BEKAPOLE

GLASS FIBRE REINFORCED POLYESTER (GRP) POLE RANGE

BEKA Schréder

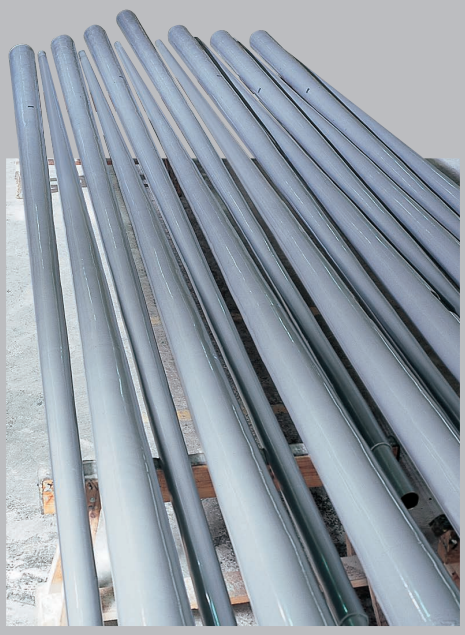
BEKAPOLE

SUCCESS STORY

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, like 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.

KEY ADVANTAGES

NON-CORROSIVE

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

MAINTENANCE-FREE

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

LIGHT WEIGHT

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

LONGEVITY

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

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 other wind speeds must be calculated separately.

VERSATILITY

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

VANDAL RESISTANT

High impact strength of polyester gel coat and glass filament wound structure.

SUSTAINABLE

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

Light weight

Bending strength

Corrosion of steel pole

Pole manufacturing plant

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.

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


Residential streets


Sportsfields


Decorative lighting


Area lighting


Post-top lighting


Perimeter security


Parks and Gardens


Highways

MANUFACTURING

A mechanised system of manufacturing, utilising a track mounted winding machine onto which both the glass filament rovings and resin bath are mounted, is applied.

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

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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 base plate hookbolts, cable entries, access door openings, as well as any other details required. Spigot arrangements and surface base plates, 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.


Winding of glass filament


Finishing

Precision quality inspection


Machining of cured pole


Access door detail

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 0.20m² 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.

QUALITY 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.

BASE PLATE

Poles for direct embedment in the ground can be provided with a 300x300x1.6mm hot dipped galvanised base plate 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.

RELEVANT POLE DATA AND OTHER FACTORS			CORRESPONDING CALCULATED KEY VALUES	
Total length of pole (m)	Height of pole above ground (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)
2.6	2.0	110	135.4	100
3.1	2.5	120	143.4	125
3.6	3.0	128	152.0	150
4.1	3.5	135	161.0	175
4.6	4.0	146	171.6	200
5.2	4.5	155	182.3	225
5.7	5.0	164	193.6	250
6.3	5.5	173	205.4	275
6.9	6.0	170	213.7	300
7.4	6.5	178	225.9	325
8.0	7.0	186	238.6	350
8.6	7.5	194	251.8	375
9.2	8.0	202	265.5	400
9.8	8.5	210	279.7	425
10.4	9.0	218	294.3	450
11.0	9.5	226	309.4	475
11.6	10.0	237	326.8	500
13.4	11.5	290	463.4	575
14.0	12.0	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 0.2m² with a shape factor of 1.

OPTIONS, ACCESSORIES & SPARE PARTS

TYPE		ARTICLE DESCRIPTION	REMARK	DRAWING NO.
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	BEKAPOLE spigot insert		PDP-015-001
		Single side entry spigot, 1*42*150mm		PDP-017-001
		Double side entry spigot, 2*42*150mm	A	PDP-017-003
		Triple side entry spigot, 3*42*150mm	A	PDP-017-005
		Quadruple side entry spigot, 4*42*150mm	A	PDP-017-007
	Moulded into straight pole, stainless steel (Grade 304)	BEKAPOLE spigot reducer		PDP-015-002
		Single side entry spigot, 1*42*150mm		PDP-017-001
		Double side entry spigot, 2*42*150mm	A	PDP-017-003
		Triple side entry spigot, 3*42*150mm	A	PDP-017-005
		Quadruple side entry spigot, 4*42*150mm	A	PDP-017-007
FLOODLIGHT MOUNTINGS	Hot dipped galvanised	Floodlight mounting for single floodlight - Type of floodlight to be specified	A	PDP-021-003
		Floodlight mounting for double floodlights - Type of floodlights to be specified	A	PDP-021-004
	Stainless steel (Grade 304)	Floodlight mounting for single floodlight - Type of floodlight to be specified	A	PDP-021-003
		Floodlight mounting for double floodlights - Type of floodlights to be specified	A	PDP-021-004
DECORATIVE LANTERN ARRANGEMENTS	Hot dipped galvanised, painted in the colour to be specified	2 Arm version - Type A	A,D	PDP-025-001
		3 Arm version - Type A	A,D	
		4 Arm version - Type A	A,D	
		2 Arm version - Type B	A,D	PDP-025-001
		3 Arm version - Type B	A,D	
		4 Arm version - Type B	A,D	
		2 Arm version - Type C	A,D	PDP-025-001
		3 Arm version - Type C	A,D	
		4 Arm version - Type C	A,D	
		4 + 1 Arm version - Type C	A,D	
		2 Arm version - Type D	A,D	PDP-025-001
		3 Arm version - Type D	A,D	
		4 Arm version - Type D	A,D	
		4 + 1 Arm version - Type D	A,D	
		2 Arm version - Type E	A,D	PDP-025-002

Heavy duty access door cover

Hinged glass fibre pole

Winched glass fibre pole

TYPE		ARTICLE DESCRIPTION	REMARK	DRAWING NO.
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	E	N/A
		Miniature circuitbreaker, 10A/5kA, for total Line starting currents of more than 4A, but not exceeding 8 Amp	E	N/A
DETACHABLE BASE PLATE	Hot dipped galvanised, complete with hookbolts and nuts	Base plate assembly, 300*300*1.6mm Base plate assembly, 300*300*6mm Base plate assembly, 400*400*1.6mm Base plate assembly, 400*400*6mm		PDP-003-001
		Base plate assembly, 500*500*1.6mm, standard from 12.8m total length poles		
		Base plate assembly, 500*500*6mm, optional from 12.8m total length poles		
FIXED BASE PLATE 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 BASE PLATE FOR SURFACE MOUNTING	Hot dipped galvanised	H1 - for mounting height up to 5m	A,C	PDP-003-022
		H2 - for mounting height up to 9m	A,C	
	Stainless steel (Grade 304)	H1 - for mounting height up to 5m	A,C	PDP-003-022
		H2 - for mounting height up to 9m	A,C	
WINCHED BASE PLATES FOR SURFACE MOUNTING, HOT DIPPED GALVANISED		W1 - for mounting height up to 9m	A,C	PDP-003-030 and PDP-003-031
		W2 - for mounting height up to 12m	A,C	
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	D	PDP-040-001

REMARK KEY :

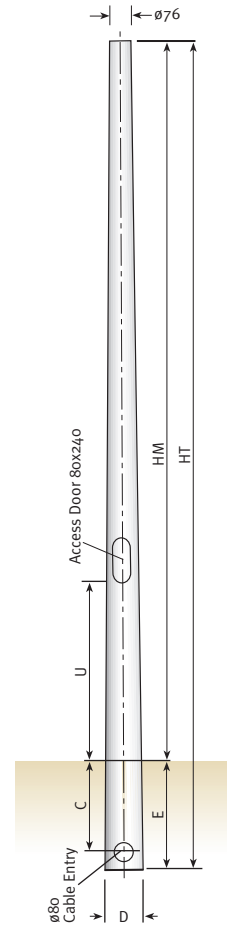
A - Special pole required
B - Only available for limited pole heights
C - Limitations for maximum headweight of 15kg and 0.2m² wind surface area apply to standard pole
D - Specify required colour
E - Refer to the datasheet technical data lamps, in the technical section of BEKA Schréder's Catalogue

Special versions are available for all items

ORDERING DATA

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

NOTE: All measurements are approximate



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

COLOUR CHART

(For indication purposes only)

K100 White

K530 Mid Bruns Green

K705 Dark Earth

K200 Black

K541 Brilliant Green

K713 Chocolate Brown

K302 Paris Blue

K600 Canary (Light) Yellow

K913 Mineral Grey

K340 Strong Blue

K640 Sandstone

K916 Charcoal

K400 Signal Red

K641 Traffic Yellow

K9199 Birch Grey

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
K9199 Birch Grey	RAL 7047

Designed and manufactured by BEKA Schréder (Pty) Ltd - South Africa
Manufacturers of Luminaires and Glass Fibre Poles
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