPF, PAR Conversion Chart

Light Level in Lux or Footcandle		Lamp Source									Grow Application	
		CMH			HPS		MH		Fluorescent			
		Competitor 4200k	Competitor 3100k	Growlite CSI	Typical Competitor	Growlite Real Red	Typical Competitor	Growlite Tru Blue	Growlite Real Red 3k	Typical Competitor 5k		Growlite Tru Blue 65k
lux	fc	umol	umol	umol	umol	umol	umol	umol	umol	umol	umol	
108000	10000	1670	1840	1980	1310	1490	1520	1620	1300	1400	1810	Outdoor
105300	9750	1629	1794	1931	1278	1453	1482	1580	1268	1365	1765	
102600	9500	1587	1748	1881	1245	1416	1444	1539	1235	1330	1720	
99900	9250	1545	1702	1832	1212	1379	1406	1499	1203	1295	1675	
97200	9000	1503	1656	1782	1179	1341	1368	1458	1170	1260	1629	
94500	8750	1462	1610	1733	1147	1304	1330	1418	1138	1225	1584	
91800	8500	1420	1564	1683	1114	1267	1292	1377	1105	1190	1539	
89100	8250	1378	1518	1634	1081	1230	1254	1337	1073	1155	1494	High Level Flower
86400	8000	1336	1472	1584	1048	1192	1216	1296	1040	1120	1448	
83700	7750	1295	1426	1535	1016	1155	1178	1256	1008	1085	1403	
81000	7500	1253	1380	1485	983	1118	1140	1215	975	1050	1358	
78300	7250	1211	1334	1436	950	1081	1102	1175	943	1015	1313	
75600	7000	1169	1288	1386	917	1043	1064	1134	910	980	1267	
72900	6750	1128	1242	1337	885	1006	1026	1094	878	945	1222	
70200	6500	1086	1196	1287	852	969	988	1053	845	910	1177	
67500	6250	1044	1150	1238	819	932	950	1013	813	875	1132	
64800	6000	1002	1104	1188	786	894	912	972	780	840	1086	
62100	5750	961	1058	1139	754	857	874	932	748	805	1041	
59400	5500	919	1012	1089	721	820	836	891	715	770	996	
56700	5250	877	966	1040	688	783	798	851	683	735	951	
54000	5000	835	920	990	655	745	760	810	650	700	905	
51300	4750	794	874	941	623	708	722	770	618	665	860	
48600	4500	752	828	891	590	671	684	729	585	630	815	Flower
45900	4250	710	782	842	557	634	646	689	553	595	770	
43200	4000	668	736	792	524	596	608	648	520	560	724	
40500	3750	627	690	743	492	559	570	608	488	525	679	
37800	3500	585	644	693	459	522	532	567	455	490	634	
35100	3250	543	598	644	426	485	494	527	423	455	589	
32400	3000	501	552	594	393	447	456	486	390	420	543	
29700	2750	460	506	545	361	410	418	446	358	385	498	
27000	2500	418	460	495	328	373	380	405	325	350	453	
24300	2250	376	414	446	295	336	342	365	293	315	408	Veg & Mother
21600	2000	334	368	396	262	298	304	324	260	280	362	
18900	1750	293	322	347	230	261	266	284	228	245	317	
16200	1500	251	276	297	197	224	228	243	195	210	272	
13500	1250	209	230	248	164	187	190	203	163	175	227	
10800	1000	167	184	198	131	149	152	162	130	140	181	
8100	750	126	138	149	99	112	114	122	98	105	136	Clone & Light Maintenance
5400	500	84	92	99	66	75	76	81	65	70	91	
2700	250	42	46	50	33	38	38	41	33	35	46	
0	0	0	0	0	0	0	0	0	0	0	0	

# DEFINITIONS

## Horticulture Lighting Terms.

### AMPERE (AMP)

The standard unit used for measuring the flow of electric current.

### ARC

An electric arc or arc discharge, is an electrical breakdown of a gas (ionization) that once started by an igniter, produces a continuous plasma discharge as a result of passing a current through a normally nonconductive media. All HID and fluorescent lamps use this effect to generate light.

### ARC TUBE

The quartz or ceramic container housing the metal salts and amalgams that allow the arc to be struck within the arc tube.

### ARRAY

A grid of LED emitters on a single chip (integrated circuit).

### BALLAST

A device which provides the necessary starting voltage and appropriate current to a fluorescent or high intensity discharge (HID) lamp. Magnetic ballasts feature an iron core. They are heavy, oftentimes hum or buzz and are not very efficient. Digital ballasts are smaller, lighter, and more efficient, albeit at a higher cost.

### BASE TYPE

These come in a wide variety and refer to the lamp attachment and corresponding sockets. Wattage, circumference, type of lamp and locking mechanism (screw in, pins, etc.) are used to determine the proper designation such as E27, Mogul, etc.

### CANDELA

The base unit of luminous intensity roughly equivalent to the light put out by a small candle.

### CERAMIC METAL HALIDE (CMH)

This is a relatively new variant of metal halide that uses a ceramic tube to ionize various gasses and salts chosen for a specific spectral output. These bulbs are becoming increasingly popular among indoor growers due to their very high CRI and their full spectrum output.

### CFM

Cubic feet per minute.

### CLONE

A clipping from a plant, which can then be rooted and grown. Cloning is a method of asexual propagation, which creates an exact genetic copy of the "mother plant."

### COLOR RENDERING INDEX (CRI)

A quantitative measure of the ability of a light source to

reproduce the colors of various objects faithfully in comparison with an ideal (100 CRI) or natural light source such as the sun.

## **CORRELATED COLOR TEMPERATURE (CCT)**

The unit of measurement used to express the color spectrum (or average temperature) of light emitted by a lamp. Light with a lower Kelvin rating such as 2700K will have a yellowish tint, while light with a higher Kelvin rating such as 6500K, will have a bluish tint.

## **COVERAGE**

This is the grow area in square feet that a specific lamp will provide optimal growth. This is not a 'hard' specification like many of the terms defined thus most manufacturers will claim a higher number than is practical.

## **EC**

Electrical conductivity, used to measure nutrient concentrations and water quality.

## **EFFICACY**

A measure expressed in lumens per watt representing the efficiency of a lamp/ballast system or luminaire.

## **FERTIGATE**

To fertilize and irrigate simultaneously.

## **FLOWER OR FLOWERING**

The reproductive stage of a plant's growth, during which the fruit or flower of the plant is produced

## **FOLIAR FEEDING**

Misting fertilizer solution which is absorbed by the foliage.

## **FOOT-CANDLE**

A unit of measure for the density of light as it reaches a surface. One foot-candle is equal to one lumen per square foot. Foot-Candles are derived from the unit of lux: one FC is equal to 10.76 lux.

## **FULL SPECTRUM**

A light source that emits radiation in all portions of the visible light spectrum which is roughly in the 400nm to 700nm range (violet to deep red).

## **FUSE**

An electrical safety device that protects electrical equipment when a circuit is overloaded.

## **HEAT SINK**

A component or integral part of a ballast or luminaire used to dissipate heat away from sensitive components such as electronics or LEDs. They are usually made of finned aluminum with copper being the most efficient and most expensive; the greater the surface area, the greater the heat dissipation.

## **HIGH INTENSITY DISCHARGE (HID)**

This is a class of lamp based on the use of a high power arc and includes halogens, metal halides (MH) and low (LPS) and high pressure sodium (HPS).

## **HIGH PRESSURE SODIUM (HPS)**

An HID lamp that uses sodium in an excited state to produce light. These lamps are still the preferred luminaire to flower with due to their very high efficacy (up to 150 LPW). While technically a full spectrum lamp in that light is emitted at all frequencies, the spectrum is quite unbalanced with the largest output in the green/yellow/red spectrum (520nm – 640nm) and very little violet/blue/cyan (400nm – 520nm). Common among small-scale growers are the 150W, 250W and 400W models. Large-scale and commercial growers lean towards the 600W and 1000W units.

## **HOOD**

This is a structure for HID lamps that contains a reflector, and may also contain a ballast and/or be glass sealed for safety or to allow for air or water cooling.

## **ILLUMINANCE**

The luminous flux incident on unit area of a surface expressed in lumens per unit area.

## **INITIAL LUMENS**

The lumens produced by a lamp after a burn-in period (usually 100 hours).

## **INPUT WATTS**

The total wattage required by both the ballast and the lamp in a luminaire.

## **KILOWATT HOUR**

1000 Watts used continuously for one hour.

## **LEC**

Light emitting capacitor. A technology very similar to LED. Contrary to popular belief, it is NOT a light emitting ceramic.

# DEFINITIONS

## Horticulture Lighting Terms.

### LED DRIVER

An electronic device which converts input power into a constant or fixed current source. It protects LEDs from voltage fluctuations as they heat up and/or age.

### LIGHT EMITTING DIODE (LED)

These are semi-conductor devices that put out light when current is run through a substrate. Different substrate materials are used to give us the various color outputs. These may either be monochromatic (single color) narrow band emitters or white (full spectrum). Due to the relatively low heat, long life and ever-increasing efficiency, they are gaining popularity as grow lights.

### LUMEN

The amount of radiant flux as perceived by the human eye. This measurement is not very useful for determining a good grow light as plants 'see' light differently. See: Radiant Flux.

### LUMENS PER WATT

The amount of radiation in lumens converted for each watt of input energy consumed.

### LUMINAIRE

A complete lighting fixture including lamp, ballast, reflector and mounting attachments.

### LUX

A unit of illuminance equal to 1 lumen per square meter.

### MEAN LUMENS

The average lumen output of a lamp over its rated life. Mean lumen values for fluorescent and HID lamps are typically measured at 40% of their rated lives.

### METAL HALIDE (MH)

A form of HID lamp that produce light by running an arc current through vaporized mercury and metal halide gasses. These have an efficacy of between 75 to 105 LPW and are quite popular for 'veggie' cycles due to their very high blue content.

### MICROMOLE ( $\mu\text{mol}$ )

A millionth of a mole (interchangeable with a microeinstein). It is a measurement of the amount of PAR photons striking a square meter per second.

### PHOSPHOR

Substances which emit light after being bombarded by electrons. Phosphors are used to coat the inside of fluorescent or induction lamps. Rare-earth elements are chosen as phosphors to emit color in a specific color band.

### PHOTOINHIBITION

The inhibition of photosynthesis by excess light.

## PHOTOPERIOD

The relative periods of light and dark within a 24 hour period, also referred to as day-length. To keep a marijuana plant in the vegetative state, lights are generally run 18 hours on and 6 hours off or 24 hours on. Switching to a 12 on/12 off light/dark cycle is used to induce flowering.

## PHOTOSYNTHETICALLY ACTIVE RADIATION (PAR)

Light wavelengths between the 400nm to 700nm range that correspond to the wave band absorbed by photosynthetic pigments.

## PHOTOSYNTHETIC PHOTON FLUX DENSITY (PPFD)

Photosynthetically active radiation expressed as the number of photons (in micromoles) striking a square meter every second. This is one of the best measurements for determining the evenness of your lamp over the entire garden as well as the density of the radiation.

## PHOTOTROPISM

The self-orientation of the leaves of a plant (tracking) toward a light source, mostly respondent to the blue part of the spectrum.

## PHYTOCHROME

A plant growth-regulation photoreceptor protein that absorbs primarily red light and far-red light, and blue light to a lesser degree.

## PPM

Parts per million, a measurement for nutrient and CO<sub>2</sub> concentrations.

## PROPAGATE: (1) SEXUAL:

produce a seed by breeding different male and a female flowers (2) Asexual: to produce a plant by taking cuttings.

## REFLECTIVITY

The measure of the reflective quality of a surface; the relative ability of a given surface to reflect light away from it without absorbing, diffusing, or otherwise compromising the light's quality, intensity, and spectrum.

## RESTRIKE

Refers to the restarting of a previously operating lamp shortly after turnoff. Metal halide lamps typically require a minimum of 4-15 minutes to restart after turn-off.

## SOCKET

The threaded, wired receptacle that a bulb screws into.

## SPECULAR

A highly polished or mirrored aluminum surface with a reflectivity rating ranging from 84% to 98%.

## T5/T8/T12 FLUORESCENT BULBS

"T" stands for tubular, while the second number stands for the number of eighths of an inch in diameter. Therefore a T8 lamp would be a Tubular 8/8", or 1" diameter lamp. T5s (the thinnest bulbs) are the most popular choice for indoor horticulture due to high efficacy and a wide choice of spectral options.

## TERPENE

The aromatic and flavor compounds found in nearly every plant on the planet, terpenes are responsible for the smell and flavor of fruits, flowers and leafy greens.

## TDS

Total dissolved solids. A measurement for water quality and nutrient concentrations.

## TRANSPIRE

Give off or emit water vapor and waste by products through the plant's stomata.

## UNIVERSAL

An HID lamp that can be safely placed in either a horizontal or vertical orientation without shortening the life of the bulb.

## μmol

Unit of measure for PAR, PPF and PPFD.

## VEGETATIVE STATE OR "VEGGING"

A plant development stage during which the primary growth occurs providing the budding sites and structure that will support the plant through the flowering stage.

## VPD

Vapor pressure deficit. It's the difference between the amount of moisture in the air and how much moisture the air can hold when saturated.

## WATT

A standard unit of measurement equivalent to one joule per second and equal to the power in a circuit in which a current of one ampere flows across a potential difference of one volt.

# SALES TOOLS



## TRIANGLE CEILING DISPLAY

**TRIANGLE CEILING DISPLAY**  
40" x 15"  
Includes Hooks & Wires  
MKT-TRI-CD-GL17



## COUNTERMATS

**COUNTERMAT**  
11"X17"  
MKT-LIT-GLCM



## POP DISPLAYS & LITERATURE

**315 CMH TRI-FOLD BROCHURE**  
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**HDE TRI-FOLD BROCHURE**  
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MKT-LIT-GL-HDE-TF



**HSE and HDE-E TRI-FOLD BROCHURE**  
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MKT-LIT-GL-HSE/HDE-E-TF



**LED QUAD-FOLD BROCHURE**  
Pack of 25  
MKT-LIT-GL-QF25





## 3' & 4' WIRE RACK *PLANOGRAM* DISPLAYS

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**3' WIRE RACK DISPLAY  
WITH SIDE PANELS**

**RACK DISPLAY - 35.5" x 18.5" x 68"**

**SIDE PANELS - 18.5" x 73"**

Includes Product Shown

**MKT-GL-RACK-3FT-KIT**



**4' WIRE RACK DISPLAY  
WITH SIDE PANELS**

**RACK DISPLAY - 47.5" x 18.5" x 68"**

**SIDE PANELS - 18.5" x 73"**

Includes Product Shown

**MKT-GL-RACK-4FT-KIT**

**\*CONSULT FACTORY FOR ORDERING DETAILS & PROGRAM TERMS**

# MERCHANDISE

## APPAREL



BACK

**GROWLITE HOODIE**  
L, XL, & XXL - 100% COTTON





**BEANIE**



**GLOVES**



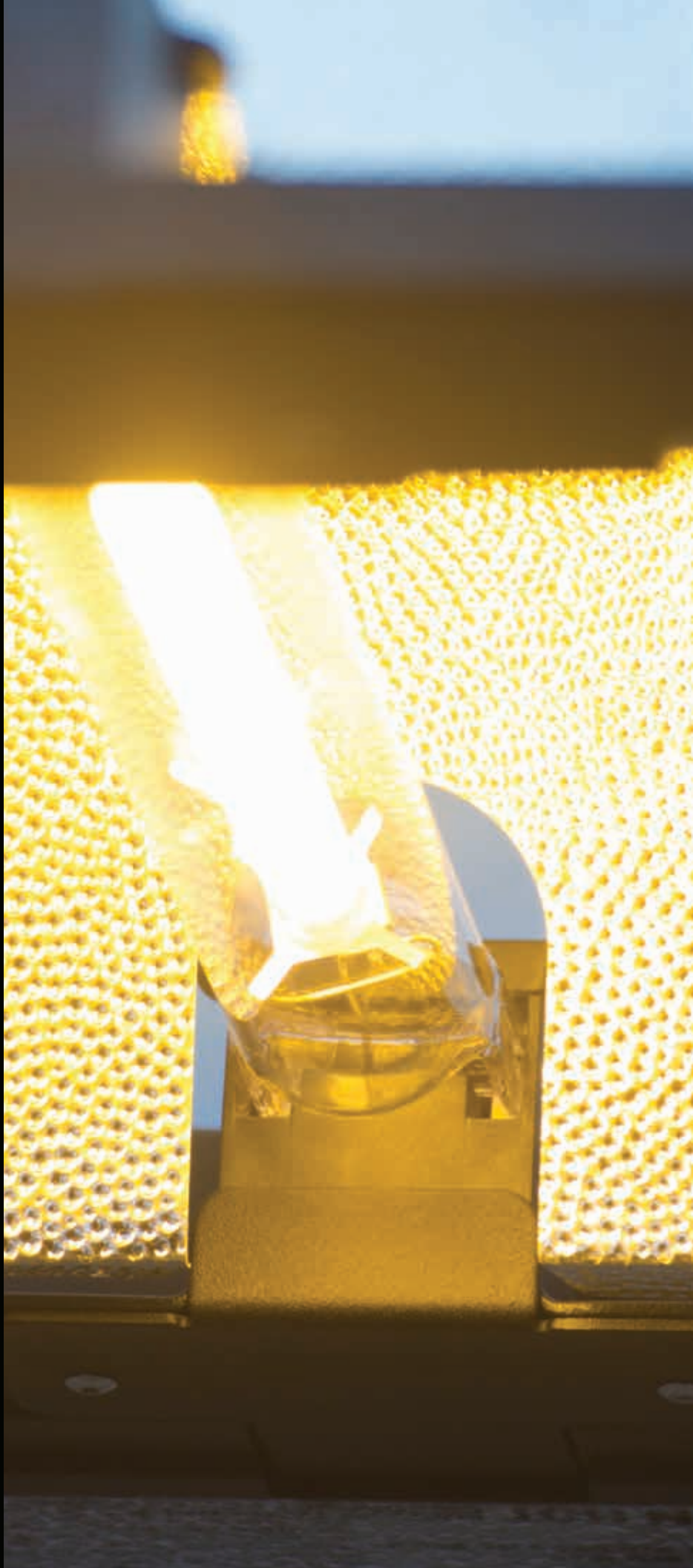
**GROWLITE REPUBLIC SHIRT**  
L, XL, & XXL - 100% COTTON



**BACK**

**BLACK SHIRT**  
L, XL, & XXL - 100% COTTON

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