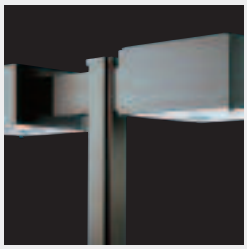
FORM TEN

SQUARE FORM AREA LIGHTING

GARDCO
LIGHTING

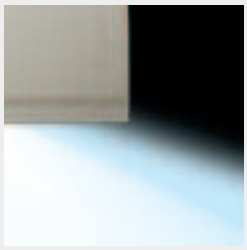


ORIGINAL

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 six 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.

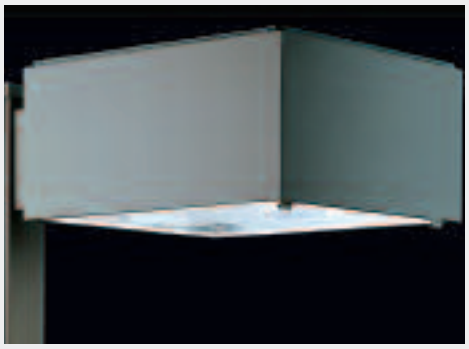
DURABILITY 14-15

Durability is uncompromised. With rugged construction, extruded aluminum housings and 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.

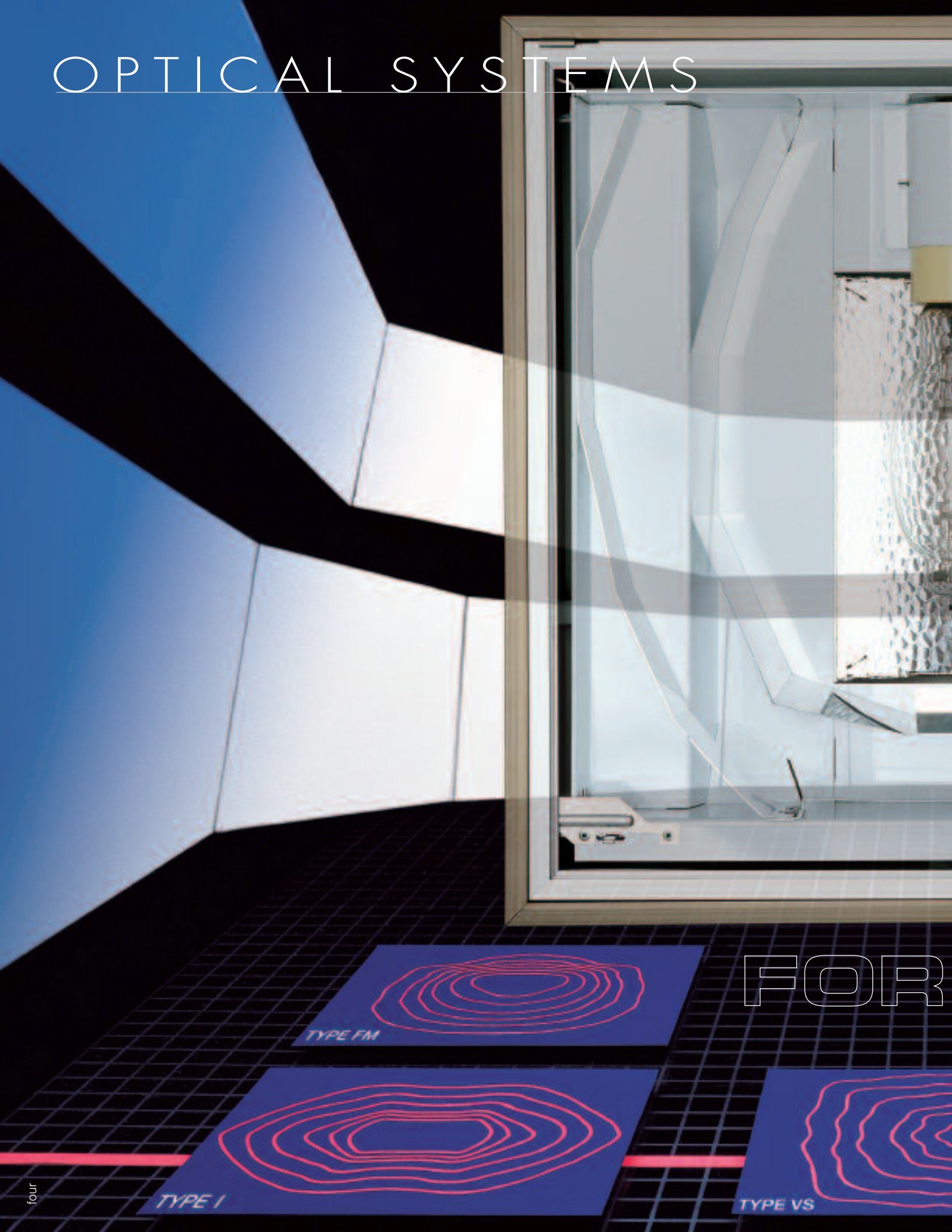
FORM

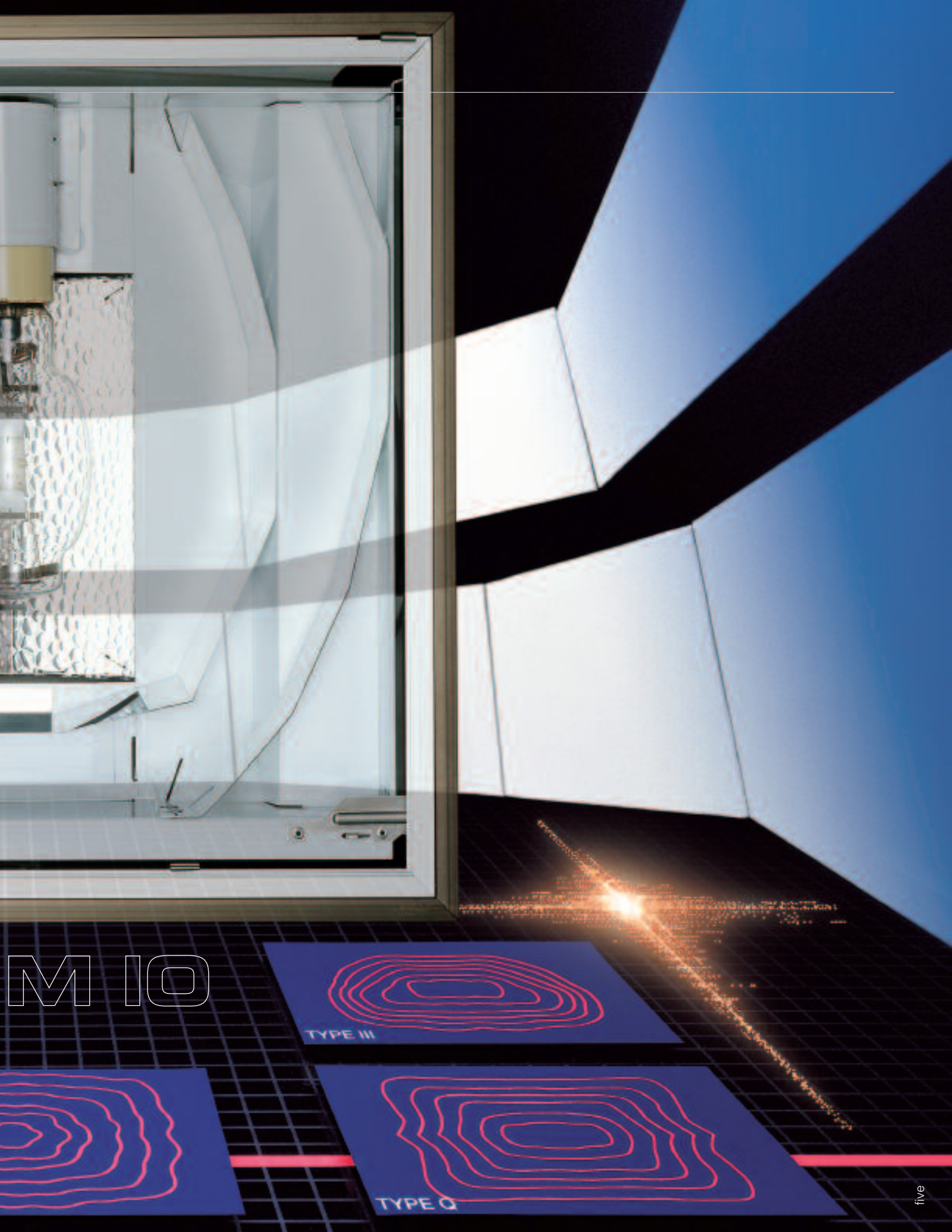


FUNCTION

PERFORMANCE

OPTICAL SYSTEMS



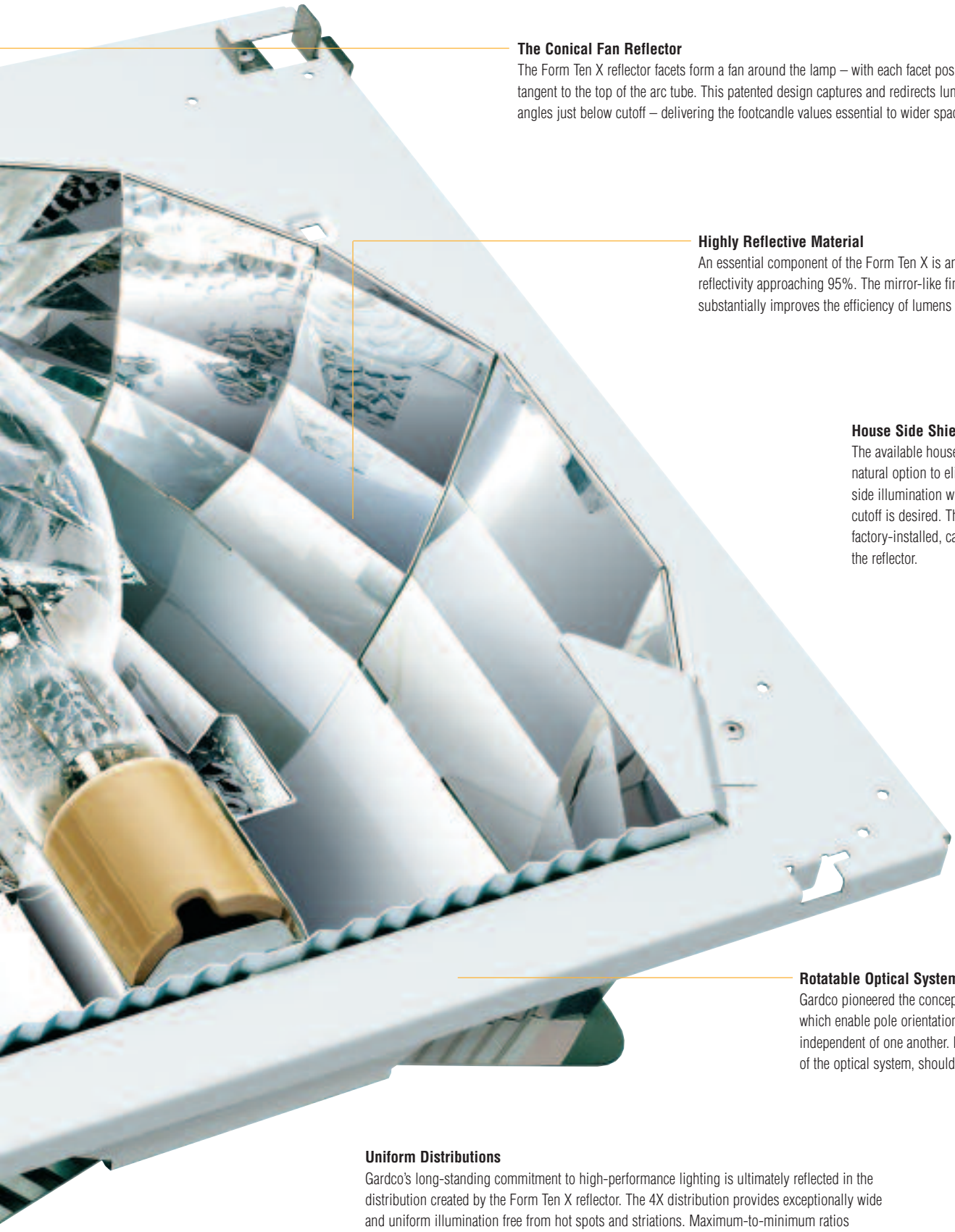

M 10
TYPE III
TYPE Q

PERFORMANCE

A fundamental difference between competing lighting systems is performance – and performance ultimately affects 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 savings on fixtures, poles, installation and maintenance. These more-efficient luminaires typically enable mounting at lower heights, further reducing initial and long-term service costs.

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



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.

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 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 full 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 percentage 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 disperses 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

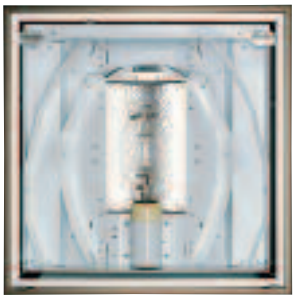
- Narrow Walkways
- Building Alleyways
- Median-Mounted Divided Highways

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 FM (IES Type IV) forward throw optics distribute the majority of light in front on the luminaire with full cutoff of the pattern behind the luminaire (House Side). This distribution is useful for areas where illumination is to be precisely confined in one direction.

Applications

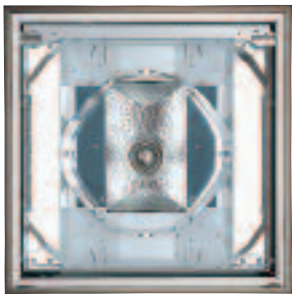
- Wall Mount Requirements
- Sports (i.e. Tennis Courts)
- Perimeter Lighting with Surrounding Residential

Typical Spacing

2 MH forward x 4 MH lateral.

Type VS

The VS optics use a vertically positioned lamp. These Type V 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

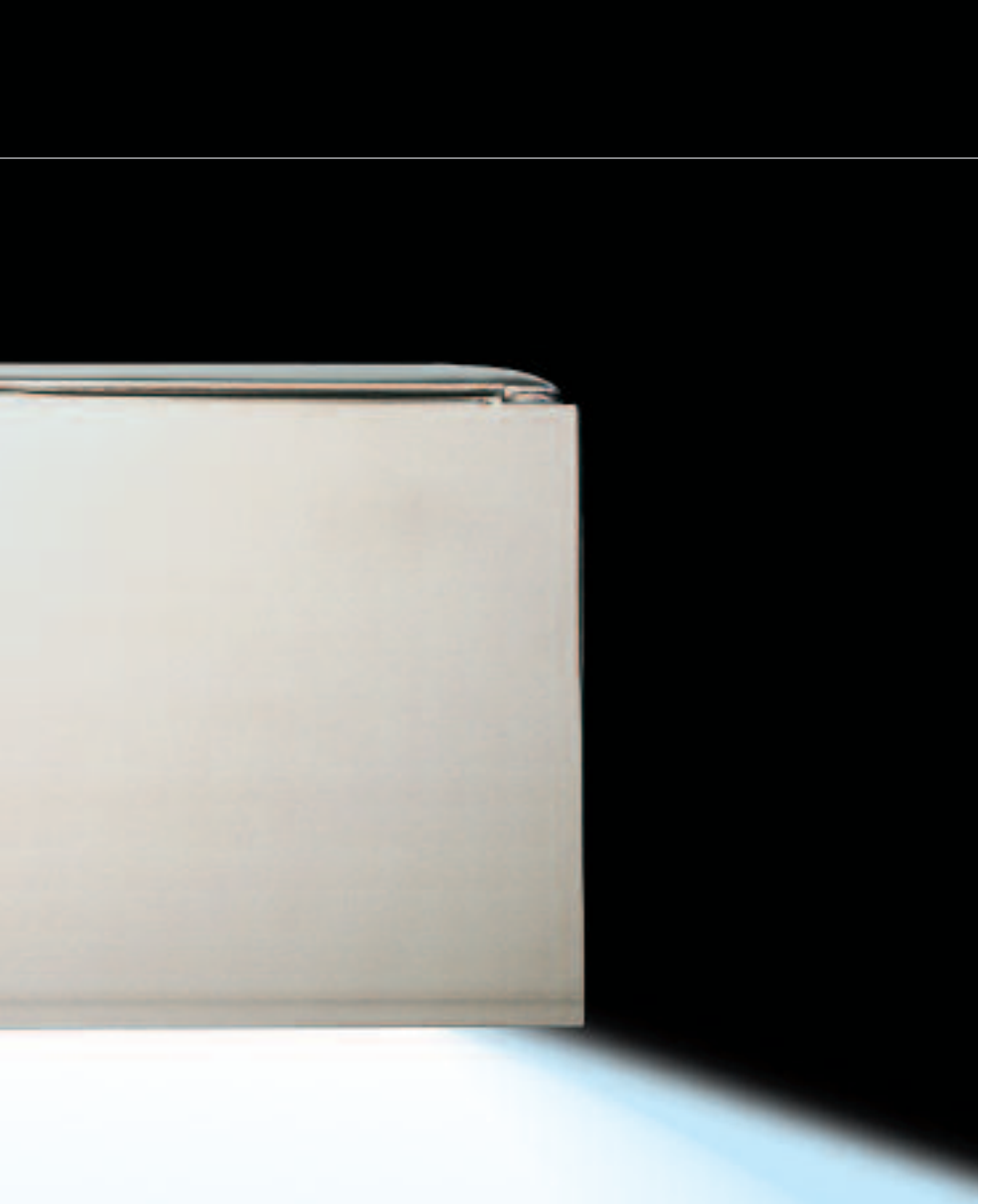
Providing for good visibility is more difficult in practice than in theory, as site, aesthetic, economic and maintenance factors are introduced. Designing for good visibility means ensuring that there is an adequate level of illumination, uniform pavement luminance, and minimal glare. In addition to 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

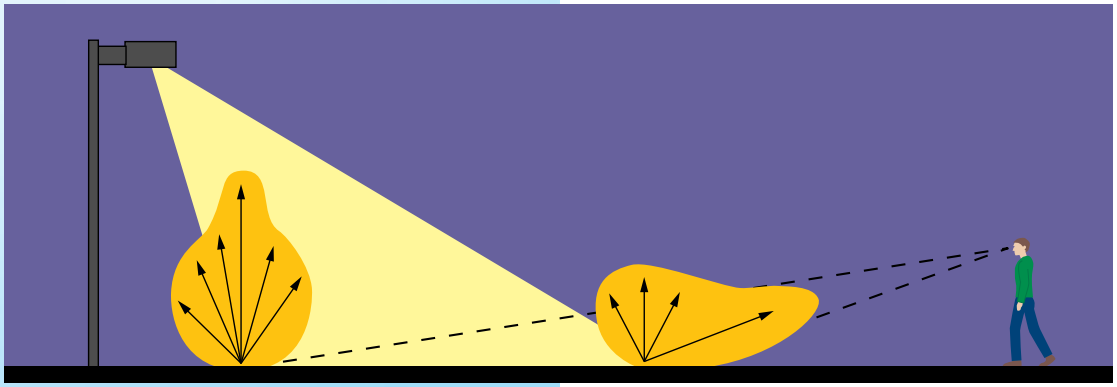
The second component of visibility is uniformity of pavement luminance. When the eye has to continually adjust to lighter and darker areas, vision is significantly impaired. A uniformly lit site appears lighter than a site which may have somewhat higher light levels, but poor uniformity. Although there 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 (5:1 or below maximum-to-minimum footcandles) may appear non-uniform.



GLARE CONTROL

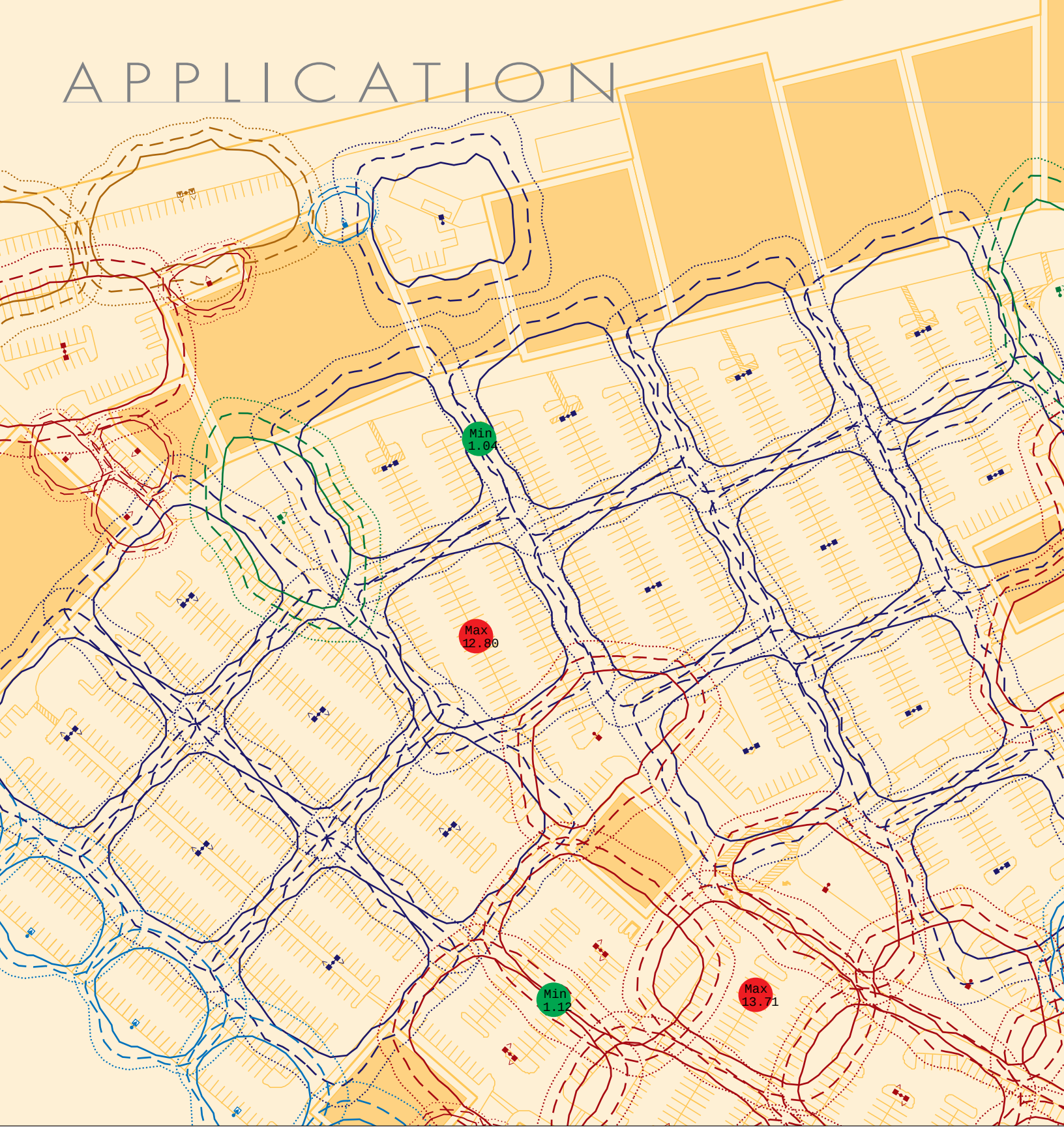
The factor most destructive to lighting performance is glare. Simply stated, glare is bright direct light from an unshielded source. At night, the human eye is drawn to the most luminous element in its field of vision. Uncontrolled, glare is distracting, causes discomfort to the viewer, and adversely 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.

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



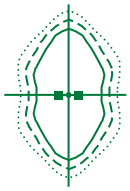
Because the eye sees reflected light, sites lit to extremely uniform levels appear dark directly under luminaires.

APPLICATION



TYPE I
Standard

TYPE I
Back-to-Back

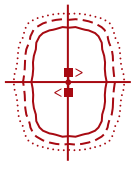


TYPE I
Rotated Optics

TYPE III
Standard

TYPE III
Back-to-Back

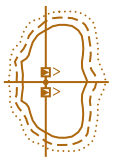
TYPE III
Rotated Optics

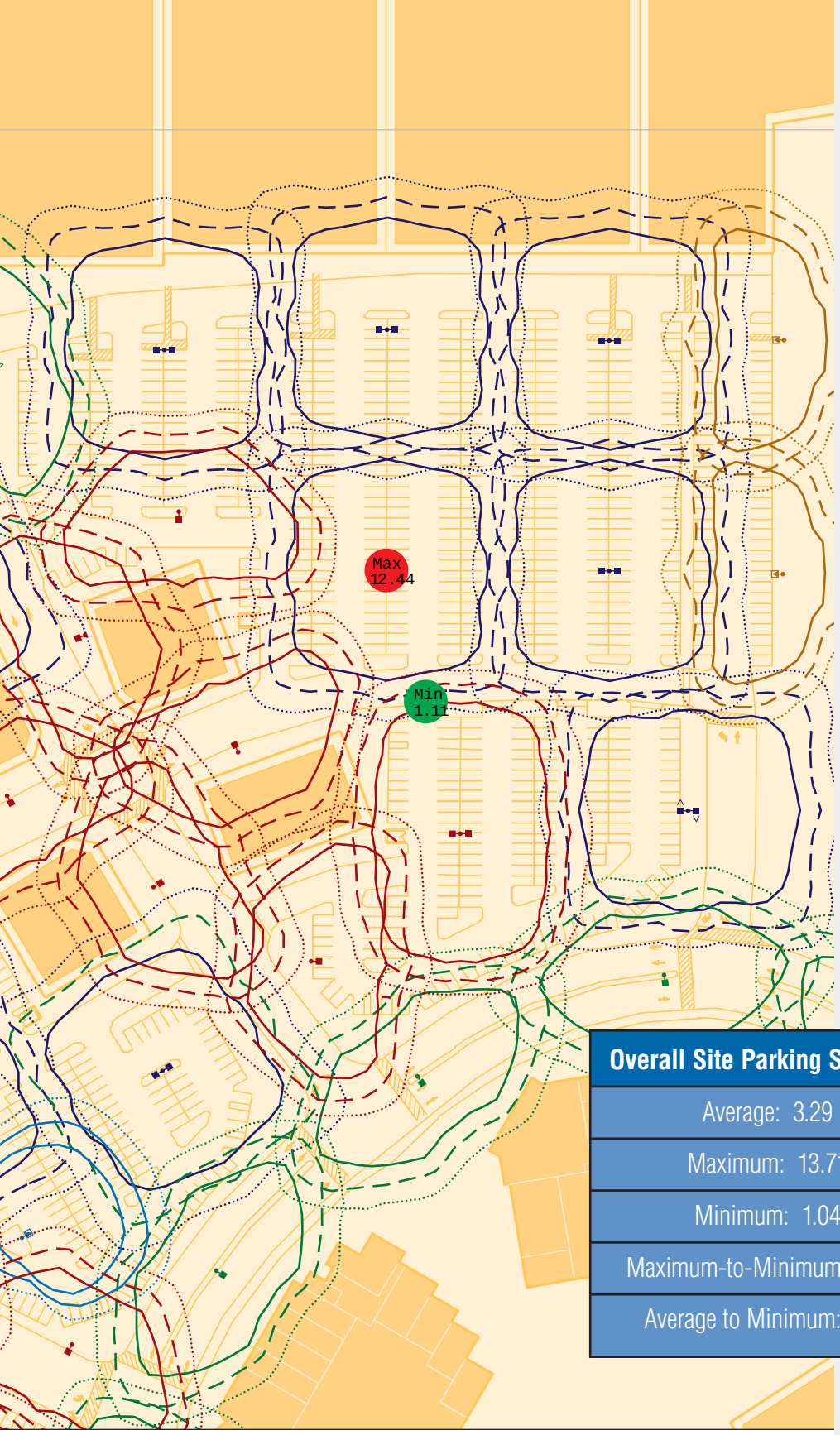


TYPE III
Wall Mount

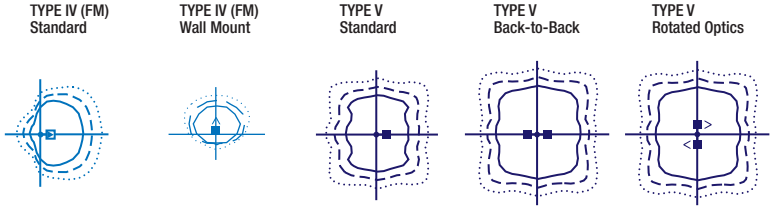
TYPE III with HS
Option Standard

TYPE III with HS Option
Rotated Optics





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 ensure that pavement luminance appears uniform. When mounting heights, lamp types and optical systems are selected and placed as shown at left, light levels and uniformity criteria can be verified.

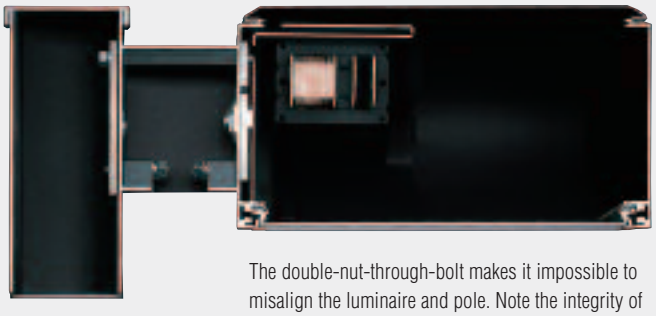
A footcandle printout verifies that the objectives of the lighting plan are accomplished… a one footcandle minimum maintained, with a maximum-to-minimum ratio no greater than 15:1.

FEATURES

The Form Ten is the product of nearly forty 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.

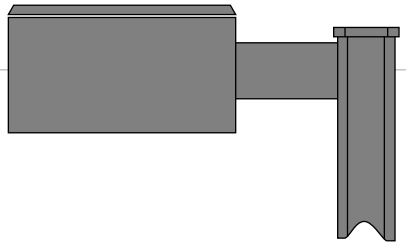
The integrity of Form Ten appearance and performance owes to a design and construction philosophy without compromise. The weather-tight luminaire housing is sealed at all points of material transition with pressure-injected silicone, and the door frame seals to the luminaire with hollow-core, memory-retentive silicone. Arm assemblies are designed with a double-nut-through-bolt that effectively makes it impossible to misalign luminaire and pole. The pre-wired 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 also 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.



EH/H ARM MOUNT FORM TEN

GENERAL DESCRIPTION: The Gardco arm-mounted Square Form Ten products are 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 and HT 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
HT	Fabricated
H	Fabricated

SIZE

14"	
14"	
19"	
19"	
19"	
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[1]	Type I
3[1]	Type III
4X[1,2]	Type IV (*19/ T19only*)
FM[1]	Type IV
Q[1]	Type V

Vertical Lamp

VS	Type V

In 400w and below, luminaires are supplied with an acrylic sag lens. A glass sag lens is supplied with luminaires above 400w and with 26" luminaires. Medium base, 200w max on 14" units.

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	Black Anodized
BRA	Bronze Anodized
NA	Natural Aluminum Anodized
OC	Optional Color Paint *Specify RAL designation. Ex: OC-RAL7024.*
SC	Special Color Paint *Specify. Must supply color chip.*

H/HT Style

BRP	Bronze Paint
BLP	Black Paint
OC	Optional Color Paint *Specify RAL designation. Ex: OC-RAL7024.*
SC	Special Color Paint *Specify. Must supply color chip.*

OPTIONS

F	Fusing *(In head.)*
LF	In-Line/In-Pole 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.)*
HS	Internal Houseside Shield *(Supplied standard with FM optics.)*
QS	Quartz Standby
QST	Quartz Standby – Timed Delay
XF	Extended Flat Glass Lens *(Flat glass lens with extended drop. Allows for the use of a larger lamp and still meet IES Full cutoff classification. T19 supplied standard with horizontal lamp optics above 400w.)*
SG	Sag Glass Lens *(In lieu of flat glass. Supplied standard with 26" VS.)*
CD	Clear Drop Diffuser *(EH Style only.)*
MF	Mass Arm Fitter
MU	10° Uptilt Bracket
UB	Quick Disconnect for Ballast Tray
AP	Adjustable Knuckle – Pole Mount *(Only available with 1 way and 2 @ 180° mounting.)*
AT	Adjustable Knuckle – Tenon Mount *(Fits 2 3/8 tenon. N/A with 14" units.)*
PTF2	Pole Top Fitter - 2 3/8" - 3" Dia. Tenon
PTF3	Pole Top Fitter - 3" - 3 1/2" Dia. Tenon
PTF4	Pole Top Fitter - 3 1/2" - 4" Dia. Tenon

WATTAGE

14"	19"	T19"	26"
100MH[3]	**250MH**	**750PSMH**[6]	**1000MH**
150MH[3]	**400MH**	**875PSMH**	**750PSMH**[7]
175MH	**250PSMH**	**750HPS**	**1000PSMH**[4]
200MH	**320PSMH**[7]		**750HPS**
250MH[8]	**350PSMH**[7]		**1000HPS**
175PSMH[4]	**400PSMH**		
100HPS	**450PSMH**[4]		
150HPS[5]	**250HPS**		
	400HPS		

Notes

1. *19" and T19" luminaires, 400w and below are supplied with flat glass lens standard. For wattages above 400w, "XF" flat lens is supplied standard.*
2. *MH/PSMH 400w Type 4X luminaires require the E28/BT28 reduced jacket lamp.*
3. *Medium base lamp.*
4. *Available with vertical lamp optics only.*
5. *Operates 55V lamp.*
6. *M149 only. Horizontal optics require MS750/PS/BU/HOR/BT37 lamp.*
7. *Requires E28/BT28 lamp.*
8. *Available with horizontal lamp optics only.*

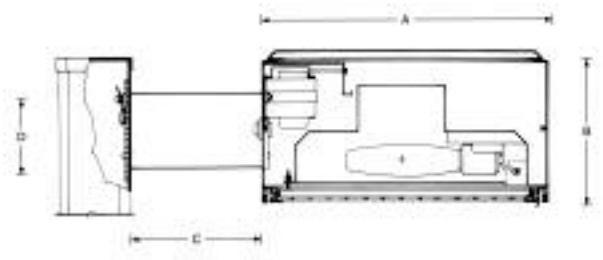
MH Metal Halide
PSMH Pulse Start Metal Halide
HPS High Pressure Sodium

Prior to ordering, consult submittal data sheet on sitelighting.com for most current information. Gardco Lighting 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.

DIMENSIONS

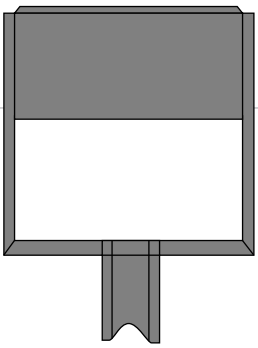
EH Style	Size	A	B*	C	D	EPA's Single Arm	EPA's Twin 180°	EPA's Quad	Approx. Wt. Single Fixture
	14"	14" 35.56cm	7" 17.78cm	6" 15.24cm	5" 12.70cm	1.1 .10 m²	2.3 .21 m²	2.9 .27 m²	30 lbs 24.9 kgs
	19"	19" 48.26cm	10" 25.40cm	9" 22.86cm	5" 12.70cm	2.1 .20 m²	4.0 .37 m²	5.5 .51 m²	55 lbs 26.9 kgs

H Style	Size	A	B*	C	D	EPA's Single Arm	EPA's Twin 180°	EPA's Quad	Approx. Wt. Single Fixture
	14"	14" 35.56cm	7" 17.78cm	2"† 5.08cm†	5" 12.70cm	1.1 .10 m²	2.3 .21 m²	2.9 .27 m²	30 lbs 13.6 kgs
	19"	19" 48.26cm	10" 25.40cm	2"† 5.08cm†	5" 12.70cm	2.1 .20 m²	4.0 .37 m²	5.5 .51 m²	55 lbs 24.9 kgs
	26"	26" 66.04cm	12" 30.48cm	12" 30.48cm	8" 20.32cm	3.5 .33 m²	7.0 .65 m²	8.9 .83 m²	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 TEN

GENERAL DESCRIPTION: The Gardco post-top 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 and 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[1,2] Type IV (19"only)
FM Type IV
Q Type V

Vertical Lamp
VS Type V

In 400w and below, luminaires are supplied with an acrylic sag lens. A glass sag lens is supplied with luminaires above 400w and with 26" luminaires. Medium base, 200w max on 14" units.

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

F
LF
PC
PCR
POLY
XF
SG
QS
QST
CD
UB
HS

Luminaires furnished with Gardco poles will be supplied with a square fitter for square aluminum or steel poles or a round fitter for round poles. Luminaires furnished for use with poles by others will be supplied with a 5" O.D. fitter for a 4" X 6" tenon or a 3.5" O.D. fitter for a 2 3/8" tenon. Specify when ordering.

WATTAGE

14"	19"	26"
100MH[3]	**250MH**	**1000MH**
150MH[3]	**400MH**	**750PSMH**[5]
175MH	**250PSMH**	**1000PSMH**[3]
200MH	**320PSMH**[7]	**750HPS**
250MH[6]	**350PSMH**[7]	**1000HPS**
175PSMH[4]	**400PSMH**	
100HPS	**450PSMH**[4]	
150HPS[4]	**250HPS**	
	400HPS	

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

FINISH

JEH and JH26
BLA Black Anodized
BRA Bronze Anodized
NA Natural Aluminum Anodized
OC Optional Color Paint
Specify RAL designation. Ex: OC-RAL7024.
SC Special Color Paint
Specify. Must supply color chip.

JH Style
BRP Bronze Paint
BLP Black Paint
OC Optional Color Paint
Specify RAL designation. Ex: OC-RAL7024.
SC Special Color Paint
Specify. Must supply color chip.

OPTIONS

F Fusing *(In head.)*
LF In-Line/In-Pole 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.)*
XF Extended Flat Glass Lens *(Flat glass lens with extended drop. Allows for the use of a larger lamp and still meet IES Full cutoff classification.)*
QS Quartz Standby
QST Quartz Standby – Timed Delay
SG Sag Glass Lens *(In lieu of flat glass. Supplied standard with 26" VS.)*
CD Clear Drop Diffuser *(JEH Style only.)*
UB Quick Disconnect for Ballast Tray
HS Internal Houseside Shield *(Supplied standard with FM optics.)*

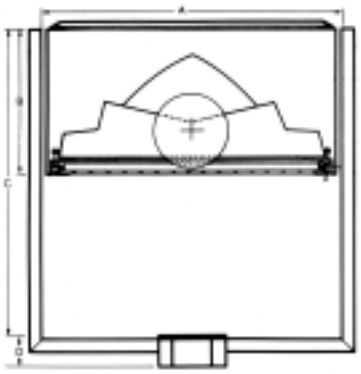
Notes

1. *19", 400w and below are supplied with flat glass lens standard. For wattages above 400w, "XF" flat lens is supplied standard.*
2. *MH/PSMH 400w Type 4X luminaires require the E28/BT28 reduced jacket lamp.*
3. *Medium base lamp.*
4. *Available with vertical lamp optics only.*
5. *M149 only. Horizontal optics require MS750/PS/BU/HOR/BT37 lamp.*
6. *Horizontal optics only.*
7. *Requires E28/BT28 lamp.*

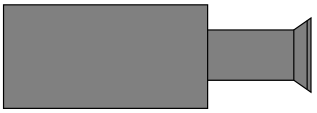
Prior to ordering, consult submittal data sheet on sitelighting.com for most current information. Gardco Lighting reserves the right to change materials or modify the design of its product without notification as part of the company's continuing product improvement program.

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 .13 m²
	19	19" 48.26cm	10" 25.40cm	23" 58.42cm	1.5" 3.81cm	2.5 .23 m²
	26	26" 66.04cm	12" 30.48cm	25" 68.58cm	1.5" 3.81cm	2.8 .26 m²



BE/WE/BH/WH WALL MOUNT FORM TEN



BE/BH

WE/WH

GENERAL DESCRIPTION: The Gardco wall-mounted Square Form Ten products are sharp cutoff luminaires for high-intensity discharge lamps up to 875 watts. BE and WE units are manufactured from mitered extruded aluminum and finished in an Architectural Class 1 anodizing. The BH and WH luminaires are die formed aluminum with a thermoset polyester finish. Both products can accept one of four (4) interchangeable and rotatable precision-segmented optical systems.

ORDERING

	MOUNTING	HOUSING	SIZE	CONFIGURATION	PHOTOMETRIC DISTRIBUTION	WATTAGE	VOLTAGE	FINISH	OPTIONS
example	B	E	19	1	FM	400MH	120	BRA	PCR

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

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

SIZE
- **14"** (E, H)
- **19"** (E, H, HT)

CONFIGURATION
- **1** Single Assembly

PHOTOMETRIC DISTRIBUTION

Horizontal Lamp
- **1** Type I
- **3** Type III
- **4X**[1,2] Type IV *(19"/ T19"only)*
- **FM** Type IV

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
- **F**
- **PC**
- **PCR**
- **POLY**
- **XF**
- **SG**
- **HS**
- **QS**
- **QST**
- **CD**
- **UB**

WATTAGE

14"	19"	T19"
100MH[3]	**250MH**	**750PSMH**[6]
150MH[3]	**400MH**	**875PSMH**
175MH	**250PSMH**	**750HPS**
200MH	**320PSMH**[5]	
250MH	**350PSMH**[5]	
100HPS	**400PSMH**	
150HPS[4]	**250HPS**	
	400HPS	

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

FINISH

BE and WE
- **BLA** Black Anodized
- **BRA** Bronze Anodized
- **NA** Natural Aluminum Anodized
- **OC** Optional Color Paint
  Specify RAL designation.
  Ex: OC-RAL7024.
- **SC** Special Color Paint
  Specify. Must supply color chip.

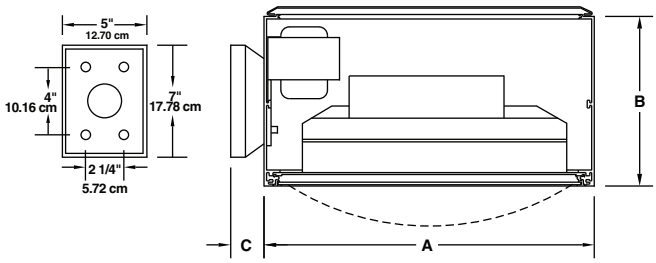
BH/BHT and WH/WHT
- **BRP** Bronze Paint
- **BLP** Black Paint
- **OC** Optional Color Paint
  Specify RAL designation.
  Ex: OC-RAL7024.
- **SC** Special Color Paint
  Specify. Must supply color chip.

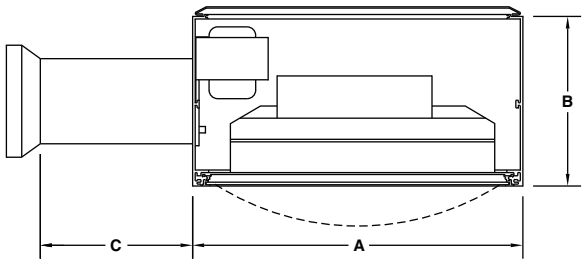
OPTIONS
- **F** Fusing *(In head.)*
- **PC** Photocontrol and Receptacle *(N/A with 480V.)*
- **PCR** Photocontrol Receptacle only
- **POLY** Polycarbonate Sag Lens *(In lieu of flat glass. N/A with 4X optics. 450W maximum.)*
- **XF** Extended Flat Glass Lens *(Flat glass lens with extended drop. Allows for the use of a larger lamp and still meet IES Full cutoff classification. T19 supplied standard with horizontal lamp optics above 400w.)*
- **SG** Sag Glass Lens *(In lieu of flat glass. Supplied standard with 26" VS.)*
- **HS** Internal Houseside Shield *(Supplied standard with FM optics.)*
- **QS** Quartz Standby
- **QST** Quartz Standby – Timed Delay
- **CD** Clear Drop Diffuser *(EH Style only.)*
- **UB** Quick Disconnect for Ballast Tray

Notes
1. *19" and T19" luminaires, 400w and below are supplied with flat glass lens standard. For wattages above 400w, "XF" flat lens is supplied standard.*
2. *MH/PSMH 400w Type 4X luminaires require the E28/BT28 reduced jacket lamp.*
3. *Medium base lamp.*
4. *Operates 55V lamp.*
5. *Requires E28/BT28 lamp.*
6. *M149 only. Horizontal optics require MS750/PS/ BU/HOR/BT37 lamp.*

Prior to ordering, consult submittal data sheet on sitelighting.com for most current information. Gardco Lighting 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.

DIMENSIONS



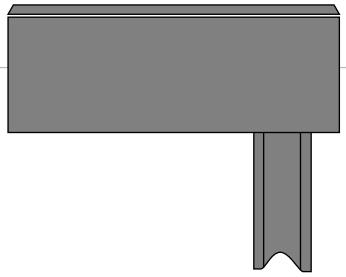


WE/WH/WHT

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 TEN

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. The A Style luminaires feature a choice of six (6) interchangeable and rotatable precision-segmented 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" Extruded
19" Extruded
26" Fabricated

CONFIGURATION

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

PHOTOMETRIC DISTRIBUTION

Horizontal Lamp
1 Type I
3 Type III
4X[1,2] Type IV *(19"only)*
FM Type IV
Q Type V

Vertical Lamp
VS Type V

In 400w and below, luminaires are supplied with an acrylic sag lens. A glass sag lens is supplied with luminaires above 400w and with 26" luminaires. Medium base, 175w max on 14" units.

WATTAGE

See Table Below

WATTAGE

14"	19"	26"
100MH[3]	**250MH**	**1000MH**
150MH[3]	**400MH**	**750PSMH**[7]
175MH	**250PSMH**	**1000PSMH**[8]
250MH4	**320PSMH**[9]	**750HPS**
175PSMH[5]	**350PSMH**[9]	**1000HPS**
100HPS	**400PSMH**	
150HPS[6]	**450PSMH**[5]	
	750PSMH[7]	
	250HPS	
	400HPS	
	750HPS	

VOLTAGE

120
208
240
277
347
480
QUAD

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

FINISH

BLA
BRA
NA
OC
SC

FINISH

BLA Black Anodized
BRA Bronze Anodized
NA Natural Aluminum Anodized
OC Optional Color Paint
Specify RAL designation.
Ex: OC-RAL7024.
SC Special Color Paint
Specify. Must supply color chip. _____

OPTIONS

F
LF
PC
PCR
POLY
HS
XF
SG
QS
QST

OPTIONS

F Fusing *(In head.)*
LF In-Line/In-Pole 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.)*
HS Internal Houseside Shield *(Supplied standard with FM optics.)*
XF Extended Flat Glass Lens *(Flat glass lens with extended drop. Allows for the use of a larger lamp and still meet IES Full cutoff classification.)*
SG Sag Glass Lens *(In lieu of flat glass. Supplied standard with 26" VS.)*
QS Quartz Standby
QST Quartz Standby – Timed Delay

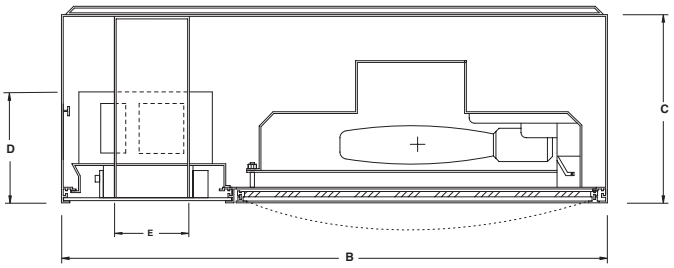
Notes

1. *19" luminaires, 400w and below is supplied with flat glass lens standard. For wattages above 400w, "XF" flat lens is supplied standard.*
2. *MH/PSMH 400w Type 4X luminaires requires the E28/BT28 reduced jacket lamp.*
3. *Medium base lamp.*
4. *14" 250MH luminaires available in single and twin configurations only. Horizontal optics only.*
5. *Available with vertical lamp optics only.*
6. *Operates 55V lamp.*
7. *M149 only. Horizontal optics require MS750/PS/BU/HOR/BT37 lamp.*
8. *Horizontal optics require M1000/PS/U/BT37 Lamp*
9. *Requires E28/BT28 lamp.*

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

Prior to ordering, consult submittal data sheet on sitelighting.com for most current information. Gardco Lighting 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.

DIMENSIONS



Size	Width	B	C	Tenon Depth D	Tenon Dia. E	EPA's Single	EPA's Twin	EPA's Quad	Weight Single	Weight Twin	Weight Quad
14	14"	21"	7"	4"	2.375	1.3 ft²	2.7 ft²	2.7 ft²	34 lbs	62 lbs	122 lbs
	35.56cm	53.34cm	17.78cm	10.16cm	6.05cm	.12 m²	.25 m²	.25 m²	15.42 kg	28.12 kg	55.34 kg
19	19"	29"	10"	6"	4"	2.5 ft²	5.1 ft²	5.1 ft²	71 lbs	126 lbs	226 lbs
	48.26cm	73.66cm	25.40cm	15.24cm	10.16cm	.23 m²	.47 m²	.47 m²	32.21 kg	57.15kg	102.51 kg
26	26"	39"	10"	6"	4"	3.4 ft²	6.8 ft²	6.8 ft²	113 lbs	214 lbs	385lbs
	66.04cm	99.06cm	25.40cm	15.24cm	10.16cm	.32 m²	.63 m²	.63 m²	51.26 kg	97.07 kg	174.63 kg

SPECIFICATIONS

Housing
Extruded housings *(A, EH, JEH, WE, and BE)* feature four (4) precisely mitered and welded 0.130" (.33cm) aluminum side sections. Fabricated housings *(H, HT, JH, WH, BH)* are single-piece, multi-formed 0.06" (.15cm) aluminum sheet with an integral reinforcing spline. All units feature a press-formed aluminum top, which is welded to the 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 pre-wired and suitable for installation without accessing housing.

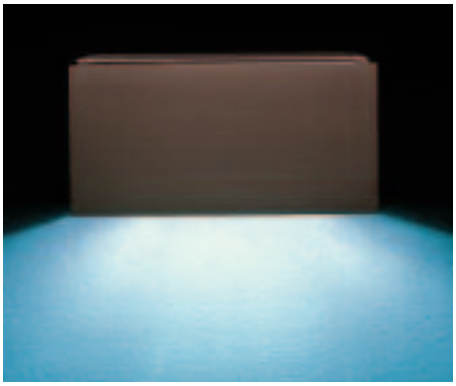
Arm
(EH, H, BE, BH) Extruded aluminum arm features integral channel to support tie rods maintaining housing-to-pole (or wall bracket) alignment.

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 that transitions are clean and continuous.

Wall Bracket
Hooking die cast aluminum wall bracket conceals 10-gauge mounting plate.

Lens
Mitered, extruded anodized aluminum door frame retains the optically clear, heat- and impact-resistant tempered flat glass (unless otherwise specified) in a sealed manner using 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.



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 ensures full cutoff of light, minimizing glare and controlling light trespass. No optical system can consistently match the predictable, exacting performance of this faceted, full cutoff Form Ten.

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 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/-29°C. 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 301°F/150°C or higher.

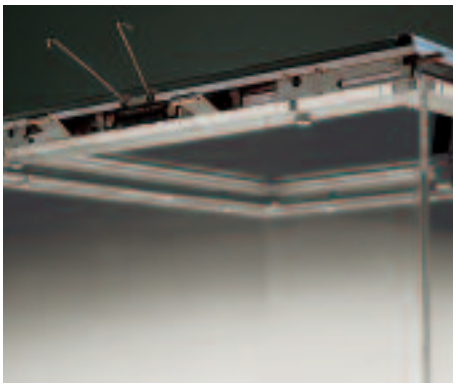
Finish

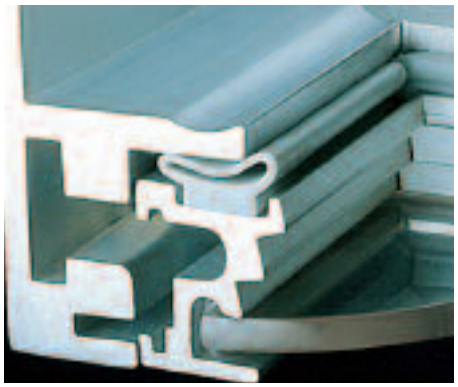
Painted units feature hardcoat fade-resistant thermal cured polyester finish. Extruded units *(A, EH, JEH, WE and BE)* are available with Aluminum Association Architectural Class I Anodizing.

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.

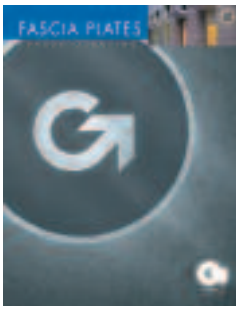




Optional clear drop acrylic diffuser provides a decorative accent to luminaires. Memory-retentive silicone gasket won't take a set which can result in gaps after relamping. Flat surfaces, sharp corners and precise geometric proportions characterize the pure architectural forms of the Square Form Ten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

Gullwing

Fascia Plates



Floodlight

100 Line Sconces

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