

Roadway Lighting



Introduction

Public lighting authorities all over the country are finding it increasingly difficult to cope with an ever-increasing volume, density and speed of traffic. There is a dire need for maintenance-free and improved road lighting. Efficient road lighting means enhanced visibility and hence minimising the risk of road accidents.

High Intensity Discharge Lamp due to its high luminous efficacy, longer life and compact size is being preferred for public lighting installations. Since the surface brightness of the lamp is higher, optics of road lighting luminaires have to be specially designed not only for proper light distribution on the road surface, but also to prevent the direct glare from the luminaire.

Bajaj Range of Luminaires

This section provides you the technical details of our wide range of road lighting luminaires, suitable for HPSV / MH / HPMV / FTL / T5 / CFL lamps for highways, main roads, arterial roads, lanes and by-lanes which conform not only to the latest BIS but also to the international standards and code of practices. With highly efficient optical controls, luminaires are suitable for use with either elliptical shaped coated or tubular shaped clear high intensity discharge (HID) lamps.

Bajaj luminaires are offered either with electrochemically brightened, polished and anodised aluminium reflector or with **GLASKOTE**[®], thin layer of glass coated reflectors which increase efficiency & reduce maintenance of the luminaires. The unique design of the luminaires & their reflectors allows for wide spacing between two poles, thereby achieving substantial economy in the total road lighting system.

BIS Specification

Earlier specification of the luminaire was made, based on the light distribution of the luminaire, viz. cut-off, semi cut-off and non cut-off luminaire. According to the light distribution they fall in any of these categories. The light distribution is changed either by adjusting the side reflectors or by changing the position of the lamp holder with respect to the reflector (toe-in-angle).

Classification and levels of illumination

Classification	Level	Uniformity
Group A1	30 lux	0.4
Group A2	15 lux	0.4
Group B1	8 lux	0.3
Group B2	4 lux	0.3

As per the IEC Publication 598-2-3 (1979), in the latest BIS 10322 (Part 5/sec 3) 1987, the above concept of light distribution has been replaced by the new parameters, viz. spread, throw and control. To indicate the suitability or otherwise for a given application. Luminaire characteristics are to be specified by the above parameters based on:

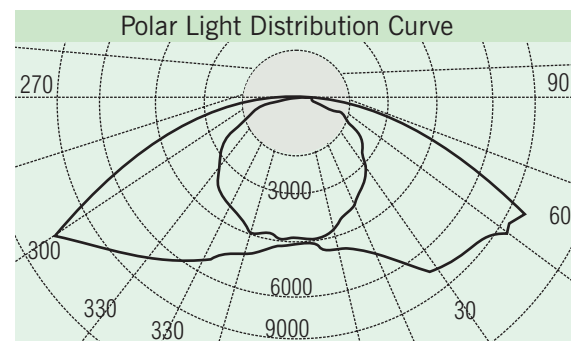
- The extent to which the light is thrown along the road,
- The degree of sideways spread of light across a road, and
- The amount of control exercised over light emitted at high angles.

Public Lighting Authorities, Lighting Engineers and other users of Road Lighting Installations would like to find out the various values relevant to the installation viz. the illuminance, luminance, uniformity, glare values etc. The illuminance deals mainly with the amount of light falling on the road surface and the luminance indicates the amount of light being reflected back. Since illuminance values are most commonly used by the designers, in the following pages the various methods of calculation of illuminance values and uniformity are explained.

Aids to Road Lighting Design

Light Distribution Diagrams

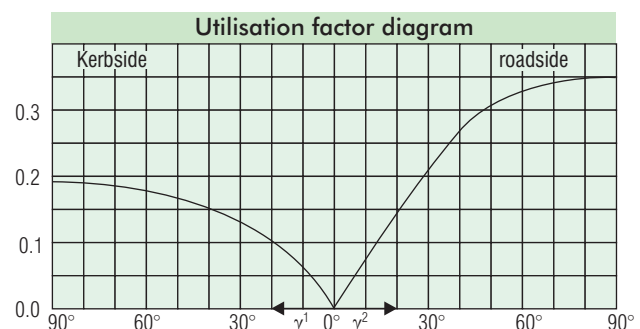
Light distribution diagrams in the various planes for selection of the type of luminaire are required for a particular road lighting installation. The polar intensity diagram provides a rough idea of the

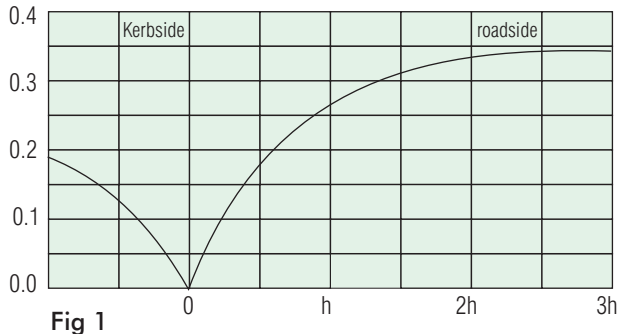


shape of the light distribution of a luminaire. In the polar intensity diagram the luminous intensity is given in the form of a polar curve. The luminous intensity is given in candela per 1000 lumen (cd/1000 lm) of the normal lamp flux of the lamps applied.

Utilisation Factor Diagrams

Utilisation factor diagrams indicate the effectiveness of the luminaire in distributing lamp flux into different longitudinal strips on or besides the roadways. The utilisation factor diagram evaluates



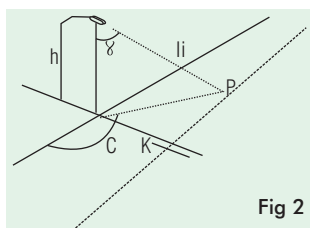


the luminous flux from a luminaire, expressed as a fraction of the lamp flux, emitted in the zone subtended at the luminaire by the $C=0^\circ$ plane and the sloping plane, through a longitudinal roadway line. The longitudinal roadway line may be defined by its lateral angle (angle in the $C = 90^\circ$ plane) or by its lateral distance from the longitudinal roadway line beneath the luminaire as a function of luminaire mounting height.

Thus, there are two possible forms of utilisation factor diagrams, as shown in Fig. 1. The sum of asymptotic utilisation factors on the kerbside and the road gives the downward light output ratio of the luminaire. This diagram may be used to determine the average illuminance in any longitudinal strip parallel to a long line of luminaires.

Isolux Diagrams

The value of the illuminance at point p on a road, consists of the sum of the partial illuminance produced by all the lanterns (neglecting illuminance contributions from any other light sources there may be) where I_i , C_i is the luminous intensity of lantern i in the direction of point p as indicated the angles i and C_i (see Fig. 2 - illuminance at point p by lantern i).



With this formula, it is possible to calculate the value of illuminance of various points on a road. When values obtained are plotted on a plane of the road and the values of equal illuminance are connected together, the result forms what is

known as an isolux diagram.

These isolux diagrams, for one luminaire, are given in photometric data sheets for each type of luminaire, in terms of percentages of the maximum illuminance, for every mounting height, as the relative isolux diagram on plane to be illuminated $E_{max}=100\%$ (see Fig.3).

To obtain illuminance from a lantern i at point p, all that is necessary to do is to place the centre point of relative diagram on projected position of the luminaire L_i on a scale plane of road drawn in same units of h as the relative diagram and read off the value of relative diagram at point p. This read-off value should be multiplied by $E_{max} = a \times /h^2$ to obtain the illuminance value in lux. The figure for the factor 'a' is given under the relative diagram. ($a=0.187$, =luminous flux in lumen and $h =$ mounting height in metres).

Illuminance calculations

The average illuminance over a large pavement area in terms of lux may be calculated by means of a "utilisation curve" or by computing the illuminance at a large number of specific points and averaging the values found.

The easiest and quickest way of calculating the average illuminance of a straight road of infinite length, is by using the utilisation factor curves given in the Photometric Data Sheets and the following formula:

$$E_{av} = \frac{\eta \Phi_L}{W \times S} \dots (1)$$

Where :

- Φ_L = Luminous flux of the lamp
- W = Width of the road
- S = Spacing between the luminaires
- η = Utilisation factor

In outdoor lighting the utilisation factor is defined as that fraction of the luminous flux coming from a luminaire which actually reaches the road :

$$\eta = \frac{\Phi_{Utilised}}{\Phi_L}$$

From this definition formula (1) may be derived as

$$E_{av} = \frac{\Phi(\text{utilised of all luminaires})}{(\text{area of the road})} = n \times \frac{\Phi(\text{utilised of one luminaire})}{(\text{area of the road})}$$

$n =$ number of spacings

Computer- Aided Lighting Designs

Computers are being extensively used in lighting design calculations, to enable designers and users to adopt lighting systems with a fair degree of confidence and without resorting to experimentation. This has been done considering the practical impossibility of carrying out manual calculations for multi lamp installations in large areas. Also, this has the added advantage of examining the achieving results with various lighting designs, prior to commencing the actual project work and selecting that design which is appropriate. Prior to carrying out the computer calculations, thumb rule calculations (based upon the lumen method and the designer's experience) are carried out. This forms the basis of the computer aided design calculations.

However, for computer aided design exhaustive photometric data of the luminaires are required and with the help of software the results are obtained. Luminaires Division of BEL not only provides the photometric data of all the luminaires but also provides the most modern outdoor software for illumination design to the Architects, Consultants, Project Authorities and the users on request. State-of-

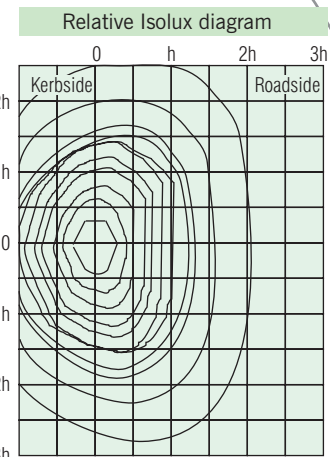


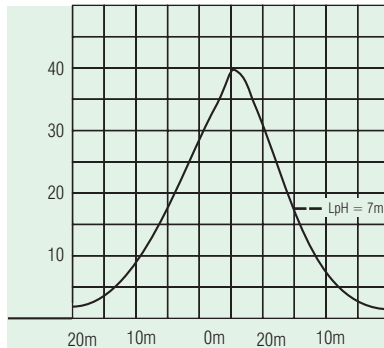
Fig 3

the-art software enables to work out a number of alternate designs giving the horizontal illumination levels and uniformity ratios in a shortest possible time.

Ground Illumination Diagram

The ground illumination diagram can be used to quickly assess the initial illuminance at a given distance from the lighting column, for a luminaire at a given mounting height. For post top lanterns with symmetrical light distribution, this diagram is applicable in all directions.

For road lighting luminaires, however, this diagram refers to the CO-C180 plane only, i.e for a road lighting luminaire inclined at 0, the ground illumination diagram shows the initial illuminance values directly under the luminaire and parallel to the road axis.



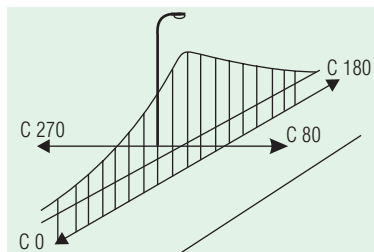
Wind Load

Road lighting luminaires have to withstand winds upto gale force. Wind pressures on the luminaires also have an effect on the design of the poles.

The following is the testing procedure for Wind Load Test as given in IS 10322 (Part 5/Sec 3) 1987.

The luminaire is mounted with its largest projected area as viewed in elevation lying in the horizontal plane and with the means of attachment secured in accordance with the manufacturer's recommendations.

The constant evenly distributed load is applied for 10 min. on the luminaire using sand bags providing 1.5kN/m² of lantern projected area for mounting heights upto 8m, 2.0kN/m² for mounting heights of 8m to less than 15m and 2.4kN/m² for mounting heights of 15m and over. The luminaire is then turned 180o, in the vertical plane, about the point of attachment and the test is repeated.



GLASKOTE® Reflectors

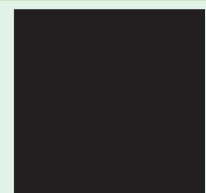
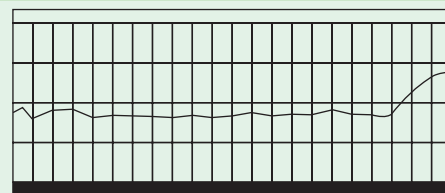
GLASKOTE® is a thin, clear, flexible coating of high quality (95% purity) silica glass which is bonded chemically to the surface of formed reflectors. Each reflector immersed in silica solution, provides pinhole free coating to all surfaces. The result is chemically inert finish with the reflectivity of aluminium and durability of glass. The highly transparent glass finish ensures a very small light loss and ensures very high reflectance. Due to glass coating the reflector is corrosion resistant. Except for hydrofluoric acid the **GLASKOTE®** coating is corrosion resistant against any acid or alkali.

Extraordinarily smooth surface finish protects the reflector from deposition of dust and resultant smearing and the high reflectance is maintained for a longer period. It is just like any glass surface where you can mop up the dust easily with a warm wet cloth. Like glass-fibre, **GLASKOTE®** is flexible. The thin layer of glass coating on aluminium sheet bears any heavy bending of the sheets. Furthermore, it is heat resistant and shock proof. In fact **GLASKOTE®** reflector is found to be better than prismatic glass reflector as it is light in weight, has high physical strengths and high efficiency.

Comparison of surface roughness

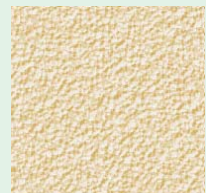
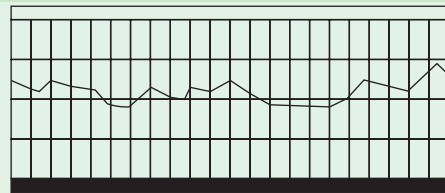
Environmental air is filled with the suspension of fine dust of a few micron (1/1000 mm) size. The dust gets deposited on the reflector and, when hot, the area close to the lamps burns and sticks to the reflector surface (known as reflector baking) which in turn reduces its reflectance. The surface of **GLASKOTE®** is coated with two layers of silicate solutions, which gives a smooth and extremely fine surface finish. The measurement data of surface roughness (shown in the figure below) clearly indicates that **GLASKOTE®** is practically free from surface roughness and dust deposition which is present on an Anodised Reflector.

Measurement data of surface roughness of GLASKOTE® (Silicate Film)



Magnified surface view (x 35,000 with electronic microscope)

Anodised reflector





BJSLA 111/118 CFL

Compact CFL roadway luminaire

Luminaire Body

Black epoxy powder coated sheet aluminium housing, epoxy white powder coated CRCA sheet steel gear tray, clear acrylic with felt gasket fixed to the housing by 4 nos. toggles.
20 mm OD entry for direct mounting on pipe bracket.

Optics

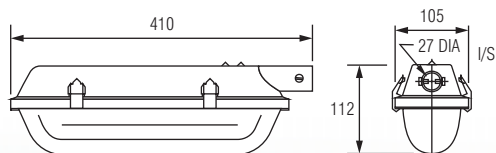
Electrochemically brightened, polished aluminium reflector fixed to gear tray.

Lamp and Accessories

All electrical accessories, Open construction ballast suitable for 11/18W CFL lamp are wired upto the terminal block.

Degree of Protection

IP 53



BJSLA 136 CFL

Compact CFL roadway luminaire

Luminaire Body

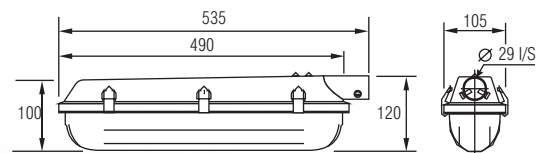
Black epoxy powder coated sheet aluminium housing, epoxy white powder coated CRCA sheet steel gear tray, clear acrylic with rubber gasket fixed to the housing by 6 nos. toggles.
25 mm OD entry for direct mounting on pipe bracket.

Lamp and Accessories

All electrical accessories, Open construction ballast suitable for 36W CFL lamp are wired upto the terminal block.

Degree of Protection

IP 53



Roadway Lighting



BJSLF 211 / 218 DD

Compact CFL roadway luminaire

Luminaire Body

Black epoxy powder coated sheet CRCA housing, epoxy white powder coated CRCA sheet steel gear tray, clear acrylic with rubber gasket fixed to the housing by 4 nos. toggles.

30 mm OD entry for direct mounting on pipe bracket.

Optics

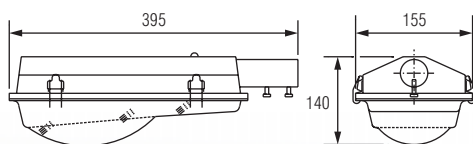
Electrochemically brightened, polished aluminium reflector fixed to gear tray.

Lamp and Accessories

All electrical accessories, open construction ballast suitable for twin 11/18W CFL lamp are wired upto the terminal block.

Degree of Protection

IP 53



BJSLF 85RF CFL BC / E40

Retro-fit CFL roadway luminaire

Luminaire Body

Black epoxy powder coated sheet CRCA housing, with perforated lamp holder cover, clear acrylic with rubber gasket fixed to the housing by 4 nos. toggles.

30 mm OD entry for direct mounting on pipe bracket.

Optics

Electrochemically brightened, polished aluminium reflector fixed to body.

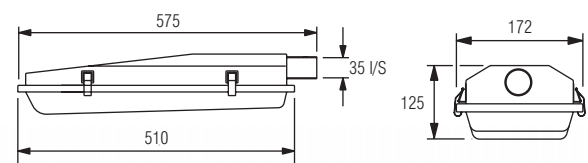
Lamp and Accessories

All electrical accessories suitable for 85W retro-fit CFL lamp are wired up to the terminal block.

Degree of Protection

IP 53

Note: Suffix in cat. ref indicates AL - Aluminium housing
MS - Mild Steel housing





BJSLF 236 CFL

CFL roadway luminaire

Luminaire Body

Black epoxy powder coated CRCA sheet steel housing, epoxy white powder coated CRCA sheet steel gear tray, clear acrylic with rubber gasket fixed to the housing by 4 nos. toggles.

2 nos. 'U' clamp and bolts are provided for direct mounting on 30 mm dia pipe bracket.

Optics

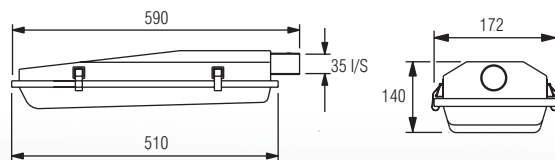
Electrochemically brightened, polished aluminium reflector fixed to gear tray.

Lamp and Accessories

All electrical accessories, open construction ballast suitable for twin 36W CFL lamp are wired upto the terminal block.

Degree of Protection

IP 54



BJSLA 136/140 / 236/240 BJSLA 1140 AL / MS

FTL roadway luminaires

Luminaire Body

Muncell grey finish sheet aluminium housing with stove enamelled white CRCA sheets steel reflector in BJSLA 136/140/236/240 and BJSLA 1140 AL.

Muncell grey finish MS housing with stove enamelled MS sheets steel reflector in BJSLF 1140 MS.

Highly transparent, ribbed acrylic bowl with rubber gasket fixed to the housing with toggle latches.

Side entry mounting for 30MM OD pipe bracket for BJSLA 136/140

Side entry mounting for 40MM OD pipe bracket for BJSLA 236/240

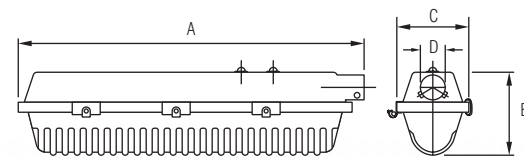
Side entry mounting for 20/30 mm OD pipe bracket in BJSLA 1140 AL/MS.

Lamp and Accessories

All electrical accessories, open construction ballast suitable for single /twin 36/40W FTL lamp are wired upto the terminal block.

Degree of Protection

IP 43



Cat. Ref.	A	B	C	D
BJSLA 136/140	1334	106	105	35
BJSLA 236/240	1362	140	133	43
BJSLA 1140 AL	1317	102	87	35
BJSLF 1140 MS	1317	102	87	35

NOTE : Top entry mounting option available. These luminaires are available with high frequency electronic ballast on request.

Roadway Lighting



BTSLF 114/124/214/224 MS

Energy conservation T5 lamp

Luminaire Body

Muncell grey finish MS sheet housing, epoxy white powder coated MS sheet gear tray covered with anodised aluminium reflector. Clear acrylic cover with rubber gasket fixed by toggles. Side entry mounting for 30 mm OD pipe bracket.

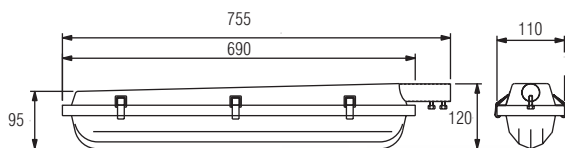
Lamp and Accessories

All electrical accessories, electronic ballast suitable for single/twin 14/24W T5 lamp are wired upto the terminal block.

Degree Protection

IP 53

NOTE: BTSLF 128/228 T5 - Luminaire suitable T5 lamp available in range



BTSLF 414 / 424 DD / MS / FRP BJSLF 336 CFL

Energy conservation T5 lamp

Luminaire Body

Muncell grey finish deep drawn aluminium / CRCA sheets steel / FRP housing with stove enamelled CRCA sheets steel reflector.

Clear acrylic cover with rubber gasket fixed by toggles.

Side entry mounting for 40 to 50 mm OD pipe bracket in BTSLF 414/424 DD/FRP luminaire.

2 Nos. 'U' clamp and bolts are provided for direct mounting on pipe bracket in MS version luminaires.

Lamp and Accessories

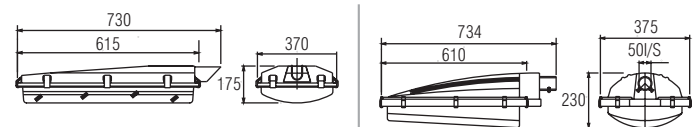
All electrical accessories, electronic ballast suitable for quadruple 14/24W T5 lamp are wired upto the terminal block.

Degree Protection

BTSLF 414/424 DD : IP 54

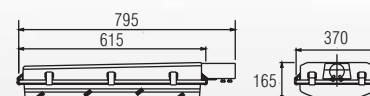
BTSLF 414/424 MS : IP 55

BTSLF 414/424 FRP : IP 65



BTSLF 314/414 MS

BTSLF 314/414 FRP



BTSLF 314/414 DD



BJMIP 02 80 MV / 02 70 SV BJMIP 150 SV

Hydro formed sheet aluminium lamp housing & die-cast aluminium control gear, integral, HID lamp roadway luminaire

Luminaire Body

Hydro formed sheet aluminium lamp housing, black powder coated die-cast aluminium control gear with highly transparent acrylic bowl, anti-moth treated felt gasket fixed to the lamp housing with SS toggles. 2 nos. mounting bolts are provided for 40 to 50 mm OD pipe bracket.

Optics

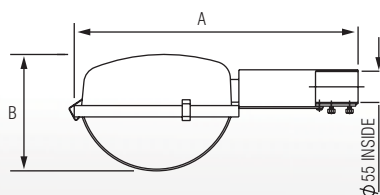
Inner side of the lamp housing is electrochemically brightened and anodised.

Lamp and Accessories

Suitable for 80W HPMV / 70/150W HPSV lamp. BC/E-27/GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 54 (Lamp compartment)
IP 33 (Control gear housing)



Cat. Ref.	A	B	Max. width
BJMIP 02 80 MV	505	200	230 mm
BJMIP 02 70 SV	505	200	230 mm
BJMIP 150 SV	660	280	255 mm



BJMIP 250 SV

Sheet aluminium lamp housing & die-cast aluminium alloy control gear luminaire

Luminaire Body

Hydro formed sheet aluminium lamp housing, silver grey stove enamelled finish die-cast aluminium control gear with highly transparent acrylic bowl, anti-moth treated felt gasket fixed to the housing with SS toggles.

2 nos. U bolts are provided for 50 to 60 mm OD pipe bracket.

Reflector

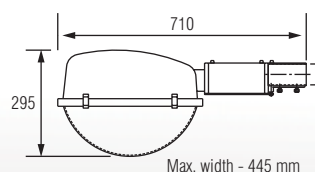
Electrochemically brightened and anodised aluminium side reflectors in hydro formed sheet aluminium housing.

Lamp and Accessories

Suitable for 250W HPSV lamp. GES lamp holder, open construction copper ballast and other accessories wired upto the terminal block.

Degree of Protection

IP 54 (Lamp compartment)
IP 33 (Control gear housing)



Roadway Lighting



BJMSC 80MV/70SV SH BJMSC 02 70 SV

Single piece die-cast aluminium alloy, intergral, HID lamp roadway luminaire

Luminaire Body

Grey hammertone stove enamelled finish die-cast aluminium housing, single piece integral luminaire with highly transparent acrylic bowl, anti-moth treated felt gasket fixed to the housing with SS toggles Side mounting arrangement for 40 to 50 mm OD for pipe entry.

Optics

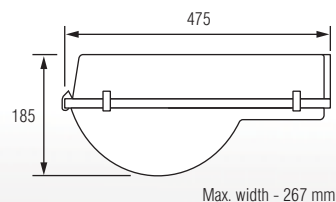
Electrochemically brightened, polished aluminium side reflectors.

Lamp and Accessories

Suitable for 80W HPMV / 70W HPSV lamp. BC / E-27 lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 54



BJMSC 02 150 SV

Integral, cast aluminium luminaires with side reflectors

Luminaire Body

Grey hammertone stove enamelled finish die-cast aluminium housing, single piece integral luminaire with highly transparent acrylic bowl, anti-moth treated felt gasket fixed to the housing with SS toggles. Side mounting arrangement for 50 mm OD for pipe entry.

Optics

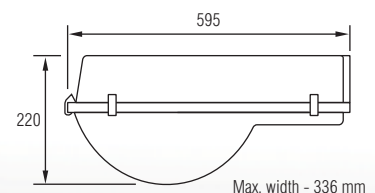
Electrochemically brightened, polished aluminium side reflectors.

Lamp and Accessories

Suitable for 150W HPSV lamp. GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 54





BJMSC 02 250 SV

Integral, cast aluminium luminaires with side reflectors

Luminaire Body

Grey hammertone stove enamelled finish die-cast aluminium housing, single piece integral luminaire with highly transparent acrylic bowl, anti-moth treated felt gasket fixed to the housing with SS toggles. Side mounting arrangement for 50 mm OD for pipe entry.

Optics

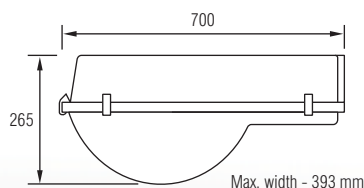
Electrochemically brightened, polished aluminium side reflectors.

Lamp and Accessories

Suitable for 250W HPSV lamp. GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 54



BJMSD 02 70 SV

Hydro formed sheet aluminium lamp housing, control gear, integral, HID lamp roadway luminaire

Luminaire Body

Grey hammertone stove enamelled finish sheet aluminium housing integral luminaire, clear acrylic bowl with anti-moth treated felt gasket fixed to the housing by SS toggles.

2 nos. mounting bolts arrangement is provided to hold 40 to 50 mm OD pipe bracket.

Optics

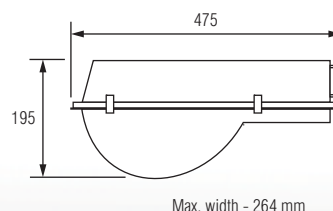
Electrochemically brightened, polished aluminium side reflectors.

Lamp and Accessories

Suitable for 70W HPSV lamp. E-27 lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 54



Roadway Lighting



BJMSD 04 150/250 SV

Hydro formed sheet aluminium lamp housing, control gear, integral, HID lamproadway luminaire

Luminaire Body

Grey hammertone stove enamelled finish sheet aluminium housing integral luminaire, clear acrylic bowl with anti-moth treated felt gasket fixed to the housing by SS toggles.

2 nos. mounting bolts arrangement is provided to hold 40 to 50 mm bracket.

Optics

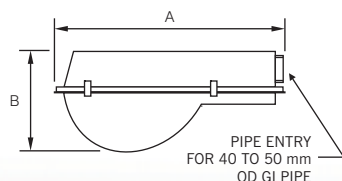
Electrochemically brightened, polished aluminium side reflectors.

Lamp and Accessories

Suitable for 150/250W HPSV lamp. GES lamp holder, open construction copper ballast and other accessories wired upto the terminal block.

Degree of Protection

IP 54



Cat. Ref.	A	B	Max. width
BJMSD 04 150 SV	520	225	300 mm
BJMSD 04 250 SV	555	260	360 mm



BJMSD 1150 SV FG SH BJMSD 1250 SV FG SH

Integral sheet aluminium housing luminaire with full glass cover

Luminaire Body

Grey hammertone stove enamelled finish sheet aluminium housing integral luminaire, clear toughened glass cover fixed to the housing with anti-moth treated felt gasket by SS toggles.

2 nos. 'U' bolts are provided to hold 40 to 50 mm OD pipe bracket for BJMSD 1150 SV FG SH.

Side entry mounting for 40-50mm pipe bracket in BJMSD 1250 SV FG SH.

Optics

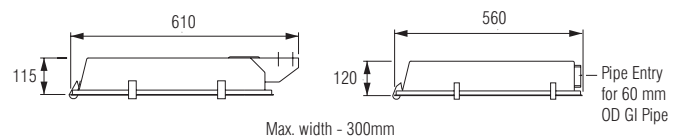
Inner side of the lamp housing is white painted and fixed with side reflector.

Lamp and Accessories

Suitable for 150/250W HPSV lamp. GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 54



BJMSD 1150 SV FG SH

BJMSD 1250 SV FG SH



BJMSDT 03 150 SV IP65 BJMSDT 03 250 SV/MH IP65

Integral sheet aluminium housing luminaire with full glass cover

Luminaire Body

Integral sheet aluminium housing in sand blast finish form outside, clear toughened glass cover fixed to the housing with anti-moth treated rubbers gasket by SS toggles.

2 nos. bolts are provided to hold 40 to 50 mm OD pipe bracket.

Optics

Inner side of the housing is sand blasted and electronically brightened reflector.

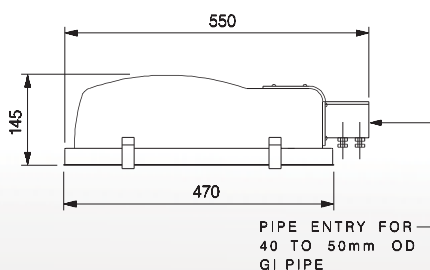
Lamp and Accessories

Suitable for 150/250W HPSV lamp, GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 65

Note - The above said luminaire is also available with 85W Retro-fit CFL lamp BJMSDT 03 85 RF CFL ACR BC, BJMSDT 03 85 RF CFL ACR E27, BJMSDT 03 85 RF CFL ACR E40



BJEST 04 150/250 SV DD

Integral, single piece, deep drawn, sheet aluminium luminaire

Luminaire Body

Grey powder coated enamelled deep drawn sheet aluminium housing, highly transparent acrylic cover fixed to the housing with anti-moth treated felt gasket and ss toggles.

Side entry mounting for 40-50mm OD pipe bracket.

Optics

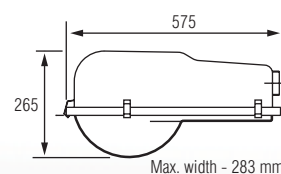
Electrochemically brightened, sand blasted finished pot optics aluminium reflector cum body.

Lamp and Accessories

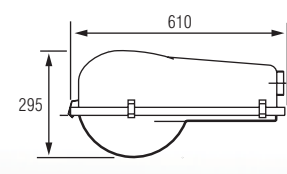
Suitable for 150/250W HPSV lamp. GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 54



BJEST 04 150 SV DD



BJEST 04 250 SV DD

Roadway Lighting



BGEST 70/150/250 SV DD

Integral, single piece, deep drawn, sheet aluminium luminaire with **GLASKOTE®** reflector

Luminaire Body

Grey epoxy powder coated deep drawn sheet aluminium housing, highly transparent acrylic cover fixed to the housing with anti-moth treated felt gasket and ss toggles.

Side entry mounting for 40-50mm OD pipe bracket.

Optics

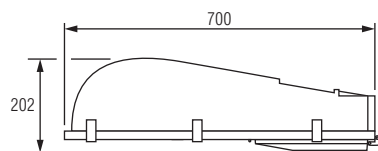
Electrochemically brightened, polished **GLASKOTE®** finish computer aided designed pot potics aluminium reflector for tubular lamp.

Lamp and Accessories

Suitable for 70/150/250W HPSV lamp. E-27/GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 54



Cat. Ref.	A	B	Max. width
BGEST 70 SV DD	468	230	220 mm
BGEST 150 SV DD	610	290	306 mm
BGEST 250 SV DD	700	331	330 mm



BGEST 02 70 SV BGEST 150/250 SV

Integral, single piece, cast aluminium, **GLASKOTE®** reflector luminaire

Luminaire Body

Grey epoxy powder coated single piece cast aluminium housing, highly transparent acrylic cover fixed to the housing with anti-moth treated felt gasket and ss toggles.

Side entry mounting for 40-50mm OD pipe bracket.

Optics

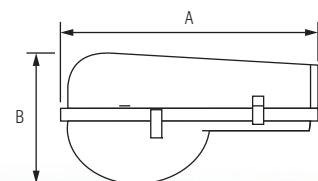
Electrochemically brightened, polished **GLASKOTE®** finish computer aided designed pot potics aluminium reflector for tubular lamp.

Lamp and Accessories

Suitable for 70/150/250W HPSV lamp. E-27/GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 54



Cat. Ref.	A	B	Max. width
BGEST 02 70 SV	468	230	218 mm
BGEST 150 SV	610	290	306 mm
BGEST 250 SV	700	322	330 mm



BGEST 150/250 SV IP65 ACR

Integral, single piece, Cast aluminium, with full frame and acrylic cover, **GLASKOTE®** reflector luminaire

Luminaire Body:

Grey epoxy powder coated single piece cast aluminium housing, cast aluminium frame fixed with highly transparent acrylic hinged to the housing rubber gasket and SS toggle.

Side entry mounting for 40-50mm OD pipe bracket.

Optics

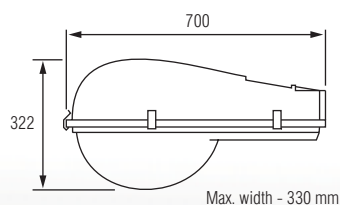
Electrochemically brightened, polished **GLASKOTE®** finish computer aided designed pot optics aluminium reflector for tubular lamp.

Lamp and Accessories

Suitable for 150/250W HPSV lamp. GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 65



BGEST 02 70 SV IP65 FG

Integral, single piece, cast aluminium with full glass cover **GLASKOTE®** reflector luminaire

Luminaire Body

Grey epoxy powder coated single piece cast aluminium housing, clear, toughened full glass cover fixed to the housing with rubber gasket and SS toggles.

Side entry mounting for 40-50 mm OD pipe bracket.

Optics

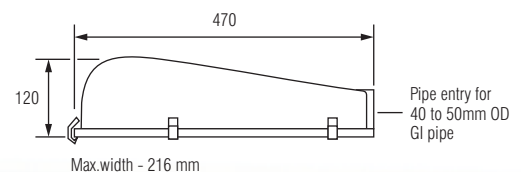
Electrochemically brightened, polished **GLASKOTE®** finish computer aided designed pot optics aluminium reflector for tubular lamp

Lamp and Accessories

Suitable for 70W SV/MH lamp. E-27 lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 65



Roadway Lighting



BGEST 150 SV/MH IP 65 FG BGEST 250 SV/MH IP 65 FG SH

Integral, single piece, cast aluminium with full glass cover **GLASKOTE®** reflector luminaire

Luminaire Body

Grey epoxy powder coated single piece cast aluminium housing, clear, toughened full glass cover fixed to the housing with rubber gasket and SS toggles.

Side entry mounting for 40-50 mm OD pipe bracket.

Optics

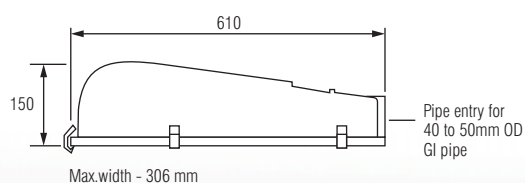
Electrochemically brightened, polished **GLASKOTE®** finish computer aided designed pot optics aluminium reflector for tubular lamp.

Lamp and Accessories

Suitable for 150/250W SV/MH lamp. GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 65



BGEST 150 SV/MH IP66 FFG BGEST 250 SV/MH IP66 FFG

Integral, single piece, cast aluminium, with full frame glass cover, **GLASKOTE®** reflector luminaire

Luminaire Body

Grey epoxy powder coated single piece cast aluminium housing, cast aluminium frame fixed with clear, toughened glass with rubber gasket by SS toggles.

Side entry mounting for 50-60 mm OD pipe bracket.

Optics

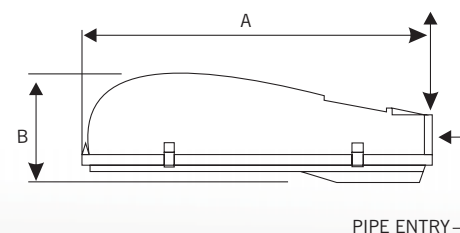
Electrochemically brightened, polished **GLASKOTE®** finish computer aided designed pot optics aluminium reflector for tubular lamp.

Lamp and Accessories

Suitable for 150/250W SV/MH lamp. GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 66 (Lamp compartment only)



Cat. Ref.	A	B
BGEST 150 SV/MH IP66 FFG	610	155
BGEST 250 SV/MH IP66 FFG	700	205



BGEST 400 SV/MH IP 65 SH FFG

Cast aluminium, TOP opening **GLASKOTE**[®] reflector luminaire with cast aluminium frame

Luminaire Body

Epoxy grey powder coated single piece die-cast aluminum housing weatherproof gasket for lamp and C.G. accessories. Cast aluminium frame with heat resistant toughened clear glass and EPDM rubber gasket fixed with SS toggles.

Optics

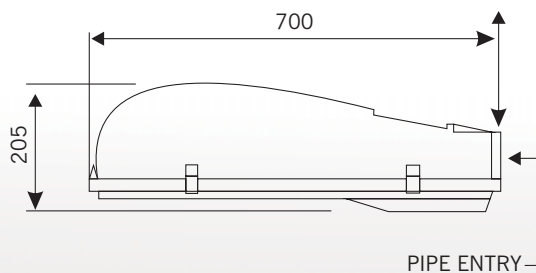
Electrochemically brightened, polished and anodised computer aided designed pot optics aluminium reflectors for individual tubular lamp.

Lamp and Accessories

Suitable for 400 WSV/MH lamp, GES lamp holders prewired upto the terminal block.

Degree of Protection

IP 65



BGEST 400 SV/MH IP 66 SH FFG

Cast aluminium, TOP opening **GLASKOTE**[®] reflector luminaire with cast aluminium frame

Luminaire Body

Epoxy grey powder coated piece die-cast aluminum housing weatherproof gasket for lamp and C.G. accessories. Cast aluminium frame with heat resistant toughened clear glass and EPDM rubber gasket fixed with SS toggles.

Optics

Electrochemically brightened, polished and anodised finish computer aided designed pot optics aluminium reflector and heat resistant toughened clean glass fixed with EPDM gasket on the cast aluminium frame

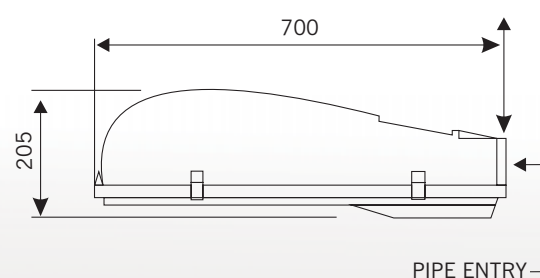
Lamp and Accessories

Suitable for HPSV/MH T 400 prewired upto the terminal block.

Degree of Protection

IP 66

P 54



Roadway Lighting



BGEST 250 SV IP66 LH
BGEST 250/400 MH IP66 LH

"MOMENTUM" integral, cast aluminium, TOP opening **GLASKOTE**® reflector luminaires

Luminaire Body

Epoxy grey powder coated single piece die-cast aluminium housing, heat resistant toughened clear glass fixed to housing with silicon rubber gasket with MS Galvanised clips. Separate die-cast aluminium top cover hinged to the housing and fixed with state-of-art press fit clips. Side entry mounting for 50-60 mm OD pipe bracket.

Reflector

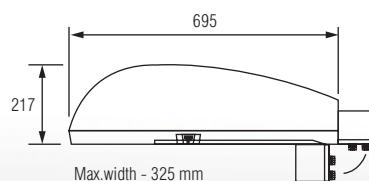
Electrochemically brightened, polished and **GLASKOTE**® finish computer aided pot optic aluminium reflector for tubular lamp.

Lamp and Accessories

Suitable for 250/400W SV/MH lamp. Adjustable GES lamp holder, copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 66 (Lamp compartment only)



"JET"
BGJRL 150 SV/MH FFG

Cast aluminium, TOP opening **GLASKOTE**® reflector luminaires with latch arrangement

Luminaire Body

Epoxy powder coated single die-cast aluminum housing with separate top cover fixed to the housing with silicon gasket, heat resistant clear flat glass fixed to the housing with EPDM rubber gasket by SS clips. Mounting spigot can be adjusted to side / pole mount arrangement.

Optics

Electrochemically brightened, polished and **GLASKOTE**® finish computer aided pot optic aluminium reflector for tubular lamp.

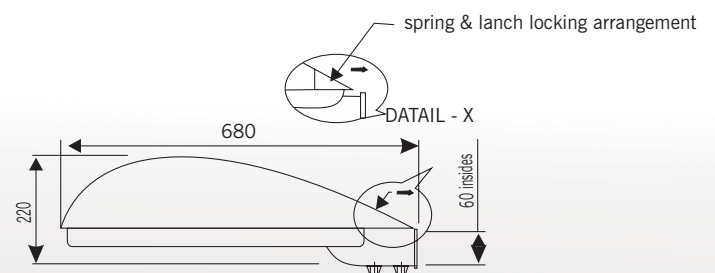
Lamp and Accessories

Suitable for 150/250W SV/MH lamp, GES E - 40) lamp holder prewired upto the terminal block.

Degree of Protection

IP 66 (Lamp compartment only)

IP 54 Control gear compartment





"JET"
BGJRL 250/400 MH FFG "JET"

Single toggle, single piece, cast aluminium, TOP opening **GLASKOTE®** reflector luminaires

Luminaire Body

Ivory powder coated die-cast aluminium frame fixed with heat resistant toughened clear glass and rubber gasket. Aqua blue powder coated die-cast aluminium housing hinged to the frame at front and fixed with spring and latch locking arrangement at back. Mounting spigot can be adjusted to the required tilt angle.

Optics

Computer aided pot optic aluminium reflector with **GLASKOTE®** finish.

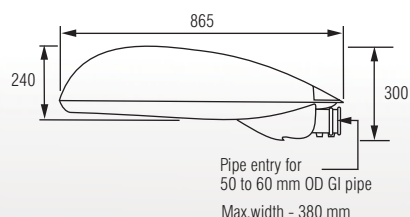
Lamp and Accessories

Suitable for 250/400W SV/MH lamp. GES lamp holder, copper ballast and other accessories wired upto the terminal block.

Degree of Protection

IP 66 (Lamp compartment only)

NOTE: Luminaire is available with curved glass on request.



"WAVE"
BGWRL 70/150 SV/MH FFG

Single toggle, cast aluminium, **GLASKOTE®** reflector luminaires with cast aluminium frame

Luminaire Body

Ivory powder coated die-cast aluminium frame with heat resistant toughened clear glass fixed with rubber gasket. Aqua blue powder coated die-cast aluminium housing hinged to the frame and fixed with SS single toggle. Side entry mounting for 40-50 mm OD pipe bracket.

Optics

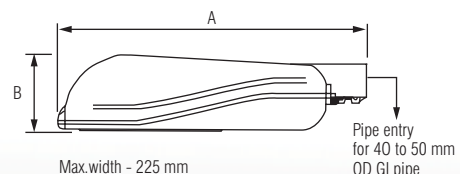
Computer aided pot optic aluminium reflector with **GLASKOTE®** finish.

Lamp and Accessories

Suitable for 70/150 W SV/MH lamp. E-27/E-40 lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 66 (Lamp compartment only)



Cat. Ref.	A	B
BGWRL 70 SV/MH FFG	450	115
BGWRL 70 SV/MH FFG	545	145

Roadway Lighting



"WAVE" BGWRL 250 SV/MH FFG "WAVE"

Single toggle, Cast aluminium, TOP opening
GLASKOTE® reflector luminaires

Luminaire Body

Ivory powder coated die-cast aluminium frame with heat resistant clear glass with rubber gasket. Aqua blue powder coated die-cast aluminium housing hinged to the frame and fixed with SS single toggle.

Mounting spigot can be adjusted to side / pole mounting arrangement. Side entry mounting for 50-60 mm OD pipe bracket.

Optics

Computer aided pot optic aluminium reflector with **GLASKOTE®** finish.

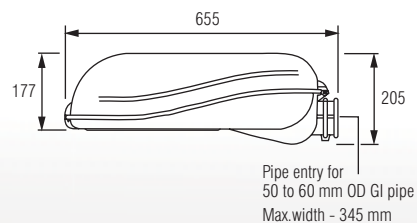
Lamp and Accessories

Suitable for 250W SV/MH lamp. GES lamp holder, open construction copper ballast and other accessories wired upto the terminal block.

Degree of Protection

IP 66 (Lamp compartment only)

NOTE: Luminaire is available with curved glass on request.



"Dolphin" BGDRL 250 SV/MH FFG

TOP opening single piece, cast aluminium
housing with full frame & glass integral luminaires

Luminaire Body

Ivory powder coated die-cast aluminium frame fixed with heat resistant toughened clear glass fixed to the frame with rubber gasket. Aqua blue powder coated die-cast aluminium housing locked to the frame by single toggle.

Mounting spigot can be adjusted to the required tilt angle. Side entry mounting for 50-60 mm OD pipe bracket.

Optics

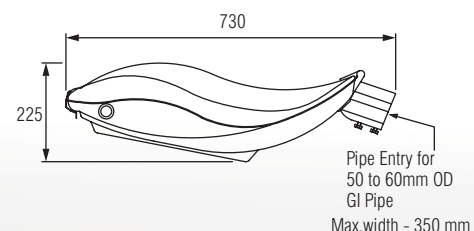
Electrochemically brightened, polished and **GLASKOTE®** finish computer aided pot optic aluminium reflector for tubular lamp.

Lamp and Accessories

Suitable for 250W HPSV/MH lamp. GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 65 (Lamp compartment only)





BJQRGK 250/400 SV/MH FFG

Single piece, pressure die-cast aluminium housing with full frame & glass cover integral luminaires

Luminaire Body

Epoxy powder coated single die-cast aluminum housing with separate top cover fixed to the housing with silicon gasket, heat resistant clear flat glass fixed to the housing with EPDM rubber gasket by SS clips. Mounting spigot can be adjusted to side / pole mount arrangement.

Optics

Electrochemically brightened, polished and **GLASKOTE[®]** finish computer aided pot optic aluminium reflector for tubular lamp.

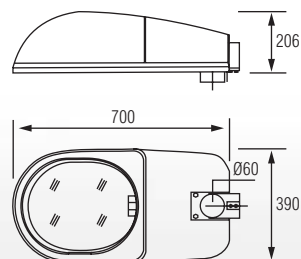
Lamp and Accessories

Suitable for 250/400W SV/MH lamp. GES lamp holder, open construction copper ballast and other accessories are wired upto the terminal block.

Degree of Protection

IP 66 (Lamp compartment only)

*NOTE: Luminaire is available with curved glass on request.
CPRI Certificate No.: 256E80DIP0750146 dated 24.09.2007*



BJSHM 02 3x250/400 SV

Semi highmast integral luminaires

Luminaire Body

Spun aluminium canopy, stove enamelled blue / black outside. Covered at the bottom with specially shaped clear acrylic cover. Bottom entry for 105 mm OD pipe bracket.

Optics

Electrochemically brightened, polished and anodised computer aided designed pot optics aluminium reflectors for individual tubular lamp.

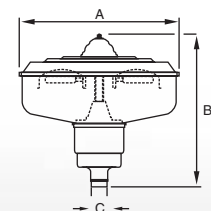
Lamp and Accessories

Luminaire is suitable for triple 150W HPSV / 250/400W HPSV/MH. GES lamp holders, copper ballasts and other accessories are wired upto the terminal block.

Degree of Protection

IP 54

*NOTE : Recommended mounting height 250 SV / MH : 9-11 metres;
400 SV / MH : 12-14 metres*



Cat. Ref.	A	B	C
BJSHM 02 3x250 SV	1162	1182	115
BJSHM 02 3x400 SV	1162	1182	115



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BAJAJ *Inspiring Trust*

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