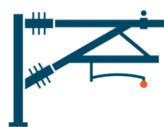


YOUR SPECIALIST AND PROFESSIONAL PARTNER
FOR RAILWAY SYSTEMS





WE ARE PIONEERS IN THE DEVELOPMENT,
PLANNING AND CONSTRUCTION OF ELECTRICAL
CONTACT LINES FOR RAILWAYS



CANTILEVER

04



TUNNELS

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CONSTRUCTION ELEMENTS

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DISCONNECTORS / FEEDS

40



CATENARY

46

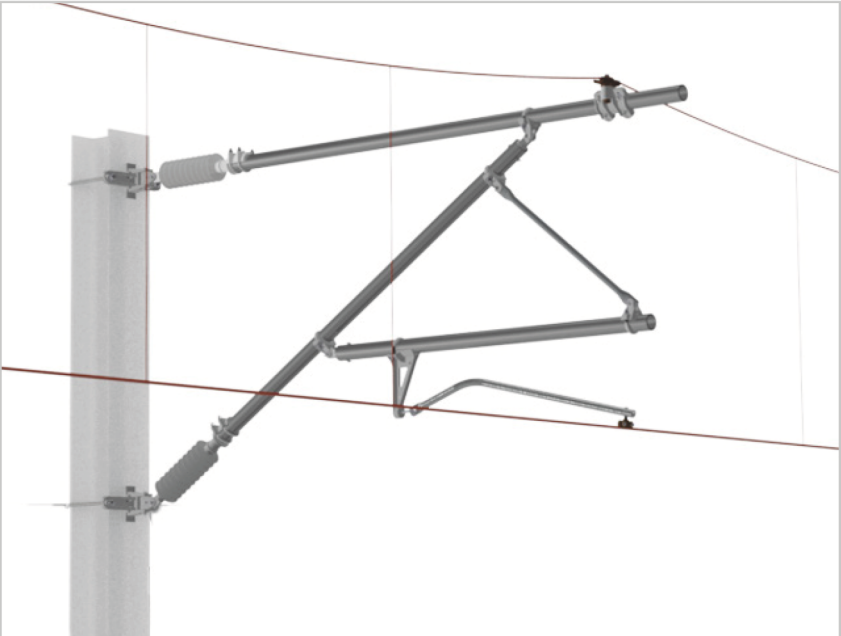


DE-ICING SYSTEM

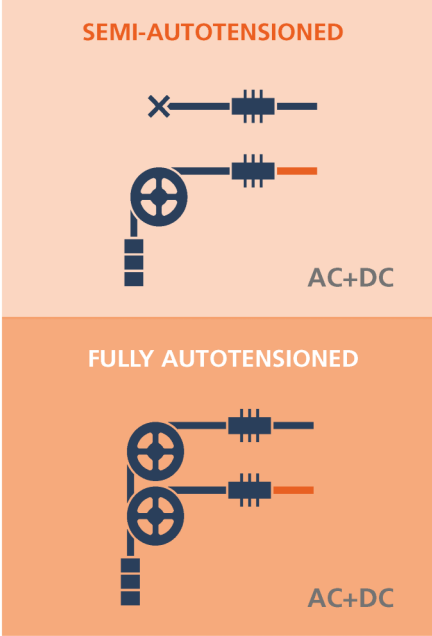
58



ARCAS ADAPTABLE RAILWAY CANTILEVER SYSTEM



A patented development by Kummler+Matter designed on the basis of the tried-and-tested modular system. This system reduces the number of parts in your inventory to the minimum. Because there are only a few standard parts, the system is much faster to install on site.

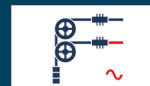


Depending on the application, the support structures can be divided into four sections.

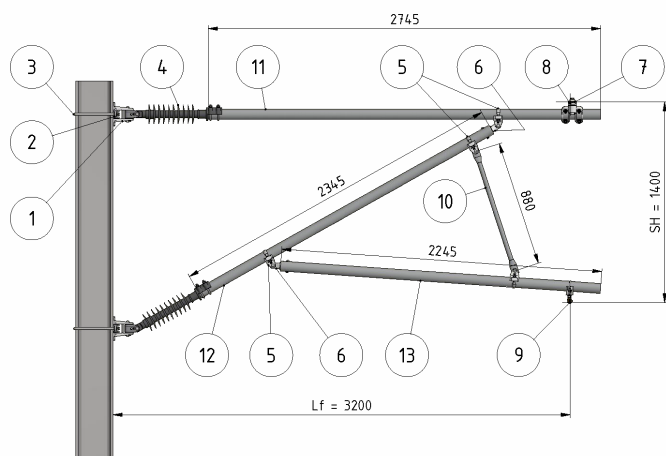
- YOUR BENEFITS AT A GLANCE:**
- Modular structure
 - Can be integrated into existing systems
 - Simple to install
 - Low maintenance
 - Individual functionality
 - Highly cost-efficient

 REFERENCE AND STANDARD	 VOLTAGE	 LOAD	 CONTACT WIRE
 EN 50119, IEC 60913	 600 V/DC to 25 kV/AC	 Messenger cable tension max. 25 kN  Contact wire tension max. 45 kN	 100–150 mm²  2/0–350 MCM

ARCAS CANTILEVER, OOR, fully compensated, 25 kV/AC, single insulation, with support pipe, LF = 3.20 m



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SYSTEM VARIANTS	
PART NO.	LENGTH LF
820002	3.2 m

<https://kuma.ch/en/catalog/820002-en>

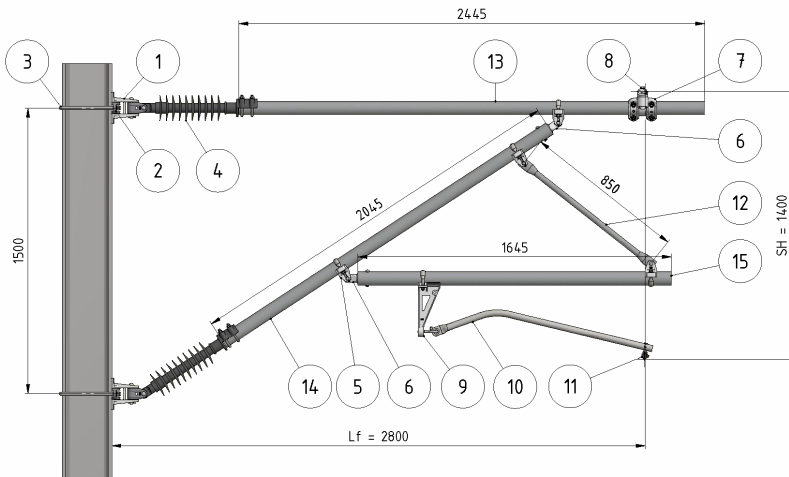
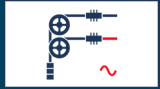
POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D2469-01	2	Hinge with clevis fork vertical
2		C1873-01	2	Bracket 250-320
3		E0888-06	2	U-bolts, Ø 16 mm HEB 260
4		302664	2	Insulator, 25 kV creepage distance: 1230 ±3 mm
5		D3027-03	4	Pipe attachment complete, with U-bolt
6		D2799-01	2	Pipe connector with tongue
7		D2566-03	1	Messenger cable suspension non-insulated, rotatable, cable Ø max. 13 mm
8		301309	1	Protection sleeve AlCu for messenger cable
9		D2664-01	1	Contact wire suspension, rigid, 4°, 2°
10		D2661-05	1	Support pipe Ø 30/3 x 880 mm Alu
11		D2796-24	1	Pipe, Ø 70/7, L=2745 mm Alu
12		D2796-19	1	Pipe Ø 70/7, L = 2245 mm Alu
13		D2796-20	1	Pipe Ø 70/7, L = 2345 mm Alu

POLE TYPE	HEB 260
CONTACT WIRE	100/150 mm²
MESSENGER CABLE	50/120 mm²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	1.4 m

Other pole types on request

ACCESSORIES	
	C1853-01 Bracket 180-240
	E0888 U-bolt, Ø 16 mm
	D2897 pole clamp with band to round pole, for 1 armature

ARCAS CANTILEVER, pull, fully compensated, 25 kV/AC, single insulation, with support pipe, LF = 2.80 m



<https://kuma.ch/en/catalog/820000-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D2469-01	2	Hinge with clevis fork vertical
2		C1873-01	2	Bracket 250-320
3		E0888-06	2	U-bolts, Ø 16 mm HEB 260
4		302664	2	Insulator, 25 kV creepage distance: 1230 ±3 mm
5		D3027-03	4	Pipe attachment complete, with U-bolt
6		D2799-01	2	Pipe connector with tongue
7		D2566-03	1	Messenger cable suspension non-insulated, rotatable, cable Ø max. 13 mm
8		301309	1	Protection sleeve AlCu for messenger cable
9		D3124-05	1	Drop bracket clamp for steady arms, 1 steady arm
10		D3907-01	1	Steady arm, 1", L = 1100 mm
11		E3183-01	1	Contact wire clamp M16
12		D2661-13	1	Support pipe Ø 30, L = 750 mm Alu
13		D2796-21	1	Pipe Ø 70/7, L = 2045 mm
14		D2796-17	1	Pipe, D=70/7, L=2045
15		D2796-13	1	Pipe, D=70/10, L=1645

SYSTEM VARIANTS

PART NO.	LENGTH LF
820000	2.8 m ± 0.2 m

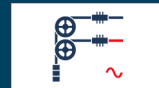
POLE TYPE	HEB 260
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	1.4 m

Other pole types on request

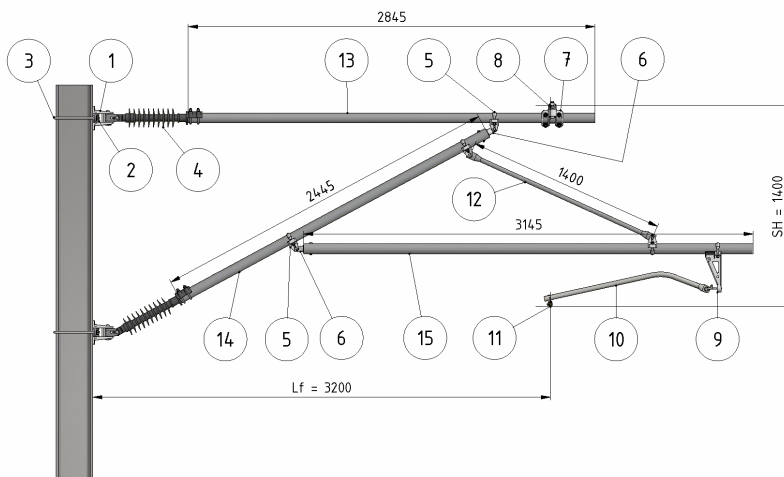
ACCESSORIES

	D2897 pole clamp with band to round pole, for 1 armature
	C1853-01 Bracket 180-240
	E0888 U-bolt, Ø 16 mm

ARCAS CANTILEVER, push, fully compensated, 25 kV/AC, single insulation, with support pipe, LF = 3.20 m



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SYSTEM VARIANTS

PART NO.	LENGTH LF
820001	3.2 m ± 0.2 m

<https://kuma.ch/en/catalog/820001-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D2469-01	2	Hinge with clevis fork vertical
2		C1873-01	2	Bracket 250-320
3		E0888-06	2	U-bolts, Ø 16 mm HEB 260
4		302664	2	Insulator, 25 kV creepage distance: 1230 ±3 mm
5		D3027-03	4	Pipe attachment complete, with U-bolt
6		D2799-01	2	Pipe connector with tongue
7		D2566-03	1	Messenger cable suspension non-insulated, rotatable, cable Ø max. 13 mm
8		301309	1	Protection sleeve AlCu for messenger cable
9		D3124-05	1	Drop bracket clamp for steady arms, 1 steady arm
10		D3907-01	1	Steady arm, 1", L = 1100 mm
11		E3183-01	1	Contact wire clamp M16
12		D2661-24	1	Support pipe Ø 30/3, L = 1400 mm
13		D2796-25	1	Pipe Ø 70/7, L = 2845 mm
14		D2796-21	1	Pipe Ø 70/7, L = 2045 mm
15		D2796-28	1	Pipe, D=70/7, L=3145

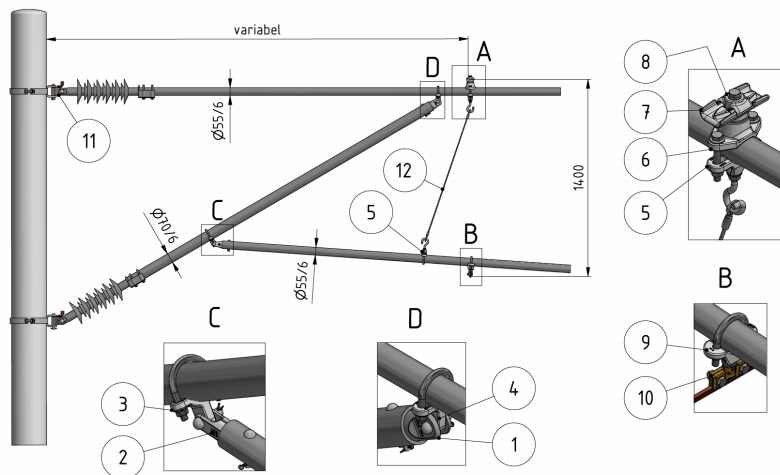
POLE TYPE	HEB 260
CONTACT WIRE	100/150 mm²
MESSENGER CABLE	50/120 mm²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	1.4 m

Other pole types on request

ACCESSORIES

	E0888 U-bolt, Ø 16 mm
	C1853-01 Bracket 180-240
	D2897 pole clamp with band to round pole, for 1 armature

ARCAS forged CANTILEVER, OOR, 25 KV/AC



SYSTEM VARIANTS

PART NO.

820264

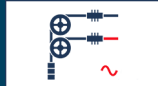
<https://kuma.ch/en/catalog/820264-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D4136-01	2	Pipe connector 70/6
2		D4173-01	2	Pipe connector 55/6
3		D4162-01	1	Pipe attachment 70
4		D4160-01	1	Pipe attachment 42/55
5		D4190-01	2	Pipe connector 55/42
6		D4177-01	1	Support
7		D4122-01	1	Messenger cable clamp
8		D4175-01	1	Clamp
9		D4181-01	1	Contact wire suspension, rigid, 4°
10		E3183-01	1	Contact wire clamp M16
11		D4193-01	2	Tongue
12		D2714-22	1	Cable, Ø = 6 mm, L = 1250 mm, inox

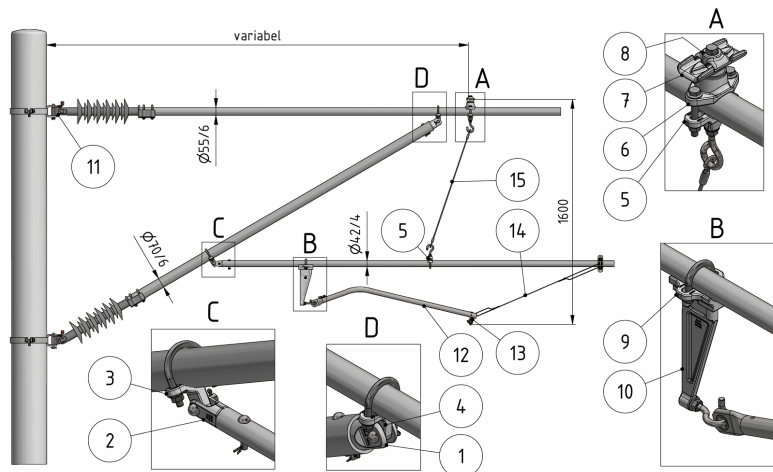
POLE TYPE	Round pole
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	1.6 m

Other pole types on request
Scope of delivery: without fix point cables and cantilevers

ARCAS forged CANTILEVER, PULL, 25 KV/AC



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SYSTEM VARIANTS

PART NO.

820265

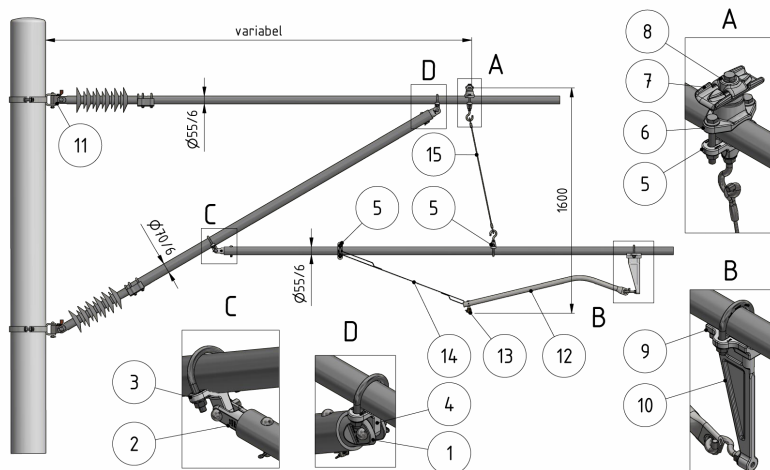
<https://kuma.ch/en/catalog/820265-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D4136-01	2	Pipe connector 70/6
2		D4169-01	2	Pipe connector 42/4
3		D4162-01	1	Pipe attachment 70
4		D4160-01	1	Pipe attachment 42/55
5		D4190-01	3	Pipe connector 55/42
6		D4177-01	1	Support
7		D4122-01	1	Messenger cable clamp
8		D4175-01	1	Clamp
9		D4191-01	1	Pipe connector 55/42
10		D4192-01	1	Drop bracket
11		D4193-01	2	Tongue
12		D3907-02	1	Steady arm G 1", L = 1100 mm, with ring nut Ø 16 mm, SST
13		E3183-01	1	Contact wire clamp M16
14		D4076-01	1	Wind stay
15		D2714-22	1	Cable, Ø = 6 mm, L = 1250 mm, inox

POLE TYPE	Round pole
CONTACT WIRE	100/150 mm²
MESSENGER CABLE	50/120 mm²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	1.6 m

Other pole types on request
Scope of delivery: without fix point cables and cantilevers

ARCAS forged CANTILEVER, PUSH, 25 KV/AC



SYSTEM VARIANTS

PART NO.

820263

<https://kuma.ch/en/catalog/820263-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D4136-01	2	Pipe connector 70/6
2		D4173-01	2	Pipe connector 55/6
3		D4162-01	1	Pipe attachment 70
4		D4160-01	1	Pipe attachment 42/55
5		D4190-01	3	Pipe connector 55/42
6		D4177-01	1	Support
7		D4122-01	1	Messenger cable clamp
8		D4175-01	1	Clamp
9		D4191-01	1	Pipe connector 55/42
10		D4192-01	1	Drop bracket
11		D4193-01	2	Tongue
12		D3907-02	1	Steady arm G 1", L = 1100 mm, with ring nut Ø 16 mm, SST
13		E3183-01	1	Contact wire clamp M16
14		D4076-01	1	Wind stay
15		D2714-22	1	Cable, Ø = 6 mm, L = 1250 mm, inox

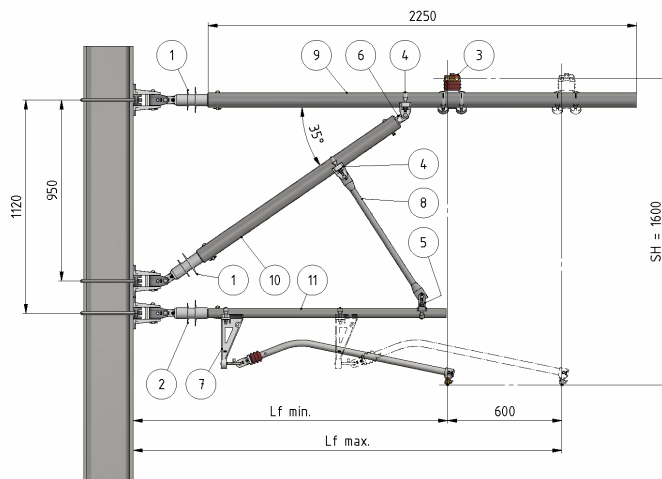
POLE TYPE	Round pole
CONTACT WIRE	100/150 mm²
MESSENGER CABLE	50/120 mm²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	1.6 m

Other pole types on request
Scope of delivery: without fix point cables and cantilevers

ARCAS CANTILEVER, pull, fully compensated, 3 kV/DC, double insulation, with support pipe, Lf = 1.65–2.30 m



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SYSTEM VARIANTS

PART NO.	LENGTH LF
820100	1.65–2.30 m

<https://kuma.ch/en/catalog/820100-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2559-02	1	Messenger cable suspension insulated, rotatable, reinforced, to pipe 2.5", cable Ø max. 21
4		D3027-02	2	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
5		D2338-01	1	Pipe attachment complete, with U-bolt, to pipe G1.5"
6		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
7		120535	1	Contact wire suspension insulated 3 kV
8		D2661-13	1	Support pipe Ø 30, L = 750 mm Alu
9		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
11		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

POLE TYPE	HEB 260
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	1.6 m

Other pole types on request

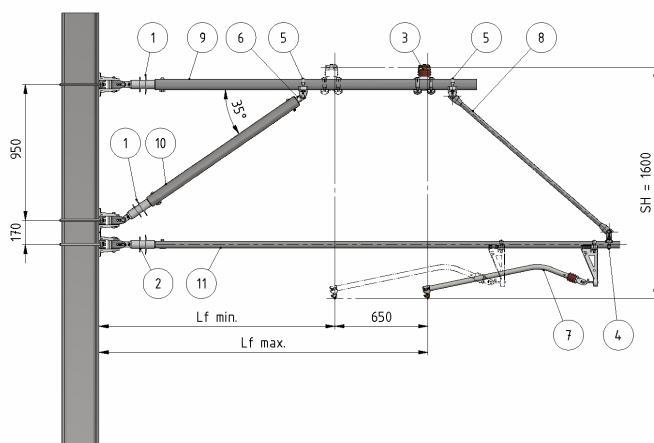
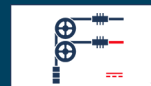
ACCESSORIES

	D2360-02 pole bracket with hinge and clevis, HEB 180
	D2360-03 pole bracket with hinge and clevis, HEB 200
	D2360-04 pole bracket with hinge and clevis, HEB 220
	D2360-05 pole bracket with hinge and clevis, HEB 240
	820401 pole clamp to round pole, for 1 armature Ø 150–250 mm
	820402 pole clamp to round pole, for 1 armature Ø 251–500

EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, push, fully compensated, 3 kV/DC, double insulation, with support pipe, Lf = 1.65–2.30 m



<https://kuma.ch/en/catalog/820142-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2559-02	1	Messenger cable suspension insulated, rotatable, reinforced, to pipe 2.5", cable Ø max. 21
4		D2338-01	1	Pipe attachment complete, with U-bolt, to pipe G1.5"
5		D3027-02	2	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
6		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
7		120535	1	Contact wire suspension insulated 3 kV
8		D2661-13	1	Support pipe Ø 30, L = 750 mm Alu
9		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
11		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

SYSTEM VARIANTS	
PART NO.	LENGTH LF
820142	1.65–2.30 m

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	1.6 m

Other pole types on request

ACCESSORIES	
	D2360-02 pole bracket with hinge and clevis, HEB 180
	D2360-03 pole bracket with hinge and clevis, HEB 200
	D2360-04 pole bracket with hinge and clevis, HEB 220
	D2360-05 pole bracket with hinge and clevis, HEB 240
	820401 pole clamp to round pole, for 1 armature Ø 150–250 mm
	820402 pole clamp to round pole, for 1 armature Ø 251–500

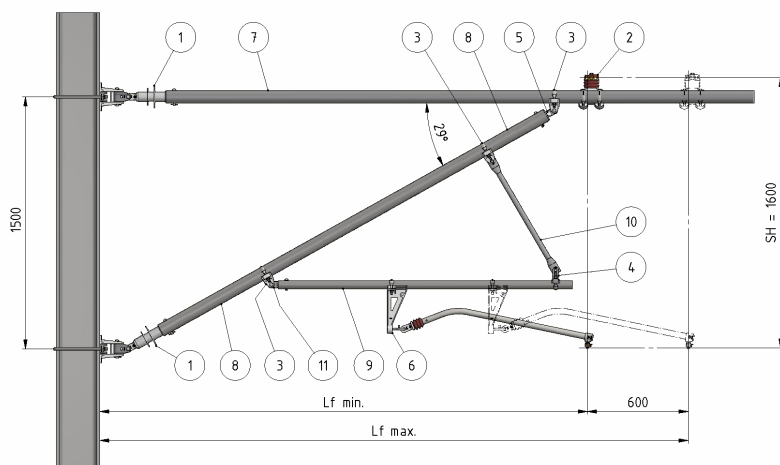
EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, pull, fully compensated, 3 kV/DC, double insulation, with support pipe, Lf = 2.00–4.70 m



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SYSTEM VARIANTS	
PART NO.	LENGTH LF
820101	2.00–2.60 m
820135	2.30–2.90 m
820136	2.60–3.20 m
820137	2.90–3.50 m
820138	3.20–3.80 m
820139	3.50–4.10 m
820140	3.80–4.40 m
820141	4.10–4.70 m

<https://kuma.ch/en/catalog/820137-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		D2559-02	1	Messenger cable suspension insulated, rotatable, reinforced, to pipe 2.5", cable Ø max. 21
3		D3027-02	3	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
4		D2338-01	1	Pipe attachment complete, with U-bolt, to pipe G1.5"
5		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
6		120535	1	Contact wire suspension insulated 3 kV
7		D2457	1	Pipe 2.5" STL HDG Length acc. to extended specifications
8		D2460	1	Pipe 2.5" STL HDG Length acc. to extended specifications
9		D2463	1	Pipe 1.5" STL HDG Length acc. to extended specifications
10		D2661-13	1	Support pipe Ø 30, L = 750 mm Alu
11		D2353-01	1	Pipe connector with tongue, complete, to pipe G1.5"

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	1.6 m

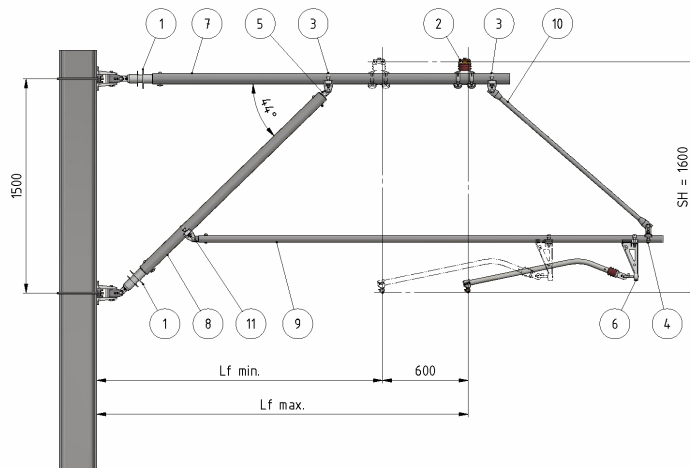
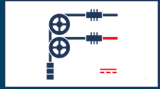
Other pole types on request

ACCESSORIES	
	D2360-02 pole bracket with hinge and clevis, HEB 180
	D2360-03 pole bracket with hinge and clevis, HEB 200
	D2360-04 pole bracket with hinge and clevis, HEB 220
	D2360-05 pole bracket with hinge and clevis, HEB 240
	820401 pole clamp to round pole, for 1 armature Ø 150–250 mm
	820402 pole clamp to round pole, for 1 armature Ø 251–500

EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, push, fully compensated, 3 kV/DC, double insulation, with support pipe, Lf = 2.00–4.70 m



<https://kuma.ch/en/catalog/820143-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		D2559-02	1	Messenger cable suspension insulated, rotatable, reinforced, to pipe 2.5", cable Ø max. 21
3		D3027-02	3	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
4		D2338-01	1	Pipe attachment complete, with U-bolt, to pipe G1.5"
5		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
6		120535	1	Contact wire suspension insulated 3 kV
7		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
8		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
9		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2661-13	1	Support pipe Ø 30, L = 750 mm Alu
11		D2353-01	1	Pipe connector with tongue, complete, to pipe G1.5"

SYSTEM VARIANTS	
PART NO.	LENGTH LF
820143	2.00–2.60 m
820144	2.30–2.90 m
820145	2.60–3.20 m
820146	2.90–3.50 m
820147	3.20–3.80 m
820148	3.50–4.10 m
820149	3.80–4.40 m
820150	4.10–4.70 m

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	1.6 m

Other pole types on request

ACCESSORIES	
	D2360-02 pole bracket with hinge and clevis, HEB 180
	D2360-03 pole bracket with hinge and clevis, HEB 200
	D2360-04 pole bracket with hinge and clevis, HEB 220
	D2360-05 pole bracket with hinge and clevis, HEB 240
	820401 pole clamp to round pole, for 1 armature Ø 150–250 mm
	820402 pole clamp to round pole, for 1 armature Ø 251–500

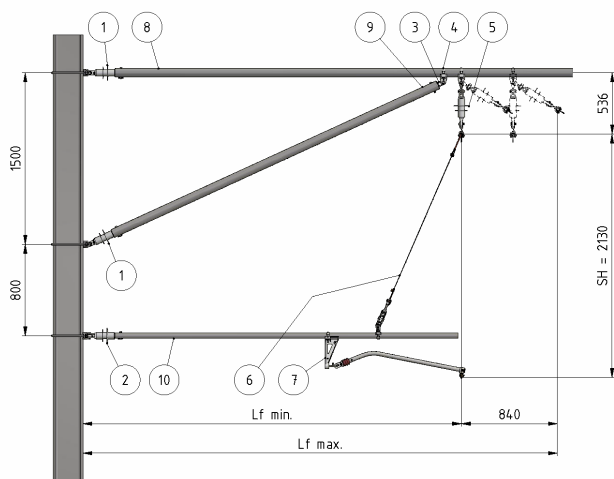
EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, pull, semi-tensioned, 3 kV/DC, $\geq 30^\circ$ – 90° , double insulation, with hanger cable, $L_f = 1.57$ – 4.80 m



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SYSTEM VARIANTS	
PART NO.	LENGTH L_f
820154	1.57–2.40 m
820155	1.65–2.65 m
820156	2.15–2.90 m
820157	2.45–3.30 m
820158	2.75–3.65 m
820159	3.00–3.90 m
820160	3.30–4.15 m
820161	3.58–4.40 m
820162	3.98–4.80 m

<https://kuma.ch/en/catalog/820160-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
4		D3027-02	1	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
5		120621	1	Suspension, 3 kV, 2.5" 1 conductor $\geq 30^\circ$ – 90°
6		120506	1	Suspension for registration pipe G 1.5", conductive, with loop insulator
7		120535	1	Contact wire suspension insulated 3 kV
8		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
9		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	2.1 m

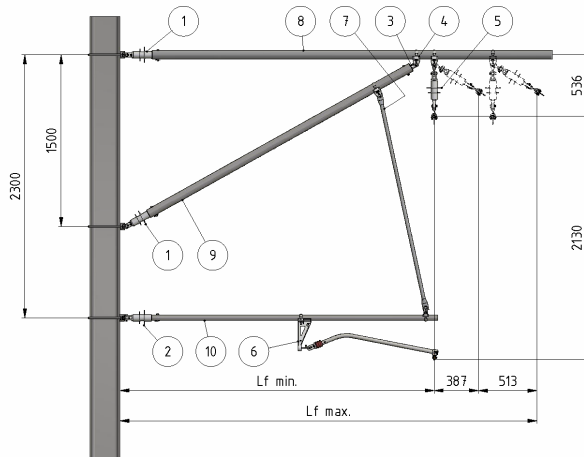
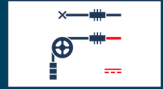
Other pole types on request

ACCESSORIES	
	D2358 pole bracket with clevis, HEB 200–240
	D2359 pole bracket with tongue, HEB 200–240
	D2748 pole bracket with clevis, HEB 100–160
	D2749 pole bracket with tongue, HEB 100–160
	D2746 pole bracket with clevis, HEB 260–300
	D2747 pole bracket with tongue, HEB 260–300

EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, pull, semi-tensioned, 3 kV/DC, $\geq 30^\circ$ – 90° , double insulation, with support pipe, Lf = 1.57–4.80 m



SYSTEM VARIANTS	
PART NO.	LENGTH LF
820163	1.57–2.40 m
820164	1.65–2.65 m
820165	2.15–2.90 m
820166	2.45–3.30 m
820167	2.75–3.65 m
820168	3.00–3.90 m
820169	3.30–4.15 m
820170	3.58–4.40 m
820171	3.98–4.80 m

<https://kuma.ch/en/catalog/820169-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
4		D3027-02	1	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
5		120621	1	Suspension, 3 kV, 2.5" 1 conductor $\geq 30^\circ$ – 90°
6		120535	1	Contact wire suspension insulated 3 kV
7		120631	1	Support pipe Ø30, L=2490 mm, pipe 1.5"/2.5"
8		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
9		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	2.1 m

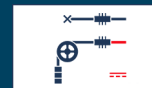
Other pole types on request

ACCESSORIES	
	D2358 pole bracket with clevis, HEB 200–240
	D2359 pole bracket with tongue, HEB 200–240
	D2748 pole bracket with clevis, HEB 100–160
	D2749 pole bracket with tongue, HEB 100–160
	D2746 pole bracket with clevis, HEB 260–300
	D2747 pole bracket with tongue, HEB 260–300

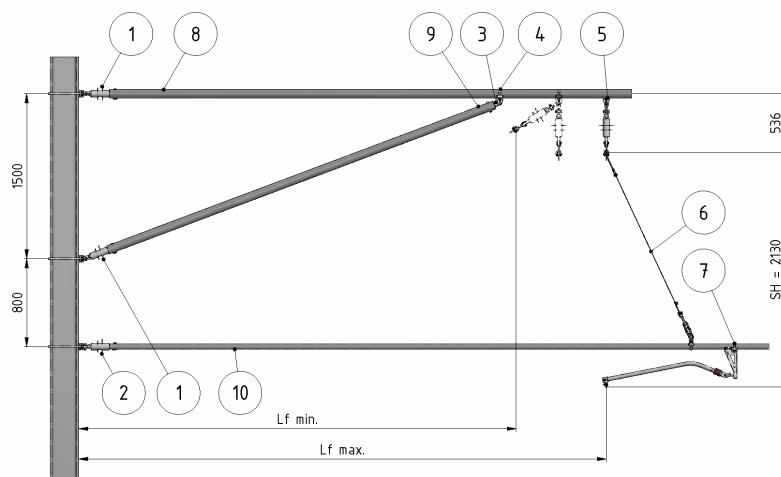
EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, push, semi-tensioned, 3 kV/DC, ≥ 30°–90°, double insulation, with hanger cable, Lf = 1.57–4.80 m



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SYSTEM VARIANTS	
PART NO.	LENGTH LF
820172	1.57–2.40 m
820173	1.65–2.65 m
820174	2.15–2.90 m
820175	2.45–3.30 m
820176	2.75–3.65 m
820177	3.00–3.90 m
820178	3.30–4.15 m
820179	3.58–4.40 m
820180	3.98–4.80 m

<https://kuma.ch/en/catalog/820179-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
4		D3027-02	1	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
5		120621	1	Suspension, 3 kV, 2.5" 1 conductor ≥ 30°–90°
6		120506	1	Suspension for registration pipe G 1.5", conductive, with loop insulator
7		120535	1	Contact wire suspension insulated 3 kV
8		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
9		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	2.1 m

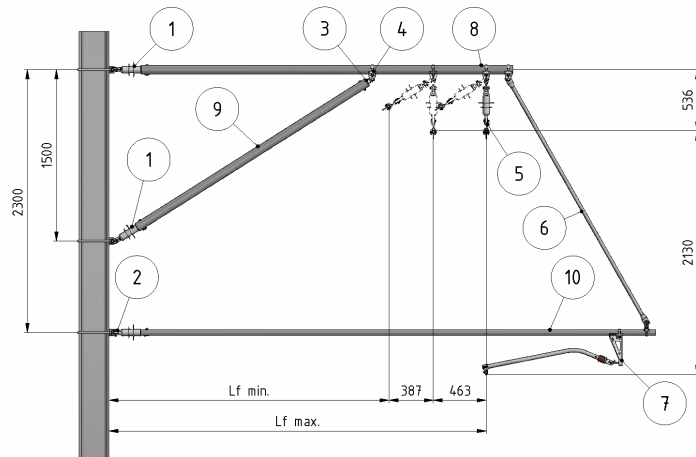
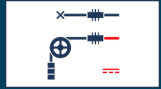
Other pole types on request

ACCESSORIES	
	D2358 pole bracket with clevis, HEB 200–240
	D2359 pole bracket with tongue, HEB 200–240
	D2748 pole bracket with clevis, HEB 100–160
	D2749 pole bracket with tongue, HEB 100–160
	D2746 pole bracket with clevis, HEB 260–300
	D2747 pole bracket with tongue, HEB 260–300

EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, push, semi-tensioned, 3 kV/DC, $\geq 30^\circ$ – 90° , double insulation, with support pipe, Lf= 1.57–4.80 m



<https://kuma.ch/en/catalog/820185-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
4		D3027-02	1	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
5		120621	1	Suspension, 3 kV, 2.5" 1 conductor $\geq 30^\circ$ – 90°
6		120535	1	Contact wire suspension insulated 3 kV
7		120632	1	Support pipe Ø30, L = 2490 mm, Pipe 1.5"/2.5"
8		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
9		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

SYSTEM VARIANTS	
PART NO.	LENGTH LF
820181	1.57–2.40 m
820182	1.65–2.65 m
820183	2.15–2.90 m
820184	2.45–3.30 m
820185	2.75–3.65 m
820186	3.00–3.90 m
820187	3.30–4.15 m
820188	3.58–4.40 m
820189	3.98–4.80 m

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	2.1 m

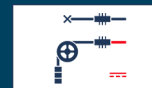
Other pole types on request

ACCESSORIES	
	D2358 pole bracket with clevis, HEB 200–240
	D2359 pole bracket with tongue, HEB 200–240
	D2748 pole bracket with clevis, HEB 100–160
	D2749 pole bracket with tongue, HEB 100–160
	D2746 pole bracket with clevis, HEB 260–300
	D2747 pole bracket with tongue, HEB 260–300

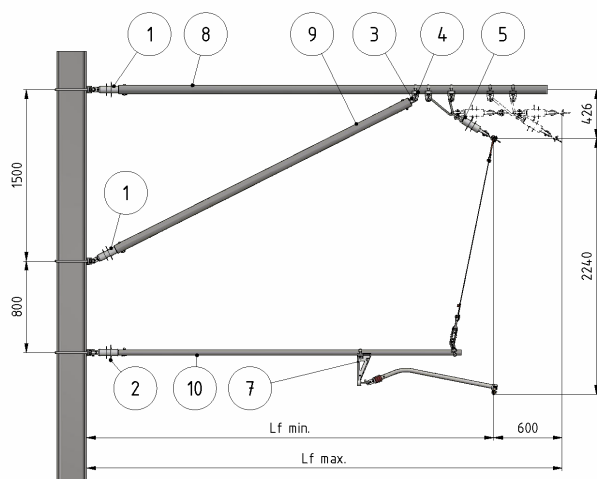
EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, pull, semi-tensioned, 3 kV/DC, 30°–0°, double insulation, with hanger cable, Lf = 1.97–5.07 M



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SYSTEM VARIANTS	
PART NO.	LENGTH LF
820190	1.97–2.62 m
820191	2.19–2.79 m
820192	2.75–3.32 m
820193	3.00–3.60 m
820194	3.30–3.90 m
820195	3.56–4.16 m
820196	3.80–4.40 m
820197	4.07–4.67 m
820198	4.47–5.07 m

<https://kuma.ch/en/catalog/820195-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
4		D3027-02	1	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
5		120622	1	Suspension 1 conductor 30°–0°, 2.5", 3 kV
6		120506	1	Suspension for registration pipe G 1.5", conductive, with loop insulator
7		120535	1	Contact wire suspension insulated 3 kV
8		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
9		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	2.2 m

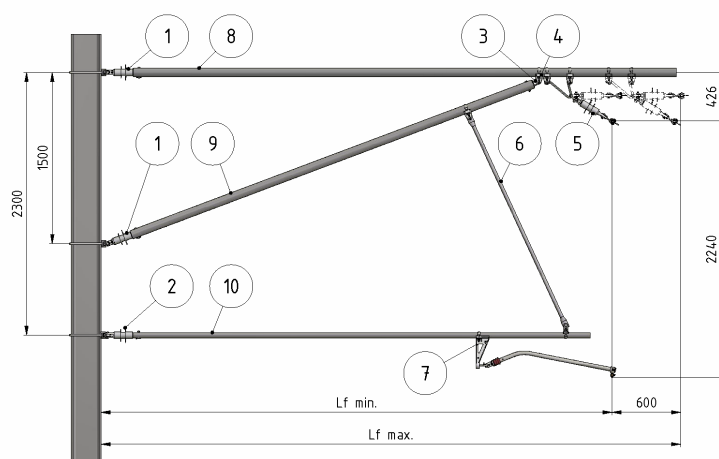
Other pole types on request

ACCESSORIES	
	D2358 pole bracket with clevis, HEB 200–240
	D2359 pole bracket with tongue, HEB 200–240
	D2748 pole bracket with clevis, HEB 100–160
	D2749 pole bracket with tongue, HEB 100–160
	D2746 pole bracket with clevis, HEB 260–300
	D2747 pole bracket with tongue, HEB 260–300

EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, pull, semi-tensioned, 3 kV/DC, 30°–0°, double insulation, with support pipe, Lf = 1.97–5.07 m



SYSTEM VARIANTS	
PART NO.	LENGTH LF
820199	1.97–2.62 m
820200	2.19–2.79 m
820201	2.75–3.32 m
820202	3.00–3.60 m
820203	3.30–3.90 m
820204	3.56–4.16 m
820205	3.80–4.40 m
820206	4.07–4.67 m
820207	4.47–5.07 m

<https://kuma.ch/en/catalog/820203-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
4		D3027-02	1	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
5		120622	1	Suspension 1 conductor 30°–0°, 2.5", 3 kV
6		120633	1	Support pipe Ø30, L = 1990 mm, Pipe connections 1.5" / 2.5"
7		120535	1	Contact wire suspension insulated 3 kV
8		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
9		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	2.2 m

Other pole types on request

ACCESSORIES	
	D2358 pole bracket with clevis, HEB 200–240
	D2359 pole bracket with tongue, HEB 200–240
	D2748 pole bracket with clevis, HEB 100–160
	D2749 pole bracket with tongue, HEB 100–160
	D2746 pole bracket with clevis, HEB 260–300
	D2747 pole bracket with tongue, HEB 260–300

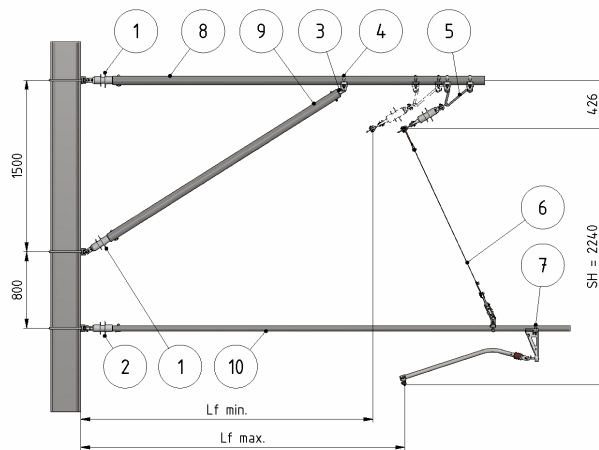
EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, push, semi-tensioned, 3 kV/DC, 30°–0°, double insulation, with hanger cable, Lf = 1.51–4.43 m



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SYSTEM VARIANTS	
PART NO.	LENGTH LF
820208	1.51–1.84 m
820209	1.71–2.09 m
820210	2.19–2.34 m
820211	2.50–2.83 m
820212	2.79–3.08 m
820213	3.07–3.33 m
820214	3.35–3.59 m
820215	3.62–3.83 m
820216	4.03–4.43 m

<https://kuma.ch/en/catalog/820212-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
4		D3027-02	1	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
5		120622	1	Suspension 1 conductor 30°–0°, 2.5", 3 kV
6		120506	1	Suspension for registration pipe G 1.5", conductive, with loop insulator
7		120535	1	Contact wire suspension insulated 3 kV
8		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
9		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	2.2 m

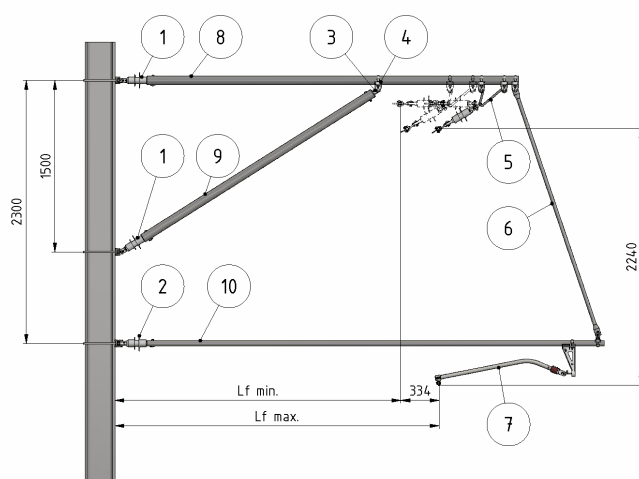
Other pole types on request

ACCESSORIES	
	D2358 pole bracket with clevis, HEB 200–240
	D2359 pole bracket with tongue, HEB 200–240
	D2748 pole bracket with clevis, HEB 100–160
	D2749 pole bracket with tongue, HEB 100–160
	D2746 pole bracket with clevis, HEB 260–300
	D2747 pole bracket with tongue, HEB 260–300

EXTENDED SPECIFICATIONS



ARCAS CANTILEVER, push, semi-tensioned, 3 kV/DC, 30°–0°, double insulation, with support pipe, Lf= 1.51–4.43 m



SYSTEM VARIANTS	
PART NO.	LENGTH LF
820217	1.51–1.84 m
820218	1.71–2.09 m
820219	2.19–2.34 m
820220	2.50–2.83 m
820221	2.79–3.08 m
820222	3.07–3.33 m
820223	3.35–3.59 m
820224	3.62–3.83 m
820225	4.03–4.43 m

<https://kuma.ch/en/catalog/820220-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C2460-12	2	Insulator 3 kV Tongue - pipe 2 1/2" / 0°
2		C2499-01	1	Insulator 3 kV Pipe 1 1/2" - clevis / 90°
3		D2349-01	1	Pipe connector with tongue, to pipe G 2.5"
4		D3027-02	1	Pipe attachment, with U-bolt, to pipe G 2.5", reinforced
5		120622	1	Suspension 1 conductor 30°–0°, 2.5", 3 kV
6		120635	1	Support pipe Ø30, L = 2290 mm, Pipe connections 1.5"/2.5"
7		120535	1	Contact wire suspension insulated 3 kV
8		D2457	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
9		D2460	1	Pipe 2.5" STL HDG <i>Length acc. to extended specifications</i>
10		D2463	1	Pipe 1.5" STL HDG <i>Length acc. to extended specifications</i>

POLE TYPE	HEA + HEB
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	3 kV/DC
SYSTEM HEIGHT	2.2 m

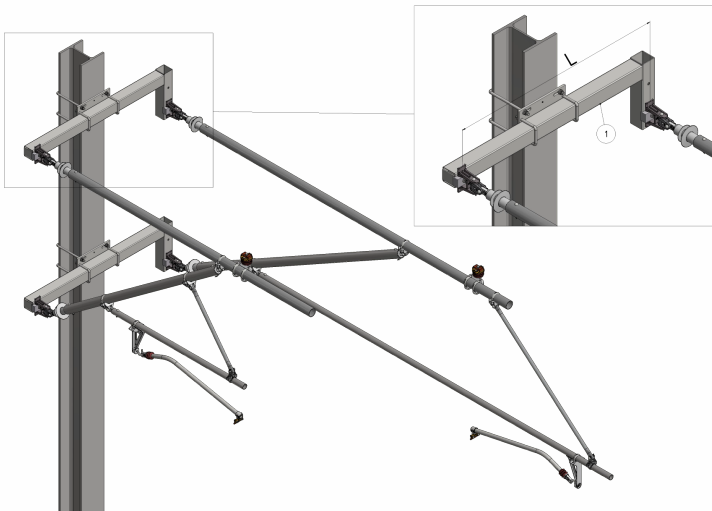
Other pole types on request

ACCESSORIES	
	D2358 pole bracket with clevis, HEB 200–240
	D2359 pole bracket with tongue, HEB 200–240
	D2748 pole bracket with clevis, HEB 100–160
	D2749 pole bracket with tongue, HEB 100–160
	D2746 pole bracket with clevis, HEB 260–300
	D2747 pole bracket with tongue, HEB 260–300

EXTENDED SPECIFICATIONS



BRACKET INCLINED FOR TENSION SECTION, fully compensated, AC or DC



<https://kuma.ch/en/catalog/820257-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C1867-03	2	Bracket inclined with hinge complete for tension section, with clevis, L = 1500 mm

SYSTEM VARIANTS	
PART NO.	VERSION
820257	HEB 260 / L = 1500
820394	HEB 260 / L = 1200
820395	HEB 260 / L = 1300
820396	HEB 260 / L = 900
820397	HEB 320 / L = 1300
820398	HEB 550 / L = 1300
820399	HEB 160 / L = 1300

SYSTEM HEIGHT	variable
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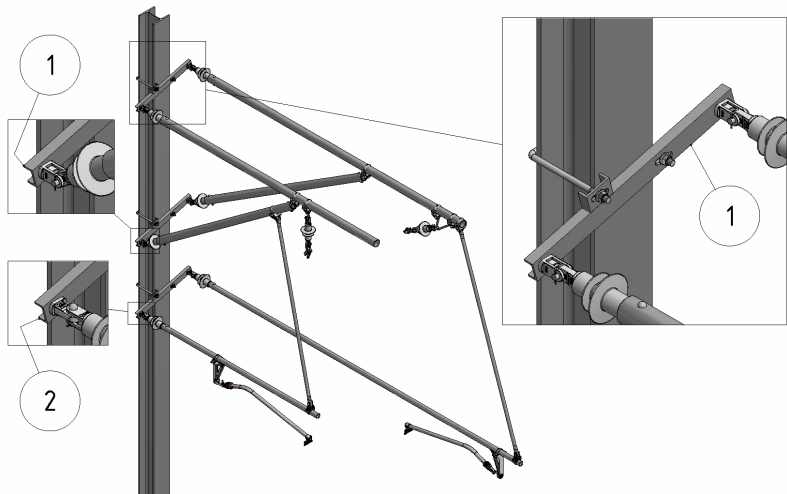
Scope of delivery
 - without cantilevers
 - without u-bolts

ACCESSORIES	
	E0888 U-bolt, Ø 16 mm, HEA/HEB

EXTENDED SPECIFICATIONS



BRACKET INCLINED FOR TENSION SECTION, semi-tensioned, DC



SYSTEM VARIANTS	
PART NO.	VERSION
820260	ST / 3 kV

<https://kuma.ch/en/catalog/820260-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C0663-01	2	Bracket inclined with clevis, on wide flange poles
2		C0663-02	1	Bracket inclined with tongue, to wide flange poles

VOLTAGE	3 kV/DC
SYSTEM HEIGHT	variable

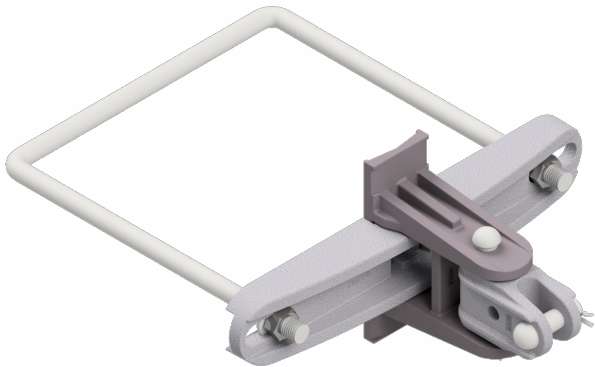
Scope of delivery
- without cantilevers
- without u-bolts

ACCESSORIES	
	E0717 U-bolt, Ø 16 mm

EXTENDED SPECIFICATIONS



POLE BRACKET for H-poles with hinge



SYSTEM VARIANTS	
PART NO.	VERSION
D2360-02	HEB 180
D2360-03	HEB 200
D2360-04	HEB 220
D2360-05	HEB 240

<https://kuma.ch/en/catalog/D2360-02-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		C1853	1	Bracket 180-240
2		D2361-01	1	Hinge with clevis fork vertical
3		E0888	1	U-bolts, Ø = 16 mm to HEB 180 <i>Version acc. to extended specifications</i>

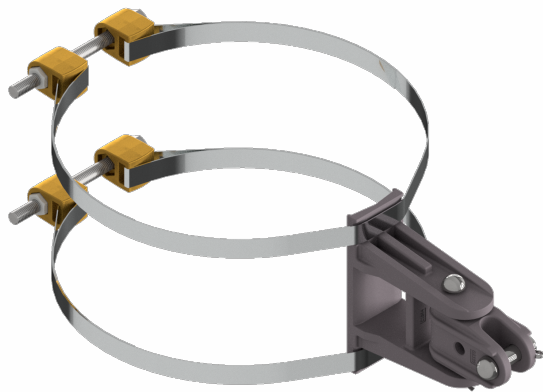
BOLT	Ø 16 mm
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ACCESSORIES	
	WE3255-01 Interlock system for hinge

EXTENDED SPECIFICATIONS



POLE BRACKET for round poles with hinge



SYSTEM VARIANTS	
PART NO.	VERSION
820400	Ø 114–149 mm
820401	Ø 150–250 mm
820402	Ø 251–500 mm

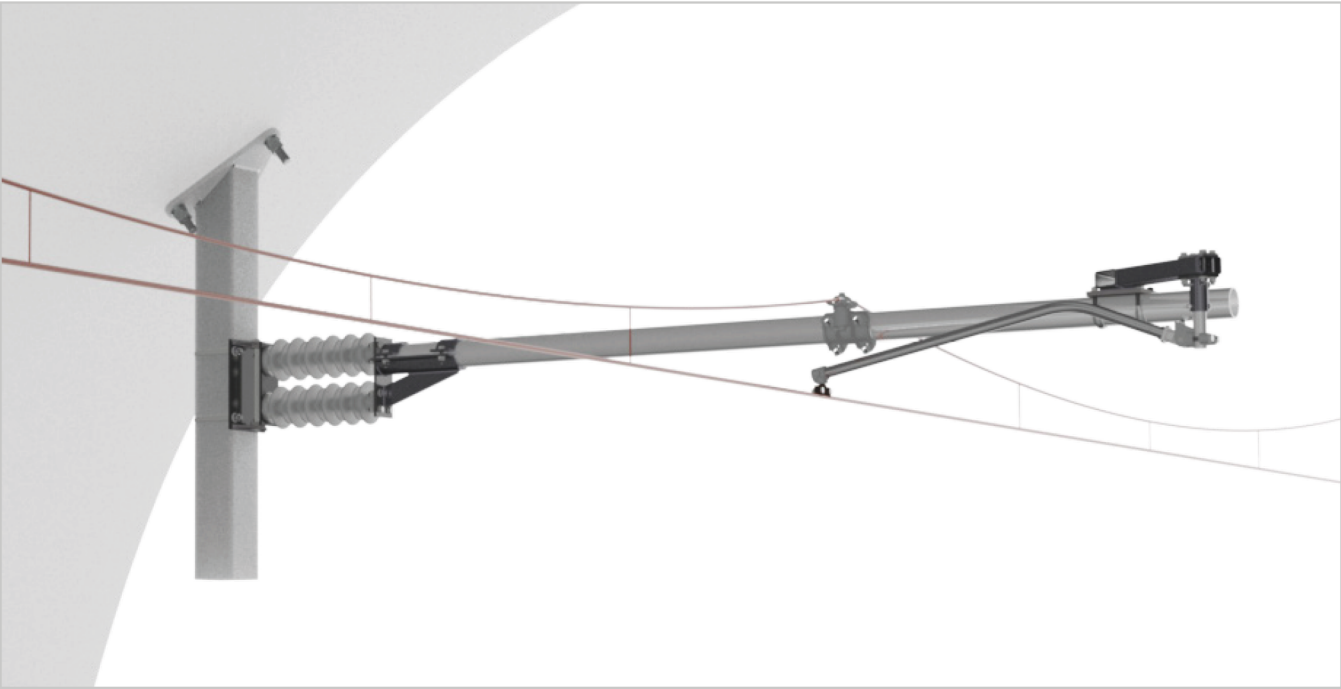
<https://kuma.ch/en/catalog/820400-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D2897	2	Pole clamp with band to round pole, for 1 armature 114–149 mm
2		D2361-01	1	Hinge with clevis fork vertical

BOLT	Ø 16 mm
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ACCESSORIES	
	WD2888-01 Bending device for pole band 1 x 20 mm

CANTILEVER SYSTEMS FOR TUNNELS



A cantilever system for lower system heights in tunnels with restricted space. A development by Kummler+Matter that is also designed on the basis of the tried-and-tested modular system.

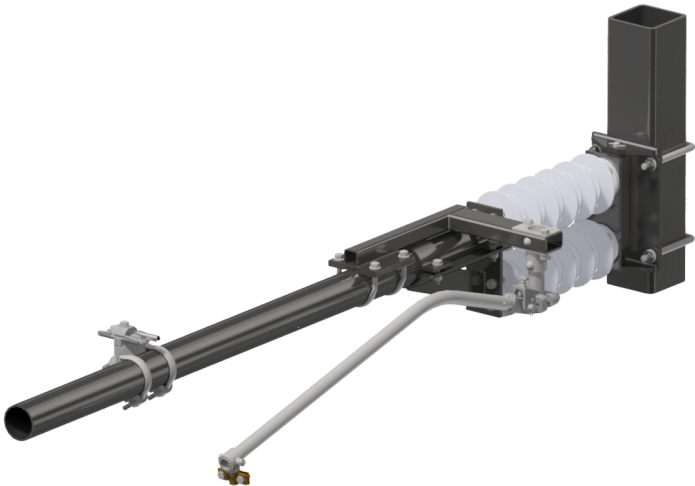
This system reduces the number of parts in your inventory to the minimum. Because there are only a few standard parts, the system is much faster to install on site.

YOUR BENEFITS AT A GLANCE:

- Modular structure
- Can be integrated into existing systems
- Simple to install
- Low maintenance
- Individual functionality
- For low system heights of between 300 and 650 mm

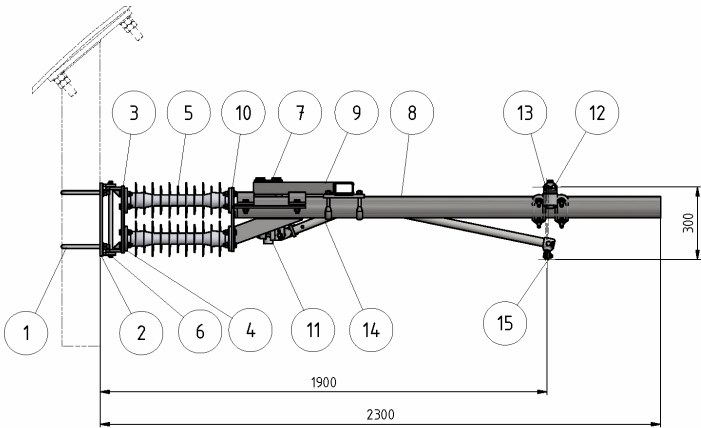
 REFERENCE AND STANDARD	 VOLTAGE	 LOAD	 CONTACT WIRE
 EN 50119, IEC 60913	 600 V/DC to 25 kV/AC	 Messenger cable tension max. 25 kN  Contact wire tension max. 45 kN	 100–150 mm ²  2/0–350 MCM

TUNNEL CANTILEVER, pull, SH = 300 mm, 25 kV/AC, single insulation



SYSTEM VARIANTS	
PART NO.	LENGTH LF
820009	1.9 m

<https://kuma.ch/en/catalog/820009-en>



POLE TYPE	HEB 140
CONTACT WIRE	100/150 mm²
MESSENGER CABLE	50/120 mm²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	300 mm

Other pole types on request

The cantilevers are especially suitable for tight spatial conditions in tunnels due to the low system height of 300 mm. The cantilevers can be adapted to specific customer requirements such as mounting them to different suspension support profiles.

The exhibited cantilevers are standard.

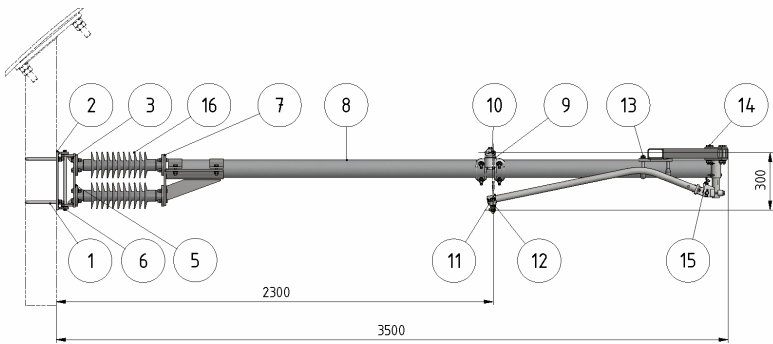
TUNNEL CANTILEVER, push,
SH = 300 mm, 25 kV/AC, single insulation



SYSTEM VARIANTS

PART NO.	LENGTH LF
820010	2.3 m

<https://kuma.ch/en/catalog/820010-en>



POLE TYPE	HEB 140
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	300 mm

Other pole types on request

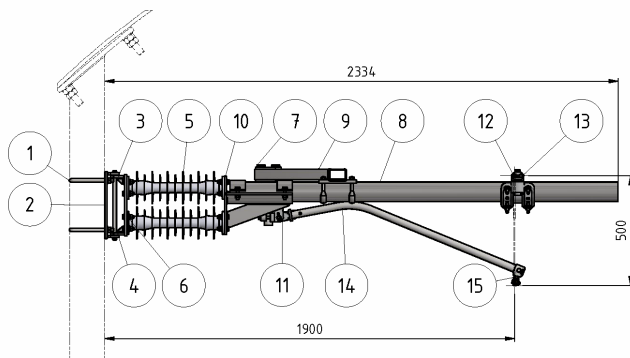
The cantilevers are especially suitable for tight spatial conditions in tunnels due to the low system height of 300 mm. The cantilevers can be adapted to specific customer requirements such as mounting them to different suspension support profiles.

The exhibited cantilevers are standard.

TUNNEL CANTILEVER, pull, SH = 500 mm, 25 kV/AC, single insulation



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SYSTEM VARIANTS	
PART NO.	LENGTH LF
820011	1.9 m

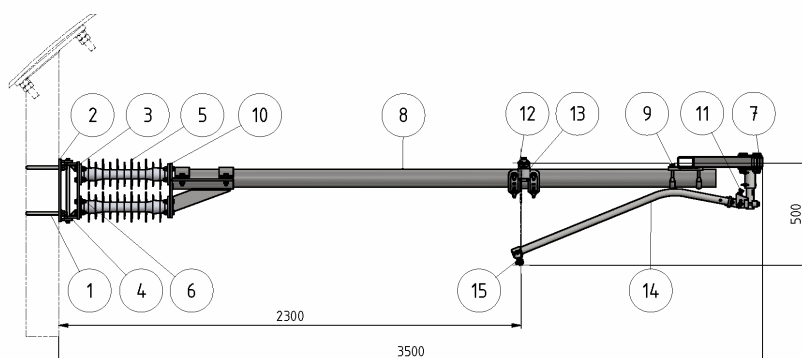
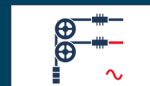
<https://kuma.ch/en/catalog/820011-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D2476-03	2	U-bolt, Ø = 16 mm to HEB 140
2		D4044-01	1	Hinge
3		C2462-01	1	Swivel support
4		301497	1	Washer, 31.9 / 18.1 x 1.5 Inox
5		302712	2	Insulator, 25 kV, with double flange
6		D3871-01	3	Spacer plate
7		D4045-01	1	Hook joint
8		D3702-01	1	Pipe Ø 88.9/5, L = 1765 mm STL HDG
9		D4043-01	1	Lateral support
10		C2464-01	1	Pipe support
11		D2705-01	1	Pipe attachment simple with lift limiter, to pipe Ø 38 mm, for 1 steady arm
12		301309	1	Protection sleeve AlCu for messenger cable
13		D2566-04	1	Messenger cable suspension, non-insulated, to pipe Ø 90 mm, cable Ø max. 13 mm
14		D2647-01	1	Steady arm G 1" curved, L = 1100 mm, M16, SST
15		E3183-01	1	Contact wire clamp M16

POLE TYPE	HEB 140
CONTACT WIRE	100/150 mm²
MESSENGER CABLE	50/120 mm²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	500 mm

Other pole types on request

TUNNEL CANTILEVER, push, SH = 500 mm, 25 kV/AC, single insulation



SYSTEM VARIANTS	
PART NO.	LENGTH LF
820012	2.3 m

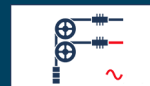
<https://kuma.ch/en/catalog/820012-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D2476-03	2	U-bolt, Ø = 16 mm to HEB 140
2		D4044-01	1	Hinge
3		C2462-01	1	Swivel support
4		301497	1	Washer, 31.9 / 18.1 x 1.5 Inox
5		302712	2	Insulator, 25 kV, with double flange
6		D3871-01	3	Spacer plate
7		D4045-01	1	Hook joint
8		D3702-02	1	Pipe Ø 88.9/5, L = 2650 mm STL HDG
9		D4043-01	1	Lateral support
10		C2464-01	1	Pipe support
11		D2705-01	1	Pipe attachment simple with lift limiter, to pipe Ø 38 mm, for 1 steady arm
12		301309	1	Protection sleeve AlCu for messenger cable
13		D2566-04	1	Messenger cable suspension, non-insulated, to pipe Ø 90 mm, cable Ø max. 13 mm
14		D2647-01	1	Steady arm G 1" curved, L = 1100 mm, M16, SST
15		E3183-01	1	Contact wire clamp M16

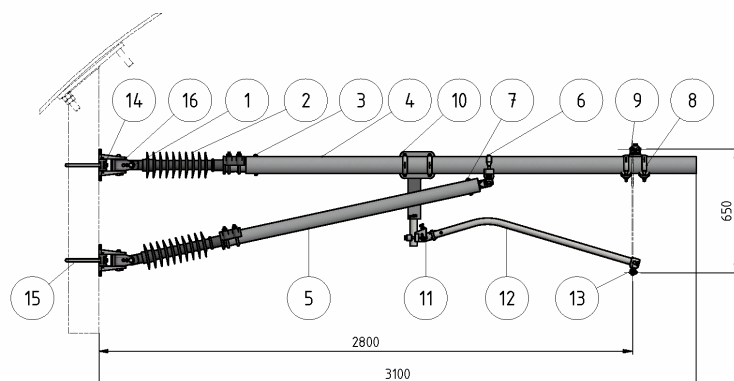
POLE TYPE	HEB 140
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	500 mm

Other pole types on request

TUNNEL CANTILEVER, pull, SH = 650 mm, 25 kV/AC, single insulation



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SYSTEM VARIANTS	
PART NO.	LENGTH LF
820013	2.8 m

<https://kuma.ch/en/catalog/820013-en>

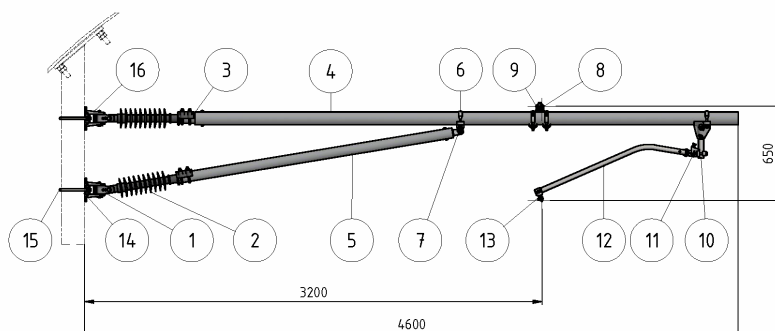
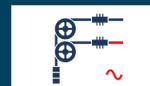
POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D2469-01	2	Hinge with clevis fork vertical
2		302664	2	Insulator, 25 kV creepage distance: 1230 ±3 mm
3		E3311-01	1	Adapter for pipe D = 90/5 mm
4		D2658-08	1	Pipe, Ø 90/5, L = 2362 mm Alu
5		D2660-26	1	Pipe, Ø 70/10, L = 1369 mm Alu
6		D2336-04	1	Pipe attachment, with U-bolt, to pipe Ø = 90 mm
7		D2571-01	1	Pipe connector with tongue, to pipe Ø = 70/10 mm
8		D2566-04	1	Messenger cable suspension, non-insulated, to pipe Ø 90 mm, cable Ø max. 13 mm
9		301309	1	Protection sleeve AlCu for messenger cable
10		D4046-01	1	Hook joint
11		D2705-01	1	Pipe attachment simple with lift limiter, to pipe Ø 38 mm, for 1 steady arm
12		D2647-01	1	Steady arm G 1" curved, L = 1100 mm, M16, SST
13		E3183-01	1	Contact wire clamp M16
14		D2668-01	2	Bracket 100-160
15		E0888-01	2	U-bolt, Ø 16 mm to HEB 160

POLE TYPE	HEB 140
CONTACT WIRE	100/150 mm²
MESSENGER CABLE	50/120 mm²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	650 mm

Other pole types on request

TUNNEL CANTILEVER, push

SH = 650 mm, 25 kV/AC, single insulated



SYSTEM VARIANTS

PART NO.	LENGTH LF
820014	3.2 m

<https://kuma.ch/en/catalog/820014-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D2469-01	2	Hinge with clevis fork vertical
2		302664	2	Insulator, 25 kV creepage distance: 1230 ±3 mm
3		E3311-01	1	Adapter for pipe D = 90/5 mm
4		D2658-13	1	Pipe, Ø 90/5, L = 3800 mm Alu
5		D2796-16	1	Pipe, Ø 70/7, L = 1945 mm Alu
6		D2336-04	1	Pipe attachment, with U-bolt, to pipe Ø = 90 mm
7		D2799-01	1	Pipe connector with tongue
8		D2566-04	1	Messenger cable suspension, non-insulated, to pipe Ø 90 mm, cable Ø max. 13 mm
9		301309	1	Protection sleeve AlCu for messenger cable
10		D4047-01	1	Hook joint
11		D2705-01	1	Pipe attachment simple with lift limiter, to pipe Ø 38 mm, for 1 steady arm
12		D2647-01	1	Steady arm G 1" curved, L = 1100 mm, M16, SST
13		E3183-01	1	Contact wire clamp M16
14		D2668-01	2	Bracket 100–160
15		E0888-01	2	U-bolt, Ø 16 mm to HEB 160

POLE TYPE	HEB 140
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	25 kV/AC
SYSTEM HEIGHT	650 mm

Other pole types on request

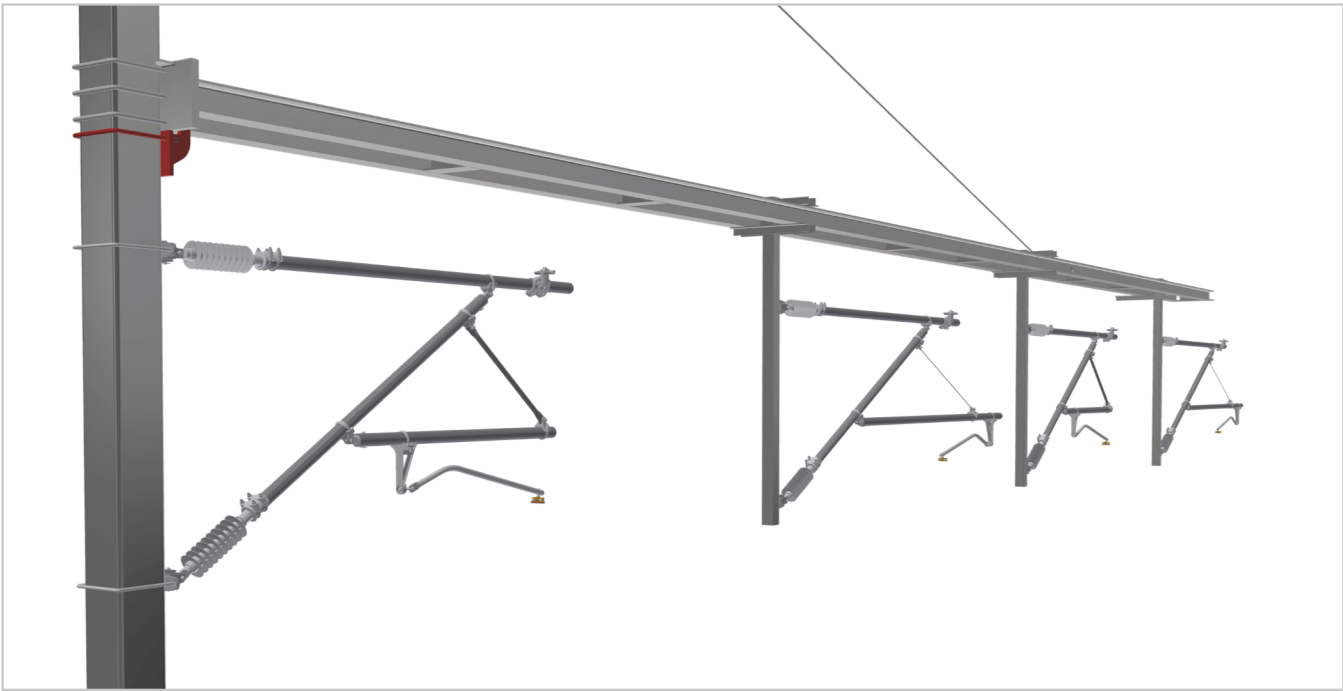


FOR OUR CUSTOMERS, WE ASSESS OPTIMAL
SOLUTIONS TAILORED TO THEIR INDIVIDUAL
NEEDS – SOLUTIONS THAT MEET TODAY'S
AND TOMORROW'S REQUIREMENTS



CONSTRUCTION ELEMENTS

MULTI-TRACK CANTILEVERS



Two alternative versions of the multi-track cantilever are available: systems A1490S and T100. Depending on the system, this makes it possible to implement cantilevers with lengths of up to 20 metres. The main advantage of our systems is the substantial reduction in installation effort. Thanks to simple, positive-locking plug-in connectors and only a small number of bolted joints,

the system is set up very quickly. Tire-some adjustments and adaptations are eliminated – so the narrow time windows available on site can be utilised more efficiently and costs are cut to the minimum. These two systems have been set up for training purposes at Kummler+Matter’s premises in Dällikon, and interested visitors are welcome to arrange an appointment to view them.

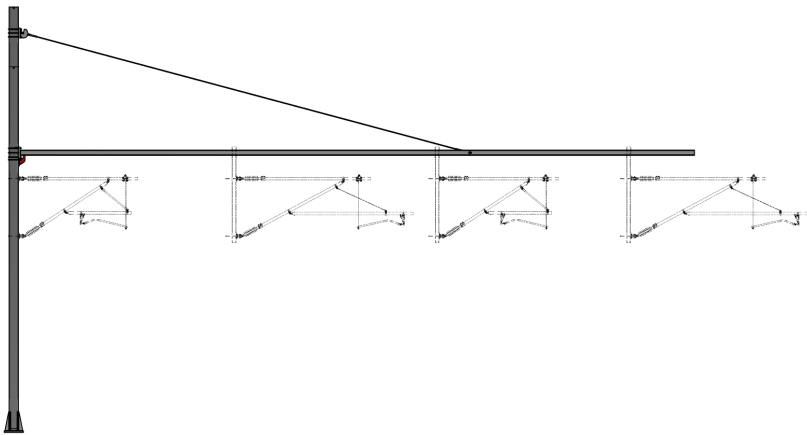
YOUR BENEFITS AT A GLANCE:

- Installation effort is cut by 90%
- Only 1 pole / foundation
- Optimised utilisation of short blocked periods
- More efficient installation processes
- Systems are suitable for placement by helicopter
- Simplified construction logistics for foundation construction because only one foundation is needed
- 100% compatible with SBB catenary equipment

 REFERENCE AND STANDARD	 VOLTAGE	 LOAD	 SPEED
EN 50119, IEC 60913	Up to 25 kV/AC	Cantilever length up to 20 m (4 tracks)	Maximum 300 km/h

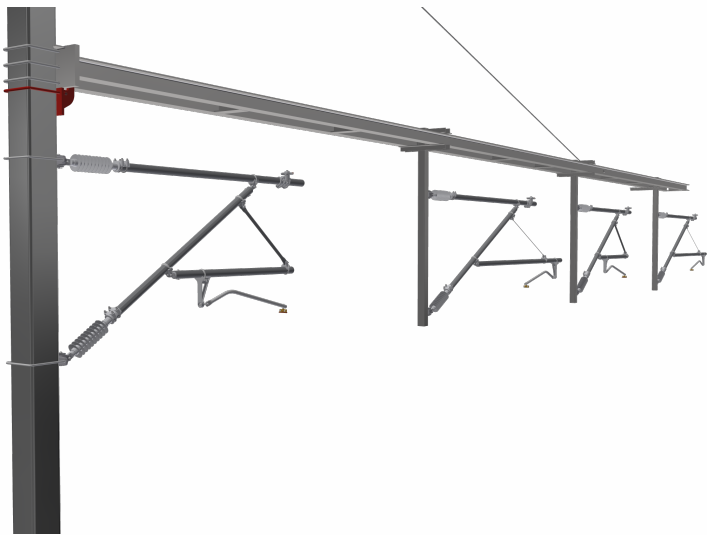
MULTI-TRACK CANTILEVER A140SA

mounting optimized with attachment anchor rope



SYSTEM VARIANTS	
PART NO.	VERSION
502029	A140S

<https://kuma.ch/en/catalog/502029-en>



POLE TYPE 1	RRW 250x250
POLE TYPE 2	HEM 240
CANTILEVER LENGTH	4.5 to 20 m
NUMBER OF TRACKS	up to 4

Other pole types on request

Customised solutions are our strength.
 Due to their complexity, our multi-track cantilevers are adapted to the customers' specific requirements in each individual case.

Talk with us – we will offer you comprehensive advice and work with you to find the solution that is best for you.

EXTENDED SPECIFICATIONS

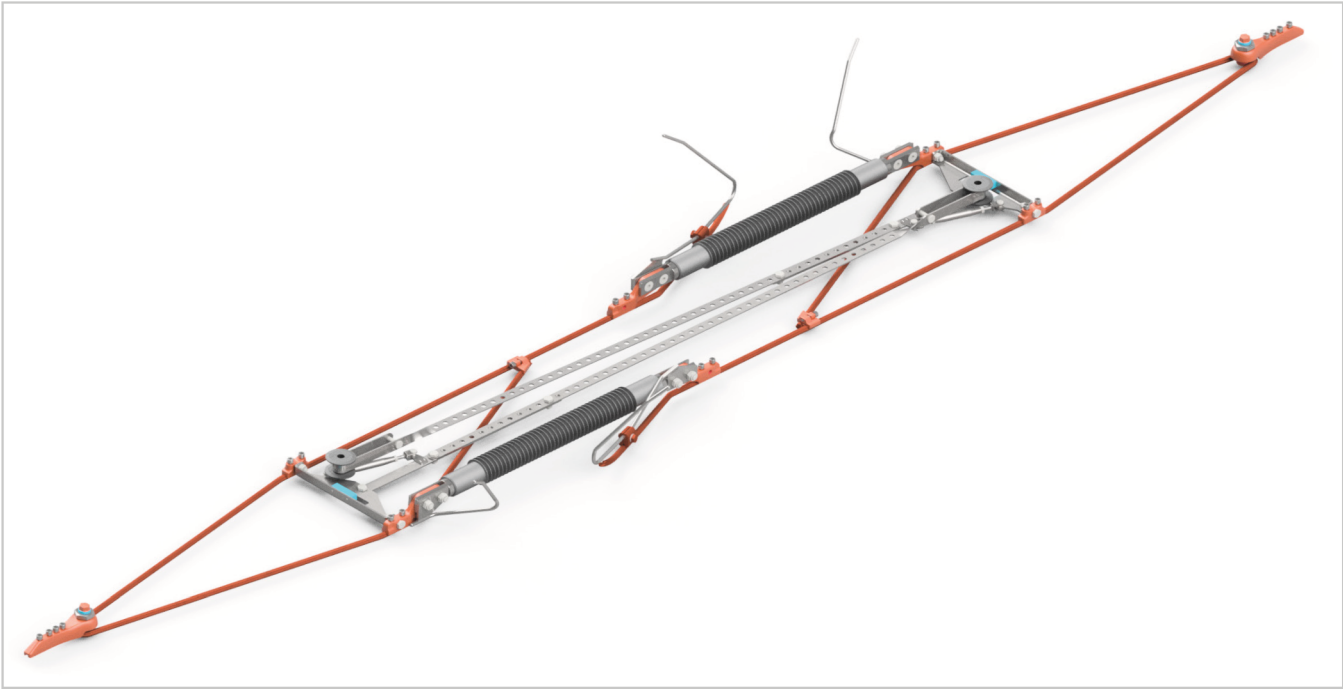




WE COLLABORATE OPENLY WITH OUR CUSTOMERS AND
HAVE A PRECISE KNOWLEDGE OF THEIR OBJECTIVES –
AND WE DRAW ON THE EXPERTISE WE HAVE GATHERED
OVER THE YEARS TO OFFER THEM EFFECTIVE SUPPORT



KUSEC SECTION INSULATOR



This innovative section insulator has been newly developed by Kummler+ Matter. The runners consist entirely of highly wear-resistant copper-magnesium contact wire. Thanks to **this new design**, the insulator stays flat throughout the full length. This allows the pantograph to travel more

smoothly across the entire length of the component. **Maintenance intervals can be extended significantly** by using elevated, non-traversed insulators. The anchor clamp – an additional development by Kummler+ Matter – **makes it very simple to install the complete section insulator** and adjust its height.

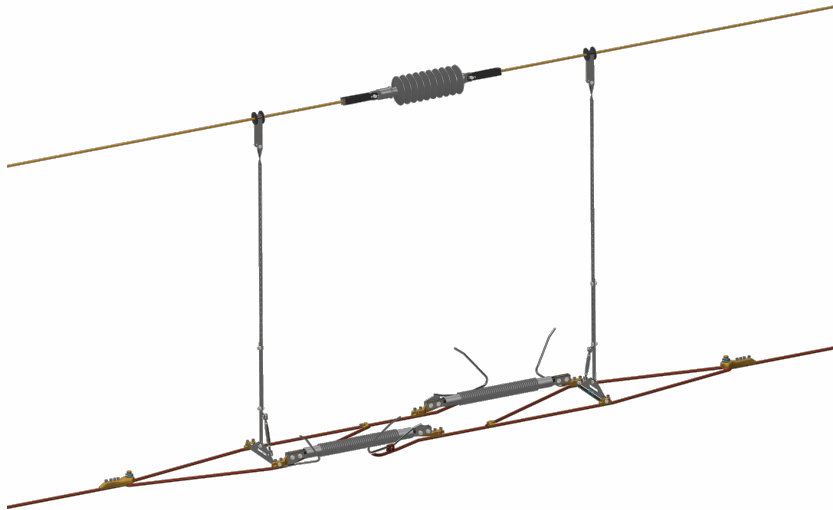
YOUR BENEFITS AT A GLANCE:

- 30 % reduction in installation cost
- Short overall length
- Re-usable anchor clamps
- Non-traversed insulators
- Highly wear-resistant materials significantly extend durability

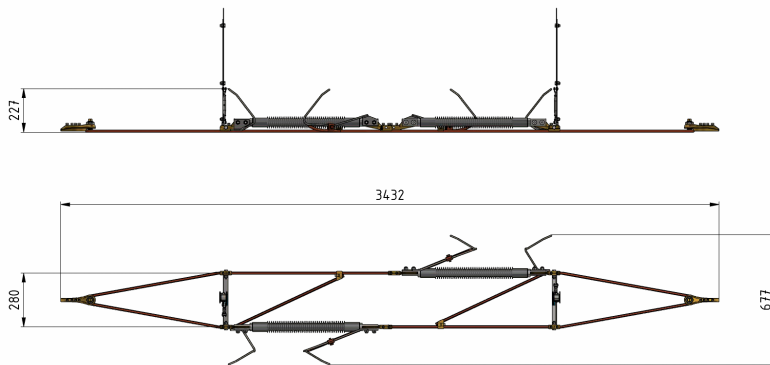
 REFERENCE AND STANDARD	 VOLTAGE	 LOAD	 SPEED
 EN 50119, IEC 60913	 Up to 25 kV/AC	 For nominal forces of up to 35 kN	 Designed for high speeds

KUSEC SECTION INSULATOR, 25 kV AC

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<https://kuma.ch/en/catalog/b1552-01-en>



SYSTEM VARIANTS	
PART NO.	VERSION
B1552-01	25 kV

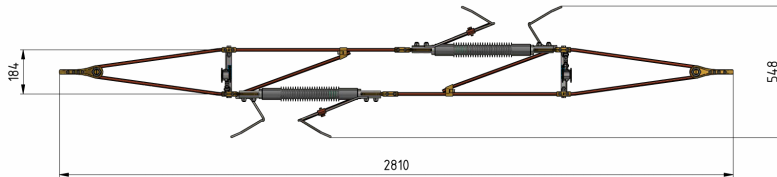
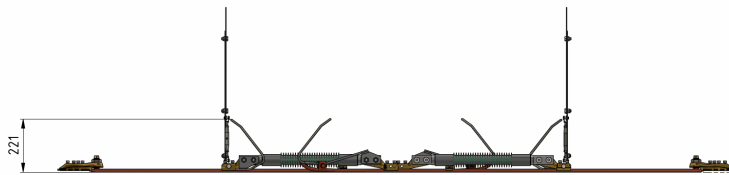
SHORT-CIRCUIT CURRENT	40.000 A
CONTACT WIRE CROSS-SECTION	max. 150 mm ²
KERF WIDTH	5.6 mm
CREEPAGE DISTANCE	1250 mm
ARCING HORN DISTANCE	250 mm
OPERATING VOLTAGE	25 kV
MIN. BREAKING LOAD	70 kN

Newly developed rail section insulator with a flexible design for high speeds. Maintenance intervals are significantly longer than those of conventional systems due to highly abrasion-resistant magnesium catenary wire runners and non-grounded isolators. Attaching the two anchor clamps to the catenary is the first step during section insulator installation. The section insulator is then simply inserted into the anchor clamp roller screws. The insulator is consequently adjusted to the same height of the catenary underside by way of the anchor clamp roller screws. This simplifies assembly and reduces installation time.

KUSEC SECTION INSULATOR, 15 kV AC



<https://kuma.ch/en/catalog/b1569-01-en>



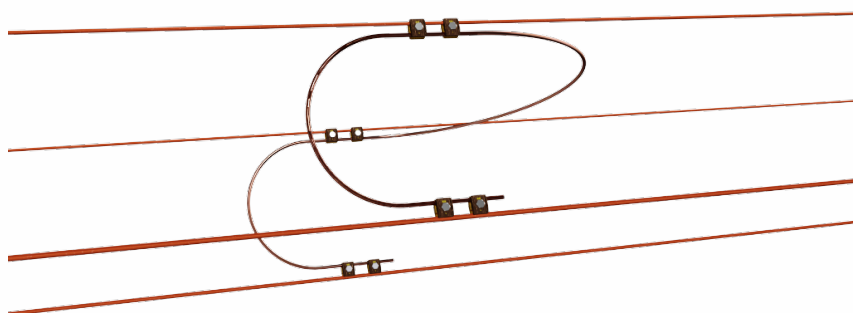
SYSTEM VARIANTS	
PART NO.	VERSION
B1569-01	15 kV

SHORT-CIRCUIT CURRENT	40.000 A
CONTACT WIRE CROSS-SECTION	max. 150 mm ²
KERF WIDTH	5.6 mm
CREEPAGE DISTANCE	830 mm
ARCING HORN DISTANCE	140 mm
OPERATING VOLTAGE	15 kV
MIN. BREAKING LOAD	60 kN

Newly developed rail section insulator with a flexible design for high speeds. Maintenance intervals are significantly longer than those of conventional systems due to highly abrasion-resistant magnesium catenary wire runners and non-grounded isolators. Attaching the two anchor clamps to the catenary is the first step during section insulator installation. The section insulator is then simply inserted into the anchor clamp roller screws. The insulator is consequently adjusted to the same height of the catenary underside by way of the anchor clamp roller screws. This simplifies assembly and reduces installation time.

ELECTRICAL CONNECTION, 95 mm²

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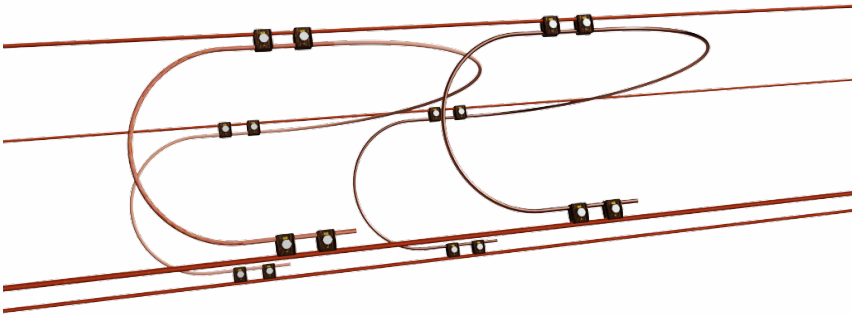
SYSTEM VARIANTS	
PART NO.	VERSION
823007	CW120 / MW70

<https://kuma.ch/en/catalog/823007-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D0106-01	8	Feeder clamp simple
2		300092	8 kg	Copper cable 95 mm ² rigid, bare

CONTACT WIRE	120 mm ²
MESSENGER CABLE	70 mm ²

ELECTRICAL CONNECTION, 95 mm², double



SYSTEM VARIANTS	
PART NO.	VERSION
823008	CW120/MW70

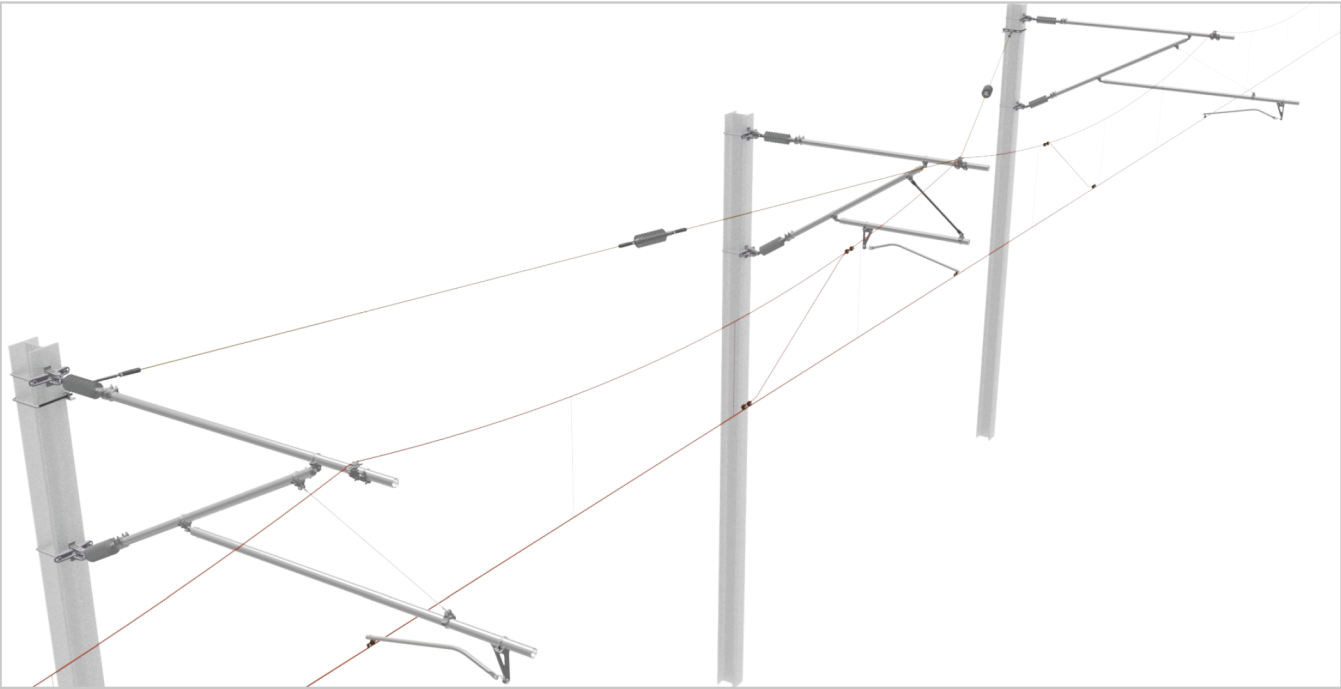
<https://kuma.ch/en/catalog/823008-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D0106-01	16	Feeder clamp simple
2		300092	16	Copper cable 95 mm² rigid, bare

CONTACT WIRE	100/150 mm²
MESSENGER CABLE	70 mm²



CATENARIES



The catenary is a standard version of the contact line design. It comprises the contact wire, the messenger cable, hangers, auxiliary cables and jumpers. The design of the catenary allows wider field spans between the supports.

Installation of an auxiliary cable (known as a Y-type auxiliary cable) increases the elasticity of the contact line so that higher speeds become possible.

YOUR BENEFITS AT A GLANCE:

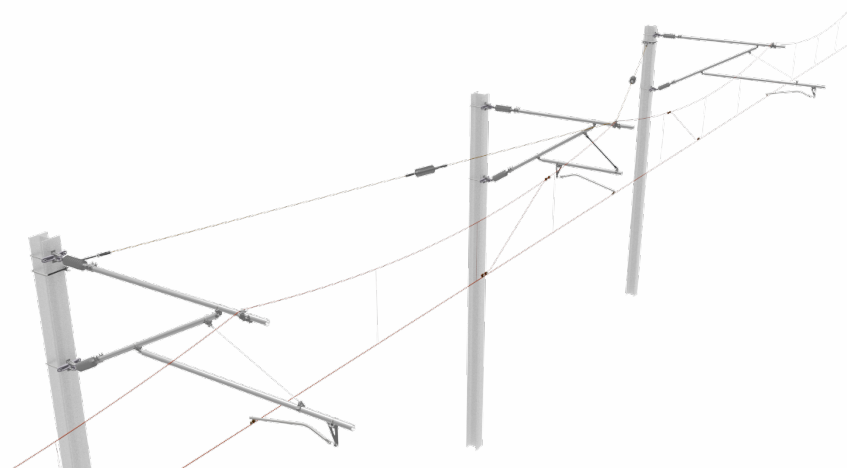
- Good driving dynamics
- Low maintenance
- High operational safety and reliability

 REFERENCE AND STANDARD	 VOLTAGE	 LOAD	 SPEED
 EN 50119, IEC 60913	 Up to 25 kV/AC	 Messenger cable tension max. 25 kN	 Maximum 300 km/h

FIXPOINT, fully compensated, 25 kV/AC, single insulated



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<https://kuma.ch/en/catalog/823009-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D3178-01	2	Holder traverse
2		C0107-01	2	Turnbuckle closed type, 5/8"
3		301225	6	Dead end clamp for copper cable 70 mm ² (Ø 10.90 mm)
4		353043	2	Silicone insulator, 25 kV, with tongue creepage distance: 1230 ±3 mm
5		D2560-03	1	Messenger cable suspension non insulated, rotatable, reinforced, to pipe D = 70 mm,
6		D0106-01	10	Feeder clamp simple

SYSTEM VARIANTS	
PART NO.	VERSION
823009	HEB 260

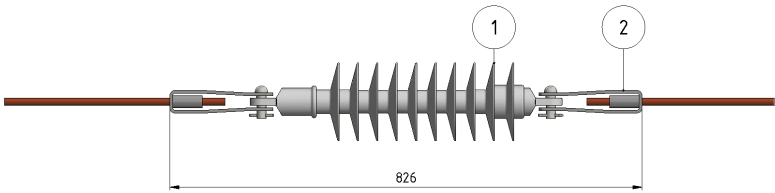
POLE TYPE	HEB 260
CONTACT WIRE	100/150 mm ²
MESSENGER CABLE	50/120 mm ²
VOLTAGE	25 kV/AC

Other pole types on request
Scope of delivery: without fix point cables and cantilevers

ACCESSORIES	
	E1484-02 U-bolt, HEB 180
	E1484-03 U-bolt, HEB 200
	E1484-04 U-bolt, HEB 220
	E1484-05 U-bolt, HEB 240
	E1484-06 U-bolt, HEB 260

INTERMEDIATE INSULATION FOR CONTACT WIRE

120mm², copper, 25 kV/AC



SYSTEM VARIANTS	
PART NO.	VERSION
823006	120 mm ²

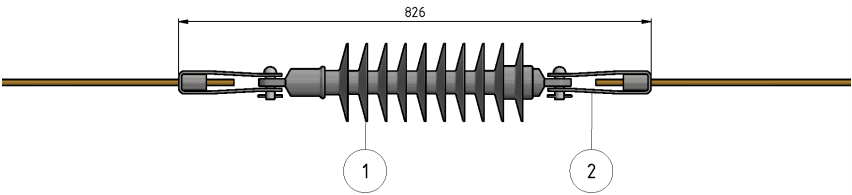
<https://kuma.ch/en/catalog/823006-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		301492	2	Dead end clamp for grooved contact wire 120 mm ² (Ø 13.20 mm)
2		353043	1	Silicone insulator, 25 kV, with tongue creepage distance: 1230 ±3 mm

CONTACT WIRE	120 mm ²
VOLTAGE	25 kV/AC

INTERMEDIATE INSULATION FOR MESSENGER CABLE

70mm², Bronze, 25 kV/AC



SYSTEM VARIANTS	
PART NO.	VERSION
823005	70 mm²

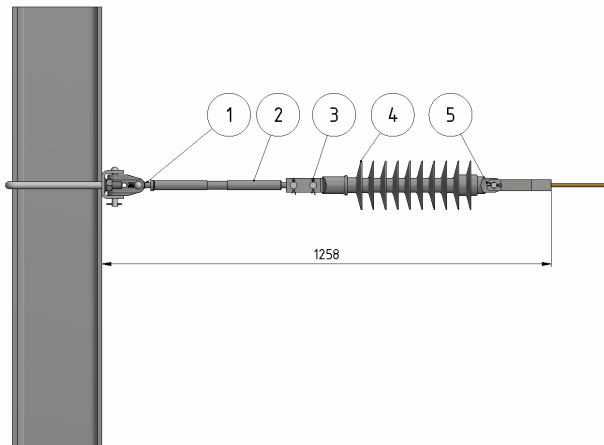
<https://kuma.ch/en/catalog/823005-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		301225	2	Dead end clamp for copper cable 70 mm² (Ø 10.90 mm)
2		353043	1	Silicone insulator, 25 kV, with tongue creepage distance: 1230 ±3 mm

MESSENGER CABLE	70 mm²
VOLTAGE	25 kV/AC

FIXED TERMINATION FOR MESSENGER CABLE

70 mm², 25 kV/AC



<https://kuma.ch/en/catalog/823004-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D3178-01	1	Holder traverse
2		C0107-01	1	Turnbuckle closed type, 5/8"
3		E0115-02	1	Double link with pin
4		353043	1	Silicone insulator, 25 kV, with tongue creepage distance: 1230 ±3 mm
5		301225	1	Dead end clamp for copper cable 70 mm² (Ø 10.90 mm)

SYSTEM VARIANTS	
PART NO.	VERSION
823004	70 mm²

POLE TYPE	HEB 260
MESSENGER CABLE	70 mm²
VOLTAGE	25 kV/AC

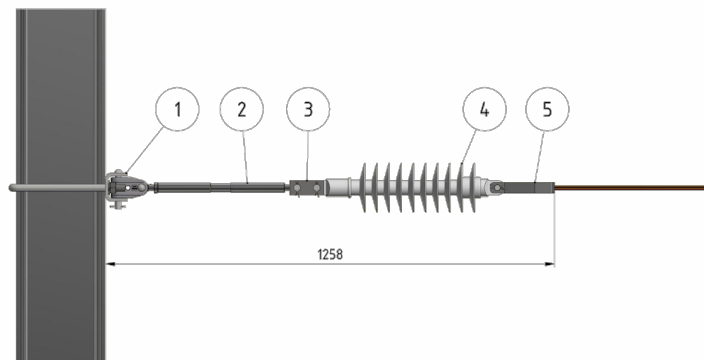
Other pole types on request

ACCESSORIES	
	E1484-02 U-bolt, HEB 180
	E1484-03 U-bolt, HEB 200
	E1484-04 U-bolt, HEB 220
	E1484-05 U-bolt, HEB 240
	E1484-06 U-bolt, HEB 260

FIXED TERMINATION FOR CONTACT WIRE

120mm², 25 kV/AC

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SYSTEM VARIANTS	
PART NO.	VERSION
823001	HEB 260 / 120 mm ²

<https://kuma.ch/en/catalog/823001-en>

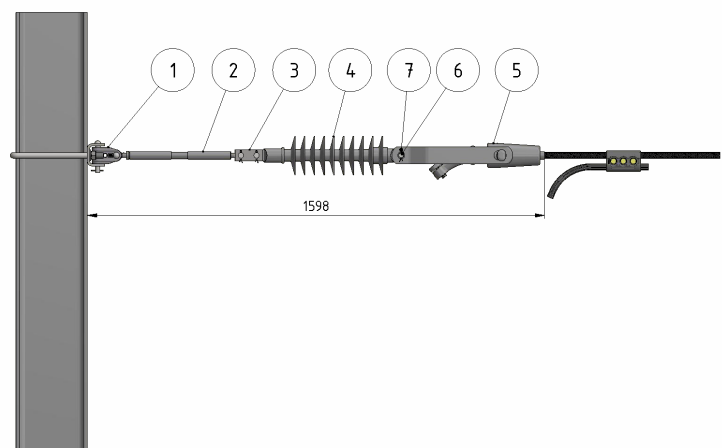
POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D3178-01	1	Holder traverse
2		C0107-01	1	Turnbuckle closed type, 5/8"
3		E0115-02	1	Double link with pin
4		353043	1	Silicone insulator, 25 kV, with tongue creepage distance: 1230 ±3 mm
5		301492	1	Dead end clamp for grooved contact wire 120 mm ² (Ø 13.20 mm)

POLE TYPE	HEB 260
CONTACT WIRE	120 mm ²
VOLTAGE	25 kV/AC

Other pole types on request

ACCESSORIES	
	E1484-02 U-bolt, HEB 180
	E1484-03 U-bolt, HEB 200
	E1484-04 U-bolt, HEB 220
	E1484-05 U-bolt, HEB 240
	E1484-06 U-bolt, HEB 260

FIXED TERMINATION FOR FEEDER CABLE 280 mm², ALU, 25 kV/AC



SYSTEM VARIANTS

PART NO.	VERSION
823003	280 mm²

<https://kuma.ch/en/catalog/823003-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D3178-01	1	Holder traverse
2		C0107-01	1	Turnbuckle closed type, 5/8"
3		E0115-02	1	Double link with pin
4		353043	1	Silicone insulator, 25 kV, with tongue creepage distance: 1230 ±3 mm
5		302700	1	Wedge anchor clamp
6		E3200-06	1	Pin, Ø 16 x 50 mm
7		E3234-01	1	Cotter pin, Ø 4.0 x 30 mm

POLE TYPE	HEB 260
FEEDER	280 mm² / ALU
VOLTAGE	25 kV/AC

Other pole types on request

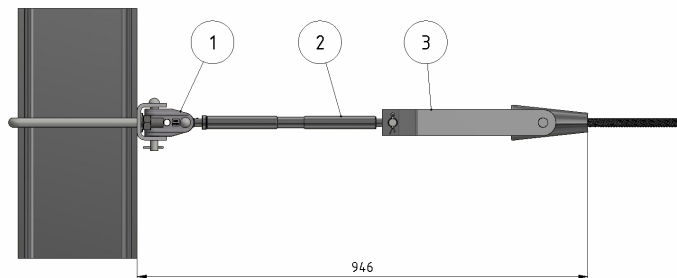
ACCESSORIES

	E1484-02 U-bolt, HEB 180
	E1484-03 U-bolt, HEB 200
	E1484-04 U-bolt, HEB 220
	E1484-05 U-bolt, HEB 240
	E1484-06 U-bolt, HEB 260
	302701 Parallel groove clamp 280 mm²

FIXED TERMINATION GROUNDING CABLE

180 mm², ALU

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SYSTEM VARIANTS	
PART NO.	VERSION
823002	180 mm ²

<https://kuma.ch/en/catalog/823002-en>

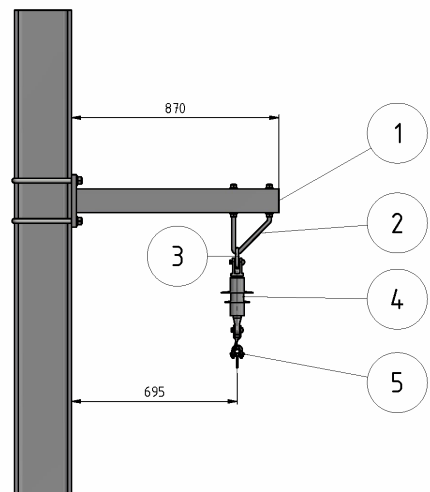
POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D3178-01	1	Holder traverse
2		C0107-01	1	Turnbuckle closed type, 5/8"
3		302702	1	Wedge anchor clamp

POLE TYPE	HEB 260
RETURN WIRE	180 mm ² / ALU

Other pole types on request

ACCESSORIES	
	E1484-02 U-bolt, HEB 180
	E1484-03 U-bolt, HEB 200
	E1484-04 U-bolt, HEB 220
	E1484-05 U-bolt, HEB 240
	E1484-06 U-bolt, HEB 260

BRACKET FOR ADDITIONAL CONDUCTOR
1x conductor, 1x suspension, 3 kV/DC



SYSTEM VARIANTS

PART NO.	VERSION
820269	1 conductor

<https://kuma.ch/en/catalog/820269-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D3342-01	1	Bracket for additional conductor to HEB 200–240 for 1 suspension, STL HDG
2		E3588-01	1	Pull-off bow 16 mm STL HDG
3		E0159-01	1	Chain link for pull-off bracket, STL HDG
4		C2460-18	1	Isolator 3 kV Tongue - clevis / 0° creepage distance: 254 mm
5		D2558-01	1	Messenger wire clamp for cables 35–150 mm², B = 20 mm

POLE TYPE	HEB 200–240
VOLTAGE	3 kV/DC
CABLE DIAMETER	7.5–16 mm

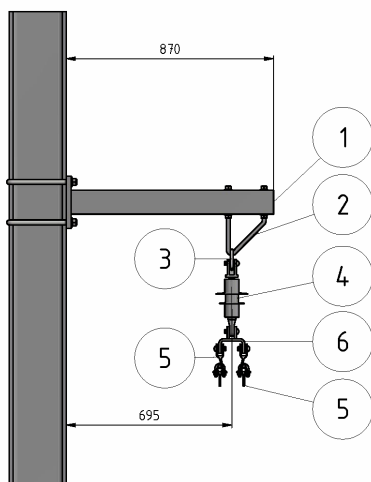
Other pole types on request

ACCESSORIES	
	E1484-03 U-bolt, HEB 200
	E1484-04 U-bolt, HEB 220
	E1484-05 U-bolt, HEB 240

BRACKET FOR ADDITIONAL CONDUCTOR

2x conductor, 1x suspension, 3 kV/DC

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SYSTEM VARIANTS

PART NO.	VERSION
820270	2 conductor, 1 suspension

<https://kuma.ch/en/catalog/820270-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D3342-01	1	Bracket for additional conductor to HEB 200–240 for 1 suspension, STL HDG
2		E3588-01	1	Pull-off bow 16 mm STL HDG
3		E0159-01	1	Chain link for pull-off bracket, STL HDG
4		C2460-18	1	Isolator 3 kV Tongue - clevis / 0° creepage distance: 254 mm
5		D2558-01	2	Messenger wire clamp for cables 35–150 mm², B = 20 mm
6		D1200-01	1	Fork bracket, parallel, A = 90 mm

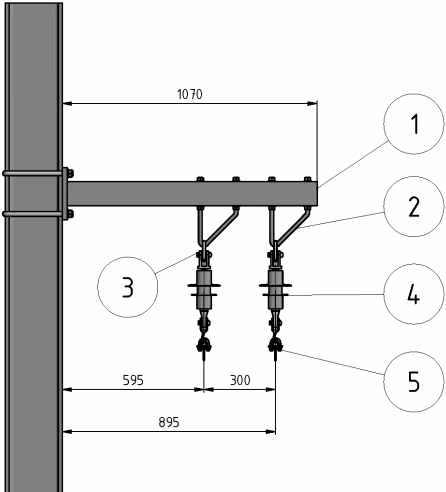
POLE TYPE	HEB 200–240
VOLTAGE	3 kV/DC
CABLE DIAMETER	7.5 - 16 mm

Other pole types on request

ACCESSORIES

	E1484-03 U-bolt, HEB 200
	E1484-04 U-bolt, HEB 220
	E1484-05 U-bolt, HEB 240

BRACKET FOR ADDITIONAL CONDUCTOR
2x conductor, 2x suspension, 3 kV/DC



SYSTEM VARIANTS

PART NO.	VERSION
820271	2 conductor

<https://kuma.ch/en/catalog/820271-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D3342-02	1	Bracket for additional conductor to HEB 200–240 for 2–3 suspension, STL HDG
2		E3588-01	2	Pull-off bow 16 mm STL HDG
3		E0159-01	2	Chain link for pull-off bracket, STL HDG
4		C2460-18	2	Isolator 3 kV Tongue - clevis / 0° creepage distance: 254 mm
5		D2558-01	2	Messenger wire clamp for cables 35–150 mm², B = 20 mm

POLE TYPE	HEB 200–240
VOLTAGE	3 kV/DC
CABLE DIAMETER	7.5 - 16 mm

Other pole types on request

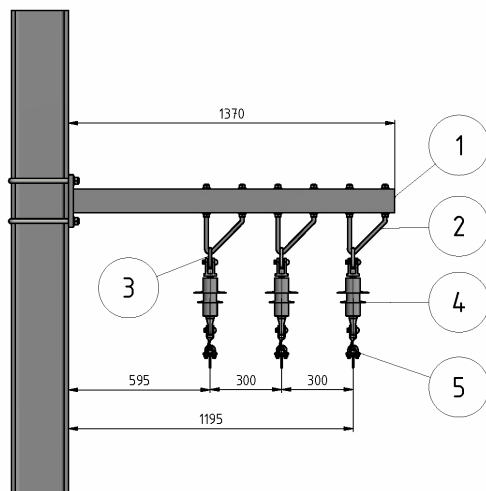
ACCESSORIES

	E1484-03 U-bolt, HEB 200
	E1484-04 U-bolt, HEB 220
	E1484-05 U-bolt, HEB 240

BRACKET FOR ADDITIONAL CONDUCTOR

3x conductor, 3x suspension, 3 kV/DC

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<https://kuma.ch/en/catalog/820272-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		D3342-03	1	Bracket for additional conductor to HEB 200–240 for 2–3 suspension, STL HDG
2		E3588-01	3	Pull-off bow 16 mm STL HDG
3		E0159-01	3	Chain link for pull-off bracket, STL HDG
4		C2460-18	3	Isolator 3 kV Tongue - clevis / 0° creepage distance: 254 mm
5		D2558-01	3	Messenger wire clamp for cables 35–150 mm², B = 20 mm

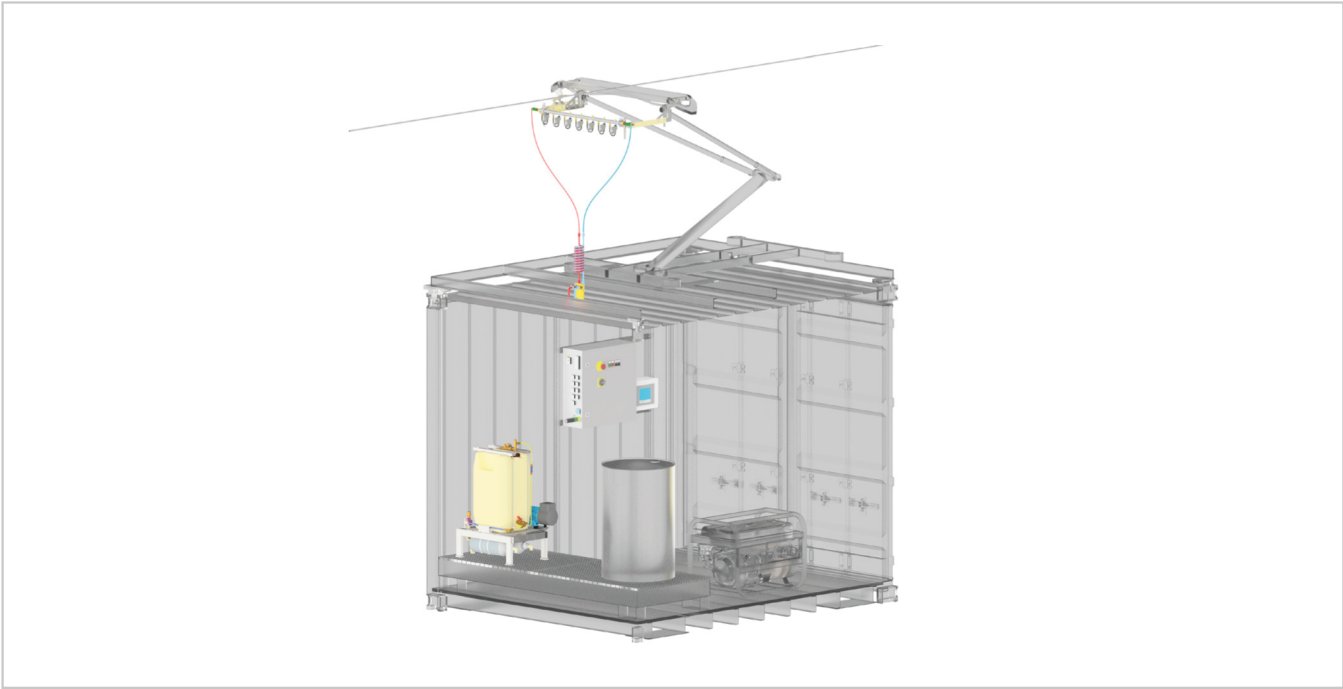
SYSTEM VARIANTS	
PART NO.	VERSION
820272	3 conductors

POLE TYPE	HEB 200–240
VOLTAGE	3 kV/DC
CABLE DIAMETER	7.5 - 16 mm

Other pole types on request

ACCESSORIES	
	E1484-03 U-bolt, HEB 200
	E1484-04 U-bolt, HEB 220
	E1484-05 U-bolt, HEB 240

ProFil 3V



The combination of air humidity and cold during winter can cause the contact wires to ice up. This leads to electric arcs, which increase wear on the contact elements and contact wires and may even cause interruptions to operation. To prevent outages of this sort and ensure smooth operation, the contact lines should already be protected against icing as a preventive measure

in case of unfavourable weather conditions. Kummler+Matter’s ProFil contact wire de-icing system enables preventive protection against icing as well as reactive treatment of contact wires that are already iced up.

YOUR BENEFITS AT A GLANCE:

✓

Fewer operational outages due to contact wire icing

✓

Preventive protection for contact wires

✓

Reduced wear on contact wires and abrasives

✓

Easy, low-maintenance operation and use

✓

System is individually adapted to each operator’s conditions

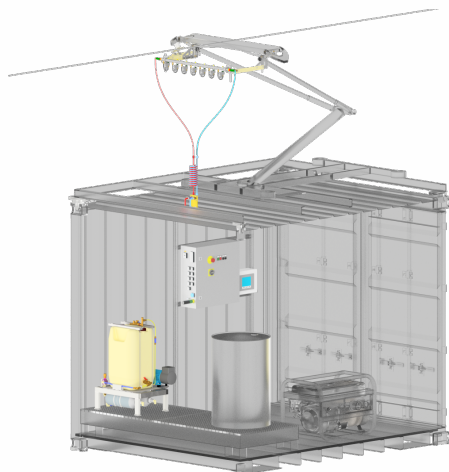
✓

Low weight on pantograph

 REFERENCE AND STANDARD	 VOLTAGE	 LOAD	 SPEED
✓ EN 50119, IEC 60913	✓ Up to 1.5 kV/DC	✓ Pressure range at 4.5 bar	✓ Operating speed 15–65 km/h

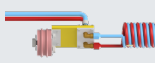
CONTACT WIRE DE-ICING SYSTEM PROFIL 3V

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SYSTEM VARIANTS	
PART NO.	VERSION
103558	up to 1.5 kV/DC

<https://kuma.ch/en/catalog/103558-en>

POS.	PICTURE	PART NO.	QTY	DESCRIPTION
1		B1518-01	1	Processing unit
2		B1509-01	1	Sprinkler arm including probe
3		302796	1	Control cabinet
4		B1493-01	1	Feed and return line, hydraulic

OPERATING SPEED	15–65 km/h
VOLTAGE RANGE	up to 1.5 kV/DC
APPLICATION TEMPERATURE RANGE	0°C to –20°C
SPRAY CONSUMPTION RATE	approx. 1.3 l/km (at 50 km/h)
PRESSURE RANGE	at about 4.5 bar
EFFECTIVE FOR APPROX.	5–7 days (weather-dependent)

ACCESSORIES	
	302175 ... Profil Pro 220 kg
	302174 ... Profil Pro 25 kg
	302173 ... Profil Attaq 230 kg
	302177 ... Profil Attaq 25 kg

DISCLAIMER

Information about our products and systems may differ from our current range.
For more information, please consult our General Terms and Conditions (GTC).

LET US SHOW YOU THE ADVANTAGES

✓ SPEED

Our well-established processes ensure that projects run smoothly and quickly.

✓ INNOVATIVE MINDSET

We've been pioneers for the last 100 years. We'll also think ahead for you so that we can help you make your success story come true.

✓ RELATIONSHIPS BUILT ON PARTNERSHIP

You are our top priority. We believe that trust-based relationships with our customer are key to success.

✓ GLOBAL SPECIALIST

As our customer, you gain access to extensive specialist knowledge, and you can take advantage of the expertise we've garnered over the years.

✓ RELIABLE, SAFE COMPONENTS

We deliver reliability and safety.

✓ STRAIGHTFORWARD INSTALLATION AND ASSEMBLY

Because our installation and assembly processes are so straightforward, we guarantee that your project will be implemented quickly.

✓ LONG PRODUCT LIFETIMES

Your investments will pay off in the long term.

DIRECT COST SAVINGS

COSTS PER CANTILEVER

STORAGE

-30%

WEIGHT

-25%

-20%

INSTALLATION TIME

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