
Catalogue of Composite Lighting Poles



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GENERAL INFORMATION

This catalogue presents composite lighting poles of the SKw, SKf and SKfz types, which are another proposal in our company's wide range of products.

The innovation of the implemented product is manifested in the process of its production - centrifugal casting technology with the use of specialized centrifuges.

Composite poles are used to illuminate streets and roads, parking lots, open industrial and urban areas, squares, storage yards, crossings, pedestrian crossings, stops, platforms and other railway facilities powered by LV cables.

Composite poles manufactured by STRUNOBET-MIGACZ Sp. z o.o. based in Lewin Brzeski have received a positive assessment from the Power Engineering Department of the Railway Institute, which qualifies them for use in lighting of railway areas managed by PKP Polskie Linie Kolejowe S.A.

Advantages of using composite poles

The production technology makes it possible to obtain dimensional stability and a perfect smooth surface without sharp seams and irregularities. In addition, thanks to the use of a special fabric, which forms the first layer of pole reinforcement, the product is characterised by high UV resistance, and in the event of scratches, the protective layer remains intact. The fabric gives the possibility to change the colour to any desired colour and also to print a graphic design that meets the requirements of our customers.

Low weight of the presented poles allows them to be installed in hard-to-reach areas, precluding access with heavy construction equipment. These poles are maintenance-free and resistant to chemical and atmospheric agents, and the use of self-extinguishing material allows them to be used in industrial areas.

A characteristic feature of the product is its repeatability, each pole of a given series of types has identical technical parameters.

Colour palette

Poles are made in two standard colours available in the RAL palette:



RAL 7035
MILK GRAY



RAL 7047
LIGHT GRAY



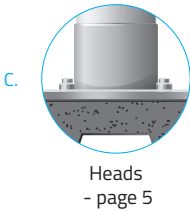
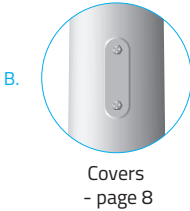
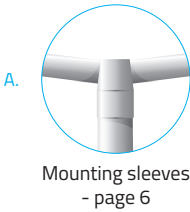
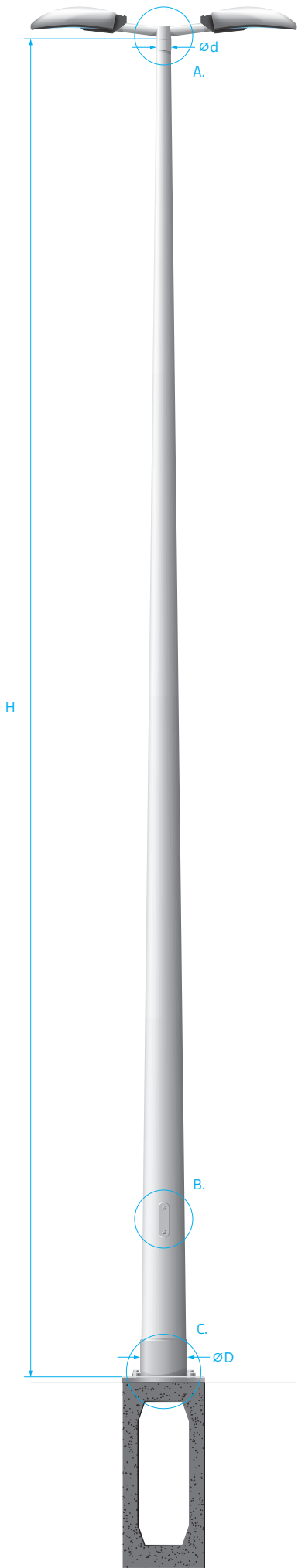
It is possible to have the poles custom-made in any colour from the RAL palette.

Physical and mechanical properties

Properties	Test method	Unit	Average value
Specific weight	ASTM D792	g/cm ³	1,65
Glass content	ISO 1172	%	45÷55
Water absorption	ISO 62	%	0,5
Dielectric strength	ASDM D149	kV/mm	5
Surface resistance	ASDM D149	Ω	10 ¹²
Thermal class	—	CLASS	F
Longitudinal thermal expansion	ISO 11359-2	K-1	15x10 ⁻⁶
Thermal conductivity	EN 12667/EN12664	W/mK	0,3
Longitudinal bending strength	ASTM D790	MPa	350
Longitudinal tensile strength	ASTM D638	MPa	400
Longitudinal modulus of elasticity	ASTM D638	GPa	22
Longitudinal compressive strength	ASTM D695	MPa	200
Impact force	ASTM D5942	kJ/m ²	180

SKf, SKfz

COMPOSITE LIGHTING POLES



CE CE standard PN-EN 40-7

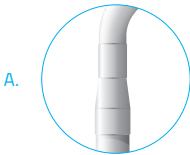
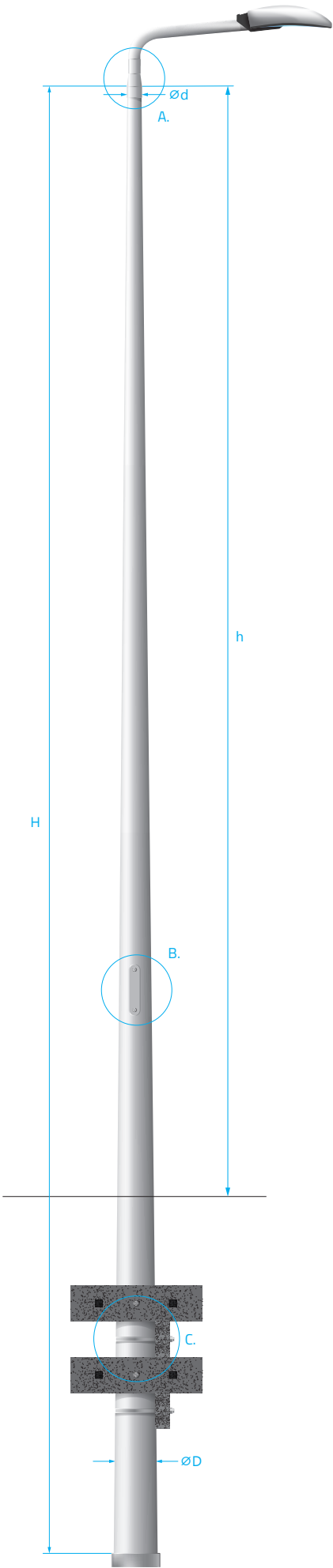
The SKf poles are distinguished by an innovative method of installation, which involves the use of a steel head with holes for fastening the pole to the concrete foundation.

The use of the external head makes it possible to reuse in the event of damage to the pole or its disassembly, and to perform full visual assessment of its technical condition.

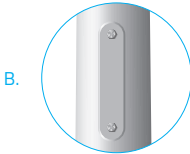
The head is available in a fixed variant (ØD SKf pole, fixed head) and optionally equipped with a hinge (SKfz pole). The use of a hinge facilitates installation and subsequent operation and maintenance of light sources.

No.	Pole symbol	Dimensions			Spacing of mounting holes (mm)	Weight without head (kg)
		H (m)	Ød (mm)	ØD (mm)		
1	SKf 3	3,00	76 (60)	110	190x190	5,5
2	SKf 4	4,00	76 (60)	127	190x190	8,6
3	SKf 5	5,00	76 (60)	145	190x190	11,3
4	SKf 6	6,00	76	177	250x250	19,5
5	SKf 7	7,00	76	194	250x250	25,6
6	SKf 8	8,00	76	210	250x250	39
7	SKf 9	9,00	76	225	250x250	40,4
8	SKf 10	10,00	76	245	300x300	46
9	SKf 11	11,00	76	260	300x300	56
10	SKf 12	12,00	76	278	300x300	68,2

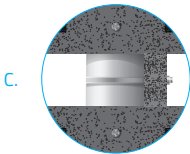
DIRECT BURIAL
SKw
COMPOSITE LIGHTING POLES



A.
Mounting sleeves
- page 6



B.
Covers
- page 8



C.
Foundations and ground beams
- pages 15-18

Installation of SKw poles is carried out using the traditional method by embedding the poles in the ground.

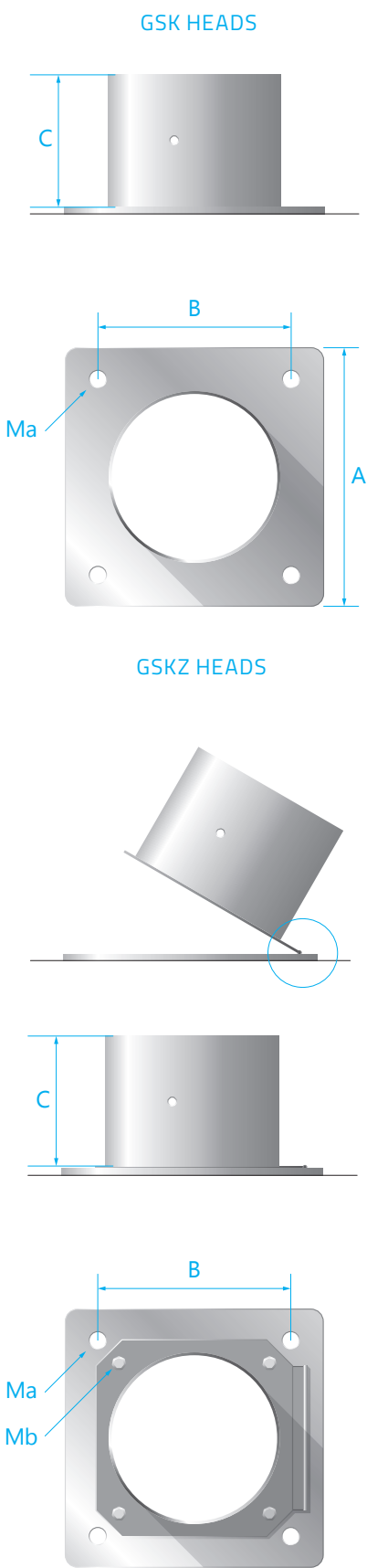
All available ground beams are fully compatible with the presented poles.

Composite poles are characterized by high volume resistivity, which makes them an excellent choice for the power and railway industries.

CE CE standard PN-EN 40-7

No.	Pole symbol	Dimensions			Weigh (kg)
		H (m)	Ød (mm)	ØD (mm)	
1	SKw 3	3,00	76 (60)	110	5,5
2	SKw 4	4,00	76 (60)	127	8,6
3	SKw 5	5,00	76 (60)	145	11,3
4	SKw 6	6,00	76	177	19,5
5	SKw 7	7,00	76	194	25,6
6	SKw 8	8,00	76	210	39
7	SKw 9	9,00	76	225	40,4
8	SKw 10	10,00	76	245	46
9	SKw 11	11,00	76	260	56
10	SKw 12	12,00	76	278	68,2
11	SKw 13,6	13,60	76	305	87,8

GSK and GSKz HEADS



The use of an innovative solution, which is a steel head, in the installation of composite poles noticeably facilitates the process of construction, operation and maintenance of external lighting circuits.

The use of a hinged head allows you to replace a damaged luminaire without the need to use lifting equipment in the form of a platform or basket.

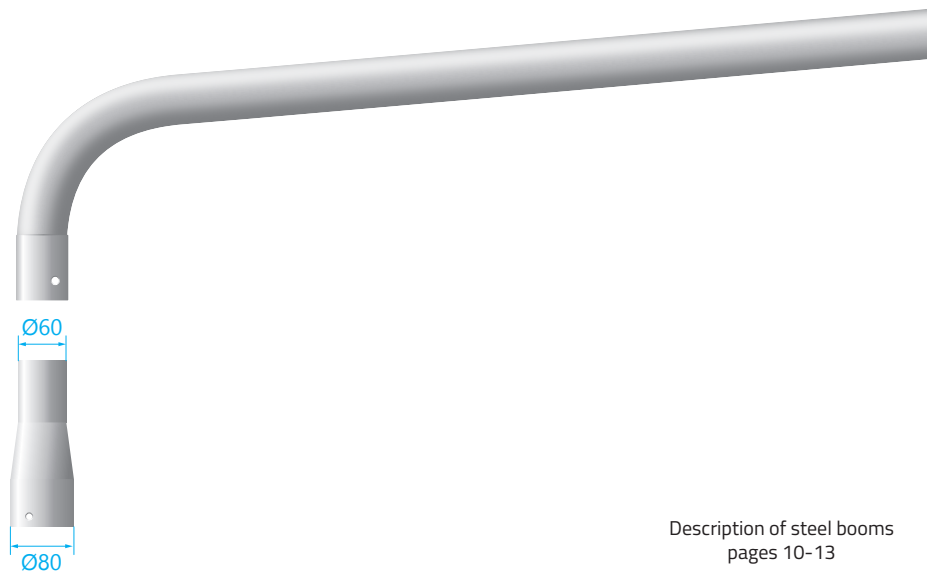
CAUTION! If a hinged head is used, a cable reserve of at least 0.5 m must be provided.

No.	For the pole	Dimensions				
		Width A (mm)	Spacing of mounting holes B (mm)	Height C (mm)	Screw Ma	Screw Mb
1	Skf(z) 3	290	190	150	M20	M16
2	SKf(z) 4	290	190	170	M20	M16
3	SKf(z) 5	290	190	170	M20	M16
4	SKf(z) 6	350	250	200	M24	M16
5	SKf(z) 7	350	250	200	M24	M16
6	SKf(z) 8	350	300	200	M24	M16
7	SKf(z) 9	350	300	200	M24	M16
8	SKf(z) 10	350	300	200	M24	M16
9	SKf(z) 11	400	300	250	M24	M16
10	SKf(z) 12	400	300	250	M24	M16

TMS, TMK

MOUNTING SLEEVES

MOUNTING SLEEVE
FOR STEEL/ALUMINUM BOOMS (TMS)



Description of steel booms
pages 10-13

Luminaires and booms are mounted using external sleeves made of aluminium or galvanized steel resistant to weather conditions.

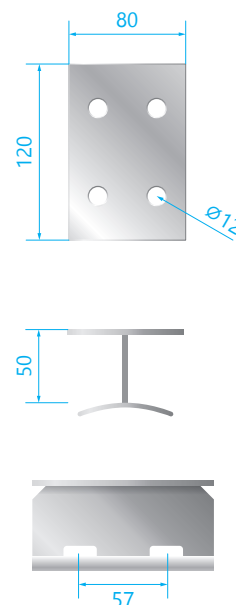
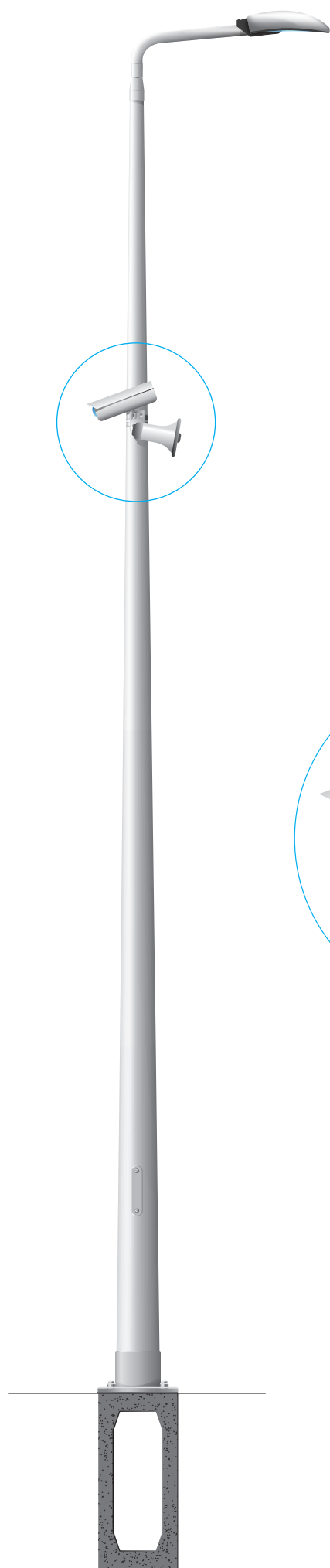
Through the use of reduction adapters, the diameter of the sleeve is adapted to the installation of all types of luminaires and booms, ensuring tightness and the possibility of replacement in the event of damage to the boom or light source.

Mounting sleeves are manufactured in four variants that allow mounting in a configuration of one to four luminaires.

UW1 MOUNTING BRACKET

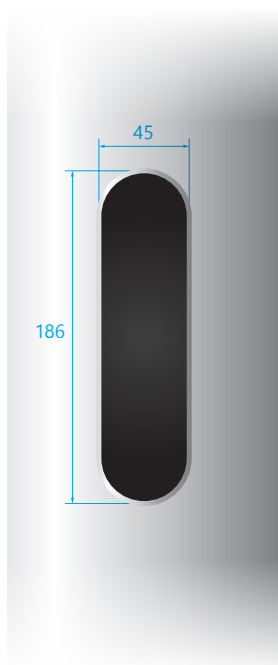
Composite poles have the option of adding elements such as cameras, megaphones, flags, etc. using mounting brackets.

The brackets have special COT 37 assembly tapes, which allow extending the functionality of the pole with additional installed accessories.



BRACKET INSTALLED TO THE POLE
USING COT 37 ASSEMBLY TAPES.

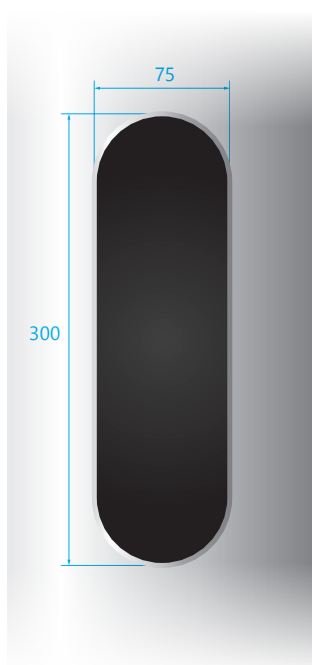
P1, P2 POLE COVERS



P1 COVER

Many lighting pole connectors available on the market can be used with composite poles.

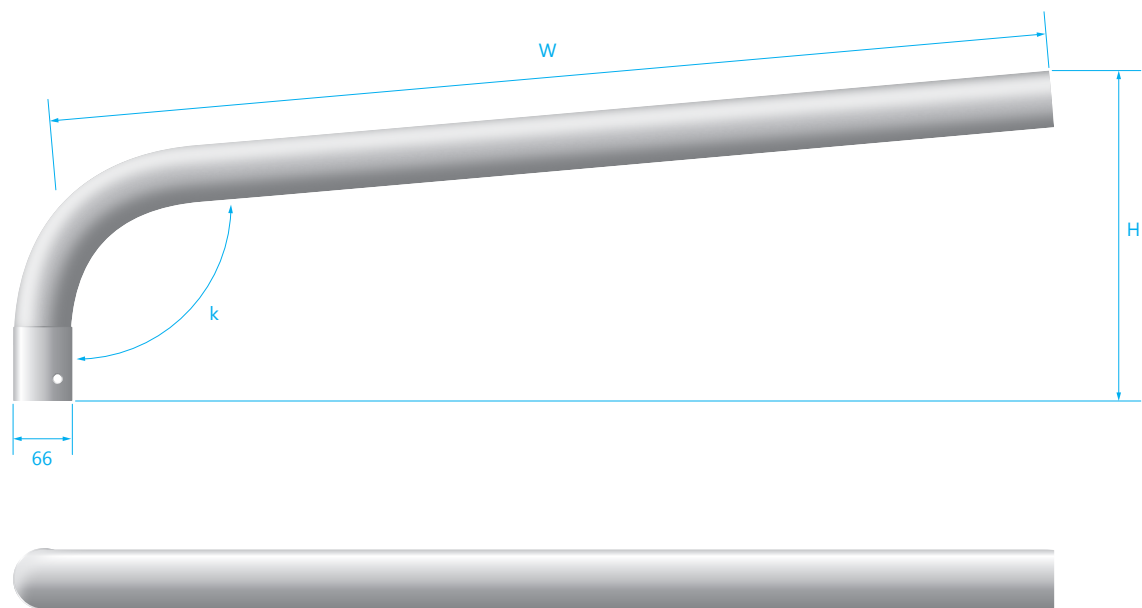
In order to meet expectations, two sizes of inspection doors with IP 55, IK 10, closed with two stainless steel screws, were used.



P2 COVER

WS1

STEEL BOOMS

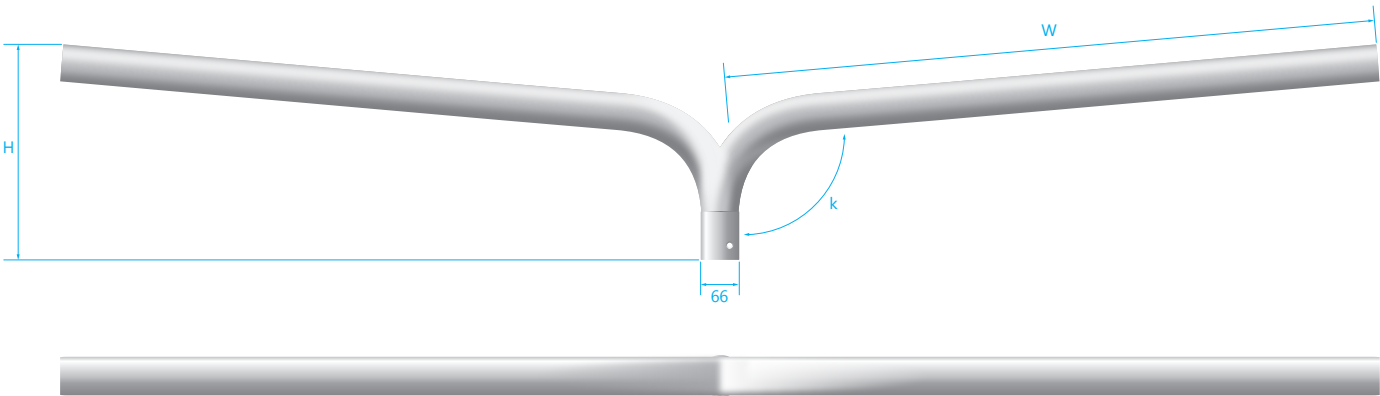


No.	Boom type	Length W (cm)	Inclination angle k	Height H (cm)	Weight (kg)
1	Ws1-50/0	50	0°	29	2,2
2	Ws1-50/5		5°	32	2,2
3	Ws1-50/10		10°	35	2,2
4	Ws1-50/15		15°	38	2,3
5	Ws1-50/20		20°	41	2,3
6	Ws1-100/0	100	0°	29	3,2
7	Ws1-100/5		5°	37	3,4
8	Ws1-100/10		10°	44	3,5
9	Ws1-100/15		15°	51	3,6
10	Ws1-100/20		20°	58	4

No.	Boom type	Length W (cm)	Inclination angle k	Height H (cm)	Weight (kg)
11	Ws1-150/0	150	0°	29	4,5
12	Ws1-150/5		5°	41	4,5
13	Ws1-150/10		10°	53	4,5
14	Ws1-150/15		15°	64	5
15	Ws1-150/20		20°	75	5,1

WS2

STEEL BOOMS

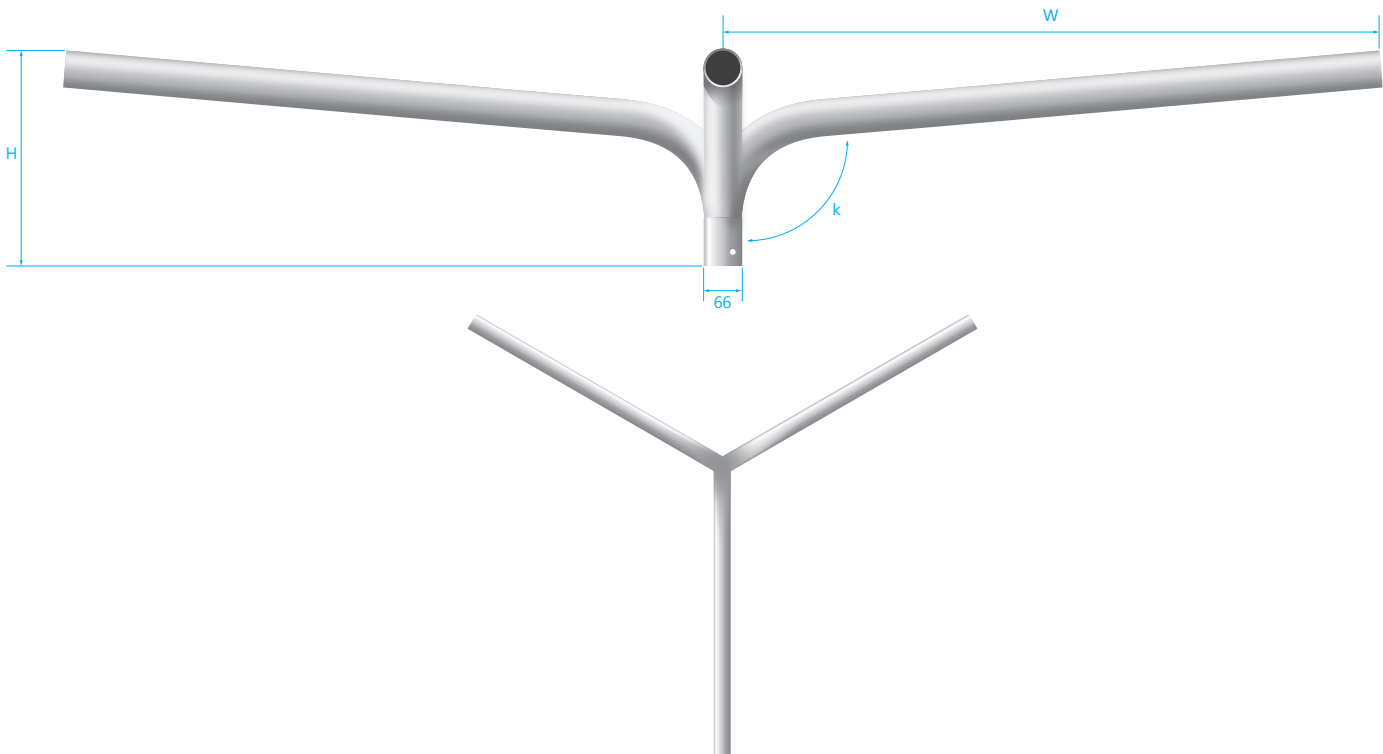


No.	Boom type	Length W (cm)	Inclination angle k	Height H (cm)	Weight (kg)
1	Ws2-50/0	50	0°	29	4,4
2	Ws2-50/5		5°	32	4,4
3	Ws2-50/10		10°	35	4,4
4	Ws2-50/15		15°	38	4,6
5	Ws2-50/20		20°	41	4,6
6	Ws2-100/0	100	0°	29	6,4
7	Ws2-100/5		5°	37	6,8
8	Ws2-100/10		10°	44	7
9	Ws2-100/15		15°	51	7,2
10	Ws2-100/20		20°	58	8

No.	Boom type	Length W (cm)	Inclination angle k	Height H (cm)	Weight (kg)
11	Ws2-150/0	150	0°	29	9
12	Ws2-150/5		5°	41	9
13	Ws2-150/10		10°	53	9
14	Ws2-150/15		15°	64	10
15	Ws2-150/20		20°	75	10,2

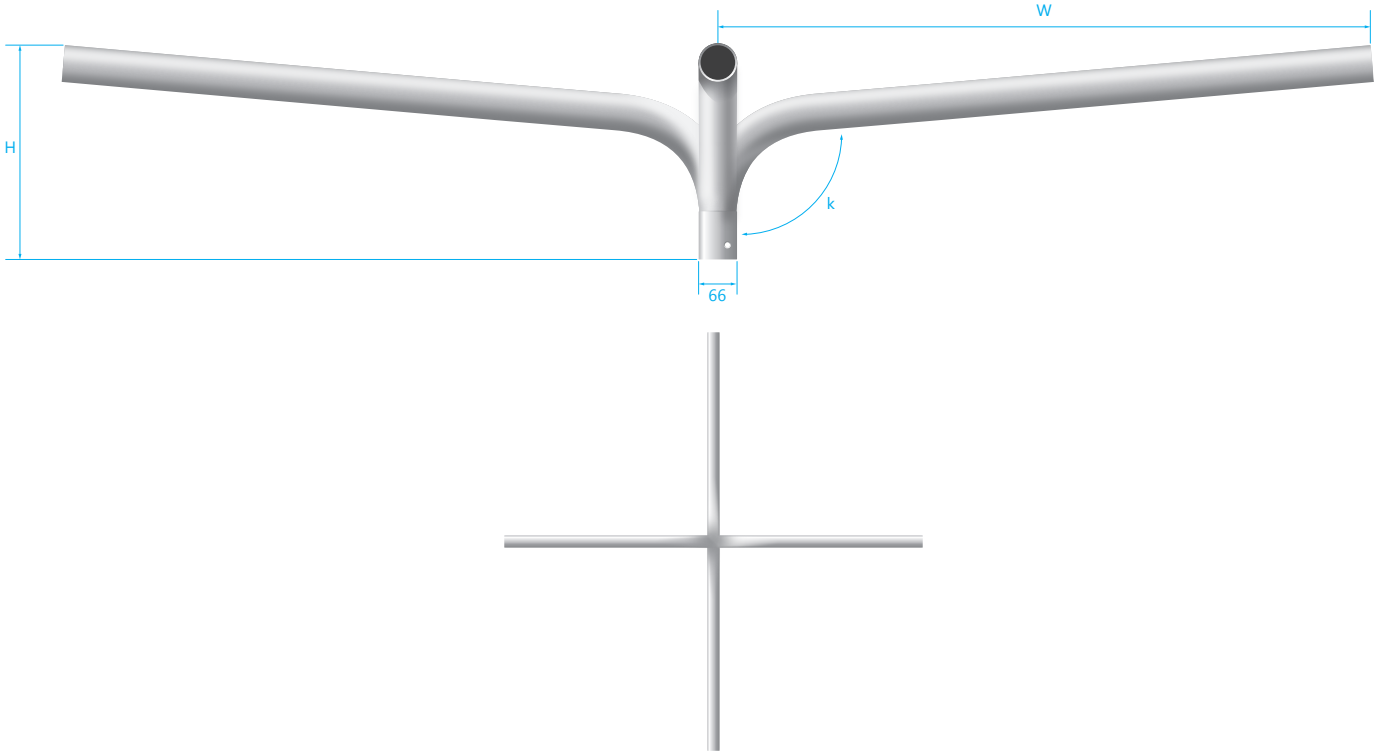
WS3

STEEL BOOMS



No.	Boom type	Length W (cm)	Inclination angle k	Height H (cm)	Weight (kg)
1	Ws3-50/0	50	0°	29	6,6
2	Ws3-50/5		5°	32	6,6
3	Ws3-50/10		10°	35	6,6
4	Ws3-50/15		15°	38	6,9
5	Ws3-50/20		20°	41	6,9
6	Ws3-100/0	100	0°	29	9,6
7	Ws3-100/5		5°	37	10,2
8	Ws3-100/10		10°	44	10,5
9	Ws3-100/15		15°	51	10,8
10	Ws3-100/20		20°	58	12

WS4
STEEL BOOMS



No.	Boom type	Length W (cm)	Inclination angle k	Height H (cm)	Weight (kg)
1	Ws4-50/0	50	0°	29	8,8
2	Ws4-50/5		5°	32	8,8
3	Ws4-50/10		10°	35	8,8
4	Ws4-50/15		15°	38	9,2
5	Ws4-50/20		20°	41	9,2
6	Ws4-100/0	100	0°	29	12,8
7	Ws4-100/5		5°	37	13,6
8	Ws4-100/10		10°	44	14
9	Ws4-100/15		15°	51	14,4
10	Ws4-100/20		20°	58	16

SELECTION OF FOUNDATIONS



SOIL 1 - NON-COHESIVE SOIL

$$\Phi_u^{(r)} = 30^{\circ}, \rho_D^{(r)} = 17 \frac{kN}{m^3}$$

SOIL 2 - NON-COHESIVE SOIL

$$\Phi_u^{(r)} = 35^{\circ}, \rho_D^{(r)} = 18 \frac{kN}{m^3}$$

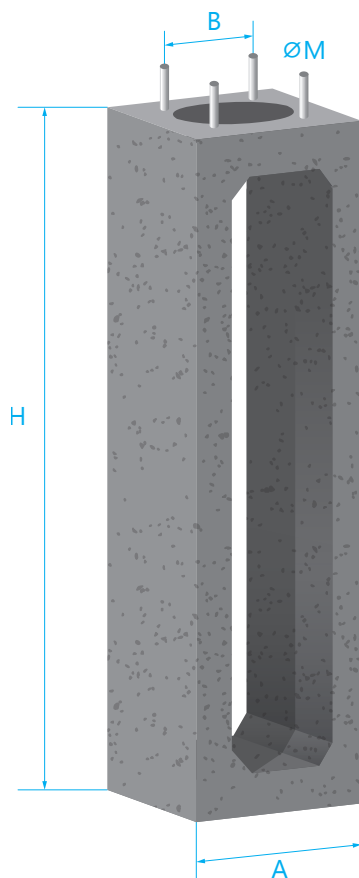
SOIL 3 - COHESIVE SOIL

$$c_u^{(r)} = 25 \text{ kPa} , \Phi_u^{(r)} = 15^{\circ}, \rho_D^{(r)} = 19 \frac{kN}{m^3}$$

- $\Phi_u^{(r)}$ – angle of internal friction,
- $\rho_D^{(r)}$ – volumetric weight,
- $c_u^{(r)}$ – computational consistency traceability.
- M_u – maximum moment of fixing the foundation in a given soil (kNm)

No.	Foundation type	Mu (kNm)		
		Soil 1	Soil 2	Soil 3
1	F-100 V/43	3,5	5,8	6,9
2	F-120 V/43	6,4	10,7	11,4
3	F-150 V/43	14,5	24,2	21,8
4	F-160 V/43	17,8	29,7	26,8
5	F-200 V/43	35,1	58,3	44,9
6	F-80 V/30	1,8	3	3,9
7	F-100 V/30	3,5	5,9	7,4
8	B-100	4,9	8,2	9,3
9	B-120	8,3	13,5	14,8
10	B-150	16,6	27,7	28,4
11	B-160	22,9	38,2	32

PREFABRICATED FOUNDATIONS FOR SKf and SKfz POLES



B80-B200 FOUNDATION

The selection of the type and dimensions of the foundation depends on the existing ground conditions in a given location and on the equipment of the pole.

GROUND BEAMS



DIRECT BURIAL POLE

The pole rotation moment is calculated in the same way as for the SKf pole, with the difference that the force is applied at the depth $\frac{2}{3}t$ below ground level (according to the drawing).

The Mu moment balanced by the buried part of the pole:

$$M_u = \frac{p_t \cdot t^2 \cdot 0,8 \cdot d}{12}$$

p_t – allowable stress in the soil at t depth

t – burial depth

d – Diameter of the pole base (0.8 coefficient was assumed due to the narrowing of the pole)

Characteristics of typical soils:

Type of soil	Bulk density (kN/m ³)	Allowable stress at 2m depth (kPa)
Medium	18,3	>147 (1,5 kG/cm ²)
Weak	17,2	>98 (1,0 kG/cm ²)

MEDIUM SOIL:

- clay and coniferous gravels and aggregates
- fine and medium sand
- clays, compact, semi-compact and hard silts

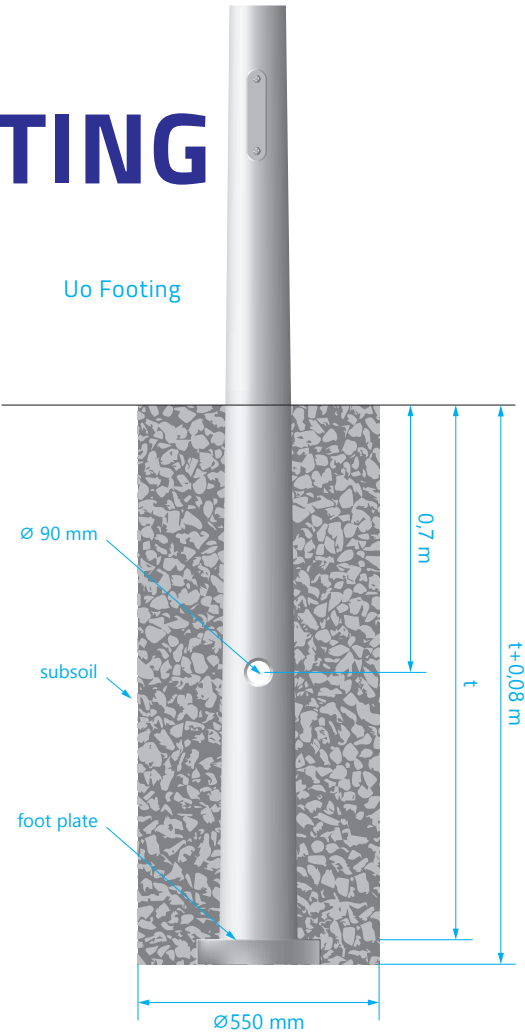
WEAK SOIL:

- dusty and humic sands of medium density
- loamy sand and dusts
- plastic clays and silts
- moderately irrigated land

No.	Specification	Type	Quantity (pcs)	Weight (kg)
1	Ground beam	B-80	4	36
2	Clamping ring	Oup	4	1,9
3	30x30 foot plate	–	1	14
Up Footing weight				165,6

The selection of the type and number of ground beams depends on the existing ground and wind conditions in a given location and on the equipment of the pole.

DRILLED
FOOTING



The selection of the type and dimensions of the footing depends on the ground and wind conditions existing in a given location and on the equipment of the pole.

No.	Pole symbol	Dimensions			Weight (kg)	ts (m)
		H (m)	Ød (mm)	ØD (mm)		
1	SKw 3	3,00	76 (60)	110	5,5	1,0
2	SKw 4	4,00	76 (60)	127	8,6	
3	SKw 5	5,00	76 (60)	145	11,3	
4	SKw 6	6,00	76	177	19,5	
5	SKw 7	7,00	76	194	25,6	2,0
6	SKw 8	8,00	76	210	39	
7	SKw 9	9,00	76	225	40,4	
8	SKw 10	10,00	76	245	46	
9	SKw 11	11,00	76	260	56	
10	SKw 12	12,00	76	278	68,2	

THE REMAINING OFFER OF THE COMPANY



CONTAINER
TRANSFORMER
STATIONS



ES TYPE PRE STRESSED
CONCRETE MASTS



SK AND SKf COMPOSITE
LIGHTING POLES



EOP TYPE LIGHTING
RODS



ETG TYPE POLES OF
RAILWAY TRACTION



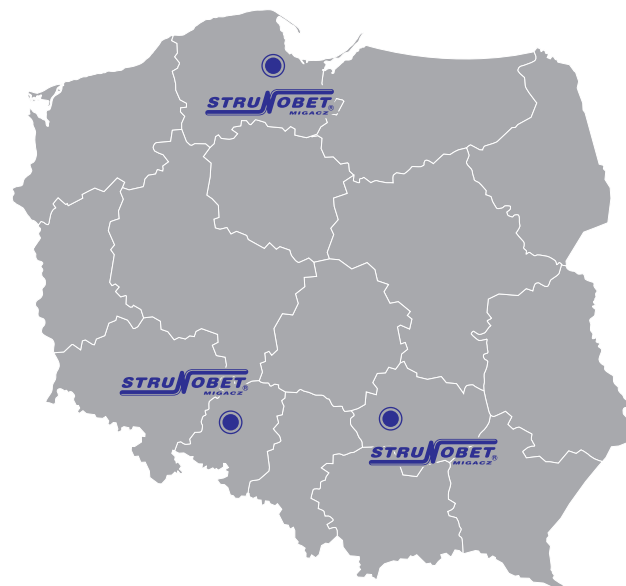
POLE MOUNT
TRANSFORMER
STATIONS



ŻN REINFORCED
CONCRETE POLES



E - TYPE SPUN
CONCRETE POLES



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National Court Register No. KRS 0000174085 | Share capital PLN 6,550,000.00



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