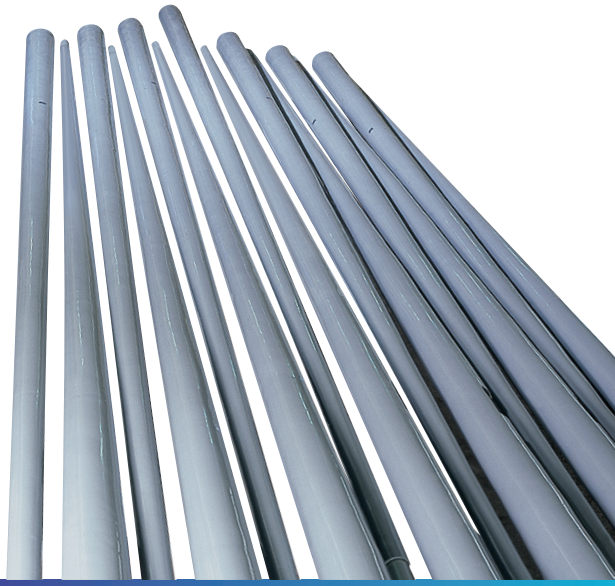
BEKA Schréder
Experts in lightability™

BEKAPOLE

Glass fibre reinforced polyester (GRP) pole range



LOCALLY
manufactured

BEKAPOLE Success Story

40+ YEARS of Lighting Excellence

In the late Seventies, BEKA Schréder was approached by the authorities in Namibia to find a solution to the corrosion which was damaging the then conventional materials used for lighting poles, such as steel, wood and concrete.

Namibia is not only one of the world's most atmospherically corrosive environments, but it also has large tracts of land with highly corrosive soils.

The resulting research into non-corrosive materials has culminated in the choice of the glassfibre reinforced polyester (GRP) pole. This material exceeded the expectations of the authorities, as it not only offered the answer to the excessive corrosion, but also offered convincing strength properties combined with an appealing finish and design.

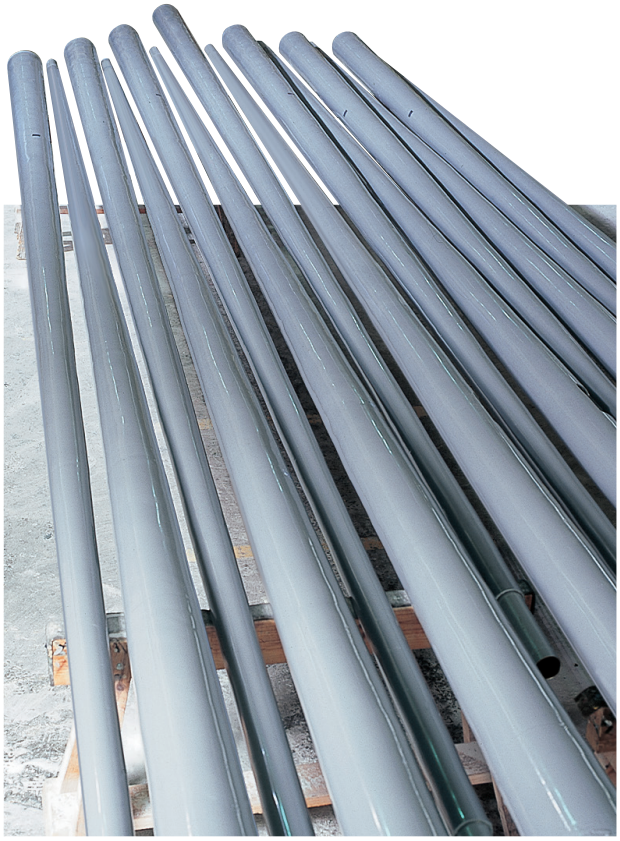
BEKA Schréder subsequently bought the expertise and machinery for the manufacture of filament wound GRP poles from a leading German manufacturer and, since commencement of production in July 1978, has manufactured several hundreds of thousands of GRP poles for the African subcontinent and beyond.

BEKA Schréder has perfected the process by adopting the latest technology.

In 1989 BEKA Schréder became the first manufacturer to be awarded the ISO 9002 accreditation for its quality management of its pole and luminaire manufacturing plant. BEKA Schréder's production is constantly subjected to the stringent quality demands which this accreditation implies.

Through its commitment to consistent quality, BEKA Schréder has become one of the world's leading manufacturers of GRP poles. BEKA Schréder's GRP poles are used for highways, main roads, residential streets, sportsfields, decorative lighting, area lighting, post-top lighting, perimeter security, parks and gardens, as well as for flag poles.

The BEKAPOLE, as it became known, is used not only for its resistance to corrosion, but is preferred by architects, developers and local authorities for its aesthetic appearance, strength, ease of installation and inherent safety for road users.

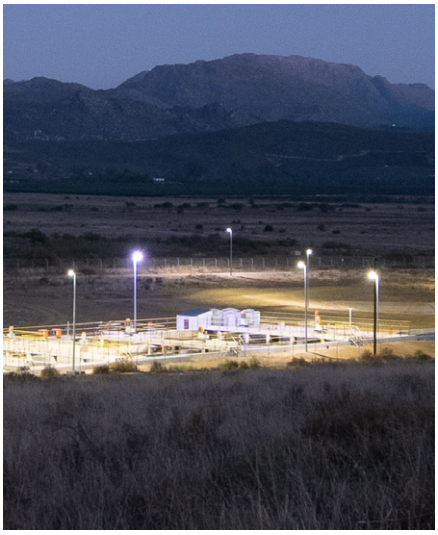


Applications

The BEKAPOLE has virtually unlimited applications. It can be manufactured to any requirement relating to the number and configuration of luminaires to be mounted, inclusive of any special colour.

Main roads

Urban roads

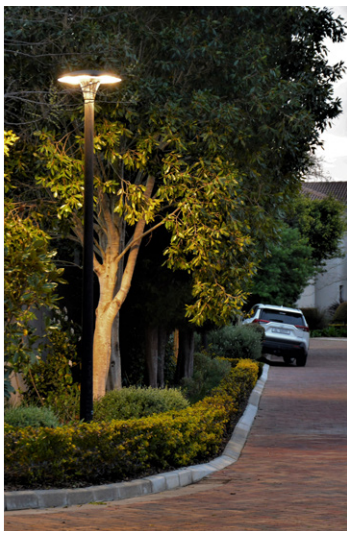


Perimeter security

Parking area lighting

Sports facilities

Flag poles



Various decorative lighting applications

Key Advantages

Light Weight

The low mass saves handling, transport and erection costs during installation:

- Low handling costs:
  No extra equipment needed to load or offload the poles
- Low transport costs:
  Save on transport costs due to the poles' low weight and the higher stacking height on road freight
- Low installation costs:
  No extra equipment is needed to erect the poles

Vandal Resistant

High impact strength of polyester gel coat and glass filament wound structure and material offering no scrap value, therefore very low risk of theft.

Non-Corrosive

No above- or below-ground corrosion in salt climates or acid soil.

Corrosion of steel pole

Maintenance-Free

No corrosion or decay ensures that the surface coat of the pole will not require maintenance.

Longevity

Over time, BEKA Schréder fibreglass poles will outlast wood, concrete, steel and aluminium under similar climatic conditions.

Versatility

A wide range of spigots, floodlight mountings, baseplates and decorative arrangements ensure a product for almost every application.

Non-Conductive

Perfect electrical insulation prevents accidental electrocution by faulty wiring.

Low Inertia

A reduction in personal injury and damage to vehicles in road accidents.

High Bending Strength

Engineered to withstand a wind pressure of 500 Pa inclusive of 0.20m² luminaire area with less than a 5% deflection of the mounting height. This relates to a wind speed of 103.9km/h. Any higher wind speeds must be calculated separately.

Sustainable

The manufacturing process for glass fibre poles is much kinder to the environment than metal or concrete products.

Myths

“Glass fibre poles whip around in the wind...”

Due to the unique process of glass filament winding, standard BEKA Schréder GRP poles are designed to withstand a wind pressure of 500 Pa on a projected luminaire area of 0.20m². Some of our most satisfied customers are situated in coastal environments subjected to high winds. All BEKA Schréder GRP poles are designed and manufactured with a safety factor of 2,5.

“Glass fibre poles are deteriorated by sunlight...”

The ultraviolet rays in sunlight will deteriorate only unprotected glass fibre. This has been eliminated by pigmenting the resin and the application of a polyester gel coat with UV inhibitors to the surface of the pole structure.

“Glass fibre poles cannot support big headloads...”

Each BEKA Schréder glass fibre pole is individually engineered by factoring in the weight, projected area and windloading requirements of the installation site. The most demanding installation is easily achieved by a pre-engineered BEKA Schréder glass fibre pole.

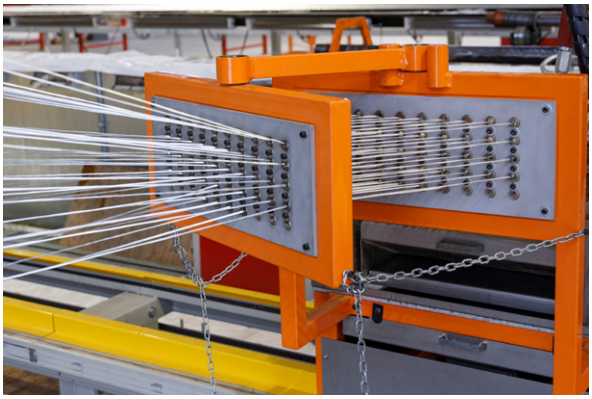
“Glass fibre poles are made out of plastic...”

BEKA Schréder glass fibre poles are manufactured by the filament winding process where continuous glass rovings are fed through a polyester resin bath and wound at an even tension onto a rotating mandrel, resulting in a mass glass to resin ratio of 70:30, making full use of the tensile strength of the glass filament which is more than that of steel.

Heavy duty access door cover

Hinged glass fibre pole

Winched glass fibre pole



Glass filament windings

Manufacturing

A mechanised manufacturing process utilises a fully automated track mounted roving machine as both the glass filament windings and resin are applied. This sophisticated high quality manufacturing method optimises the usage of materials, thus considering costs, resources and our environment.

The filament winding machine is operated at calculated speeds whilst moving alongside the rotating mandrels to achieve maximum winding angles.

BEKA Schréder GRP poles are manufactured through the filament winding process whereby continuous glass rovings are fed through a polyester resin bath and wound at an even tension onto a rotating mandrel, resulting in a mass to resin ratio of 70:30 and making full use of the tensile strength of the glass filament which is more than that of steel.

After the winding process has been completed, the glass filament structure is cured and then removed from the mandrel for surface preparation.

A base coat of polyester resin that complies with the requirements of SANS 1749 is applied, thereafter the cured structure is further machined to receive a final gel coat that is applied to a uniform thickness of between 250 and 500 microns.

In the mechanical assembly process, the pole is machined to provide holes for baseplate hookbolts, cable entries, access door openings, as well as any other details required. Spigot arrangements and surface baseplates, where required, are moulded into the pole and secured in position with locking screws.

Throughout the manufacturing process, the pole is subjected to stringent quality checks and tests.

Automated track mounted winding machine

Accurate, consistent computer-controlled winding process

Winding of glass filament

Drilling machine

Design & Construction Details

Material

The pole is constructed by the filament winding process to achieve optimum results for strength and rigidity. The filament winding process is continuously applied with uniform tension onto a rotating mandrel, resulting in a minimum mass glass to resin ratio of 70:30. The surface is seamless, smooth and tapered.

Finishing coat

The material of the finishing coat is a gel coat that complies to SANS 1749 and is applied to a uniform thickness of between 250 and 500 microns, providing a weatherproof, UV-resistant, flame-resistant and impact-strong surface in the colour specified.

Mechanical properties

A standard pole supporting a luminaire with a wind surface of 0.20m^2 may not have a pole top deflection of more than 5% of its height above ground when subjected to a basic wind pressure of 500 Pa. A safety factor of 2.5 times the total maximum windload is applicable.

Material system

The pole is manufactured in accordance with SANS 1749 under the ISO 9002 quality system.

Access opening

If an access opening is required, the cut-out is covered by an access door cover manufactured from glass filled nylon impregnated in the same colour as that of the surface coat. It is secured to the pole by two stainless steel Allen head captive screws into M4 brass inserts embedded in the pole.

Cable entry

A cable entry with a minimum diameter of 34mm is provided at a minimum depth of 400mm below the ground surface.

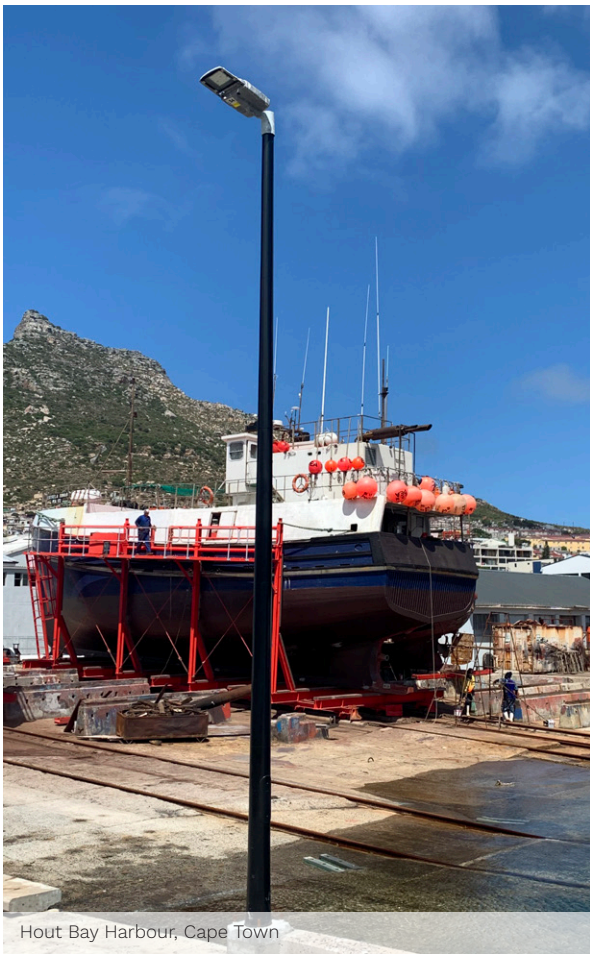
Glandplate

A hot dipped galvanised glandplate, suitable for gland no. 0 or 1, complete with terminal block and DIN rail for a miniature circuitbreaker, is provided and is mounted to a bolt provided in the access opening.

Baseplate

Poles for direct embedment in the ground can be provided with a square hot dipped galvanised baseplate complete with 2 x hot dipped galvanised steel hookbolts and nuts. Base-mounted poles have a hot dipped galvanised flange plate that can be bolted to a foundation which is designed to withstand the forces the pole will experience in service.

Century City Square, Cape Town



Hout Bay Harbour, Cape Town

Relevant Pole Data and Other Factors			Corresponding Calculated Key Values	
Mounting height (m)	Total length of pole (m)	Diameter of pole at ground level (mm)	Load to be applied in pole-top deflection test (N)	Maximum permitted deflection in pole-top deflection test (mm)
2.0	2.6	110	135.4	100
2.5	3.1	120	143.4	125
3.0	3.6	128	152.0	150
3.5	4.1	135	161.0	175
4.0	4.6	146	171.6	200
4.5	5.2	155	182.3	225
5.0	5.7	164	193.6	250
5.5	6.3	173	205.4	275
6.0	6.9	170	213.7	300
6.5	7.4	178	225.9	325
7.0	8.0	186	238.6	350
7.5	8.6	194	251.8	375
8.0	9.2	202	265.5	400
8.5	9.8	210	279.7	425
9.0	10.4	218	294.3	450
9.5	11.0	226	309.4	475
10.0	11.6	237	326.8	500
11.5	13.4	290	463.4	575
12.0	14.0	300	504.0	600

NOTES: 1. Relevant pole data is based on a shape factor of 0.7 and a calculated wind pressure of 500.14 Pa (relating to a wind speed of 103.9km/h).
2. Corresponding calculated key values are based on a luminaire surface area of 0.2m^2 with a shape factor of 1.

WITS University, Johannesburg

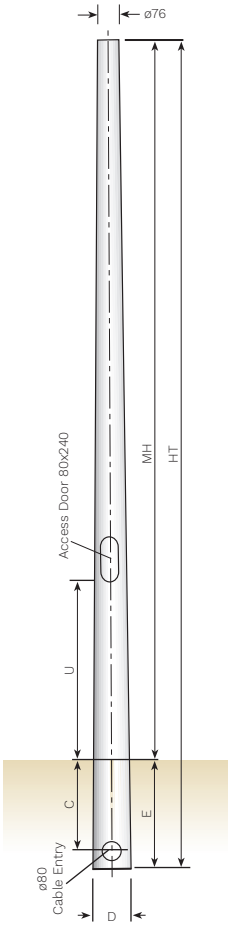

Amphitheatre, Durban


Wine distribution centre, Cape Town

Dimensions

Description	MH m	HT m	E m	U m	D mm	C mm
K 18 76 20	2.0	2.6	0.6	0.5	121	400
K 18 76 25	2.5	3.1	0.6	0.5	131	400
K 18 76 30	3.0	3.6	0.6	0.5	135	400
K 18 76 35	3.5	4.1	0.6	0.5	146	400
K 18 76 40	4.0	4.6	0.6	0.5	157	400
K 18 76 45	4.5	5.2	0.7	0.5	168	400
K 18 76 50	5.0	5.7	0.7	1.0	177	400
K 18 76 55	5.5	6.3	0.8	1.0	180	400
K 18 76 60	6.0	6.9	0.9	1.0	184	400
K 18 76 65	6.5	7.4	0.9	1.0	192	400
K 18 76 70	7.0	8.0	1.0	1.0	202	400
K 18 76 75	7.5	8.6	1.1	1.0	210	400
K 18 76 80	8.0	9.2	1.2	1.0	220	500
K 18 76 85	8.5	9.8	1.3	1.0	230	600
K 18 76 90	9.0	10.4	1.4	1.0	230	600
K 18 76 95	9.5	11.0	1.5	1.0	240	700
K 18 76 100	10.0	11.6	1.6	1.0	250	800
K 18 76 110	11.0	12.8	1.8	1.0	310	800
K 18 76 115	11.5	13.4	1.9	1.0	320	800
K 18 76 120	12.0	14.0	2.0	1.0	340	1 000

NOTE: All measurements are approximate



HT	Total length
MH	Mounting height
D	Base diameter
C	Depth of cable entry
U	Access door height
E	Buried depth

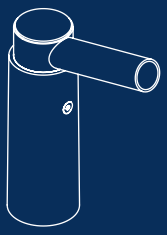
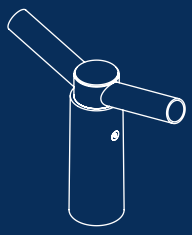
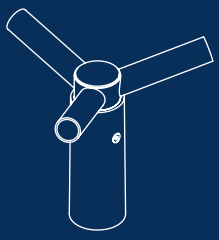
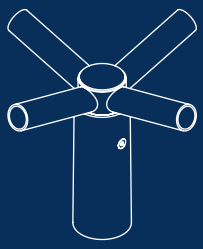
Colour Chart

(For indication purposes only)

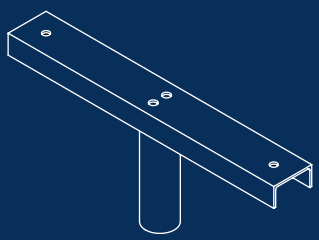
Pigment Paste Colour	Comparative RAL Colour
K100 White	RAL 9016
K200 Black	RAL 9017
K302 Paris Blue	RAL 5012
K340 Strong Blue	RAL 5017
K400 Signal Red	RAL 3020
K530 Mid Bruns Green	RAL 6005
K541 Brilliant Green	RAL 6001
K600 Canary (Light) Yellow	RAL 1018
K640 Sandstone	RAL 1001
K641 Traffic Yellow	RAL 1028
K705 Dark Earth	RAL 8025
K713 Chocolate Brown	RAL 8017
K913 Mineral Grey	RAL 7045
K916 Charcoal	RAL 7016
K918 Birch Grey	RAL 7047
K919 Pearl Light Grey	RAL 9022

Spigot Options

Spigot Mounting

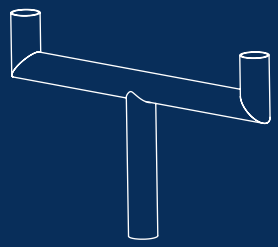
			
PDP-015-001	PDP-015-002	PDP-015-003	PDP-017-001
			
PDP-017-003	PDP-017-005	PDP-017-007	

Floodlight Mounting

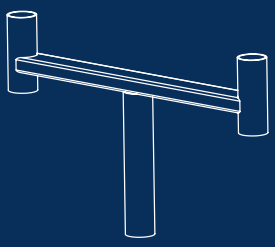
	
PDP-021-003	PDP-021-004

Bracket Options

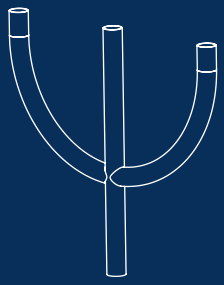
Decorative Lantern Arrangements



PDP-025-001 - Type A

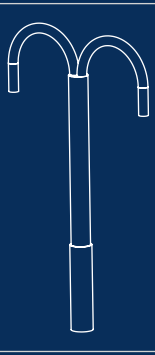


PDP-025-001 - Type B

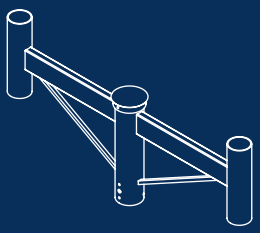


PDP-025-001 - Type C

PDP-025-001 - Type D (Single)

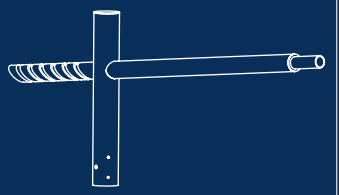


PDP-025-001 - Type D (Double)

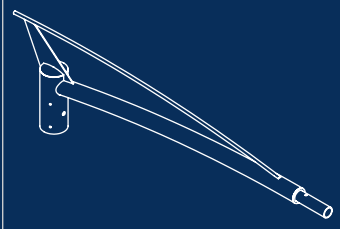


PDP-025-002

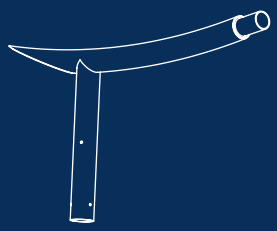
Decorative Bracket Options



KORDA-ZA

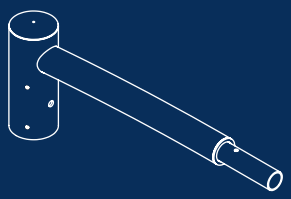


CURV-T



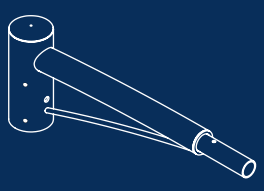
ITO-ZA (750mm)

ITO-ZA (1250mm)



CURV-N (500mm)

CURV-N (1250mm)



CURV-B (500mm)

CURV-B (1250mm)

Our decorative brackets support a weight of up to 13kg.

Options, Accessories & Spare Parts

Type		Article Description	Remark	Drawing No. For details, refer to Technical Drawings brochure
SPECIAL POLE		Heavy duty pole version with spigot, 76*80-100mm, moulded into straight pole	A	N/A
SPIGOT MOUNTING	Moulded into straight pole, hot dipped galvanised or stainless steel (Grade 304)	BEKAPOLE Ø60/76mm spigot insert (refer to drawing for options)	B	PDP-015-001
				PDP-015-002
				PDP-015-003
		Single side entry spigot, 1*Ø42mm	B, C	PDP-017-001
		Double side entry spigot, 2*Ø42mm	A, B, C	PDP-017-003
		Triple side entry spigot, 3*Ø42mm	A, B, C	PDP-017-005
		Quadruple side entry spigot, 4*Ø42mm	A, B, C	PDP-017-007
FLOODLIGHT MOUNTING	Hot dipped galvanised	Floodlight mounting for single floodlight - Type of floodlight to be specified	A, B	PDP-021-003
		Floodlight mounting for double floodlights - Type of floodlights to be specified	A, B, C	PDP-021-004
	Stainless steel (Grade 304)	Floodlight mounting for single floodlight - Type of floodlight to be specified	A, B	PDP-021-003
		Floodlight mounting for double floodlights - Type of floodlights to be specified	A, B, C	PDP-021-004
DECORATIVE LANTERN ARRANGEMENTS	Hot dipped galvanised, painted in the colour to be specified	2 Arm version - Type A	A, E	PDP-025-001
		3 Arm version - Type A	A, E	
		4 Arm version - Type A	A, E	
		2 Arm version - Type B	A, E	PDP-025-001
		3 Arm version - Type B	A, E	
		4 Arm version - Type B	A, E	
		2 Arm version - Type C	A, E	PDP-025-001
		3 Arm version - Type C	A, E	
		4 Arm version - Type C	A, E	
		4 + 1 Arm version - Type C	A, E	
		2 Arm version - Type D	A, E	PDP-025-001
		3 Arm version - Type D	A, E	
		4 Arm version - Type D	A, E	
		4 + 1 Arm version - Type D	A, E	
		2 Arm version - Type E	A, E	PDP-025-002
DECORATIVE OUTREACHES	Hot dipped galvanised, painted in the colour to be specified	KORDA-ZA	A, E	CAD-0052165
		CURV-T	A, E	CAD-0056820
		ITO-ZA (750mm)	A, E	CAD-0056280
		ITO-ZA (1250mm)	A, E	CAD-0056281
		CURV-N (500mm)	A, E	CAD-0060978
		CURV-N (1250mm)	A, E	CAD-0056823
		CURV-B (500mm)	A, E	CAD-0060946
		CURV-B (1250mm)	A, E	CAD-0056713

Type		Article Description	Remark	Drawing No. For details, refer to Technical Drawings brochure
GLANDPLATE ASSEMBLY		Glandplate assembly, Type GP/2/0/E/TB/MCB, consisting of 2 holes 20mm diameter, suitable for Gland No 0 or 1, complete with terminal block, 4 way, 30 Amp and DIN rail for MCB		PDP-011-001
MINIATURE CIRCUITBREAKER		Miniature circuitbreaker, 5A/5kA, for total line starting currents of less than 4A		N/A
		Miniature circuitbreaker, 10A/5kA, for total line starting currents of more than 4A, but not exceeding 8 Amp		N/A
DETACHABLE BASEPLATE	Hot dipped galvanised, complete with hookbolts and nuts	Baseplate assembly, 300*300*1.6mm Baseplate assembly, 300*300*6mm Baseplate assembly, 400*400*1.6mm Baseplate assembly, 400*400*6mm		PDP-003-001
		Baseplate assembly, 500*500*1.6mm, standard from 12.8m total length poles		
		Baseplate assembly, 500*500*6mm, optional from 12.8m total length poles		
FIXED BASEPLATE FOR SURFACE MOUNTING	Hot dipped galvanised	F1 - for mounting height up to 5m	A	PDP-003-011 and PDP-003-012
		F2 - for mounting height up to 10m	A	
		F3 - for mounting height up to 12m	A	
	Stainless steel (Grade 304)	F1 - for mounting height up to 5m	A	PDP-003-011
		F2 - for mounting height up to 10m	A	
		F3 - for mounting height up to 12m	A	
HINGED BASEPLATE FOR SURFACE MOUNTING	Hot dipped galvanised	H1 - for mounting height up to 5m	A, D	PDP-003-022
		H2 - for mounting height up to 9m	A, D	
	Stainless steel (Grade 304)	H1 - for mounting height up to 5m	A, D	PDP-003-022
		H2 - for mounting height up to 9m	A, D	
WINCHED BASEPLATES FOR SURFACE MOUNTING, HOT DIPPED GALVANISED		W1 - for mounting height up to 9m	A, D	PDP-003-030 and PDP-003-031
		W2 - for mounting height up to 12m	A, D	
WINCH ASSEMBLY		W1 - for mounting height up to 9m		PDP-003-080
		W2 - for mounting height up to 12m		
FLAGPOLES, complete with rope and rope attachment		9.2m total length, 8m mounting height		PDP-027-001
		10.4m total length, 9m mounting height		
MUSHROOM TOP FLAGPOLES, complete with rope and rope attachment		8m mounting height		PDP-027-002
		9m mounting height		
SPARE PARTS		Heavy duty access door	E	PDP-040-001

REMARK KEY :

A - Special pole required

B - Wound-in

C - Slip-over

D - Limitations for maximum headweight of 15kg and 0.2m^2 wind surface area apply to standard pole

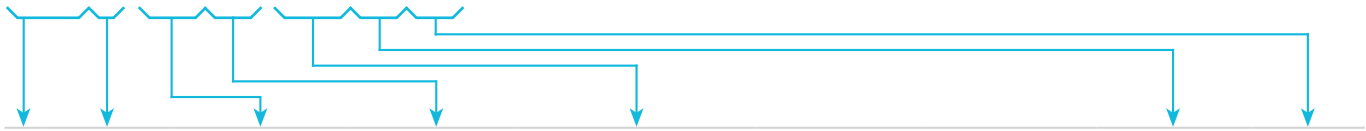
E - Specify required colour

Special versions are available for all items

Ordering Information

Example:

K187660 K918SF2 SE151DST25%



ID	Mounting Height	Colour finish	Base	Spigot	Flood	Flag pole	Pole door	Extra strength
K1876	**XX** XX = MH Thus: **60** 6.0m MH (Max. 12m mounting height)	**K100** White (RAL9016) **K200** Black (RAL9017) **K302** Paris Blue (RAL5012) **K340** Strong Blue (RAL5017) **K400** Signal Red (RAL3020) **K530** Mid Bruns Green (RAL6005) **K541** Brilliant Green (RAL6001) **K600** Canary (Light) Yellow (RAL1018) **K640** Sandstone (RAL1001) **K641** Traffic Yellow (RAL1028) **K705** Dark Earth (RAL8025) **K713** Chocolate Brown (RAL8017) **K913** Mineral Grey (RAL7045) **K916** Charcoal (RAL7016) **K918** Birch Grey (RAL7047) **K919** Pearl Light Grey (RAL9022)	**BUR** Buried **SF...** Surface mounted (F1/F2/F3) **HN...** Hinged suface mounted (H1/H2) **WN...** Winched surface mounted (W1/W2) *For a list of buried baseplates, boltcages and winch assemblies, see table below*	**No description** No spigot **S60D2** Spigot HDG 60mmx225mm **S76D2** Spigot HDG 76mmx225mm **S76D4** Spigot HDG 76mmx450mm **SE151** Spigot HDG 60/76mm x 42mm x 150mm x 1 /15° **SE152** Spigot HDG 60/76mm x 42mm x 150mm x 2 /15° **SE153** Spigot HDG 60/76mm x 42mm x 150mm x 3 /15° **SE154** Spigot HDG 60/76mm x 42mm x 150mm x 4 /15° **SE001** Spigot HDG 60/76mm x 42mm x 150mm x 1 /0° for LEDlume **SE002** Spigot HDG 60/76mm x 42mm x 150mm x 2 /0° for LEDlume **S60S2** Spigot S/Steel 60mmx225mm **S76S2** Spigot S/Steel 76mmx225mm **S76S4** Spigot S/Steel 76mmx450mm **SS151** Spigot S/Steel 60/76mm x 42mm x 150mm x 1 /15° **SS152** Spigot S/Steel 60/76mm x 42mm x 150mm x 2 /15° **SS153** Spigot S/Steel 60/76mm x 42mm x 150mm x 3 /15° **SS154** Spigot S/Steel 60/76mm x 42mm x 150mm x 4 /15° **SS001** Spigot S/Steel 60/76mm x 42mm x 150mm x 1 /0° for LEDlume **SS002** Spigot S/Steel 60/76mm x 42mm x 150mm x 2 /0° for LEDlume	**FL761** Flood mounting single HDG **FL762** Flood mounting double HDG **FS761** Flood mounting single S/Steel **FS762** Flood mounting double S/Steel	**FLAGS** Standard flag pole, complete with rope **FLAGM** Mushroom flag pole assembly, complete with rope	**DNO** No pole door **DST** Standard pole door	**XX%** 10% up to 100%

Buried Baseplate, Bolt Cages & Winched Assembly:	
Baseplate Assembly 300x300x1.6mm HDG	
Baseplate Assembly 400x400x1.6mm HDG	
Baseplate Assembly 500x500x1.6mm HDG	
Baseplate Assembly 300x300x6mm HDG	
Baseplate Assembly 400x400x6mm HDG	
Baseplate Assembly 500x500x6mm HDG	
Boltcage F1	2.0m to 5.0m MH
Boltcage F2	5.5m to 9.5m MH
Boltcage F3	10.0m to 12.0m MH
Boltcage H1	2.0m to 5.0m MH
Boltcage H2	5.5m to 9.0m MH
Boltcage W1	2.0m to 9.5m MH
Boltcage W2	10.0m to 12.0m MH
Winch Assembly 9m W1	
Winch Assembly 12m W2	

GRP Pole Planting Instructions

These instructions are intended to assist as a guideline for planting buried and surface-mount GRP poles for mounting height (MH) up to 12m.

1. Excavation of hole

Holes for the purpose of planting GRP poles can be excavated by hand or by making use of ground-moving equipment like a TLB. For buried poles an auger can also be used.

1.1. Surface-mount GRP poles

Surface-mount GRP poles should be mounted on a bolt-cage in a concrete foundation.
GRP poles are available in either of the following options:

- Fixed baseplate
- Hinged baseplate
- Winched baseplate

Below is a table indicating the requirements of the foundation for these options, as well as the limitations.
Please note the different dimensions depending on the typical head weight and wind surface area.

	Typical Head Weight and Wind Surface Area		**2 * LEDLUME-MAXI's** Head weight: 13kg each Windage area: 0.045m² each		**4 * LEDLUME-MAXI's** Head weight: 13kg each Windage area: 0.045m² each	
	Baseplate Code	**MH**	**D (m)**	**L&B (m)**	**D (m)**	**L&B (m)**
Fixed baseplate Drawing PDP-003-011	F1	≤5m	0.8	0.6	0.800	0.7
	F2	≤10m	1.0	0.9	1.000	1.0
	F3	≤14m	1.2	1.0	1.200	1.1
Hinged baseplate Drawing PDP-003-021	H1	≤5m	0.8	0.6	0.800	0.7
	H2	≤9m	1.0	0.8	1.000	0.9
Winched baseplate Drawing PDP-003-031	W1	≤9m	1.0	0.8	1.000	0.9
	W2	≤12m	1.1	0.9	1.100	1.0
	W3	≤14m	1.2	1.0	1.200	1.1

Table 1
Excavation dimensions for surface-mount GRP poles

Design is based on:

- 500 Pa was applied to the Poles with Shape Factor of 0,70 (in terms of SANS 1749)
- A minimum bearing pressure of 100kPa, which, according to SABS 0225, table 7 is the allowable safe bearing pressure for poor soil conditions, i.e. soft clay, poorly compacted sand and clays containing large amount of silt and organic matters.
- The foundations have a safety factor against overturning of 2 and more.
- D (m) is the Depth or Thickness, L&B (m) is the plan Length and Breadth of the Base required.
- Quality of concrete: Class 20/20 mass concrete mixed by volume of 1:2:4 cement/sand/stone
- Please note: These are recommendations and BEKA Schréder accepts no responsibilities for errors or omissions.

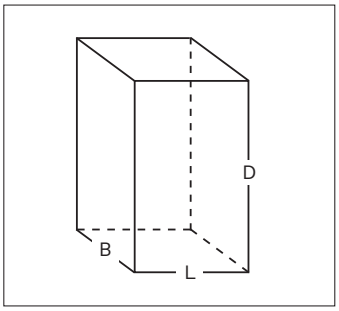


Figure 1
Dimensions of foundation-hole for surface-mount poles

1.2. Buried GRP poles

Surface-mount poles comes in different lengths and the planting depth of the pole depends on the length and mounting height of the luminaire. Details pertaining to the excavation needed can be seen in the table below:

Typical Head Weight and Wind Surface Area	**2 * LEDLUME-MAXI's** Head weight: 13kg each Windage area: 0.045m² each			
Pole Height (HT) (m)	**MH (m)**	**D (m)**	**L&B (m)**	**H (m)**
2.6	2.0	0.6	0.75	0.6
3.1	2.5	0.6	0.75	0.6
3.6	3.0	0.6	0.75	0.6
4.1	3.5	0.6	0.75	0.6
4.6	4.0	0.6	0.75	0.6
5.2	4.5	0.7	0.75	0.6
5.7	5.0	0.7	0.75	0.6
6.3	5.5	0.8	0.75	0.6
6.9	6.0	0.9	0.75	0.6
7.4	6.5	0.9	0.75	0.6
8.0	7.0	1.0	0.9	0.6
8.6	7.5	1.1	0.9	0.6
9.2	8.0	1.2	0.9	0.6
9.8	8.5	1.3	0.9	0.6
10.4	9.0	1.4	0.9	0.6
11.0	9.5	1.5	0.9	0.6
11.6	10.0	1.6	0.9	0.6
13.4	11.5	1.9	0.9	0.6
14.0	12.0	2.0	0.9	0.6

Table 2
Excavation dimensions for buried GRP poles

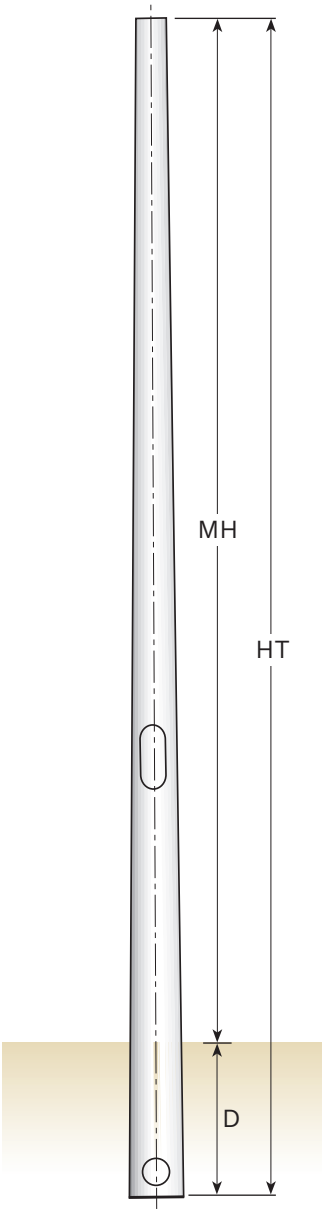


Figure 2
Dimensions of buried poles

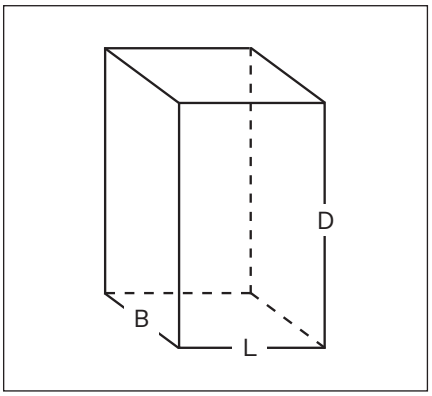


Figure 3
Dimensions of excavated hole for buried poles

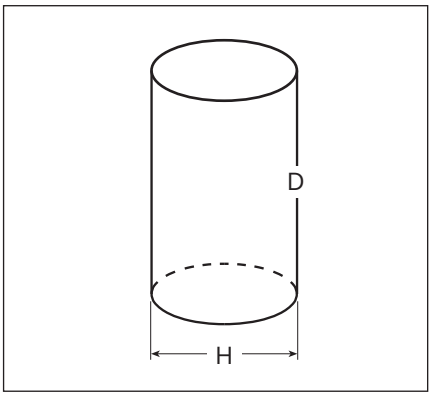


Figure 4
Dimensions of drilled hole for buried poles using an auger

2. Backfilling of buried poles

The backfilling mix should have a composition of soilcrete 1:10, based on standard soil condition of 150kPa.

Backfilling the pole hole should be done in layers of 250mm and compacted with a hand-rammer.

The soil should be compacted evenly around the pole, and care should be taken that the pole does not lean to one side during compacting.

Continue the backfill and compacting process until the hole is filled.

If a stepped hole was used the same applies, and the entire hole must be filled and compacted.

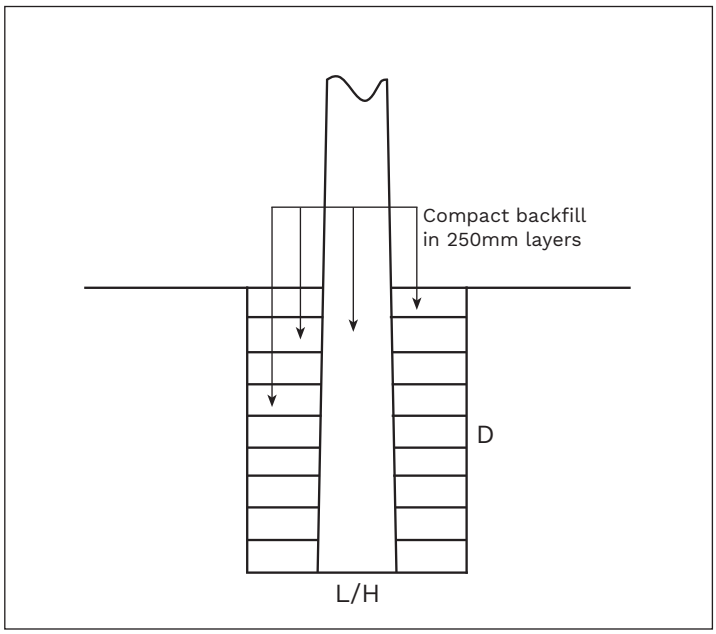


Figure 5
Backfilling and compacting the hole

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