Lighting

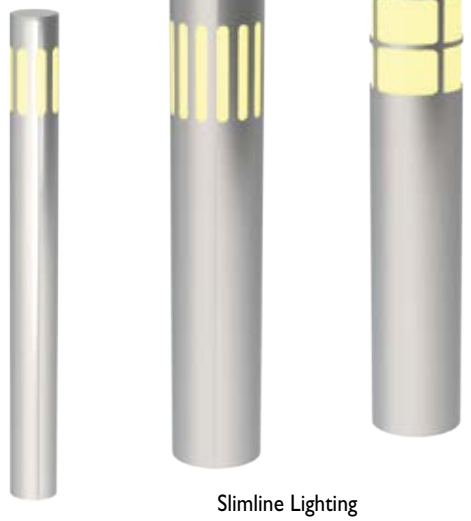
Leda's *Lighting Bollards* range was developed to complement models in the existing range of *Designer Bollards* to provide specifiers a continuity of design that can be adopted throughout a project.

Lighting Bollards

Styles & Finishes

- Slimline Lighting
  Stainless Steel
- Ambassador Lighting
  Aluminium
- Urban Lighting
  Galvanised or
  Stainless Steel
  with Timber Infills
- Screen Full Height Lighting
  Stainless Steel
- Lasercut Full Height Lighting
  Aluminium or
  Stainless Steel

Stainless steel is ideal for corrosive environments like coastal areas and is recommended if security or impact resistance is an issue. Aluminium is an ideal product for powder coating and can be coloured to your requirements.



Slimline Lighting

Screen Lighting

Urban Lighting

Solar Lighting

Features

Size (Diameter)

The standard Slimline and Ambassador range is available in 150NB (168.3mm) outside diameter. Slimline stainless steel is also available in 80NB (88.9mm) is also available in slotted lighting. Slimline security lighting bollards are available in 150NB stainless steel.

Louvres (Optional)

Louvres are primarily used to reflect light downwards to cut down glare. They are ideal for pedestrian walkways and driveways.

Lenses

Generally, either slotted or square. Vertical slotted cutouts are best suited where vandalism is a potential problem. Square cutouts offer maximum illumination.

Lighting Arc (Slimline & Ambassador)

Either 180° (half circle) or 360° (full circle). 180° lighting is more suitable for lighting walkways while 360° lighting is best in a plaza or park.

Power requirements & installation

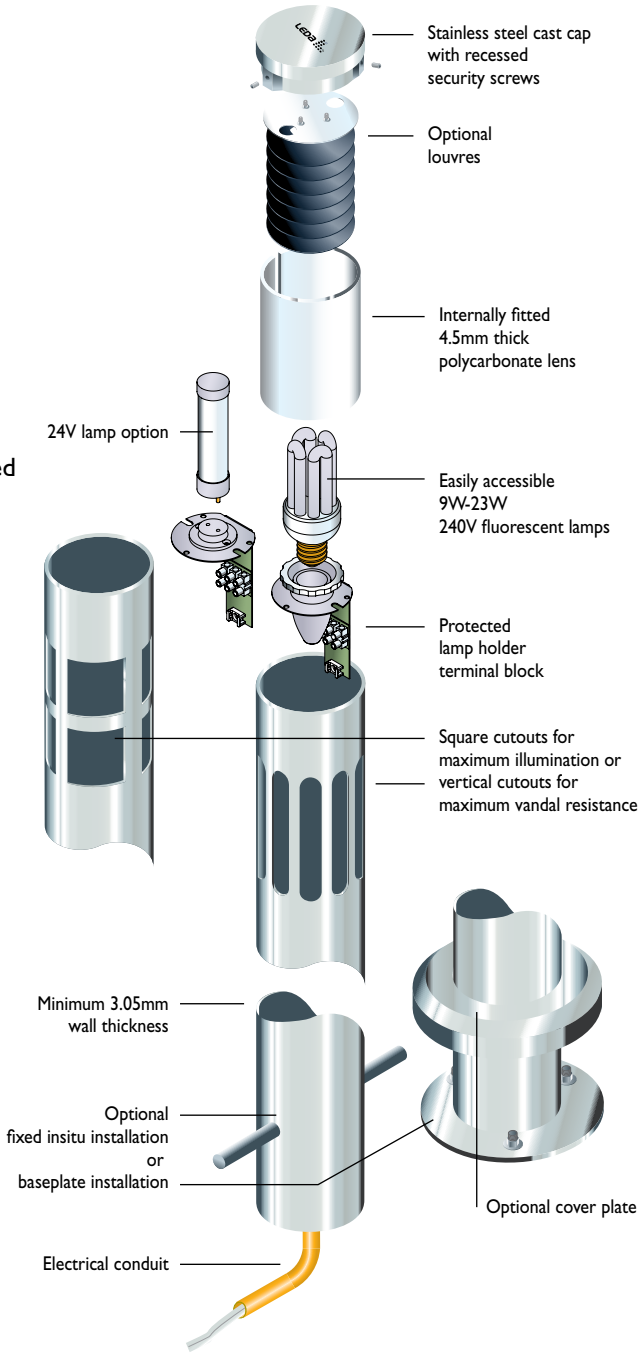
Mains 240V, earthed. All electrical components are manufactured to Australian standards. All wiring and electrical connection work is to be carried out by a licensed electrician.

24V lamp options are also available, and provide lower power consumption, longer service life and improved safety. Investigation of wiring requirements should be made with a licensed electrician.

> *Refer to the table on p56 for a guide to lamp selection.*

Typical Features

Slimline 150NB illustrated

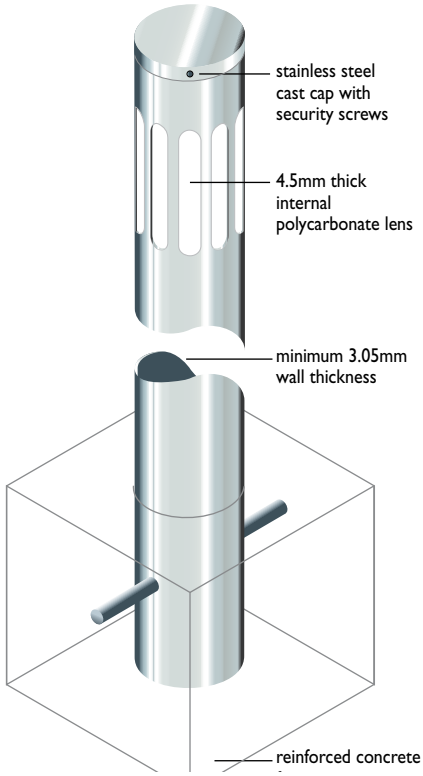


Vandal Resistant Models

The Slimline stainless steel Lighting range can also be manufactured to provide a security option. Often kicked or hit with hard objects by vandals, the tops of the bollards tend to fall off or sustain permanent damage to the lens, louvres or paint finish.

Architects and many government utilities highlighted this massive vandalism problem with existing lighting bollards and requested Leda, with its proven background in the design and manufacture of security bollards, to develop a vandal resistant lighting bollard.

The stainless steel 150NB model using slotted lens is even tough enough to be vehicle impact rated against ram-raids.



Installation

Most Leda lighting bollards can be either cast in (fixed insitu) or bolted down (fixed baseplate). Conduits containing mains power cables should be laid when forming up the concrete slab or footing, with provision for cables to be left protruding an additional one metre to allow efficient length for later connection and future maintenance.

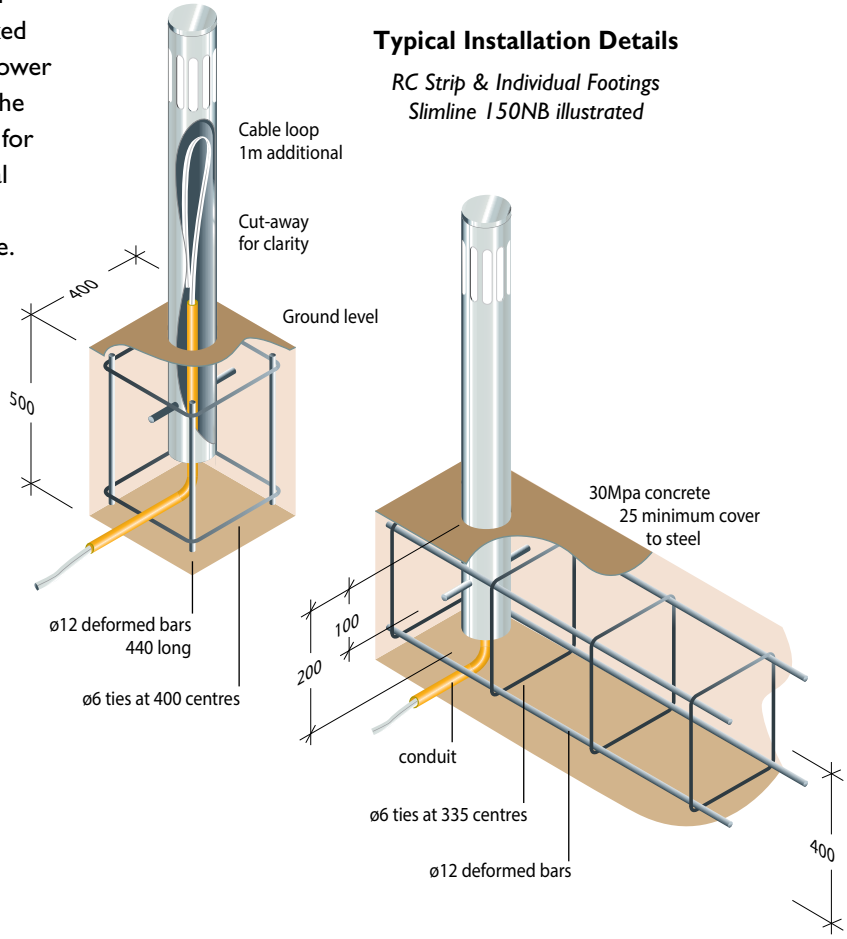
Please contact your Leda sales office for further information on installation or technical advice.

General Maintenance

Access is only available using security tools provided by Leda. Lamp replacement does not require a licensed electrician as no electrical components are exposed during this operation.

Typical Installation Details

RC Strip & Individual Footings
Slimline 150NB illustrated



While material selection and fixing methods may be major factors in selecting a lighting bollard design, it is also important to consider lighting options for particular applications.

Optional louvres and a choice of lamp sizes coupled with bollard spacing allows for a range of light intensities to suit feature lighting, safety or security applications.

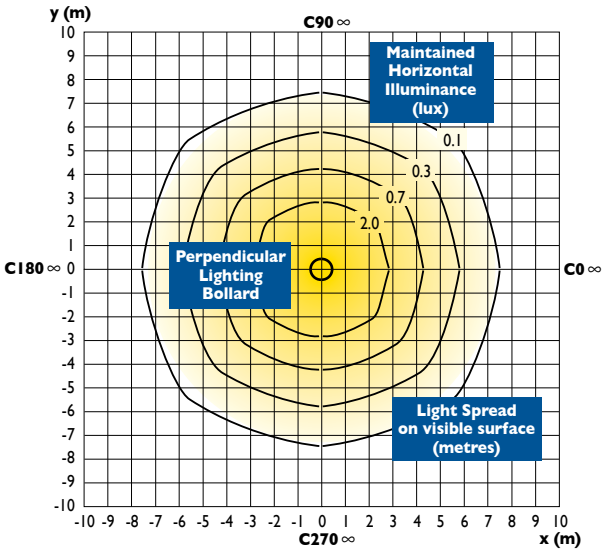
The table opposite is intended as a guide in selecting lighting bollard options to suit your requirements.

A GUIDE TO LAMP SELECTION

Watts	Lamp specification	Ballast type	Constant temp rating	Approx lamp life	Bollard sizes	Application
9	Compact lamps ES TC S	Self ballasted	90°C	5,000-10,000 hrs	80 & 150NB	Anywhere
13	Compact lamps ES TC D	Self ballasted	90°C	5,000-10,000hrs	80 & 150NB	Anywhere
23	Compact lamps ES TC D	Self ballasted	90°C	5,000-10,000hrs	80 & 150NB	Anywhere

Isolux diagrams

Isolux diagrams indicate the distribution of illuminance on a visible surface. Lines indicated (Maintained Horizontal Illuminance) are those tabled in *A guide to lighting bollard spacing* on the following page. The lighting bollard is located perpendicular to the plane. All distances are shown in metres.



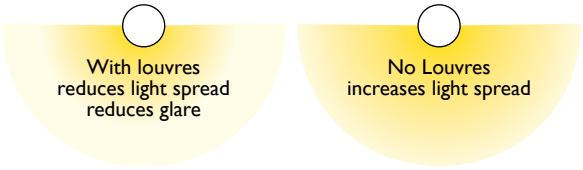
Definitions

Lumen (lm) — light emitted in a unit solid angle from a point source.

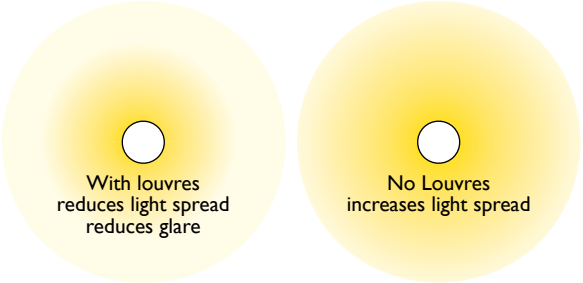
Lux (lx) — a unit of illumination defined as one lumen (lm) per square metre.

Lighting Arc

180° semi-circular
suitable for walkways and cycleways



360° circular
suitable for plazas and parks

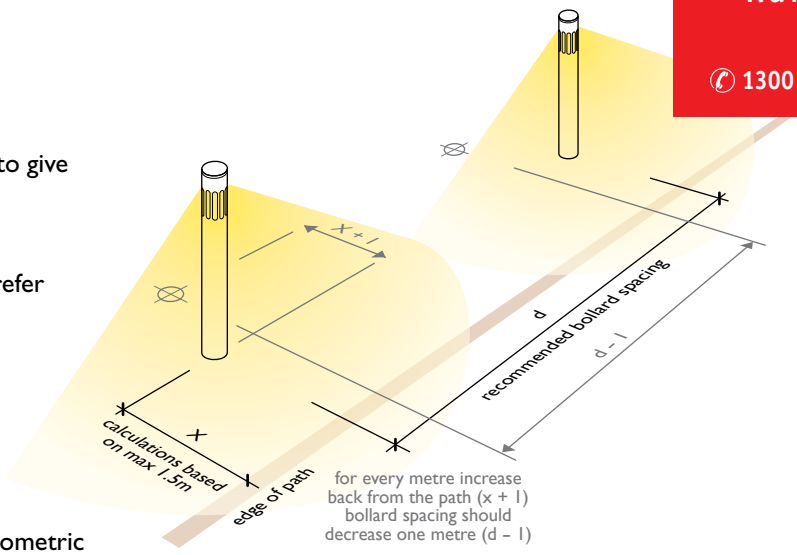


The following bollard spacing guide is designed to give specifiers a general insight into recommended minimum bollard spacings.

For further information, it is recommended to refer to the standard on which this guide is based:

AS/NZS1158.3.1:1999
Road lighting - Pedestrian area (category P) lighting - Performance and installation design requirements.

Lighting designers will be able to apply the photometric data available for Leda's lighting bollards.



A GUIDE TO LIGHTING BOLLARD SPACING

LAMP	9W	13W	23W	32W
LUMENS	600	900	1800	2400

Selection Criterea				Spacings in metres							
Pedestrian cycle activity	Risk of Crime	Need to enhance prestige	Maintained Horizontal Illuminance	With Louvres	No Louvres	With Louvres	No Louvres	With Louvres	No Louvres	With Louvres	No Louvres
Slotted 360 degree cut outs											
N/A	High	N/A	2.00	2.1	2.1	2.5	2.5	3.0	3.2	3.4	3.7
High	Medium	High	0.70	3.1	3.4	3.5	3.9	4.1	5.0	4.5	5.6
Medium	Low	Medium	0.30	3.8	4.8	4.39	5.4	5.3	7	5.7	8.2
Low	Low	N/A	0.14	4.8	6.2	5.4	7.2	6.4	9.1	6.9	10.3
Slotted 180 degree cuvt outs											
N/A	High	N/A	2.00	4.2	4.2	5.0	5.0	6.0	6.4	6.9	7.5
High	Medium	High	0.70	6.2	6.8	7.0	7.9	8.3	10.1	9.1	11.3
Medium	Low	Medium	0.30	7.8	9.6	8.7	10.9	10.6	14.0	11.4	16.4
Low	Low	N/A	0.14	9.6	12.4	10.8	14.5	12.8	18.2	13.8	20.6
Square 360 degree cut outs											
N/A	High	N/A	2.00	2.5	3.0	2.9	3.4	3.5	4.3	3.7	5.1
High	Medium	High	0.70	3.4	4.5	3.8	4.9	4.6	6.0	5.0	6.6
Medium	Low	Medium	0.30	4.3	5.6	4.7	6.3	5.7	7.5	6.1	8.4
Low	Low	N/A	0.14	5.2	6.9	5.7	7.6	6.9	9.3	7.2	10.5
Square 180 degree cut outs											
N/A	High	N/A	2.00	5.0	6.0	5.8	6.8	7.0	8.6	7.5	10.2
High	Medium	High	0.70	6.8	9.0	7.6	9.9	9.2	12.0	10.0	13.2
Medium	Low	Medium	0.30	8.7	11.2	9.5	12.6	11.4	15.0	12.3	16.8
Low	Low	N/A	0.14	10.5	13.8	11.5	15.3	13.8	18.6	14.5	21.0

Selection Criteria
Select the highest level of all three criteria relevant to the site where the bollards will be installed. Example. If there is a very low risk of crime but high pedestrian and cycle activity then it is recommended that the 'Maintained Horizontal Illuminance (Eh maint) lx,' value be 0.7 lx. You will then be able to determine globe wattage, if louvres are required and the distances between each bollard.
The selection criteria and minimum lux levels are based on AS/NZS1158.3.1:1999 Tables 1.2 and 2.1. Information is reproduced with the permission of Standards Australia.

Spacing Distances
All measurements (d) are in metres and represent the maximum distances for spacing bollards in a line.

If slotted 180° bollards with no louvre and a 26W globe were to be installed in a high crime environment, the bollards should be positioned 6.4m apart to ensure a minimum of 2.0 lx level of light is maintained. Lux (lx) is the volume of light (lumens) from the light source divided by the area.

Distance from path
If a line of bollards in a medium risk of crime environment with low pedestrian and cycle activity were to be positioned 2.5m back from a path, a Square cut out 32W bollard with louvres would go from 10m to 9m spacings. Distances listed can also be used as recommended spacings across from each other. Example. A 5m wide path in a high crime risk area that requires slotted cut out bollards with louvres positioned 1.5m back from the pathway (dimension x) will be beyond the recommended maximum spacing. The maximum spacing possible is 7.4m (42W) and the bollards are at 8 metres (5m + 1.5m + 1.5m = 8m). The options are to remove the louvres or bring the line of bollards closer to the pathway (x). Example. The bollard spacings provided are based on the line being 0m - 1.5m back from the path (x). For every metre a bollard is moved beyond the 1.5m point, the spacings (d) should be bought closer together by the same amount (1 for 1). The recommended distances (based on AS/NZS1158.3.1:1999) are calculated from photometric testing conducted by independent laboratories for Leda Security Products Pty Ltd. Further photometric data is available on request.

Architectural Range > Lighting

Slimline 150

Slotted

Material / Finish

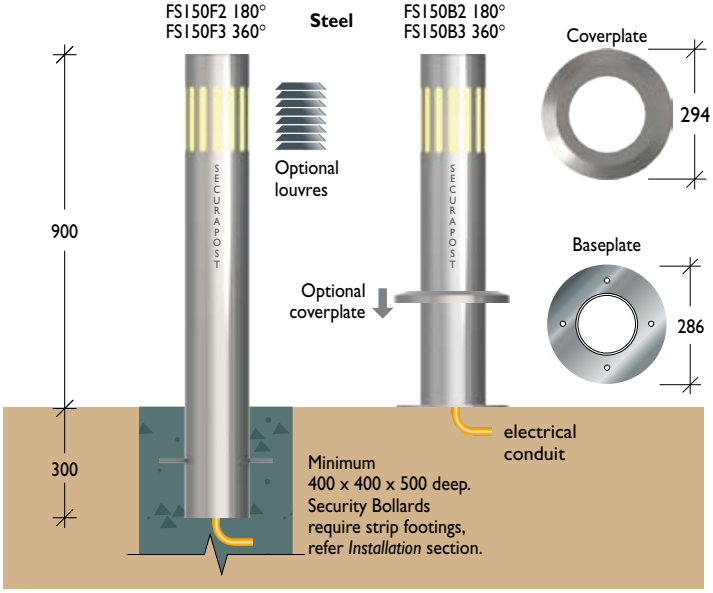
Aluminium 150NB (165.1mm) x 3.00mm aluminium pipe
Electrostatically powder coated in a range of colours

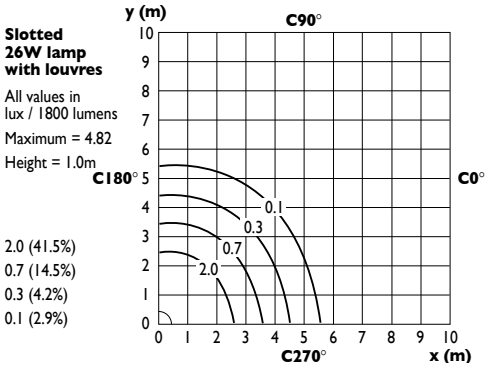
Stainless Steel 150NB (168.3mm) x 3.4 / 7.11mm Grade 304 SS pipe
Linished or electro-polished

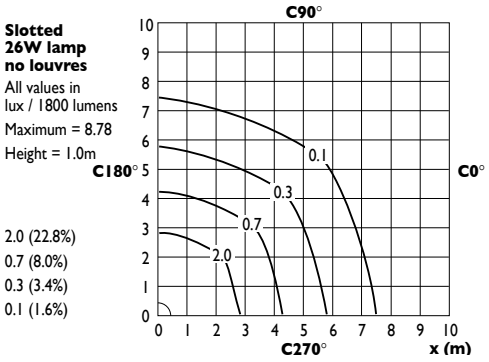
Steel 150NB (165.1mm) x 5.40mm galvanised mild steel pipe
Electrostatically powder coated in a range of colours

Fixed Insitu Security Lighting
SSL150F B 7.11 (2/3) 1
SSL150F C 10.97 (2/3) 2

FAL150F2 180° FAL150F3 360°	Aluminium	FAL150B2 180° FAL150B3 360°
SSL150F2 180° SSL150F3 360°	S/Steel	SSL150B2 180° SSL150B3 360°
FS150F2 180° FS150F3 360°	Steel	FS150B2 180° FS150B3 360°



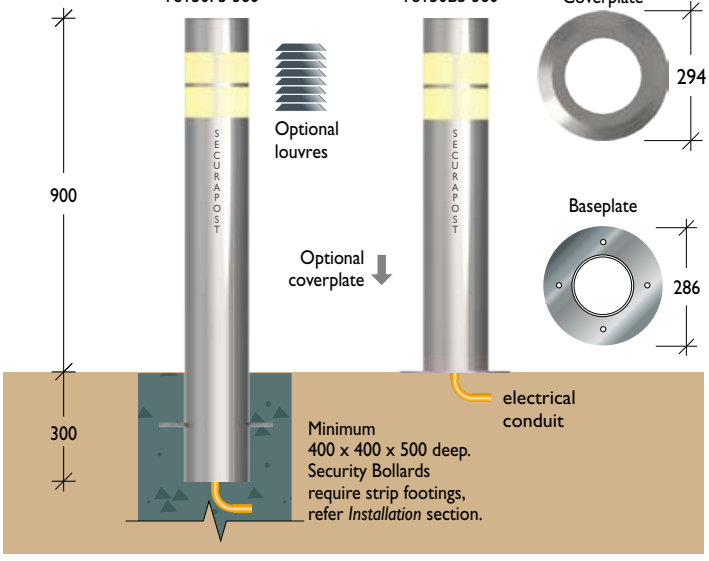


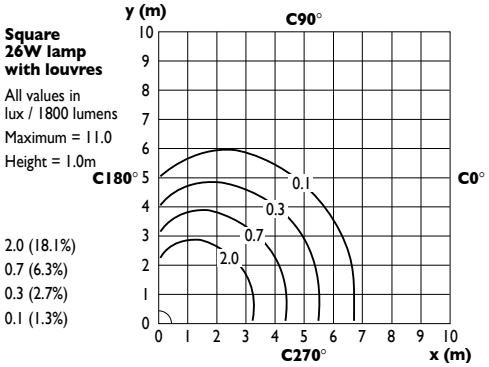


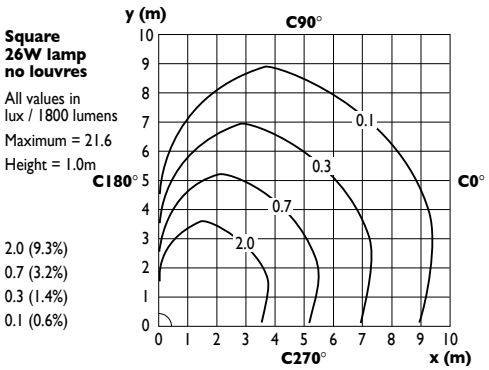
Square

Fixed Insitu Security Lighting
SSL150F B 7.11 (4/5) 1
SSL150F C 10.97 (4/5) 2

FAL150F4 180° FAL150F5 360°	Aluminium	FAL150B4 180° FAL150B5 360°
SSL150F4 180° SSL150F5 360°	S/Steel	SSL150B4 180° SSL150B5 360°
FS150F4 180° FS150F5 360°	Steel	FS150B4 180° FS150B5 360°







Slimline 80 Slotted

Material / Finish

Aluminium 80NB (88.9mm) x 3.25mm aluminium pipe
Electrostatically powder coated in a range of colours

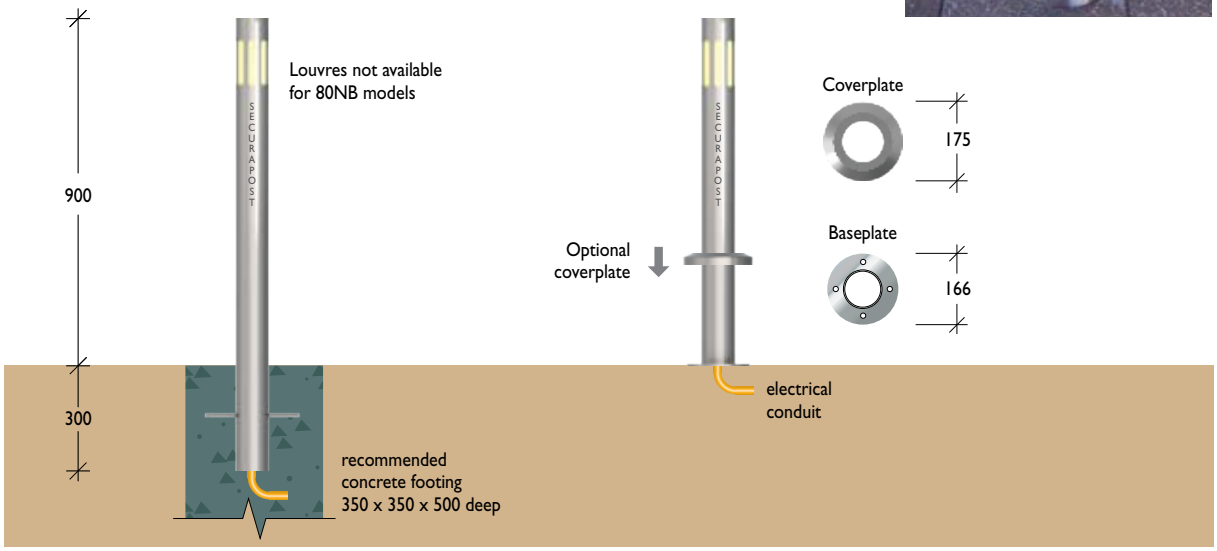
Stainless Steel 80NB (88.9mm) x 3.05mm Grade 304 SS pipe
Linished or electro-polished

Insitu Lighting

Aluminium	Stainless Steel
FAL80F2 180°	SSL80F2 180°
FAL80F3 360°	SSL80F3 360°

Baseplate Lighting

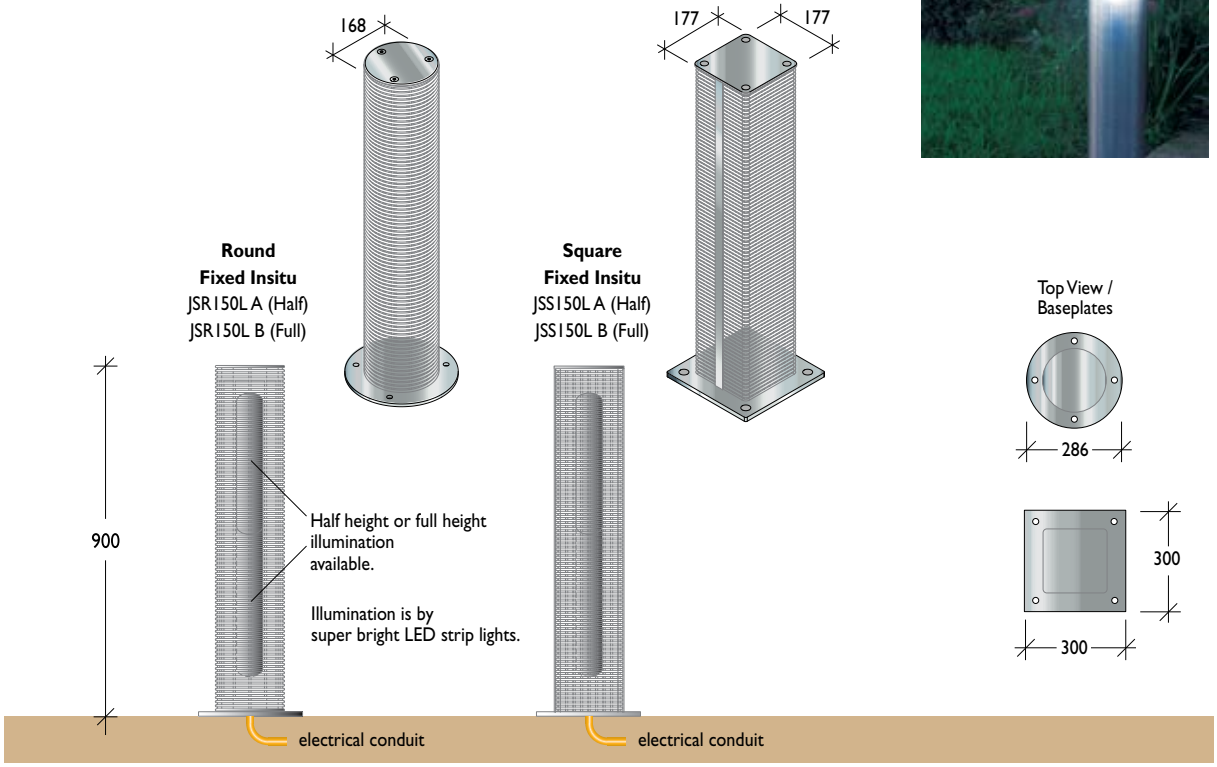
Aluminium	Stainless Steel
FAL80B2 180°	SSL80B2 180°
FAL80B3 360°	SSL80B3 360°



Screen

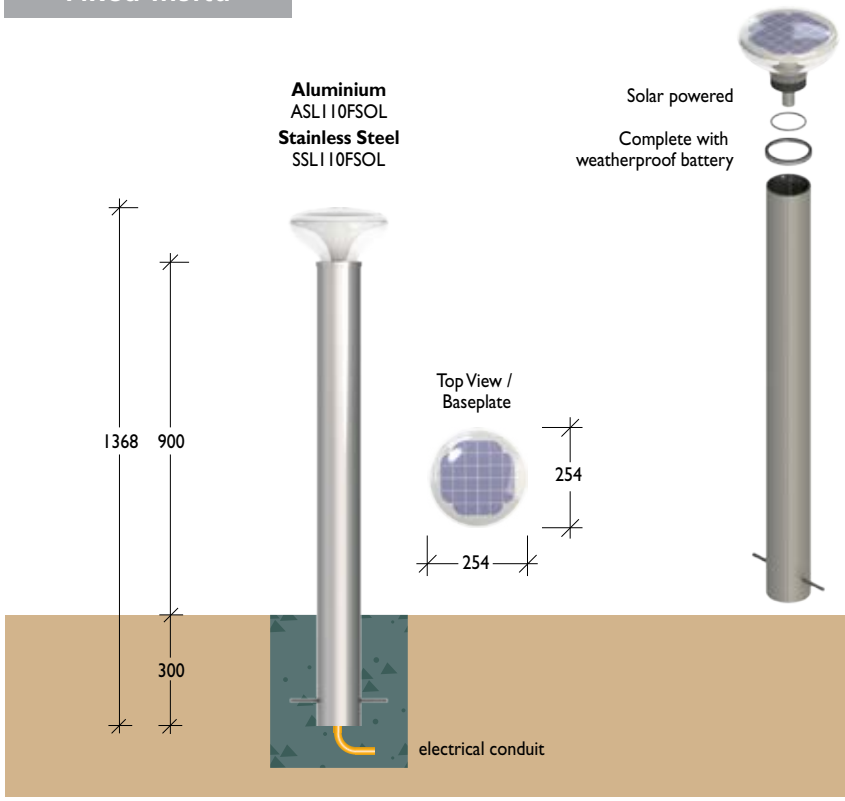
Material Grade 304 stainless steel mesh

Finish Linished (Level 4)



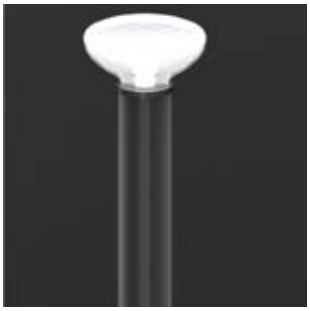
Solar
Fixed Insitu

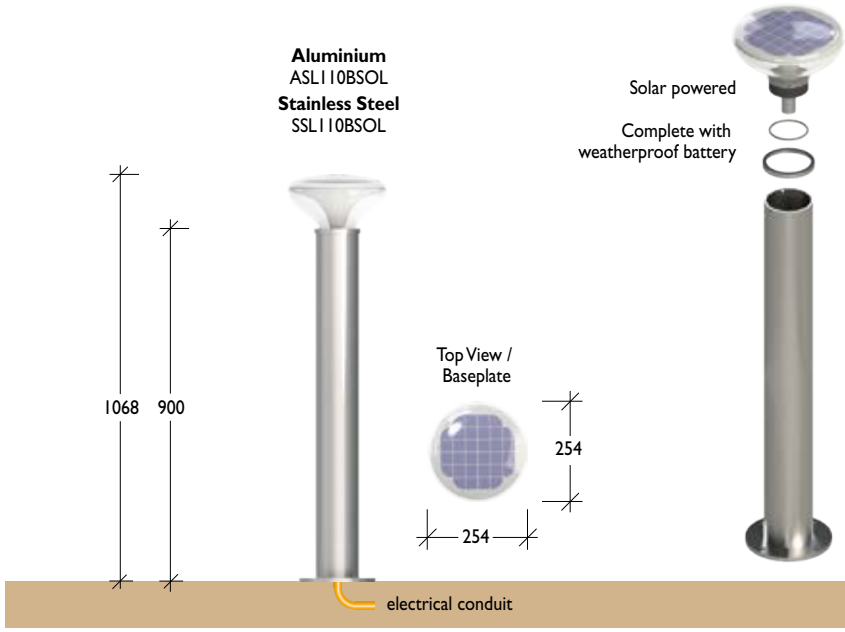
Material 100NB (114.3) x 3.05mm grade 304 stainless steel pipe
100NB (114.3) x 3.00mm aluminium pipe



Baseplate

Material 100NB (114.3) x 3.05mm grade 304 stainless steel pipe
100NB (114.3) x 3.00mm aluminium pipe





Note: These solar powered bollards are designed to be installed in direct undisrupted sunlight from dawn until dusk, try to avoid shading from trees or other structures when positioning the bollards.

Urban

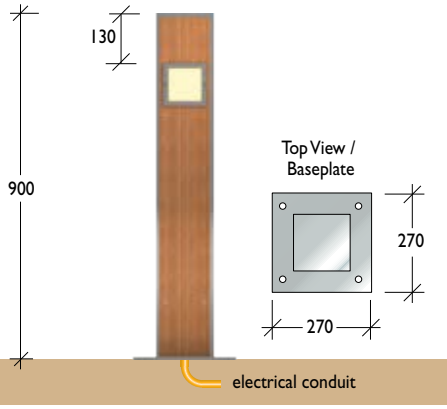
Square Light

Material Mild steel – 150 UC mild steel
Stainless steel – 10mm plate
Hardwood – Range of options available

Finish Hot dipped galvanised / linished (Level 4)

Please contact nearest LEDA Sales office to discuss material & type of Hardwood available.

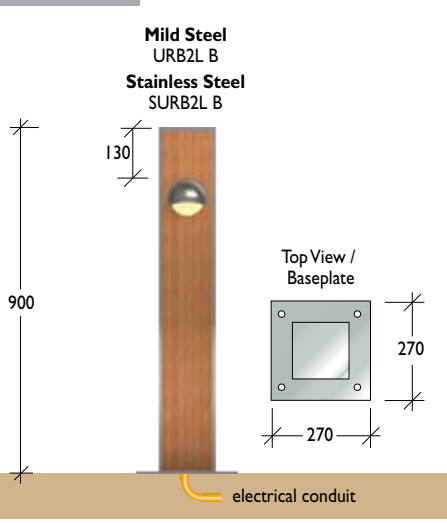
Mild Steel
URB2L A
Stainless Steel
SURB2L A

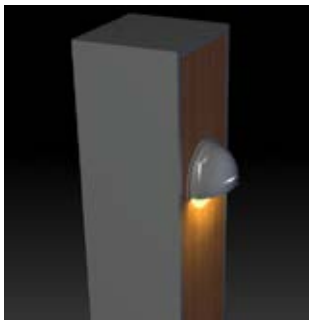


Illumination is by a super bright LED array in a single direction. A second lamp can be added to illuminate in the opposite direction – add 'D' to end of the bollard code.
Mild Steel URB2L A D
Stainless Steel SURB2L A D

Round Light

Mild Steel
URB2L B
Stainless Steel
SURB2L B

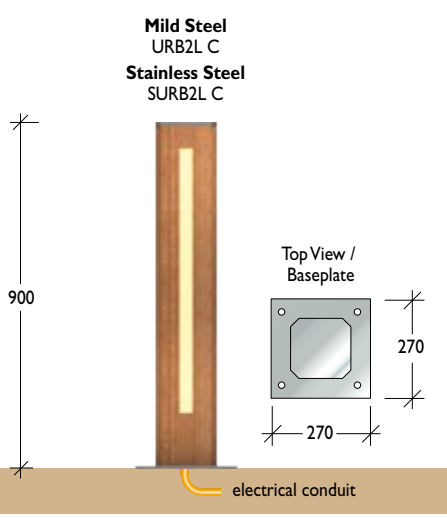




Illumination is by a super bright wall light in a single direction. A second lamp can be added to illuminate in the opposite direction – add 'D' to end of the bollard code.
Mild Steel URB2L B D
Stainless Steel SURB2L B D

Slot Light

Mild Steel
URB2L C
Stainless Steel
SURB2L C



Lighting is provided on four faces by a super bright LED strip light to provide 360° illumination.