FORM TEN

SQUARE FORM AREA LIGHTING

GARDCO
LIGHTING

ORIGINAL

A quarter century ago, Gardco reinvented the theory and practice of outdoor lighting with a luminaire and optical assembly that dramatically improved visibility in the nighttime environment. By day, the Form Ten was the first architecturally significant design available to the lighting plan designer.

OPTICAL SYSTEMS 4-9

Continuously refined since its inception, the Form Ten remains the standard for high performance outdoor area lighting. Often imitated but never matched, Gardco's six precision crafted, multi-faceted optical systems minimize light trespass, sharply cut off glare and uniformly illuminate. There is no more versatile, more efficient illumination system available to engineer and architect.

GUIDELINES AND APPLICATIONS 10-13

The pages that follow introduce the fundamentals of visibility and how it is achieved through the application of five unique optical systems. A practical example is provided to demonstrate the remarkable performance of the system, and how optical systems can be interchanged and rotated within the housing styles to meet site geometry and aesthetic.

DURABILITY 14-15

Durability is uncompromised – rugged construction, extruded aluminum housings, weather-tight sealing – Form Ten design and construction is synonymous with quality.

SPECIFICATIONS 16-27

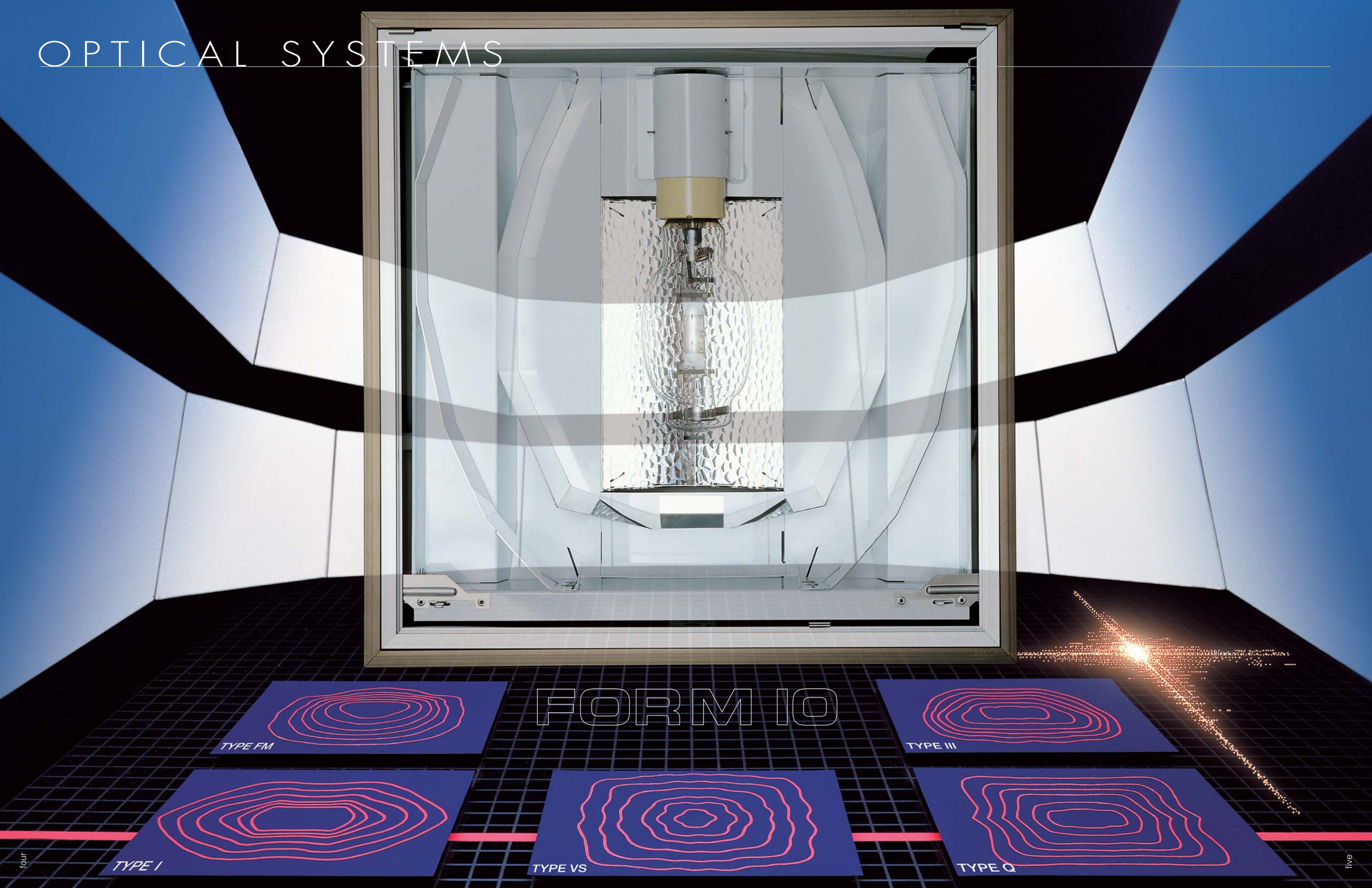
Complete ordering and specification information is provided. Your professional Gardco lighting representative can assist with further information and specification assistance.

FORM

FUNCTION

PERFORMANCE

OPTICAL SYSTEMS



PERFORMANCE

A fundamental difference between competing lighting systems is performance – and performance ultimately effects cost. That said, it is important to recognize that the patented Form Ten X optical systems make these luminaires the best performing lighting instruments available.

The benefits of higher performance levels are numerous. In many applications, fewer luminaires are necessary to illuminate a site, compounding fixture, pole, installation and maintenance savings. These more efficient luminaires typically enable mounting at lower heights, further reducing initial and long term service costs.

The Conical Fan Reflector
The Form Ten X reflector facets form a fan around the lamp – with each facet positioned to be precisely tangent to the top of the arc tube. This patented design captures and redirects lumens to the critical angles just below cutoff – delivering the footcandle values essential to wider spacings.

Highly Reflective Material
An essential component of the Form Ten X is an anodized aluminum with reflectivity approaching 95%. The mirror-like finish of the faceted optics substantially improves the efficiency of lumens redirected by the reflector.

House Side Shield
The available house side shield is a natural option to eliminate house side illumination where absolute cutoff is desired. The shield arrives factory installed, captured within the reflector.

4X Optics
Now Form Ten optical design includes conical tangential optics. The Form Ten X optics are 'oversized' so that lamp lumen output can be directed into measurably wider distributions, enabling wider pole spacings at most mounting heights.

Rotatable Optical Systems
Gardco pioneered the concept of rotatable optics – which enable pole orientation and light distribution to be independent of one another. It also enables reorientation of the optical system should traffic patterns change.

Uniform Distributions
Gardco's long-standing commitment to high performance lighting is ultimately reflected in the distribution created by the Form Ten X conical reflector. The 4X distribution provides exceptionally wide and uniform illumination free from hot spots and striations. Maximum to minimum ratios are excellent, and there is sharp cutoff at the required angle for each distribution.

The Gardco Form Ten X optical system has been awarded U.S. Patent #5690422.

FLEXIBILITY

The Form Ten system is comprised of high performance optical reflectors – six multi-faceted, multi-layered reflectors which are unequaled in their ability to efficiently shape, direct and distribute lamp output. They provide remarkable flexibility in precisely matching light distribution patterns to specific site geometry and mounting requirements. Because each reflector is fully interchangeable throughout housing shapes and styles, a uniform site aesthetic can be achieved regardless of luminaire mounting height.

Because Gardco optical systems direct a higher percent of lamp lumens into desired areas, design criteria may be achieved with wider pole spacings. Wider spacings can provide immediate savings in luminaires, poles, trenching and other installation costs and long term savings in maintenance and energy consumption.

Type 4X

Type 4X conical fan optics produce an asymmetrical distribution pattern that directs the majority of the light forward and equally on both sides of the luminaire. In a back-to-back configuration the 4X produces a square symmetrical pattern ideally suited for area lighting.

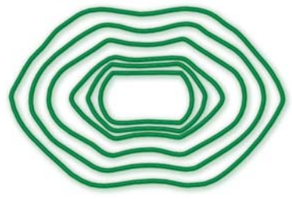
Applications

- Wide Area Lighting
- Wide Roadway
- Perimeter Only Lighting
- Low Glare Requirements
- Minimal Mounting Locations

Typical Spacing

Single luminaire:
2 MH forward x 6 MH lateral.

Back-to-back luminaires:
2 MH forward x 6 MH lateral.



Type I

Type I optics produce a long and narrow distribution pattern that disperse light equally on both sides of the luminaire with peak light output falling along the roadway or walkway. This distribution is most useful in illuminating long narrow areas.

Applications

- Narrow Walkways
- Building Alleyways
- Median Mounted Divided Highways

Typical Spacing

1 MH forward and behind x
6-7 MH lateral.

Type III

Type III optics produce an asymmetrical distribution pattern that directs the majority of the light forward and equally on both sides of the luminaire. In a back-to-back configuration the Type III produces a rectangular pattern which can extend pole spacings.

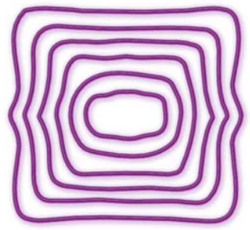
Applications

- Semi-Wide Walkways
- Semi-Wide Roadways
- Area Lighting
- Parking Entries/Exits
- Perimeter Lighting

Typical Spacing

Single luminaire:
5 1/2 MH on center.

Back-to-back luminaires:
4-6 MH on center.



Type Q

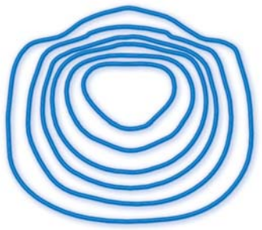
Type Q optics produce a symmetrical square distribution pattern that distributes light equally on all sides of the luminaire. The optical system is universal for most area lighting applications.

Applications

- Area Lighting
- Wide Median Mounted Divided Highways
- Parking Entries/Exits

Typical Spacing

5 x 5 MH on center.



Type FM

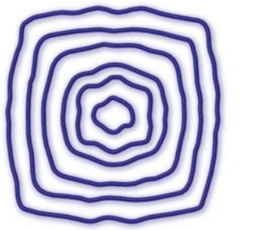
Type IV forward throw optics distribute the majority of light in front on the luminaire with sharp cut-off of the pattern behind the luminaire (HS). This distribution is useful for areas where illumination is to be precisely confined in one direction.

Applications

- Wall Mount Requirements
- Sports (i.e. Tennis Courts)
- Perimeter Lighting with Surrounding Residential

Typical Spacing

2 MH forward x 4 MH lateral.



Type VS

The VS optics use a vertically positioned lamp. These Type 5 cutoff optics produce a square uniform distribution pattern.

Applications

- Wide Area Lighting
- Higher Glare Acceptable
- Stringent Uniformity Requirements

Typical Spacing

6 x 6 MH on center.

VISIBILITY

Providing for good visibility is more difficult in practice than in theory, as site, aesthetic, economic and maintenance factors are introduced. Designing for good visibility means ensuring that there is an adequate level of illumination, uniform pavement luminance, and minimal glare. In addition to good visibility, light trespass should be controlled, the daytime product appearance should be appropriate, and both the initial and life cycle cost of the design should be considered.

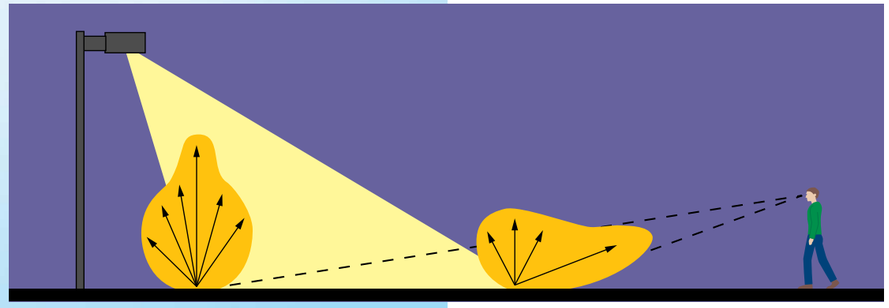
ADEQUATE LIGHTING LEVELS

The first requirement for visibility is ensuring that there is a sufficient quantity of light. It is always important to consider the surrounding environment. A restaurant parking lot on a dark country road will require significantly lower light levels than that same restaurant parking lot in a downtown area adjacent to other brightly lit commercial establishments.

UNIFORM PAVEMENT LUMINANCE

The second component of visibility is uniformity of pavement luminance. When the eye has to continually adjust to lighter and darker areas, vision is significantly impaired. A uniformly lit site appears lighter than a site which may have somewhat higher light levels, but poor uniformity. Although |there are practical difficulties associated with specifying luminance values (footlamberts) as opposed to illuminance values (footcandles), it is important to remember that the eye sees luminance and not illuminance. Furthermore, because of the reflected angles of light that the eye sees, frequently areas lit to extremely uniform illuminance values (5 to 1 or below maximum to minimum footcandles) may appear non-uniform.

It is because of this phenomenon that Gardco Lighting recommends designing to footcandle levels of 10-to-1 to 15-to-1 maximum to minimum, which will result in a site that appears uniformly lit.

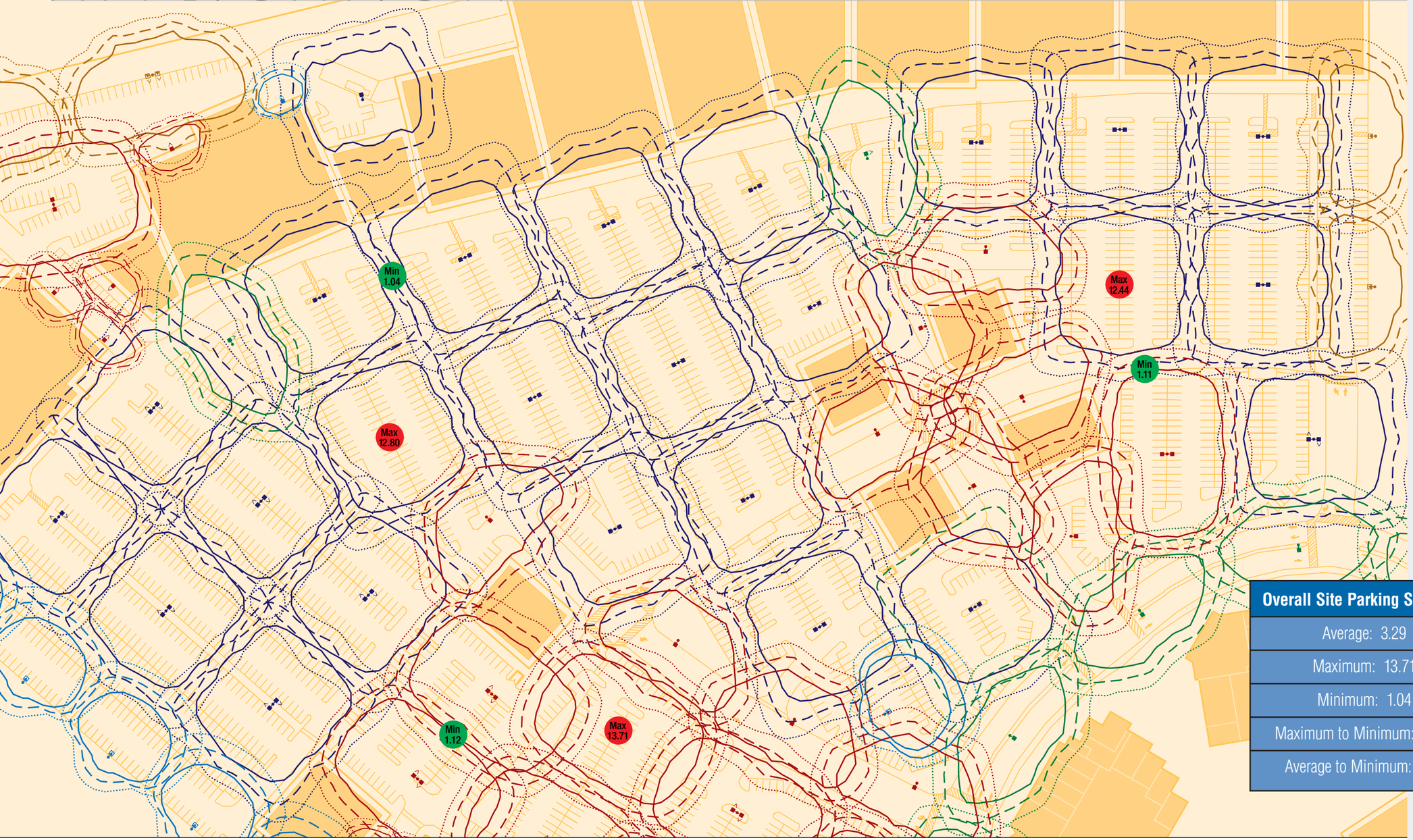


Because the eye sees reflected light, sites lit to extremely uniform levels appear dark directly under luminaires.

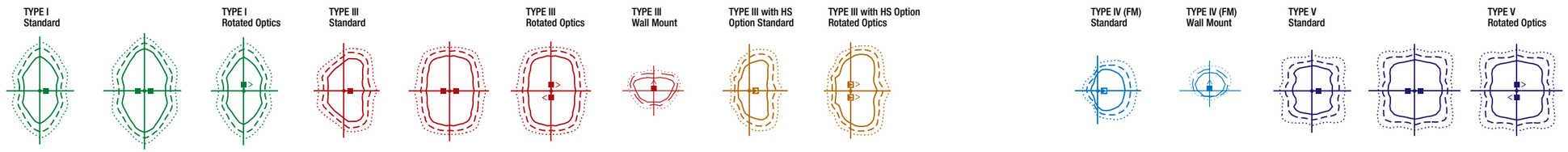
GLARE CONTROL

The factor most destructive to lighting performance is glare. Simply stated, glare is bright direct light from an unshielded source. At night, the human eye is drawn to the most luminous element in its field of vision. Uncontrolled, glare is distracting, causes discomfort to the viewer, and adversely affects visibility. Glare entering the eyes causes a veiling luminance and impairs one's ability to identify objects in the site. Two forms of glare are recognized. The most obvious form, discomfort glare, causes us to avert our eyes from its source. The effects of discomfort glare are mainly psychological; i.e. increasing irritation and tiredness. The second type of glare, disability glare, results in reduced visual performance and visibility. Both types of glare are potentially dangerous and influence traffic safety.

APPLICATION



Overall Site Parking Statistics
Average: 3.29
Maximum: 13.71
Minimum: 1.04
Maximum to Minimum: 13.18
Average to Minimum: 3.16



Careful attention to four basic design considerations will inevitably lead to superior visibility and the best value.

Minimum footcandle levels must be established, preferably, a maintained level using a depreciation factor that ensures illumination levels are sustained over time.

Mounting heights are of fundamental importance and have a direct influence on the number and location of luminaires, wattages of lamps, and initial and life cycle costs. Mounting height may be restricted by local ordinance, accessibility and capability of service equipment and the spatial relationship between the luminaires and landscape.

Type and wattage of lamp includes an analysis of the color, cost, life and performance characteristics of various HID sources. Gardco recommends the choice of clear lamps, to optimize the performance of the Form Ten optical systems.

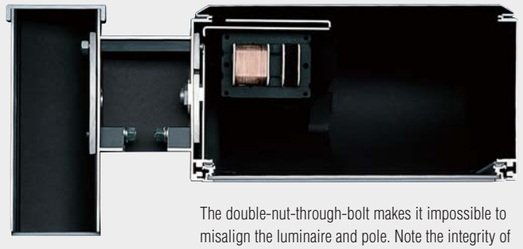
Maximum to minimum footcandle ratios of between 10:1 and 15:1 assure uniform appearing pavement luminance. When mounting heights, lamp types and optical systems are selected and placed as shown at left – light levels and uniformity criteria can be verified.

A footcandle printout verifies that the objectives of the lighting plan are accomplished… a one footcandle minimum maintained, with a maximum to minimum ratio no greater than 15:1.

FEATURES

The integrity of Form Ten appearance and performance owes to a design and construction philosophy without compromise. The weather-tight luminaire housing is sealed at all points of material transition with pressure-injected silicone, and the door frame seals to the luminaire with hollow-core, memory-retentive silicone. Arm assemblies are designed with a double-nut-through-bolt that effectively makes it impossible to misalign luminaire and pole. The prewired electrical harnesses is triple-checked prior to shipment. In short, for the architect, contractor and owner, the benefits are immediate, long term and quite obvious.

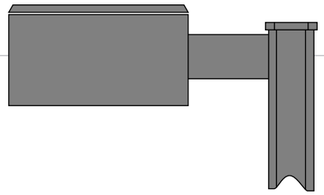
At every point of entry the luminaire is sealed against the penetration of moisture, dirt and insects with pressure-injected silicone and memory-retentive silicone gaskets. Not only does the sealed optical chamber preserve the illuminating characteristics of the mirrored, faceted reflector, but it contributes to longer ballast and electrical component life – a measurable contribution to long term value.



The double-nut-through-bolt makes it impossible to misalign the luminaire and pole. Note the integrity of the internal construction and aluminum extrusions, which provide remarkable strength-to-weight ratios.

Gardco pioneered the concept of toolless access for ease of installation and service. Each successive assembly swings conveniently away to reveal underlying components. The door is secured with spring-loaded hardware for quick relamping. The optical system includes quick-disconnect electrical components, and hinges down to access the unitized ballast tray. The entire system is factory pre-wired and pre-tested prior to shipment.

The Form Ten is the product of nearly thirty years of thoughtful engineering, craftsmanship and continuous quality improvement. It is ideally conceived and adapted to its purpose and environment. In terms of quality, value and return on investment, it remains the specification that has no equal.



EH/H ARM MOUNT FORM 10

GENERAL DESCRIPTION: The Gardco arm mounted Square Form Ten products are sharp cutoff luminaires using high intensity discharge lamps up to 1000 watts. The EH units are manufactured from mitered extruded aluminum and finished in an Architectural Class 1 anodizing. The H style luminaires are die-formed aluminum with a thermoset polyester finish. Both products can accept one of six (6) interchangeable and rotatable precision segmented optical systems.

ORDERING

	PREFIX	SIZE	CONFIGURATION	PHOTOMETRIC DISTRIBUTION	WATTAGE	VOLTAGE	FINISH	OPTIONS
example	EH	19	2	3	400MH	120	BRA	MF

PREFIX

EH	Extruded
H	Fabricated
EH	Extruded
H	Fabricated
H	Fabricated
H	Fabricated

SIZE

14"	
14"	
19"	
19"	
T19"	
26"	

CONFIGURATION

1	Single Assembly
2	Twin @ 180°
2@90	Twin @ 90°
3	Triple @ 90°
3@120	Triple @ 120°
4	Quad Assembly

PHOTOMETRIC DISTRIBUTION

Horizontal Lamp

1	Type I
3	Type III
4X	Type IV (19"/ T19"only)
FM	Type IV
Q	Type V

Vertical Lamp

VS	Type V 14" and 19" Supplied with acrylic sag lens. 26" supplied with sag lens. Medium base, 200W max on 14" units
FC3V*	Full Cutoff Type III
FCVS*	Full Cutoff Type V

* 19" 320PSMH only. Supplied w/MS320/BU/ED28/LLC/PS lamp

WATTAGE

See Table Below

VOLTAGE

120
208
240
277
347
480
QUAD

120/208/240/277 factory tied to 277V

FINISH

EH and H26

BLA
BRA
NA
OC
SC

H/HT Style

BRP
BLP
OC
SC

OPTIONS

CD	**MU**
HS	**UB**
F	**AP**
MF	**AT**
PC	**SG**
PCR	**PTF2**
POLY	**PTF3**
QS	**PTF4**

WATTAGE

14"	19"	T19"	26"
100MH [1]	250MH	1000MH [5]	1000MH
150MH	400MH	750PSMH [9]	750PSMH [9]
175MH	250PSMH [4]	1000PSMH [6]	1000PSMH [6]
200MH	320PSMH [7]	750HPS	750HPS
250MH	350PSMH		1000HPS
175PSMH [2,10]	400PSMH [8]		
100HPS	450PSMH [2]		
150HPS [3]	250HPS		
	400HPS		

MH Metal Halide
PSMH Pulse Start Metall Halide
HPS High Pressure Sodium

Notes
1. Medium base lamp.
2. Available with vertical lamp optics only.
3. Operates 55V lamp.
4. M138 or M153.
5. Uses BT37 lamps only.
6. Horizontal optics require M1000/PS/U/BT37 lamp.
7. M132 or M154.
8. M135 or M155.
9. M149 only. Horizontal optics require MS750/PS/BU-HOR/BT37 lamp.
10. M137 or M152

FINISH

BLA	Black Anodized
BRA	Bronze Anodized
NA	Natural Anodized (Anodized finishes available on EH and H26" units only)
BRP	Bronze Paint
BLP	Black Paint
OC	Optional Color Paint Specify RAL designation as shown in the Color Selection Guide. ex: OC-RAL7024
SC	Special Color Paint (Must supply color chip)

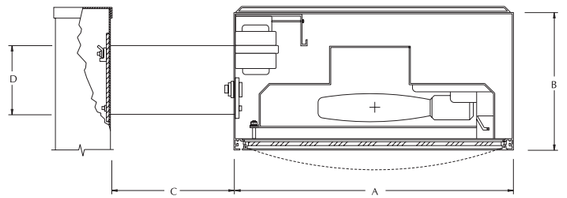
OPTIONS

CD	Clear Drop Diffuser (EH Style only)
HS	Internal Houseside Shield (Supplied standard with FM optics)
F	Fusing
MF	Mass Arm Fitter
PC	Photocontrol and Receptacle (N/A with 480V. 1000W maximum combined luminaire wattage)
PCR	Photocontrol Receptacle only (1000W maximum combined luminaire wattage)
POLY	Polycarbonate Sag lens (In lieu of flat glass. N/A with 4X optics. 450W maximum)
QS	Quartz Standby
MU	10" Uplift Bracket
AP	Adjustable Knuckle – Pole Mount (Only available with 1 and 2 @ 180° mounting)
AT	Adjustable Knuckle – Tenon Mount (Fits 2 3/8 tenon. N/A with 14" mounting)
SG	Sag Glass Lens (In lieu of flat glass) (Supplied standard with 4X optics and 26"VS)
PTF2	Pole Top Fitter - 2 3/8" Dia. Tenon
PTF3	Pole Top Fitter - 3 - 3 1/2" Dia. Tenon
PTF4	Pole Top Fitter - 3 1/2 - 4" Dia. Tenon

DIMENSIONS

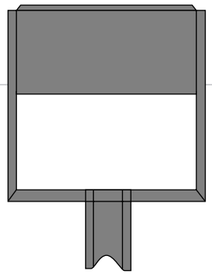
EH Style	Size	A	B*	C	D	EPA's Single Arm	EPA's Twin 180Þ	EPA's Quad	Approx. Wt. Single Fixture
	14"	14" 356mm	7" 178mm	6" 152mm	5" 127mm	1.1	2.3	2.9	30 lbs 24.9 kgs
	19"	19" 483mm	10" 254mm	9" 229mm	5" 127mm	2.1	4.0	5.5	55 lbs 26.9 kgs

H Style	Size	A	B*	C	D	EPA's Single Arm	EPA's Twin 180Þ	EPA's Quad	Approx. Wt. Single Fixture
	14"	14" 356mm	7" 178mm	2"† 152mm†	5" 127mm	1.1	2.3	2.9	30 lbs 13.6 kgs
	19"	19" 483mm	10" 254mm	2"† 51mm†	5" 127mm	2.1	4.0	5.5	55 lbs 24.9 kgs
	26"	26" 660mm	12" 305mm	12" 305mm	8" 203mm	3.5	7.0	8.9	95 lbs 43.1 kgs



Note: T19 housing B dimension is 12", EPA's are 2.2, 4.3 and 6.4, and weight is 65 lbs.

*VS units with sag lens have overall heights of 8 3/4" (EH/H-14), 13 3/8" (EH/H-19) and 21" (H-26).
† 4-way units have arm lengths of 6" (H-14) and 9" (H-19).
Note: C = Arm Length D = Arm Height



JEH/JH YOKE MOUNT FORM 10

GENERAL DESCRIPTION: The Gardco yoke mounted Form Ten products are sharp cutoff luminaires for high intensity discharge lamps up to 1000 watts. JEH units are manufactured from mitered extruded aluminum and finished in an Architectural Class 1 anodizing. The JH luminaires are die-formed aluminum with a thermoset polyester finish. Both products feature a choice of six (6) interchangeable rotatable precision segmented optical systems.

ORDERING

	PREFIX	SIZE	CONFIGURATION	PHOTOMETRIC DISTRIBUTION	WATTAGE	VOLTAGE	FINISH	OPTIONS
example	JEH	19	1	3	400MH	120	BRA	MF

PREFIX

JEH Extruded
JH Fabricated
JEH Extruded
JH Fabricated
JH Fabricated

SIZE

14"
14"
19"
19"
26"

CONFIGURATION

1 Single Assembly

PHOTOMETRIC DISTRIBUTION

Horizontal Lamp
1 Type I
3 Type III
4X Type IV (19"/ T19"only)
FM Type IV
Q Type V

Vertical Lamp
VS Type V
14" and 19" Supplied with acrylic sag lens. 26" supplied with sag glass lens. Medium base, 200W max on 14" units

FC3V* Full Cutoff Type III
FCVS* Full Cutoff Type V

* 19" 320PSMH only. Supplied w/MS320/BU/ED28/LLC/PS lamp

WATTAGE

See Table Below

VOLTAGE

120
208
240
277
347
480
QUAD

120/208/240/277 factory tied to 277V

FINISH

EH and H26
BLA
BRA
NA
OC
SC

H/HT Style
BRP
BLP
OC
SC

OPTIONS

CD
HS
F
PC
PCR
POLY
QS
UB
SG

WATTAGE

14"	19"	T19"	26"
100MH[1]	250MH	1000MH[5]	1000MH
150MH	400MH	750PSMH[9]	750PSMH[9]
175MH	250PSMH[4]	1000PSMH[6]	1000PSMH[6]
200MH	320PSMH[7]	750PSMH	750HPS
250MH	350PSMH		1000HPS
175PSMH[2,10]	400PSMH[8]		
100HPS	450PSMH[2]		
150HPS[3]	250HPS		
	400HPS		

MH Metal Halide
PSMH Pulse Start Metal Halide
HPS High Pressure Sodium

Notes
1. Medium base lamp.
2. Available with vertical lamp optics only.
3. Operates 55V lamp.
4. M138 or M153.
5. Uses BT37 lamps only.
6. Horizontal optics require M1000/PS/U/BT37 lamp.
7. M132 or M154.
8. M135 or M155.
9. M149 only. Horizontal optics require MS750/PS/BU-HOR/BT37 lamp.
10. M137 or M152.

FINISH

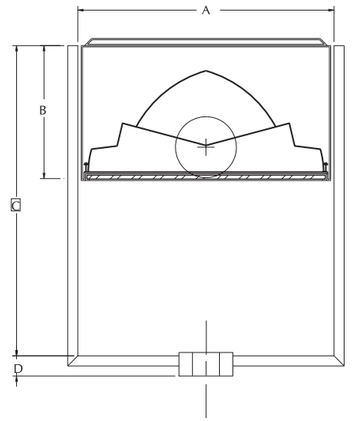
BLA Black Anodized
BRA Bronze Anodized
NA Natural Anodized
(Anodized finishes available on JEH and JH26" units only)
BRP Bronze Paint
BLP Black Paint
OC Optional Color Paint
Specify RAL designation as shown in the Color Selection Guide. ex: OC-RAL7024
SC Special Color Paint
(Must supply color chip)

OPTIONS

CD Clear Drop Diffuser (JEH Style only)
HS Internal Houseside Shield (Supplied standard with FM optics)
F Fusing
PC Photocontrol and Receptacle (N/A with 480V)
PCR Photocontrol Receptacle only
POLY Polycarbonate Sag lens (In lieu of flat glass. N/A with 4X optics. 450W maximum)
QS Quartz Standby
UB Quick Disconnect for Ballast Tray
SG Sag Glass Lens (In lieu of flat glass) (Supplied standard with 4X optics and 26"VS)

DIMENSIONS

JH/JEH Style	Size	A	B	C	D	EPA (ft²)
	14	14" 35.56cm	7" 17.78cm	17" 43.18cm	1.5" 3.81cm	1.4
	19	19" 48.26cm	10" 25.40cm	23" 58.42cm	1.5" 3.81cm	2.5
	26	26" 66.04cm	12" 30.48cm	25" 68.58cm	1.5" 3.81cm	2.8



BE/WE/BH/WH WALL MOUNT FORM 10

BE/BH

WE/WH

GENERAL DESCRIPTION: The Gardco Round Wall Mounted Form Ten products are cylindrical (CW) or semi-spherical (MW) sharp cutoff luminaires using high intensity discharge lamps up to 400 watts. Housings are one piece seamless spun aluminum and finished with either Architectural Class 1 anodizing or electrostatically applied polyurethane. Luminaires can accept one of four (4) interchangeable precision optical systems.

ORDERING

	MOUNTING	HOUSING	SIZE	PHOTOMETRIC DISTRIBUTION	WATTAGE	VOLTAGE	FINISH	OPTIONS
example	B	E	19	FM	400MH	120	BRA	PCR

MOUNTING
- **B** Arm Mount
- **W** No Arm

HOUSING
- **E** Extruded
- **H** Fabricated

E Extruded
H Fabricated

H Fabricated

SIZE
- **14"**
- **14"**
- **19"**
- **19"**
- **T19"**

PHOTOMETRIC DISTRIBUTION

Horizontal Lamp
- **1** Type I
- **3** Type III
- **4X** Type IV (19"/ T19"only)
- **FM** Type IV

Vertical Lamp
- **FC3V*** Full Cutoff Type III

* 19" 320PSMH only. Supplied w/MS320/BU/ED28/LLC/PS lamp

WATTAGE

See Table Below

VOLTAGE
- **120**
- **208**
- **240**
- **277**
- **347**
- **480**
- **QUAD**

120/208/240/277 factory tied to 277V

FINISH

BE and WE
- **BLA**
- **BRA**
- **NA**
- **OC**
- **SC**

BH/BHT and WH/WHT
- **BRP**
- **BLP**
- **OC**
- **SC**

OPTIONS
- **CD**
- **HS**
- **F**
- **PC**
- **PCR**
- **POLY**
- **QS**
- **UB**
- **SG**

WATTAGE

14"	19"	T19"
100MH [1]	250MH	1000MH [3]
150MH	400MH	750PSMH [8]
175MH	250PSMH [5]	1000PSMH [4]
200MH	320PSMH [6]	750HPS
250MH	350PSMH	
100HPS	400PSMH [7]	
150HPS [3]	250HPS	
	400HPS	

MH Metal Halide
PSMH Pulse Start Metal Halide
HPS High Pressure Sodium

Notes
1. Medium base lamp.
2. Operates 55V lamp.
3. Uses BT37 lamps only.
4. Requires M1000/PS/U/BT37 lamp.
5. M138 or M153.
6. M132 or M154.
7. M135 or M155.
8. M149 only. Horizontal optics require MS750/PS/BU-HOR/BT37 lamp.

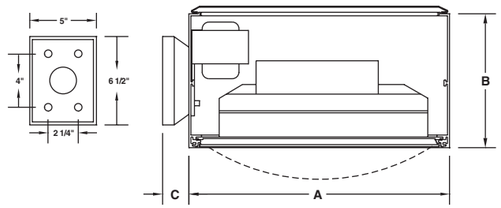
FINISH

- BLA Black Anodized
- BRA Bronze Anodized
- NA Natural Anodized
  (Anodized finishes available on BE and WE units only)
- BRP Bronze Paint
- BLP Black Paint
- OC Optional Color Paint
  Specify RAL designation as shown in the Color Selection Guide. ex: OC-RAL7024
- SC Special Color Paint
  (Must supply color chip)

OPTIONS

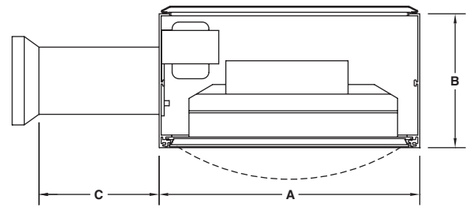
- CD Clear Drop Diffuser (BE/WE Styles only)
- HS Internal Houseside Shield
  (Supplied standard with FM optics)
- F Fusing
- PC Photocontrol and Receptacle (N/A with 480V)
- PCR Photocontrol Receptacle only
- POLY Polycarbonate Sag lens
  (In lieu of flat glass. N/A with 4X optics)
- QS Quartz Standby
- UB Quick Disconnect for Ballast Tray
- SG Sag Glass Lens (In lieu of flat glass)
  (Supplied standard with 4X optics)

DIMENSIONS



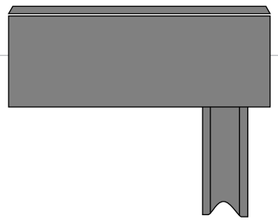
WE/WH/WHT

Size	Width	B	C	D
14	14" 35.56cm	7" 17.78cm	6" 15.24cm	2" 5.08cm
19	19" 48.26cm	10" 25.40cm	9" 22.86cm	2" 5.08cm
T19	19" 48.26cm	12" 30.48cm	9" 22.86cm	2" 5.08cm



BE/BH/BHT

Size	Width	B	C
14	14" 35.56cm	7" 17.78cm	2" 5.08cm
19	19" 48.26cm	10" 25.40cm	2" 5.08cm
T19	19" 48.26cm	12" 30.48cm	2" 5.08cm



A STYLE FORM 10

GENERAL DESCRIPTION: The Gardco A Style Form Ten products are rectilinear sharp cutoff luminaires for high intensity discharge lamps up to 1000 watts. Housings are manufactured from mitered extruded aluminum and finished in an Architectural Class 1 anodizing. Each of these performance luminaires can accept one of six (6) interchangeable and rotatable precision optical systems.

ORDERING

	PREFIX	SIZE	CONFIGURATION	PHOTOMETRIC DISTRIBUTION	WATTAGE	VOLTAGE	FINISH	OPTIONS
example	A	19	2	FM	400MH	120	BRA	HF

PREFIX

A

SIZE

14"
19"
26"

CONFIGURATION

1 Single Assembly
2 Twin @ 180Þ
3 Triple @ 90Þ
4 Quad Assembly

PHOTOMETRIC DISTRIBUTION

Horizontal Lamp
1 Type I
3 Type III
4X Type IV (19" only)
FM Type IV
Q Type V

Vertical Lamp
VS Type V
14" and 19" Supplied with acrylic sag lens. 26" supplied with sag glass lens. Medium base, 175W max on 14" units
FC3V* Full Cutoff Type III
FCVS* Full Cutoff Type V

* 19" 320PSMH only. Supplied w/MS320/BU/ED28/LLC/PS lamp

WATTAGE

See Table Below

VOLTAGE

120
208
240
277
347
480
QUAD

120/208/240/277 factory tied to 277V

FINISH

BLA
BRA
NA
OC
SC

OPTIONS

HS
F
PC
PCR
POLY
QS
SG

WATTAGE

14"	19"	26"
100MH[1]	250MH	1000MH
150MH	400MH	750PSMH[6]
175MH	250PSMH[9]	1000PSMH[7]
250MH[2]	320PSMH[10]	750HPS
175PSMH[3,8]	350PSMH	1000HPS
100HPS	400PSMH[11]	
150HPS[4]	450PSMH[3]	
	750PSMH[6]	
	250HPS	
	400HPS	
	750HPS	

MH Metal Halide
PSMH Pulse Start Metal Halide
HPS High Pressure Sodium

Notes
1. Medium base lamp.
2. 14" 250MH luminaires available in single and twin configurations only.
3. Available with vertical lamp optics only.
4. Operates 55V lamp.
5. Available with horizontal lamp optics only.
6. M149 only. Horizontal optics require MS750/PS/BU-HOR/BT37 lamp.
7. Horizontal optics require M1000/PS/U/BT37 lamp.
8. M137 or M152.
9. M138 or M153.
10. M132 or M153.
11. M135 or M155.

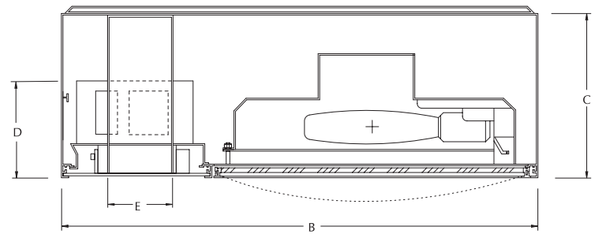
FINISH

BLA Black Anodized
BRA Bronze Anodized
NA Natural Anodized
OC Optional Color Paint
Specify RAL designation as shown in the Color Selection Guide.
ex: OC-RAL7024
SC Special Color Paint
(Must supply color chip)

OPTIONS

HS Internal Houseside Shield
(Supplied standard with FM optics)
F Fusing (In Head)
PC Photocontrol and Receptacle
(N/A with 480V. 1000W maximum combined luminaire wattage)
PCR Photocontrol Receptacle only
POLY Polycarbonate Sag lens
(In lieu of flat glass. N/A with 4x optics)
QS Quartz Standby
SG Sag Glass Lens (In lieu of flat glass)
(Supplied standard with 4x optics and 26"VS)

DIMENSIONS



A Style	Size	Width	B	C	Tenon Depth D	Tenon Dia. E	EPA's Single Arm	EPA's Twin 180Þ	EPA's Quad	Approx. Wt. Single Fixture	Approx. Wt. Twin	Approx. Wt. Quad
	14	14"	21"	7"	4"	2.375	1.3	2.7	2.7	34 lbs	62 lbs	122 lbs
		356mm	533mm	178mm	102mm	60mm				15.4 kgs	28.1 kgs	55.3 kgs
	19	19"	29"	10"	6"	4"	2.5	5.1	5.1	71 lbs	126 lbs	226 lbs
		483mm	737mm	254mm	152mm	102mm				32.2 kgs	57.1kgs	102.5 kgs
	26	26"	39"	10"	6"	4"	3.4	6.8	6.8	113 lbs	214 lbs	385lbs
		660mm	991mm	254mm	152mm	102mm				512 kgs	97.1 kgs	174.7 kgs

SPECIFICATIONS

Housing
(A, EH, H, J, W, B) Extruded housings *(A, EH, JEH, WE, and BE)* feature four precisely mitered and welded 0.130" aluminum side sections. Fabricated housings *(H, JH, WH, BH)* are single piece, multi-formed 0.06" aluminum sheet with an integral reinforcing spline. All units feature press formed aluminum top, which is welded to housing sides. After finishing, pressure injected silicone is applied to all miters and points of material transition providing a continuous weather-tight seal. Luminaires are prewired and suitable for installation without accessing housing.

Form Ten S *(EP, EA, EW)* lower housing is composed of precisely mitered and internally welded aluminum extrusions. Upper section consists of 0.25" extruded acrylic sides and aluminum sheet top. Prismatic units *(EPS, EAS, EWS)* feature internal prismatic acrylic which provides a subtle crystalline sparkle. White translucent unites *(EPG, EAG, EWG)* feature internal white diffusing acrylic which provides a soft, evenly illuminated glow. Pressure injected silicone provides a continuous weather-tight seal at all points of material transition.

Arm
(EH, H, BE, BH, EA) Extruded aluminum arm features integral channel to support tie rods maintaining housing to pole (or wall bracket) alignment.

Yoke
(JEH, JH) The co-axial fitter-yoke assembly is fabricated from extruded rectangular aluminum tubing with welded mitered corners. THe yoke-to-pole fitter is designed and manufactured specifically for the pole, ensuring transitions are clean and continuous.

Form Ten S *(EP)* 9/16" diameter parallel yokes of high strength, low mass schedule 40 steel are precisely contoured to match the housing silhouette. Yoke assembly is designed for mounting compatibility with Gardco CA4.5 pole. Welds are not visible at the luminaire or pole attachment. Yoke is electro-galvanized and coated with satin black polyurethane.

Wall Bracket
Hooking diecast aluminum wall bracket conceals 10 gauge mounting plate.

Form Ten S *(EW)* ballast is mounted in wall bracket.

Lens
Mitered, extruded anodized aluminum door frame retains the optically clear, heat and impact resistant tempered flat glass in a sealed manner sing hollow section, high compliance, memory retentive extruded silicone rubber. Concealed stainless steel latch and hinge permit easy toolless access to the luminaire.

Optical Systems
The segmented Form Ten optical system is homogenous sheet aluminum, electro-chemically brightened, anodized, and sealed. The segmented reflectors are set in faceted arc tube image duplicator patterns to achieve desired distribution.

The mogul base lampholder is glazed porcelain with a nickel plated screw shell. 50MH, 70MH, and 100MH units have medium base lampholder. Metal halide units with horizontally positioned mogul base sockets featured lamp stabilizers ensuring precise arc tube positioned mogul base sockets feature lamp stabilizers ensuring precise arc tube positioning.

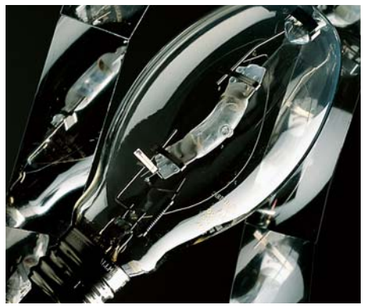
Electrical
Each high power factor ballast is the separate component type, capable of providing reliable lamp starting down to -20°F. High Pressure Sodium ballasts operate lamps within ANSI trapezoidal limits. Metal Halide and Mercury Vapor ballasts are medium regulation auto transformer providing ±10% variation from rated input voltage.

Component-to-component wiring within the luminaires will carry no more than 80% of rated current and is listed by UL for use at 600 VAC at 150°F or higher.

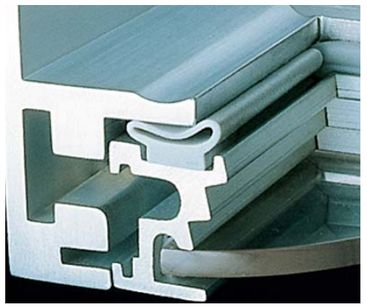
Finish
Painted units feature hardcoat fade resistant thermal cured polyester finish. Extruded units *(A, EH, JEH, WE and BE)* are available with Aluminum Association Architectural Class I Anodizing.

Labels
All Fixtures bear UL and/or CUL (where applicable) Wet Location labels.

Gardco reserves the right to change materials or modify the design of its product without notification as part of the company's continuing product improvement program. Gardco's segmented reflector optical system has been awarded U.S. Patent #3746854. The Gardco Form Ten X optical system has been awarded U.S. Patent #5690422.



At the heart of the Gardco optical system, two levels of mirror-polished facets are precisely aligned with the arc tube of an HID lamp so as to present it with optimal reflective surfaces. The configured, hammertone uplight recovery box directs lumens out and away from below the luminaire, eliminating hotspots. Precise lamp positioning assures sharp cutoff of light minimizing glare and controlling light trespass. No optical system can consistently match the predictable, exacting performance of this faceted, sharp cutoff Form 10.

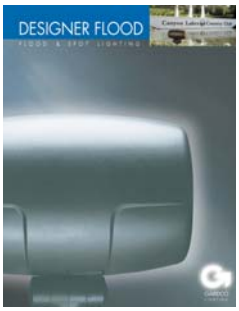




Optional clear or amber drop acrylic diffuser provide a decorative accent to luminaires. Memory retentive silicone gasket won't take a set which can result in gaps after relamping. Flat surfaces, sharp corners and precise geometric proportions characterize the pure architectural forms of the Square Form 10 product line.

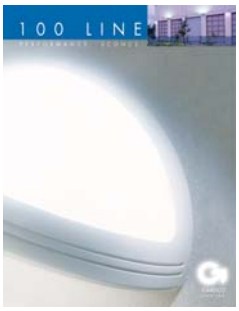
Gullwing

Fascia Plates

Floodlight



100 Line Sconces



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