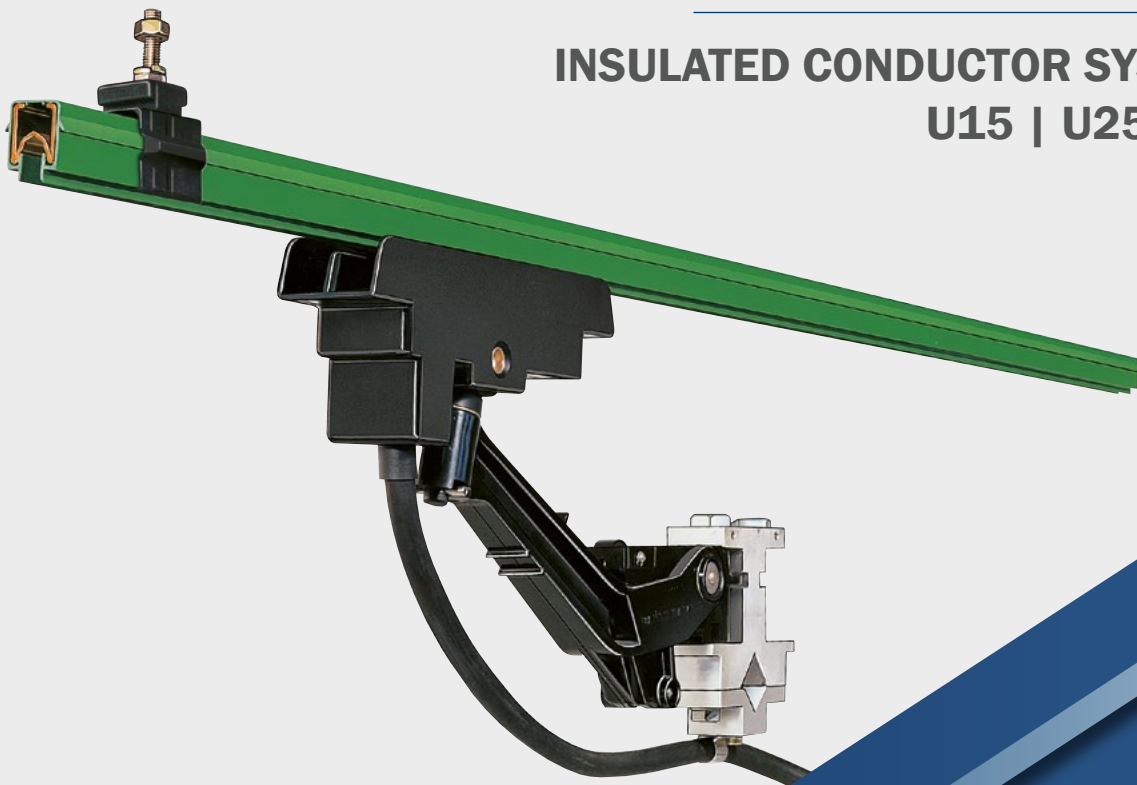




**INSULATED CONDUCTOR SYSTEMS**  
**U15 | U25 | U35**





# INSULATED CONDUCTORS U 15 – U 25 – U 35

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Collector rings with insulated conductors see leaflet No. 102.





## **GENERAL SELECTION OF CONDUCTORS ENGINEERING DATA**

**Pages 4 – 5**

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### **U 15**

For light cranes and hoists/elevators, self-propelled monorail carriers, automated storage and retrieval systems, assembly and test tracks, motor powered gates and doors, for all kinds of data and signal transmission, etc.  
Ampacity up to 100 A

**Pages 5 – 24**

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### **U 25**

For bridge- and portal crane electrification, stacker cranes, heavy monorail systems, amusement & rapid transit rides, construction- and maintenance lifts etc.  
Ampacity up to 450 A

**Pages 25 – 36**

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### **U 35**

Applications as U 25;  
however for heavy duty – Ampacity up to 1250 A

**Pages 37 – 48**

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**Questionnaire**

**Pages 50, 51**



# INSULATED CONDUCTORS U 15 – U 25 – U 35

## General

The insulated conductors U15, U25 and U35 are designed according to VDE 0100, which is today's international safety requirement and are finger safe to VDE 0470, part 1 (EN 60 529) (Protection code IP 23 in hanging arrangement)

For collectors is this touch proof only valid if the carbons are completely inside the bus bar.

In hand areas installed conductor systems, in which the collectors leave the bus bar due to site requirements, the customer has to make sure that touch proof is created on site. (e.g. barriers or disconnection)

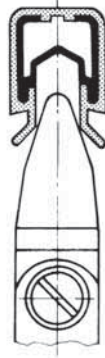
This is only valid for voltages over 25 Volt AC or 60 Volt DC. The adjacent picture demonstrates that the VDE test finger cannot reach live conductors.

The shroud which envelopes the various conductors is an excellent insulator. Therefore our unipole insulated conductors guarantee utmost safety in operation.

Any number of conductors can be installed side by side at minimum space requirement.

Standard rail sections U15, U25 are 6 m and U35 6,25 m long. Shorter sections are available.

The ground conductor is identified by international colour coding. For obvious safety reasons phase and ground collectors are not interchangeable.



## Approved and listed by

**U 15:** SEV and CSA,  
**U 25:** UL.  
Consult factory label service.

## Hangers

Snap-on or bolt-on brackets can be used to install conductors to the runway track. Spacing between rail supports:

**U 15:** see page 5,  
**U 25:** see page 27,  
**U 35:** see page 41.

## Insulators

The insulated conductors could be installed with insulators. With them the creepage distance is extended to prevent electrical flashover. In systems with difficult environmental conditions (extreme humidity, chemicals, galvanizing etc.) is the use of insulators required.

## Engineering data of shroud

|   | standard shroud<br>color green                          | heat resistant shroud<br>color grey | high temperature shroud<br>colour granite grey |
|---|---|-------------------------------------|--|
| <b>Electrical data:</b>                               |   |                                     |  |
| Dielectric strength according to DIN 53481            | > 25 kV/mm  | > 25                                | > 80   |
| Special dielectric strength according to 60093        | $> 1 \times 10^{16}$ Ohm/cm                             | $> 1 \times 10^{14}$ Ohm/cm         | $1 \times 10^{15}$ Ohm/cm                      |
| Special surface resistance according to IEC 60093     | $2,1 \times 10^{15}$ Ohm                                | $2 \times 10^{15}$ Ohm              | $1 \times 10^{13}$ Ohm                         |
| Creepage distance according EN 60112/VDE 0303 Teil 11 | CTI > 400   | CTI > 400                           | CTI > 500                                      |
| <b>Mechanical properties</b>                          |   |                                     |  |
| Flexible strength                                     | 74-85 N/mm <sup>2</sup>                                 | 90-100 N/mm <sup>2</sup>            | 70-140 N/mm <sup>2</sup>                       |
| Tensile strength                                      | 44-55 N/mm <sup>2</sup>                                 | 47-65 N/mm <sup>2</sup>             | 60-80 N/mm <sup>2</sup>                        |
| <b>Ambient temperature</b>                            | -30 °C to +55 °C  | -30 °C to +85 °C                    | -30 °C to +130 °C                              |
| Flame test proof per DIN 4102 part 1                  | class B1<br>no flaming particles,<br>self-extinguishing |                                     |  |

## Joint splices

Bolted joint splices are designed to rigidly join conductor bars and provide mechanical and electrical continuity. They include insulated protection covers.

Expansion joint sections must be provided for high temperature fluctuation and for system runs exceeding 100 m for U 15 (150 m for U 25/U 35) – see installation procedure.

## Feed terminals

Feed terminal sets are preferably installed at conductor joints. Adequate single core feed cables must be provided for connection of the incoming power.

## End caps

The open ends of unipole conductors are closed by end caps.

## Transfer funnels and Transfer guides

Single pole and multi pole transfer guides are available for spur-lines, turntables and switches or other transfer applications.

## Isolating sections

Isolating sections are electrical interrupts of the conductor. Under normal operating conditions a cross over with collectors to switch the voltage off or on is only allowed with low power ratings (control current).

Conductor isolating sections are available for sectionalizing control circuits, maintenance bays etc.

## Curves

Factory fabricated or field prepared radius bends(not U35) can be used for horizontal or vertical curves.

## Collectors

Depending on the system requirement single or double collectors are used.

The mentioned continuous current are for collectors in stand operation with copper conductors. With the AE-conductor the collectors which are working with only > 10 m/min. Travel speed or stand most of the time are only permitted to work with 50% of the continuous current.

The length of the collector connection cable is not allowed to exceed 3 m, if the preceding overload protection is not dimensioned for this connecting cable.

See VDE 0100 part 430 and EN 60204.

(Note: This often occurs with more than one collector per system)

The supplied connecting cable (H07 RN-F) is suitable for the mentioned currents. For the different cable layings have the reduction factors according to VDE 0298 to be considered.

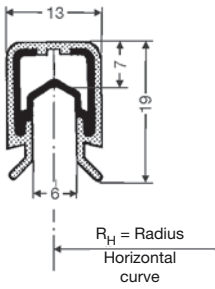
## Safety advice

It must be ensured that the arrangement of the conductor system provides minimum distances (0,5 m) between fixed and mobile plant parts (i.e. between conductor rails, collector trolleys and towing arms) so as to avoid the risk of pinching.

## Chemical resistance for both designs:

Shroudings in the standard design (color green) and in the heat resistant design (color grey) are resistance against mineral oil, fats, caustic soda 25%, caustic soda 50%, concentrated hydrochloric acid; sulfuric acid upto 50%.

**Please note: For use in galvanizing and pickling plants, under aggressive conditions and low voltage applications we would appreciate receiving detailed information, especially of the environmental conditions. For quotations and order processing including Powerail systems with curves, dead sections, turntables, switches etc. we require your drawings or sketches. Please use our questionnaire, page 44.**



**Conductor code:**  
 U = unipole insulated conductor  
 15 = shroud size  
 25 = conductor cross sectional area (mm<sup>2</sup>)  
 C = copper conductor  
 E = stainless steel conductor

**Length:**  
 6 m is standard length,  
 shorter lengths are available

**Conductor spacing:**  
 on compact hangers 18 mm  
 on standard hangers with insulators min. 50 mm

**Curves:**  
 factory prepared or on site with curve tool BVU 10/15 from R=400 mm.

**Heating system possible on request**

**Chemical and electrical properties**  
 see page 4

**Max. support distance:**  
 in straight systems and inner or outer curves and with lay out of horizontal curves above  $R_H = 5 \text{ m}^{(2)}$ :  
 1000 mm with single collectors  
 800 mm with double collectors (KDST)

With lay out of horizontal curves below  $R_H = 5 \text{ m}^{(2)}$ :  
 500 mm bei with single collectors  
 400 mm bei with double collectors (KDST)

## Type of conductor rail

|  | U 15/25 C | U 15/25 E |
|--|-----------|-----------|
| Weight kg/m                                | 0,295     | 0,285     |
| <b>Standard shroud, color green</b>        |           |           |
| Order- No. phase <sup>(1)</sup>            | 162 13 •  | 162 15 •  |
| Order- No. ground <sup>(1)</sup>           | 162 19 •  | 162 21 •  |
| <b>High temperature shroud, color gray</b> |           |           |
| Order- No. phase <sup>(1)</sup>            | 162 16 •  | 162 18 •  |
| Order- No. ground <sup>(1)</sup>           | 162 22 •  | 162 24 •  |

## Engineering Data

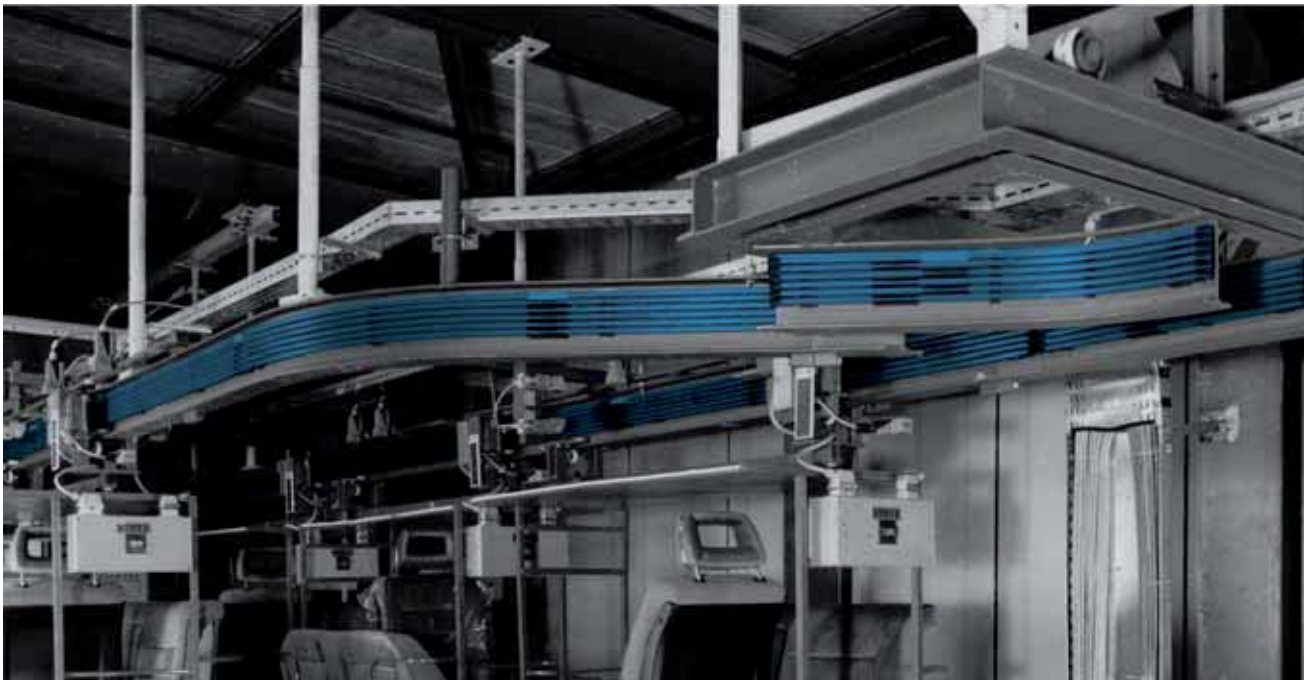
| Conductor Rail Type | Cross sectional area mm <sup>2</sup> |                 | Leakage distance of shroud mm | nominal voltage (UL) A | max. continuous capacity in A at 35 °C | Resistance <sup>(3)</sup> Ohm/1000 m | Impedance <sup>(3)</sup> Ohm/1000 m phase distance |        |        |
|---------------------|--------------------------------------|-----------------|-------------------------------|------------------------|--|--------------------------------------|--|--------|--------|
|                     | Cu                                   | stainless steel |                               |                        |  |                                      | 18 mm  | 25 mm  | 50 mm  |
| U 15/25 C           | 25                                   |                 | 30                            | 690 (600)              | 100                                    | 0,692                                | 0,6980   | 0,7010 | 0,7090 |
| U 15/25 E           |                                      | 25              | 30                            | 690 (600)              | 10                                     | 29,077                               | 29,077   | 29,077 | 29,077 |

## Selection of conductors

in accordance to ampere load and environmental conditions

**U 15/25 C** copper conductor for power and control system applications.

**U 15/25 E** stainless steel conductor for control and data-transmission in corrosive atmospheres



New material handling techniques (automated overhead monorails) require reliable electrification and use U 15 conductors.

<sup>(1)</sup> Add last number (1, 2, 3, 4, 5 or 6 m length suffix) in accordance to bars required.

<sup>(2)</sup> Recommendation

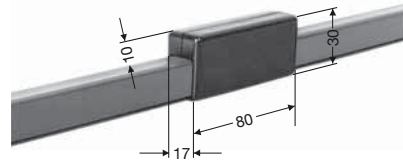
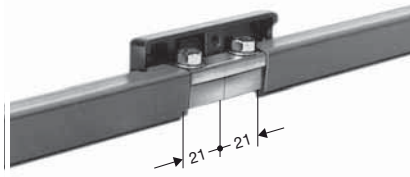
<sup>(3)</sup> With frequenz of 50 Hz and 20 °C



# ACCESSORIES FOR U 15

## Bolted joint splice

applicable as feed terminal, too.

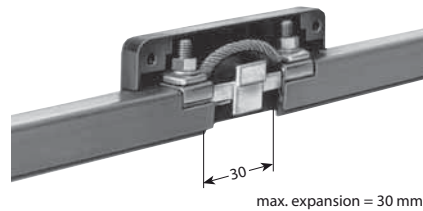
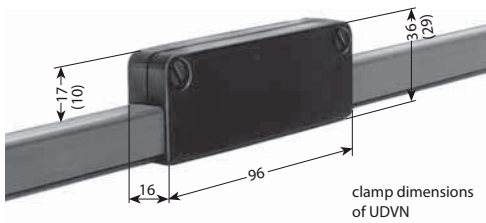


Corresponding to UE 15 K 4

| Type                           | Weight kg | Order- No. |
|--------------------------------|-----------|------------|
| <b>UV 15 K 4<sup>(1)</sup></b> | 0,040     | 160 102    |

## Expansion sections

consisting of expansion joint installed with a joint splice on a conductor section of 1 m length are required in systems from 100 m length. This length has to be counted into the total length of the system.

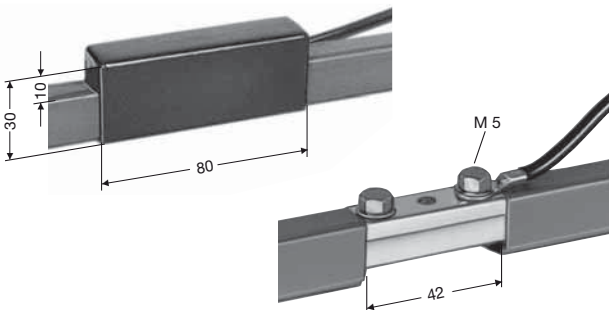


## Standard shroud, color green

## High temperature shroud, color gray

| Type  | Weight kg | Order- No. |         | Type  | Weight kg | Order- No. |         |
|---|-----------|------------|---------|---|-----------|------------|---------|
|   |           | phase      | ground  |   |           | phase      | ground  |
| <b>UDV<sup>(3)</sup> 15/25 C K 4<sup>(1)</sup></b>  | 0,430     | 160 276    | 160 277 | <b>UDV<sup>(3)</sup> 15/25 C K 4<sup>(1)</sup></b>  | 0,430     | 160 280    | 160 281 |
| <b>UDV<sup>(3)</sup> 15/25 E K 4<sup>(1)</sup></b>  | 0,420     | 160 288    | 160 289 | <b>UDV<sup>(3)</sup> 15/25 E K 4<sup>(1)</sup></b>  | 0,420     | 160 292    | 160 293 |
| <b>UDVN<sup>(2)</sup> 15/25 C K 4<sup>(1)</sup></b> | 0,430     | 160 294    | 160 295 | <b>UDVN<sup>(2)</sup> 15/25 C K 4<sup>(1)</sup></b> | 0,430     | 160 298    | 160 299 |
| <b>UDVN<sup>(2)</sup> 15/25 E K 4<sup>(1)</sup></b> | 0,420     | 160 306    | 160 307 | <b>UDVN<sup>(2)</sup> 15/25 E K 4<sup>(1)</sup></b> | 0,420     | 160 308    | 160 309 |

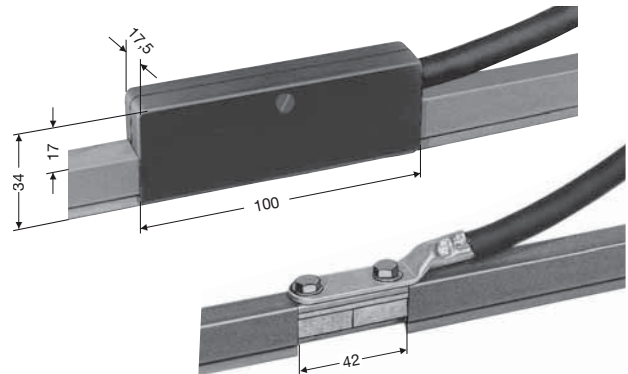
## Feed terminals



Corresponding to UV 15 K  
Connection cross section max. 2 single cores each 6 mm<sup>2</sup>

| Type                           | Weight kg | Order- No. |
|--------------------------------|-----------|------------|
| <b>UE 15 K 4<sup>(1)</sup></b> | 0,040     | 160 107    |

Cable lug and cable by others



Connection cross section  
1 single core 25 mm<sup>2</sup> (upto ø 8,2 mm)

| Type                          | Weight kg | Order- No. |
|-------------------------------|-----------|------------|
| <b>UEG 15 K<sup>(1)</sup></b> | 0,060     | 160 216    |

Cable by others. Staggered installation.  
Special cable lug comes with feed terminal.

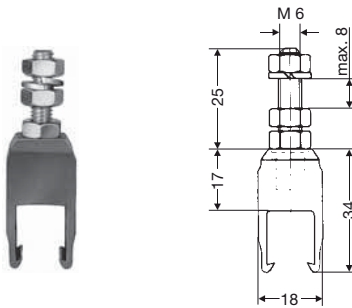
<sup>(1)</sup> with stainless steel hardware

<sup>(2)</sup> max. ampacity 70 A

<sup>(3)</sup> max. ampacity 100 A



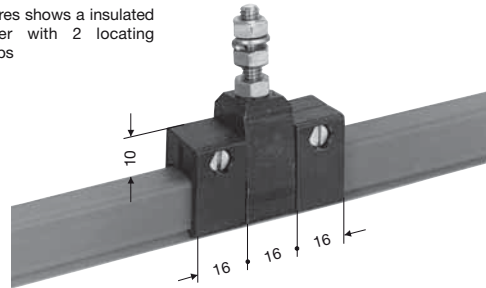
## Insulated hangers<sup>(2)</sup>



| Type                           | Weight kg | Order- No. |
|--------------------------------|-----------|------------|
| <b>UA 15</b>                   | 0,020     | 160 113    |
| <b>UA 15 K 4<sup>(1)</sup></b> | 0,020     | 160 115    |

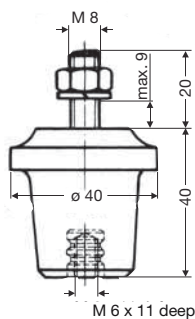
## Locating clamp

Pictures shows a insulated hanger with 2 locating clamps



| Type                            | Weight kg | Order- No. |
|---------------------------------|-----------|------------|
| <b>USK 15 K 4<sup>(1)</sup></b> | 0,030     | 160 106    |

## Insulators<sup>(2)</sup>

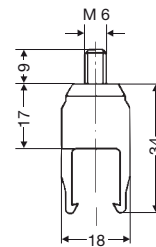


cantilever = 3000 N  
creepage distance = 60 mm

| Type                               | Weight kg | Order- No. |
|------------------------------------|-----------|------------|
| <b>GH 40-M 6</b>                   | 0,100     | 160 117    |
| <b>GH 40-M 6 K 4<sup>(1)</sup></b> | 0,100     | 160 119    |

## Rail holders

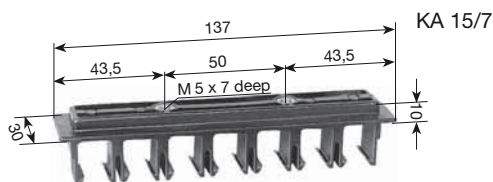
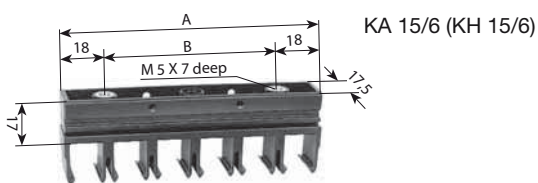
to be used with insulator only



| Type                            | Weight kg | Order- No. |
|---------------------------------|-----------|------------|
| <b>UAK 15</b>                   | 0,015     | 160 121    |
| <b>UAK 15 K 4<sup>(1)</sup></b> | 0,015     | 160123     |

## Compact hangers 2- to 7-pole

With this compact hangers is a combination of any number of poles possible.

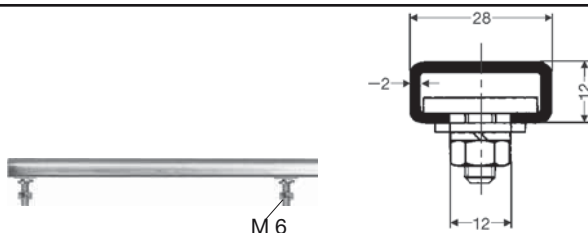


Conductor spacing 18 mm.

The hanger KA 15 is for direct bolting.

The hanger KH 15 has to be inserted in bracket profile.

| Type           | Dim. A | Dim. B | Weight kg | Order- No. |
|----------------|--------|--------|-----------|------------|
| <b>KH 15/2</b> | 36     | -      | 0,012     | 161 559    |
| <b>KH 15/3</b> | 54     | -      | 0,018     | 161 453    |
| <b>KH 15/4</b> | 72     | -      | 0,023     | 161 452    |
| <b>KH 15/5</b> | 90     | -      | 0,029     | 161 558    |
| <b>KH 15/6</b> | 108    | -      | 0,035     | 160 139    |
| <b>KA 15/2</b> | 36     | -      | 0,015     | 161 566    |
| <b>KA 15/3</b> | 54     | -      | 0,023     | 161 567    |
| <b>KA 15/4</b> | 72     | 36     | 0,028     | 162 010    |
| <b>KA 15/5</b> | 90     | 36     | 0,033     | 161 498    |
| <b>KA 15/6</b> | 108    | 72     | 0,040     | 160 138    |
| <b>KA 15/7</b> | -      | -      | 0,050     | 160 140    |



## Bracket profiles 28/12

incl. locking hardware

| Type             | Length mm | for poles | Weight kg | Order- No. |
|------------------|-----------|-----------|-----------|------------|
| <b>HU 15/200</b> | 200       | 6 + 7     | 0,130     | 161 434    |
| <b>HU 15/330</b> | 330       | 12 +14    | 0,300     | 161 435    |

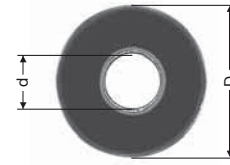
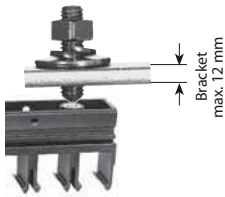
Longer brackets furnished on special order.

<sup>(1)</sup> with stainless steel hardware



# ACCESSORIES FOR U 15

## Attachment hardware for compact hangers, insulated hangers and insulators

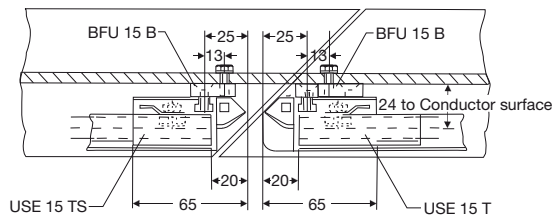


| Type                          | Weight kg | Order- No. |
|-------------------------------|-----------|------------|
| <b>BE 5 K 4<sup>(1)</sup></b> | 0,001     | 161 441    |

| Type                                | Thread | d mm | D mm | S mm | Weight kg | Order- No. |
|-------------------------------------|--------|------|------|------|-----------|------------|
| <b>Washer 5,3 K 4<sup>(1)</sup></b> | M 5    | 5,30 | 15   | 1,60 | 0,002     | 161 408    |

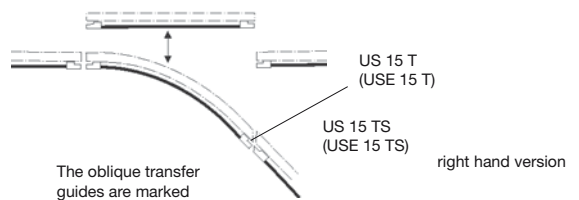
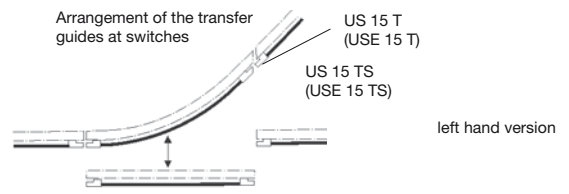
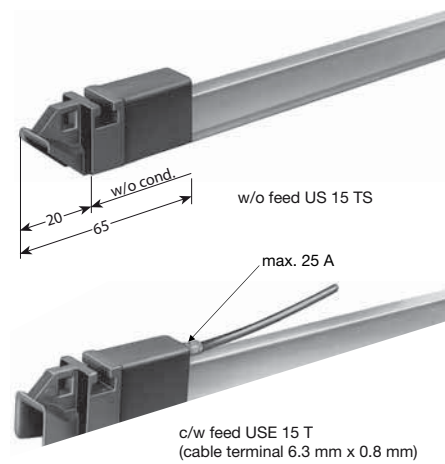
## Transfer guides for monorail systems

with and without feed terminals  
(also serving for anchor points in conjunction with BFU 15 B)



max. gap between opposite transfer guides:  
6 mm for straight transfers  
10 mm for oblique transfers  
max. vertical and horizontal offset:  $\pm 2$  mm

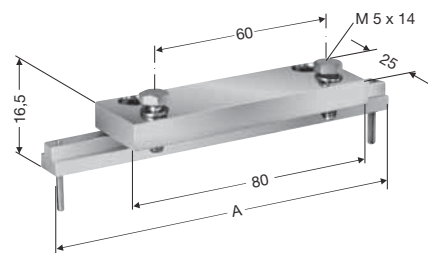
| Type             | feed terminal | Weight kg | Order- No. |
|------------------|---------------|-----------|------------|
| <b>US 15 T</b>   | w/o           | 0,016     | 160 840    |
| <b>US 15 TS</b>  | w/o           | 0,016     | 160 841    |
| <b>USE 15 T</b>  | c/w           | 0,018     | 160 842    |
| <b>USE 15 TS</b> | c/w           | 0,018     | 160 843    |



## Anchor bars for monorail transfer guide

for bolting to the track  
complete with 2 x locking pins 2 x 20 and 2 x hex screws  
M 5 x 14 with washers

| Type              | poles | Dim. A mm | Weight kg | Order- No. |
|-------------------|-------|-----------|-----------|------------|
| <b>BFU 15 B-6</b> | 1 – 6 | 116       | 0,095     | 160 851    |
| <b>BFU 15 B-8</b> | 1 – 8 | 152       | 0,120     | 160 852    |



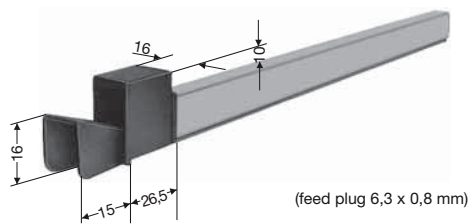
(Distance between conductor sliding surface and track = 24 mm; corresponds to compact hanger KA 15/6)





## Transfer guides

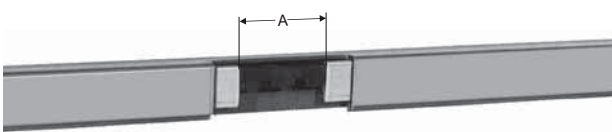
(no anchor point function)



max. air gap 6 mm  
max. vertical and horizontal offset  $\pm 2$  mm

| Type  | feed terminal | Weight kg | Order- No. |
|---|---------------|-----------|------------|
| <b>US 15</b>                                    | w/o           | 0,010     | 160 125    |
| <b>USE 15</b>                                   | c/w           | 0,050     | 160 126    |
| separately available:<br><b>SE 15 feed plug</b> |               | 0,040     | 160 859    |

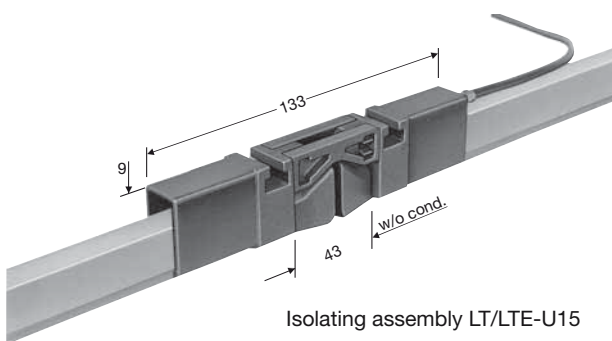
## Isolating sections



Type M: factory assembled per system layout  
Type L: loose delivery as a single item  
On both sides of the isolating section a hanger has to be considered.  
Distance max. 200 mm from center isolating section.  
Conductors and hangers have to be ordered separately.

| Type <sup>(1)</sup> | Length of isolating piece A | Weight kg | Order- No. |
|---------------------|-----------------------------|-----------|------------|
| <b>IT/U 15- 5 M</b> | 5                           | 0,003     | 160 111    |
| <b>IT/U 15-15 M</b> | 15                          | 0,004     | 160 240    |
| <b>IT/U 15-30 M</b> | 30                          | 0,004     | 160 112    |
| <b>IT/U 15-90 M</b> | 90                          | 0,007     | 160 241    |
| <b>IT/U 15- 5 L</b> | 5                           | 0,003     | 160 226    |
| <b>IT/U 15-15 L</b> | 15                          | 0,004     | 160 243    |
| <b>IT/U 15-30 L</b> | 30                          | 0,004     | 160 227    |
| <b>IT/U 15-90 L</b> | 90                          | 0,007     | 160 242    |

## Isolating assemblies



Isolating assembly LT/LTE-U15

On both sides of the isolating assembly a hanger has to be considered.  
Distance max. 200 mm from center isolating assembly.  
Conductors, hangers and connecting cable FLA have to be ordered separately.  
Flat plug connection: 6.3 x 0.8 mm

| Type                | symbol | comprising                   | Weight kg | Order- No. |
|---------------------|--------|------------------------------|-----------|------------|
| <b>LT /LT -U 15</b> |        | 2 x LT/U 15                  | 0,032     | 160 844    |
| <b>LT /LTE-U 15</b> |        | 2 x LT/U 15<br>1 x flat plug | 0,034     | 160 845    |
| <b>LTE/LTE-U 15</b> |        | 2 x LT/U 15<br>2 x flat plug | 0,036     | 160 846    |

Both isolating assembly parts (LT-U 15) are connected during installation while laterally pressed together.

## End caps with locking pin



| Type <sup>(1)</sup> | Weight kg | Order- No. |
|---------------------|-----------|------------|
| <b>UK 15-M</b>      | 0,005     | 161 656    |
| <b>UK 15-L</b>      | 0,005     | 160 109    |

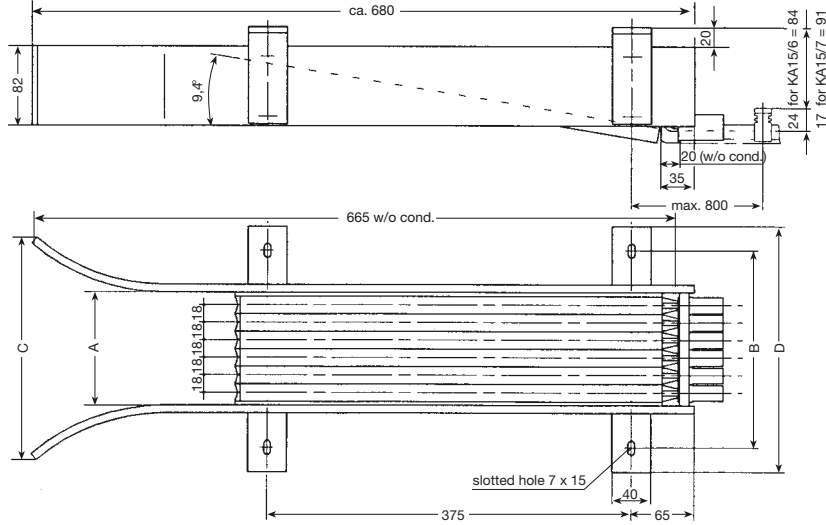
<sup>(1)</sup> Type M = factory assembled  
Type L = loose



# TRANSFER FUNNELS FOR U 15

## Transfer funnels for KSTU 30/55

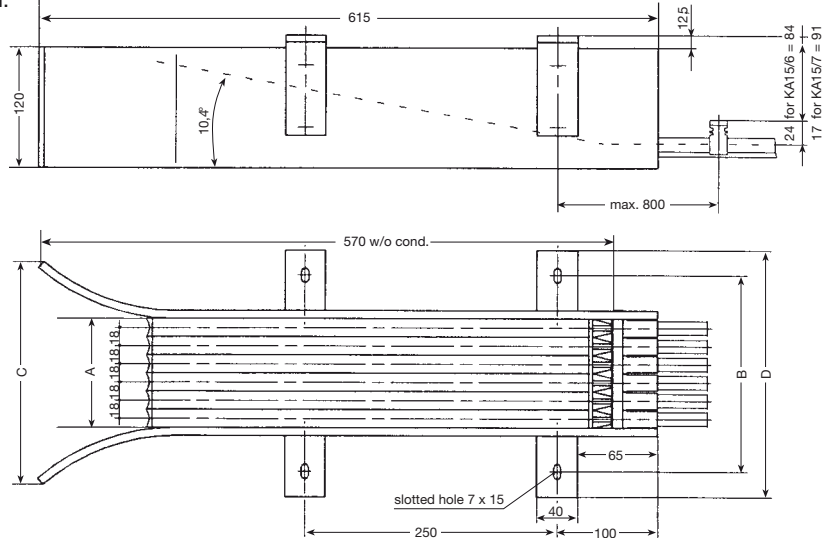
for max. speed  $v = 120 \text{ m/min.}^{(1)}$



| Type              | A mm | B mm | C mm | D mm | Weight kg | Order- No. |
|-------------------|------|------|------|------|-----------|------------|
| EFT U 15-2 - KSTU | 44   | 130  | 157  | 180  | 2,960     | 161 747    |
| EFT U 15-3 - KSTU | 62   | 148  | 175  | 198  | 3,140     | 161 748    |
| EFT U 15-4 - KSTU | 80   | 166  | 193  | 216  | 3,320     | 161 749    |
| EFT U 15-5 - KSTU | 98   | 184  | 211  | 234  | 3,500     | 161 750    |
| EFT U 15-6 - KSTU | 116  | 202  | 229  | 252  | 3,680     | 161 751    |
| EFT U 15-7 - KSTU | 134  | 220  | 247  | 270  | 3,860     | 161 752    |
| EFT U 15-8 - KSTU | 162  | 238  | 265  | 288  | 4,040     | 161 753    |

## Transfer funnels for KSTLU / KDSTLU

for max. speed  $v = 120 \text{ m/min.}^{(1)}$



| Type                | A mm | B mm | C mm | D mm | Weight kg | Order- No. |
|---------------------|------|------|------|------|-----------|------------|
| EFT U 15-2 - KDSTLU | 36   | 122  | 148  | 172  | 2,860     | 161 668    |
| EFT U 15-3 - KDSTLU | 54   | 140  | 166  | 190  | 3,060     | 161 669    |
| EFT U 15-4 - KDSTLU | 72   | 158  | 184  | 208  | 3,260     | 161 670    |
| EFT U 15-5 - KDSTLU | 90   | 176  | 202  | 226  | 3,460     | 161 671    |
| EFT U 15-6 - KDSTLU | 108  | 194  | 220  | 244  | 3,650     | 161 672    |
| EFT U 15-7 - KDSTLU | 126  | 212  | 238  | 262  | 3,850     | 161 673    |
| EFT U 15-8 - KDSTLU | 144  | 230  | 256  | 280  | 4,050     | 161 674    |

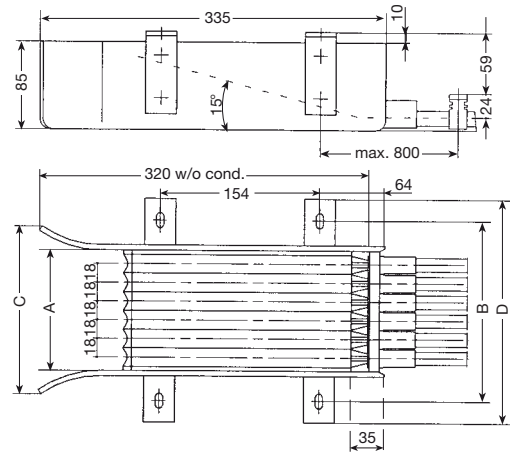
# TRANSFER FUNNELS AND CURRENT COLLECTORS FOR U 15



## Transfer funnels for KSFU 25

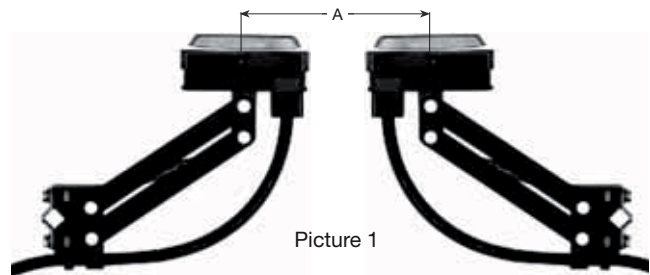
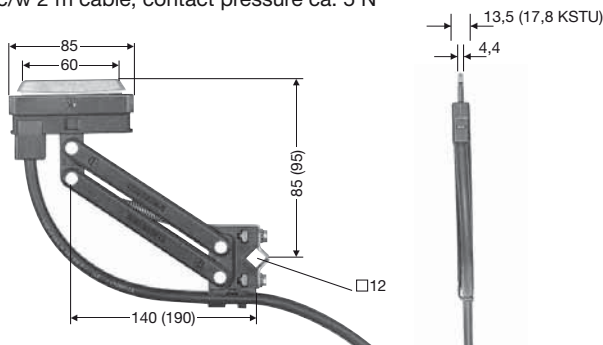
for max. speed  $v = 100 \text{ m/min.}^{(1)}$

| Type              | A mm | B mm | C mm | D mm | Weight kg | Order- No. |
|-------------------|------|------|------|------|-----------|------------|
| EFT U 15-2 - KSFU | 44   | 102  | 90   | 144  | 1,280     | 161 629    |
| EFT U 15-3 - KSFU | 62   | 120  | 108  | 162  | 1,400     | 161 630    |
| EFT U 15-4 - KSFU | 80   | 138  | 126  | 180  | 1,520     | 161 631    |
| EFT U 15-5 - KSFU | 98   | 156  | 144  | 198  | 1,640     | 161 632    |
| EFT U 15-6 - KSFU | 116  | 174  | 162  | 216  | 1,760     | 161 633    |
| EFT U 15-7 - KSFU | 134  | 192  | 180  | 234  | 1,880     | 161 634    |
| EFT U 15-8 - KSFU | 152  | 210  | 198  | 252  | 2,000     | 161 635    |



## Collectors

c/w 2 m cable; contact pressure ca. 5 N

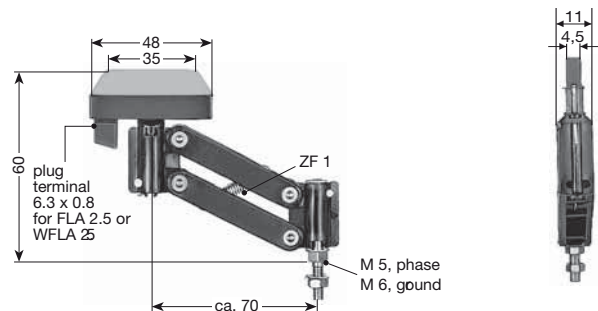


$A < 300 \text{ mm}$  conductor support spacing 0.8 m  
 $A > 300 \text{ mm}$  conductor support spacing 1.0 m

| Type <sup>(2)</sup>    | Ampacity A | Connecting cable   |           | Lift & swivel A mm | Weight kg | Order- No.   |               |
|------------------------|------------|--------------------|-----------|--------------------|-----------|--------------|---------------|
|                        |            | A/ mm <sup>2</sup> | D max/ mm |                    |           | phase- black | ground yellow |
| KST 30                 | 30         | 2,50               | 5         | ± 20               | 0,240     | 152 085      | 152 086       |
| KST 55                 | 55         | 6,00               | 11        | ± 20               | 0,368     | 154 438      | 154 439       |
| KSTL 30                | 30         | 2,50               | 5         | ± 30               | 0,240     | 152 089      | 152 091       |
| KSTL 55                | 55         | 6,00               | 11        | ± 30               | 0,368     | 154 443      | 154 444       |
| KSTU 30 <sup>(3)</sup> | 30         | 2,50               | 5         | ± 20               | 0,240     | 152 087      | 152 088       |
| KSTU 55 <sup>(3)</sup> | 55         | 6,00               | 11        | ± 20               | 0,368     | 154 441      | 154 442       |

| Type |   | for straight runs mm | for curves mm |
|------|---|----------------------|---------------|
| U 15 | Support distance with single collectors – all types - | 1000                 | 500           |
|      | with double collector<br>KDST, KDSTL, KDSTLU          | 800                  | 400           |

## Current collector

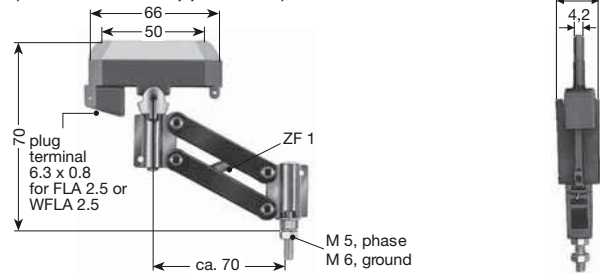


Lift  $\pm 10 \text{ mm}$ , swivel  $\pm 15 \text{ mm}$ , contact pressure: ca. 3 N  
 Connecting cable to be ordered separately.

| Type <sup>(2)</sup> | Ampacity A | Weight kg | Order- No.    |                 |
|---------------------|------------|-----------|---------------|-----------------|
|                     |            |           | phase - black | ground - yellow |
| KST 20              | 20         | 0,050     | 155 071       | 155 072         |

## Current collector

(not for transfer applications)



Lift  $\pm 10 \text{ mm}$ , swivel  $\pm 10 \text{ mm}$ , contact pressure: ca. 3.5 N  
 Connecting cable to be ordered separately.

| Type <sup>(2)</sup> | Ampacity A | Weight kg | Order- No.    |                 |
|---------------------|------------|-----------|---------------|-----------------|
|                     |            |           | phase - black | ground - yellow |
| KST 25              | 25         | 0,060     | 155 013       | 155 014         |

<sup>(1)</sup> Higher speeds on request.

<sup>(2)</sup> Suffix types e. g. KST 30 → KST 30 **PH**, Order- No. 152 085; KST 30 → KST 30 **PE**, Order- No. 152 086

<sup>(3)</sup> Collectors for transfer funnels EFT U 15 ... -KSTU

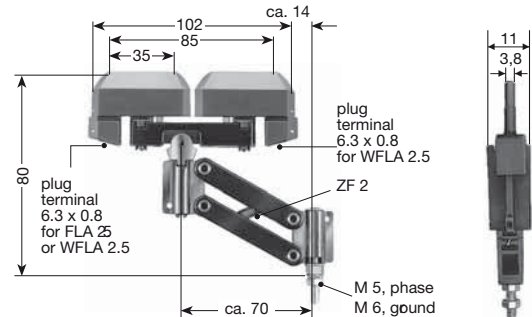


# COLLECTORS FOR U 15

## Double current collector

max. ampacity: 1 flat plug 25 A, 2 flat plugs 2 x 20 A

Lift  $\pm 10$  mm, swivel  $\pm 10$  mm,  
contact pressure: ca. 3.5 N per brush  
Connecting cable to be ordered separately.

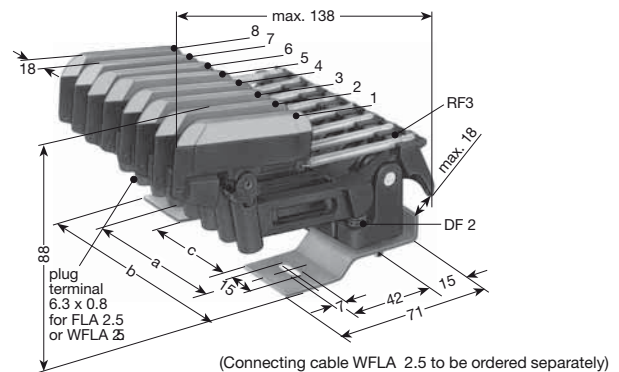


| Type <sup>(1)</sup> | Weight kg | Order- No.    |                 |
|---------------------|-----------|---------------|-----------------|
|                     |           | phase - black | ground - yellow |
| <b>KST 2/40</b>     | 0,080     | 168 137       | 168 138         |

## Compact current collectors<sup>(2)</sup>

max. ampacity: 1 flat plug 25 A

For conductor spacing of 18 mm;  
Lift & swivel  $\pm 15$  mm  
Contact pressure:  
ca. 3.5 N per brush  
Ground at No. 4, 3-pole at No. 3  
other position on request.  
For safety reasons during  
maintenance ground collector is  
always first and last contact.



| Type <sup>(1)</sup>     | Poles | a mm | b mm | c mm | Weight kg | Base plate            | Order- No.                              |                          |
|-------------------------|-------|------|------|------|-----------|-----------------------|---|--------------------------|
|                         |       |      |      |      |           |                       | for power incl. 1 x ground<br><b>HS</b> | for control<br><b>ST</b> |
| <b>KSF 25-2</b>         | 2     | 18   | 43   | -    | 0,168     | 2pole                 | -                                       | 155 038                  |
| <b>KSF 25-3</b>         | 3     | 54   | 79   | -    | 0,274     | 4pole (No. 4 = blank) | 155 028                                 | 155 039                  |
| <b>KSF 25-4</b>         | 4     | 54   | 79   | -    | 0,324     | 4pole                 | 155 029                                 | 155 040                  |
| <b>KSF 25-5</b>         | 5     | 80   | 115  | 53   | 0,425     | 6pole (No. 6 = blank) | 155 030                                 | 155 041                  |
| <b>KSF 25-6</b>         | 6     | 80   | 115  | 53   | 0,475     | 6pole                 | 155 031                                 | 155 042                  |
| <b>KSF 25-7</b>         | 7     | 120  | 151  | 80   | 0,581     | 8pole (No. 8 = blank) | 155 032                                 | 155 043                  |
| <b>KSF 25-8</b>         | 8     | 120  | 151  | 80   | 0,631     | 8pole                 | 155 033                                 | 155 044                  |
| Separately available:   |       |      |      |      |           |                       | phase                                   | ground                   |
| <b>Collector KSF 25</b> |       |      |      |      |           | 0,050                 | 155 023                                 | 155 024                  |

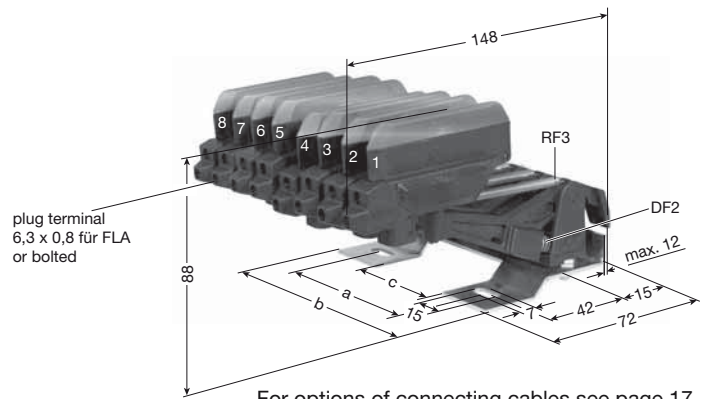
<sup>(1)</sup> Suffix types e.g.: KST 25 → KST 25 **PH**, Order- No. 155 013      KSF 25-3 → KSF 25-3 **HS**, Order- No. 155 028

<sup>(2)</sup> Install collectors in dragging position when equipment moves over transfer guides.

## Compact current collectors KESR 32-55

max. ampacity: 1 flat plug 32 A - FLA 2,5  
40 A - FLA 4,0  
55 A - FLA 6,0

Phase distance 18 mm  
Lift and swivel  $\pm 15$  mm  
Contact pressure:  
approx 3.5 N per brush  
Ground on No. 4, with 3-poles at No.3  
other positions on request.  
Ground is always first and last contact.



For options of connecting cables see page 17

### KESR-F (Flat plug connection)

| Type <sup>(1)</sup>   | Poles | a <sup>(2)</sup><br>mm | b <sup>(2)</sup><br>mm | c <sup>(2)</sup><br>mm | Weight<br>kg | Base plate               | Order- No.        |                  |
|-----------------------|-------|------------------------|------------------------|------------------------|--------------|--------------------------|-------------------|------------------|
|                       |       |                        |                        |                        |              |                          | with ground<br>HS | w/o ground<br>ST |
| KESR 32-55 F-3-18     | 3     | 54                     | 79                     | -                      | 0,393        | 4-poles (Nr. 4 = free)   | 157 285           | 157 290          |
| KESR 32-55 F-4-18     | 4     | 54                     | 79                     | -                      | 0,457        | 4-poles                  | 157 286           | 157 291          |
| KESR 32-55 F-5-18     | 5     | 80                     | 115                    | 53                     | 0,521        | 6-poles (Nr. 6 = free)   | 157 287           | 157 292          |
| KESR 32-55 F-6-18     | 6     | 80                     | 115                    | 53                     | 0,585        | 6-poles                  | 157 288           | 157 293          |
| KESR 32-55 F-7-18     | 7     | 120                    | 151                    | 80                     | 0,649        | 8-poles ( Nr. 8 = freie) | 157 289           | 157 304          |
| KESR 32-55 F-8-18     | 8     | 120                    | 151                    | 80                     | 0,713        | 8-poles                  | 157 434           | 157 435          |
| Separately available: |       |                        |                        |                        |              |                          | phase black       | ground yellow    |
| Collector KESR 32-55  |       |                        |                        |                        |              |                          | 157 274           | 157 275          |

### KESR-S (Bolted connection)

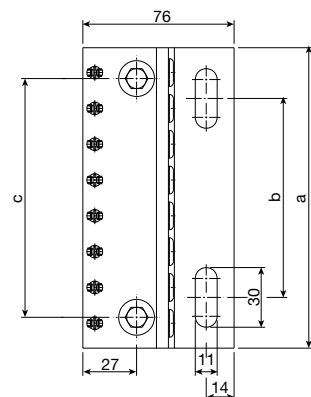
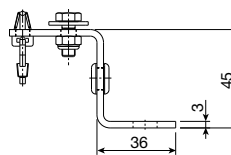
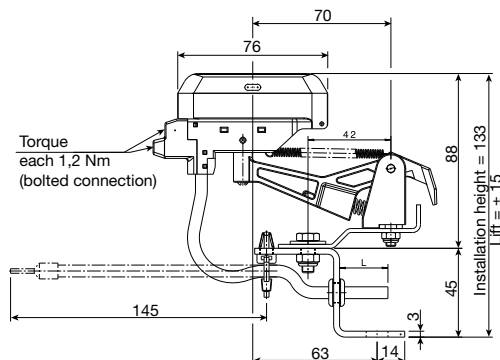
| Type <sup>(1)</sup>   | Poles | a <sup>(2)</sup><br>mm | b <sup>(2)</sup><br>mm | c <sup>(2)</sup><br>mm | Weight<br>kg | Base plate              | Order- No.        |                  |
|-----------------------|-------|------------------------|------------------------|------------------------|--------------|-------------------------|-------------------|------------------|
|                       |       |                        |                        |                        |              |                         | with ground<br>HS | w/o ground<br>ST |
| KESR 32-55 S-3-18     | 3     | 54                     | 79                     | -                      | 0,405        | 4-poles (Nr. 4 = free)  | 157 220           | 157 225          |
| KESR 32-55 S-4-18     | 4     | 54                     | 79                     | -                      | 0,476        | 4-poles                 | 157 221           | 157 226          |
| KESR 32-55 S-5-18     | 5     | 80                     | 115                    | 53                     | 0,547        | 6-poles (Nr. 6 = free)  | 157 222           | 157 227          |
| KESR 32-55 S-6-18     | 6     | 80                     | 115                    | 53                     | 0,618        | 6-poles                 | 157 223           | 157 228          |
| KESR 32-55 S-7-18     | 7     | 120                    | 151                    | 80                     | 0,689        | 8-poles ( Nr. 8 = free) | 157 224           | 157 229          |
| KESR 32-55 S-8-18     | 8     | 120                    | 151                    | 80                     | 0,760        | 8-poles                 | 157 431           | 157 433          |
| Separately available: |       |                        |                        |                        |              |                         | phase black       | ground yellow    |
| Collector KESR 32-55  |       |                        |                        |                        |              |                         | 157 294           | 157 295          |

### Adapter for compact collectors

| Type <sup>(1)</sup> | Poles | a <sup>(2)</sup><br>mm | b <sup>(2)</sup><br>mm | c <sup>(2)</sup><br>mm | Weight<br>kg | Order<br>No. |
|---------------------|-------|------------------------|------------------------|------------------------|--------------|--------------|
| AD4 - KESR/KESL     | 4     | 79                     | 35                     | 54                     | 0,210        | 157 368      |
| AD6 - KESR/KESL     | 6     | 115                    | 65                     | 80                     | 0,310        | 157 367      |
| AD8 - KESR/KESL     | 8     | 151                    | 100                    | 120                    | 0,410        | 157 432      |



Ready assembled collectors including adapter plate on request.



(1) Type completed e.g. KESR 32-55 S-4-18 with ground → KESR 32-55 S-4-18 HS Order-No. 157 221.

(2) Base plate with KESR and KSFU 25 always 2-, 4-, 6- or 8-poles.  
Collectors 3-poles: Base plate 4-poles, 4th pole free.  
Collectors 5-poles: Base plate 6-poles, 6th pole free.  
Collectors 7-poles: Base plate 8-poles, 8th pole free.

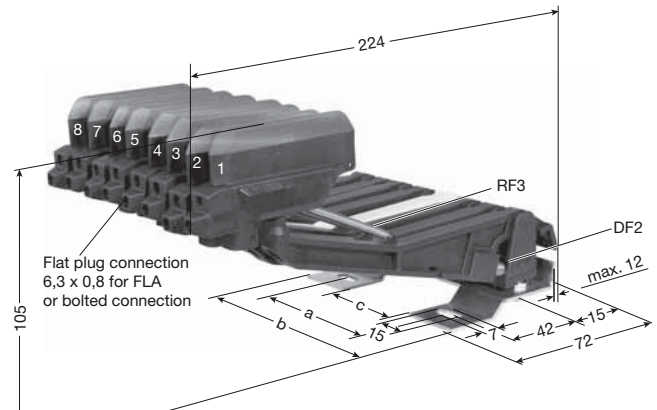


# COMPACT CURRENT COLLECTORS FOR U 15

## Compact collector KESL 32-63 Reverse operation

max. ampacity: 1 flat plug    32 A – FLA 2,5  
 40 A – FLA 4,0  
 55 A – FLA 6,0

Phase distance 18 mm  
 Lift and swivel  $\pm 30$  mm  
 Contact pressure: approx 7 N per brush  
 Ground on No. 4, with 3-poles at No.3  
 other positions on request.  
 Ground is always first and last contact.



## KESL-F (Flat plug connection)

For options of connecting cables see page 17

| Type <sup>(1)</sup>                                       | Poles | a <sup>(2)</sup><br>mm | b <sup>(2)</sup><br>mm | c <sup>(2)</sup><br>mm | Weight<br>kg | Base plate             | Order-No.      |               |
|---|-------|------------------------|------------------------|------------------------|--------------|------------------------|----------------|---------------|
|   |       |                        |                        |                        |              |                        | with ground HS | w/o ground ST |
| <b>KESL 32-55 F- 3-18</b>                                 | 3     | 54                     | 79                     | -                      | 0,438        | 4-poles (Nr. 4 = free) | 157 199        | 157 300       |
| <b>KESL 32-55 F- 4-18</b>                                 | 4     | 54                     | 79                     | -                      | 0,517        | 4-poles                | 157 200        | 157 301       |
| <b>KESL 32-55 F- 5-18</b>                                 | 5     | 80                     | 115                    | 53                     | 0,596        | 6-poles (Nr. 6 = free) | 157 201        | 157 302       |
| <b>KESL 32-55 F- 6-18</b>                                 | 6     | 80                     | 115                    | 53                     | 0,675        | 6-poles                | 157 202        | 157 303       |
| <b>KESL 32-55 F- 7-18</b>                                 | 7     | 120                    | 151                    | 80                     | 0,754        | 8-poles (Nr. 8 = free) | 157 203        | 157 305       |
| <b>KESL 32-55 F- 8-18</b>                                 | 8     | 120                    | 151                    | 80                     | 0,833        | 8-poles                | 157 204        | 157 436       |
| Separately available:<br>Collector <b>KESL 32-55 F/18</b> |       |                        |                        |                        |              |                        | Phase          | ground        |
|   |       |                        |                        |                        |              |                        | 157 188        | 157 189       |

## KESL-S (Bolted connection)

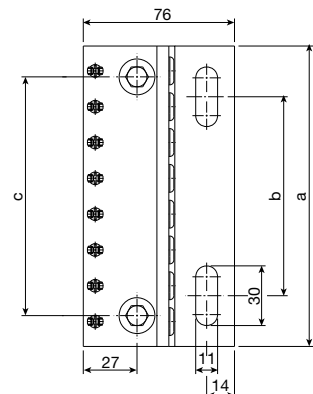
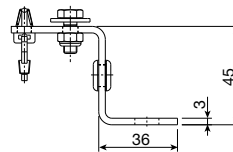
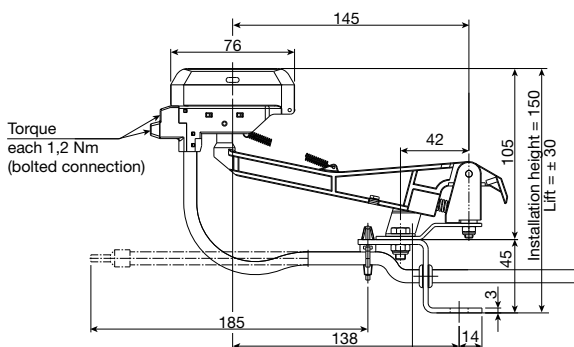
| Type <sup>(1)</sup>                                       | Poles | a <sup>(2)</sup><br>mm | b <sup>(2)</sup><br>mm | c <sup>(2)</sup><br>mm | Weight<br>kg | Base plate             | Order-No.      |               |
|---|-------|------------------------|------------------------|------------------------|--------------|------------------------|----------------|---------------|
|   |       |                        |                        |                        |              |                        | with ground HS | w/o ground ST |
| <b>KESL 32-63 S- 3-18</b>                                 | 3     | 54                     | 79                     | -                      | 0,451        | 4-poles (Nr. 4 = free) | 157 190        | 157 296       |
| <b>KESL 32-63 S- 4-18</b>                                 | 4     | 54                     | 79                     | -                      | 0,537        | 4-poles                | 157 191        | 157 297       |
| <b>KESL 32-63 S- 5-18</b>                                 | 5     | 80                     | 115                    | 53                     | 0,623        | 6-poles (Nr. 6 = free) | 157 192        | 157 298       |
| <b>KESL 32-63 S- 6-18</b>                                 | 6     | 80                     | 115                    | 53                     | 0,709        | 6-poles                | 157 193        | 157 299       |
| <b>KESL 32-63 S- 7-18</b>                                 | 7     | 120                    | 151                    | 80                     | 0,795        | 8-poles (Nr. 8 = free) | 157 194        | 157 306       |
| <b>KESL 32-63 S- 8-18</b>                                 | 8     | 120                    | 151                    | 80                     | 0,881        | 8-poles                | 157 198        | 157 437       |
| Separately available:<br>Collector <b>KESR 32-63 S/18</b> |       |                        |                        |                        |              |                        | Phase          | PE            |
|   |       |                        |                        |                        |              |                        | 157 186        | 157 187       |

## Adapter for compact collectors

| Type <sup>(1)</sup>    | Poles | a <sup>(2)</sup><br>mm | b <sup>(2)</sup><br>mm | c <sup>(2)</sup><br>mm | Weight<br>kg | Order-<br>No. |
|------------------------|-------|------------------------|------------------------|------------------------|--------------|---------------|
| <b>AD4 - KESR/KESL</b> | 4     | 79                     | 35                     | 54                     | 0,210        | 157 368       |
| <b>AD6 - KESR/KESL</b> | 6     | 115                    | 65                     | 80                     | 0,310        | 157 367       |
| <b>AD8 - KESR/KESL</b> | 8     | 151                    | 100                    | 120                    | 0,410        | 157 432       |



Ready assembled collectors including  
 adapter plate on request.



(1) Type completed e.g. KESR 32-55 S-4-18 with ground → KESR 32-55 S-4-18 HS Order-No. 157 221.  
 (2) Base plate with KESR and KSFU 25 always 2-, 4-, 6- or 8-poles.  
 Collectors 3-poles: Base plate 4-poles, 4th pole free.  
 Collectors 5-poles: Base plate 6-poles, 6th pole free.  
 Collectors 7-poles: Base plate 8-poles, 8th pole free.

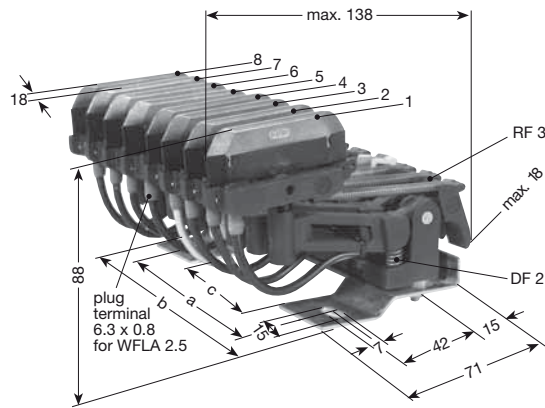
# COMPACT CURRENT COLLECTORS FOR U 15



## Compact current collectors

max. ampacity: 1 plug terminal 25 A.

For conductor spacing of 18 mm. Lift & swivel  $\pm 15$  mm  
 Contact pressure: ca. 3.5 N per brush  
 Ground at No. 4, 3-pole at No. 3 other position on request.  
 For safety reasons during maintenance ground collector is always first and last contact.

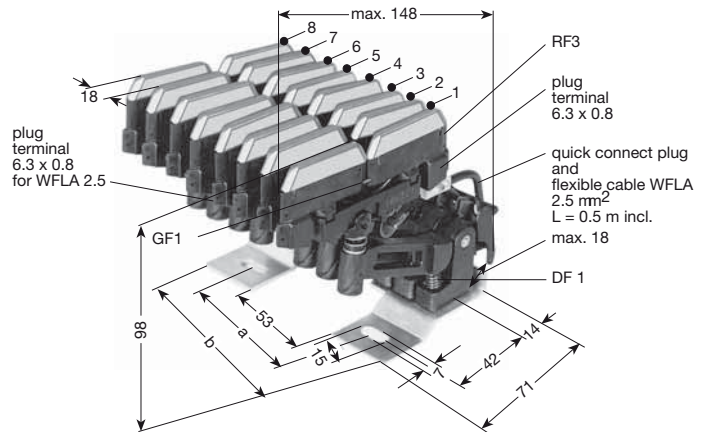


| Type <sup>(1)</sup>      | Poles | a mm | b mm | c mm | Weight kg | Base plate              | Order- No.                       |                   |         |
|--------------------------|-------|------|------|------|-----------|-------------------------|----------------------------------|-------------------|---------|
|                          |       |      |      |      |           |                         | for power incl. 1 x ground<br>HS | for control<br>ST |         |
| <b>KSFU 25-2</b>         | 2     | 18   | 43   | -    | 0,182     | 2-poles                 | 155 050                          | 155 059           |         |
| <b>KSFU 25-3</b>         | 3     | 54   | 79   | -    | 0,295     | 4-poles (No. 4 = blank) | 155 051                          | 155 060           |         |
| <b>KSFU 25-4</b>         | 4     | 54   | 79   | -    | 0,352     | 4-poles                 | 155 052                          | 155 061           |         |
| <b>KSFU 25-5</b>         | 5     | 80   | 115  | 53   | 0,460     | 6-poles (No. 6 = blank) | 155 053                          | 155 062           |         |
| <b>KSFU 25-6</b>         | 6     | 80   | 115  | 53   | 0,517     | 6-poles                 | 155 054                          | 155 063           |         |
| <b>KSFU 25-7</b>         | 7     | 120  | 151  | 80   | 0,625     | 8-poles (No. 8 = blank) | 155 055                          | 155 064           |         |
| <b>KSFU 25-8</b>         | 8     | 120  | 151  | 80   | 0,682     | 8-poles                 | 155 056                          | 155 065           |         |
| Separately available:    |       |      |      |      |           |                         | phase                            | ground            |         |
| Collector <b>KSFU 25</b> |       |      |      |      |           | 0,057                   | w/o                              | 155 025           | 155 026 |

## Compact double current collectors

max. ampacity: 1 plug terminal 25 A, 2 plug terminals 2 x 20 A

For conductor spacing of 18 mm. Lift & swivel  $\pm 15$  mm  
 Contact pressure: ca. 3.5 N per brush  
 Ground at No. 4, 3-pole at No. 3 other position on request.  
 For safety reasons during maintenance ground collector is always first and last contact.



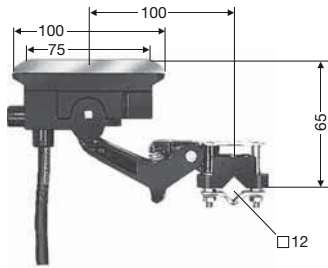
| Type <sup>(1)</sup>               | Poles | a mm | b mm | c mm | Weight kg | Base plate                  | Order- No.                       |                   |         |
|-----------------------------------|-------|------|------|------|-----------|-----------------------------|----------------------------------|-------------------|---------|
|                                   |       |      |      |      |           |                             | for power incl. 1 x ground<br>HS | for control<br>ST |         |
| <b>KDS 2/40-1-18</b>              | 1     | 54   | 79   | -    | 0,194     | 4-poles (No. 2 - 4 = blank) | 155 077                          | 155 089           |         |
| <b>KDS 2/40-2-18</b>              | 2     | 54   | 79   | -    | 0,264     | 4-poles (No. 3 + 4 = blank) | 155 078                          | 155 090           |         |
| <b>KDS 2/40-3-18</b>              | 3     | 54   | 79   | -    | 0,334     | 4-poles (No. 4 = blank)     | 155 079                          | 155 091           |         |
| <b>KDS 2/40-4-18</b>              | 4     | 54   | 79   | -    | 0,404     | 4-poles                     | 155 080                          | 155 092           |         |
| <b>KDS 2/40-5-18</b>              | 5     | 80   | 115  | 53   | 0,525     | 6-poles (No. 6 = blank)     | 155 081                          | 155 093           |         |
| <b>KDS 2/40-6-18</b>              | 6     | 80   | 115  | 53   | 0,595     | 6-poles                     | 155 082                          | 155 094           |         |
| <b>KDS 2/40-7-18</b>              | 7     | 120  | 151  | 80   | 0,721     | 8-poles (No. 8 = blank)     | 155 083                          | 155 095           |         |
| <b>KDS 2/40-8-18</b>              | 8     | 120  | 151  | 80   | 0,791     | 8-poles                     | 155 084                          | 155 096           |         |
| Separately available:             |       |      |      |      |           |                             | phase-black                      | ground-yellow     |         |
| Collector <b>KDS 2/40</b> , 1pole |       |      |      |      |           | 0,070                       | w/o                              | 168 073           | 168 074 |

<sup>(1)</sup> Suffix types e.g. KSFU 25-2 → KSFU 25-2 HS, Order- No. 155 050 · KDS 2/40 -1-18 → KDS 2/40 -1-18 HS, Order- No. 155 077



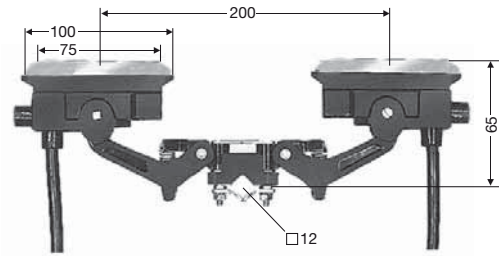
# COLLECTORS FOR U 15

## Current collectors



c/w 2 m cable · lift & swivel  $\pm 20$  mm  
contact pressure: 9 N

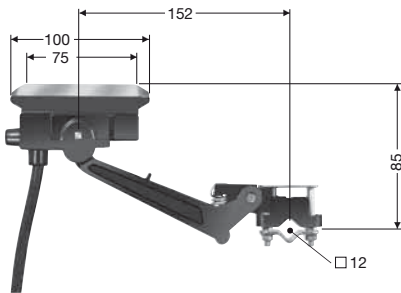
## Double current collectors



c/w 2 x 2 m cable · lift & swivel  $\pm 20$  mm  
contact pressure: 9 N per brush

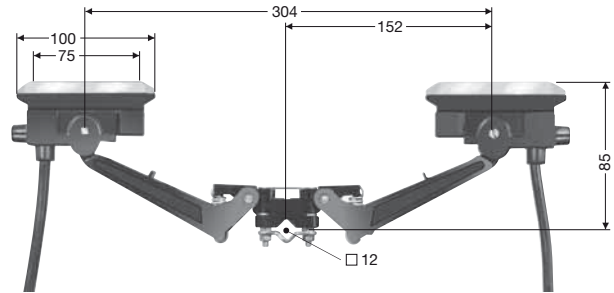
| Type <sup>(1)</sup> | Am-<br>pacity<br>A | Connecting cable |              | Weight<br>kg | Order-No.        |                    | Type <sup>(1)</sup> | Am-<br>pacity<br>A | Connecting cable |              | Weight<br>kg | Order-No.        |                    |
|---------------------|--------------------|------------------|--------------|--------------|------------------|--------------------|---------------------|--------------------|------------------|--------------|--------------|------------------|--------------------|
|                     |                    | mm <sup>2</sup>  | Ø max/<br>mm |              | phase -<br>black | ground -<br>yellow |                     |                    | mm <sup>2</sup>  | Ø max/<br>mm |              | phase -<br>black | ground -<br>yellow |
| <b>KST 15</b>       | 15                 | 2,50             | 8,00         | 0,256        | 150 891          | 150 892            | <b>KDST 30</b>      | 30                 | 2,50             | 8,00         | 0,471        | 150 897          | 150 898            |
| <b>KST 40</b>       | 40                 | 6,00             | 11,00        | 0,428        | 152 840          | 152 850            | <b>KDST 80</b>      | 80                 | 6,00             | 11,00        | 0,821        | 152 960          | 152 970            |
| <b>KST 60</b>       | 60                 | 10,00            | 12,50        | 0,588        | 153 675          | 153 676            | <b>KDST 120</b>     | 120                | 10,00            | 12,50        | 1,114        | 153 679          | 153 680            |

## Current collectors



c/w 2 m cable · lift & swivel  $\pm 40$  mm  
contact pressure: 9 N

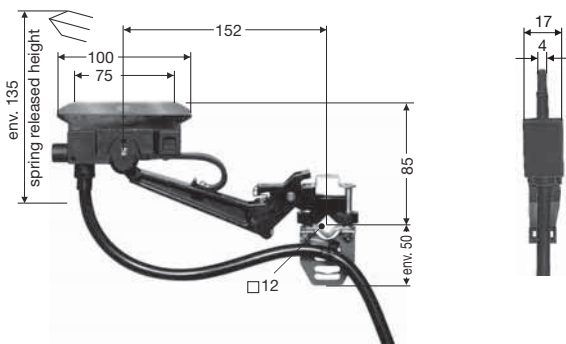
## Double current collectors



c/w 2 x 2 m cable · lift & swivel  $\pm 40$  mm  
contact pressure: 9 N per brush

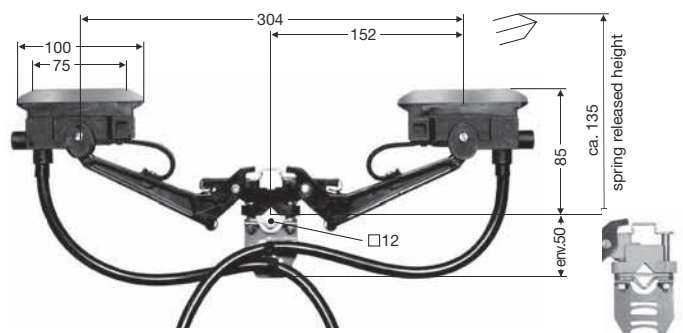
| Type <sup>(1)</sup> | Am-<br>pacity<br>A | Connecting cable |              | Weight<br>kg | Order-No.        |                    | Type <sup>(1)</sup> | Am-<br>pacity<br>A | Connecting cable |              | Weight<br>kg | Order-No.        |                    |
|---------------------|--------------------|------------------|--------------|--------------|------------------|--------------------|---------------------|--------------------|------------------|--------------|--------------|------------------|--------------------|
|                     |                    | mm <sup>2</sup>  | Ø max/<br>mm |              | phase -<br>black | ground -<br>yellow |                     |                    | mm <sup>2</sup>  | Ø max/<br>mm |              | phase -<br>black | ground -<br>yellow |
| <b>KSTL 15</b>      | 15                 | 2,50             | 8,00         | 0,272        | 150 893          | 150 894            | <b>KDSTL 30</b>     | 30                 | 2,50             | 8,00         | 0,492        | 150 899          | 150 901            |
| <b>KSTL 40</b>      | 40                 | 6,00             | 11,00        | 0,453        | 152 860          | 152 870            | <b>KDSTL 80</b>     | 80                 | 6,00             | 11,00        | 0,822        | 152 980          | 152 990            |
| <b>KSTL 60</b>      | 60                 | 10,00            | 12,50        | 0,591        | 153 677          | 153 678            | <b>KDSTL 120</b>    | 120                | 10,00            | 12,50        | 1,188        | 153 681          | 153 682            |

## Current collectors for transfer funnel EFT<sup>(2)</sup>



c/w 2 m cable  
lift  $\pm 20$  mm, swivel  $\pm 40$  mm contact pressure: 9 N

## Double current collectors for transfer funnel EFT<sup>(2)</sup>



c/w 2 x 2 m cable  
lift  $\pm 20$  mm, swivel  $\pm 40$  mm contact pressure: 9 N per brush

| Type <sup>(1)</sup> | Am-<br>pacity<br>A | Connecting cable |              | Weight<br>kg | Order-No.        |                    | Type <sup>(1)</sup> | Am-<br>pacity<br>A | Connecting cable |              | Weight<br>kg | Order-No.        |                    |
|---------------------|--------------------|------------------|--------------|--------------|------------------|--------------------|---------------------|--------------------|------------------|--------------|--------------|------------------|--------------------|
|                     |                    | mm <sup>2</sup>  | Ø max/<br>mm |              | phase -<br>black | ground -<br>yellow |                     |                    | mm <sup>2</sup>  | Ø max/<br>mm |              | phase -<br>black | ground -<br>yellow |
| <b>KSTLU 15</b>     | 15                 | 2,50             | 8,00         | 0,313        | 150 895          | 150 896            | <b>KDSTLU 30</b>    | 30                 | 2,50             | 8,00         | 0,541        | 150 902          | 150 903            |
| <b>KSTLU 40</b>     | 40                 | 6,00             | 11,00        | 0,499        | 153 791          | 153 792            | <b>KDSTLU 80</b>    | 80                 | 6,00             | 11,00        | 0,895        | 153 786          | 153 787            |
| <b>KSTLU 60</b>     | 60                 | 10,00            | 12,50        | 0,652        | 153 793          | 153 794            | <b>KDSTLU 120</b>   | 120                | 10,00            | 12,50        | 1,231        | 153 795          | 153 796            |

<sup>(1)</sup> Suffix types e.g. KST 15  $\rightarrow$  KST 15 PH Order-No. 150 891.

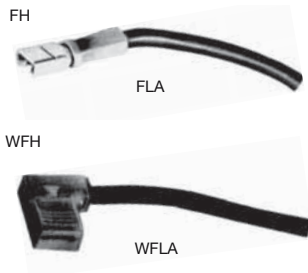
<sup>(2)</sup> Released collector maintains center phase position for easy retracking.



# COLLECTOR COMPONENTS FOR U 15



**Connecting cable**, high-flexible for collectors  
(see current collectors on pages 12, 13, 14.)



1 m long with flat plug 6.3 x 0.8.  
Longer cables available.

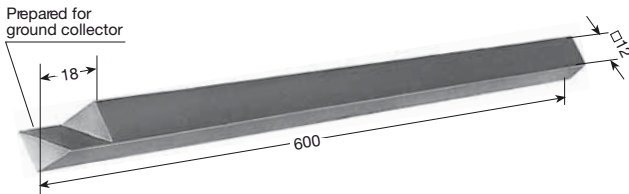
| Type            | Cross section mm <sup>2</sup> | Outer Ø mm | Weight kg | Order- No.    |                 |
|-----------------|-------------------------------|------------|-----------|---------------|-----------------|
|                 |                               |            |           | phase - black | ground - yellow |
| <b>FLA 2,5</b>  | 2,50                          | 4          | 0,080     | 165 049       | 165 050         |
| <b>FLA 4</b>    | 4,00                          | 6          | 0,100     | 165 051       | 165 052         |
| <b>FLA 6</b>    | 6,00                          | 7          | 0,015     | 166 368       | 166 369         |
| <b>WFLA 2,5</b> | 2,50                          | 4          | 0,080     | 168 107       | 168 108         |

## Flat plugs, only

| Type           | for cross section mm <sup>2</sup> | Order- No. |
|----------------|-----------------------------------|------------|
| <b>FH 2,5</b>  | 2,50                              | 165 120    |
| <b>FH 4</b>    | 4,00                              | 165 121    |
| <b>WFH 2,5</b> | 2,50                              | 168 109    |

## Collector bracket

for KST 15 thru KDSTLU 120



Longer brackets furnished on special order.

With brackets above 600 mm length a support has to be considered on site, to avoid a bending or twisting of the collector bracket.

| Type         | Length mm | Weight kg | Order- No. |
|--------------|-----------|-----------|------------|
| <b>UM 12</b> | 600       | 0,710     | 153 506    |

## Cable attachment clamp

for KSTLU 15 thru KDSTLU 120



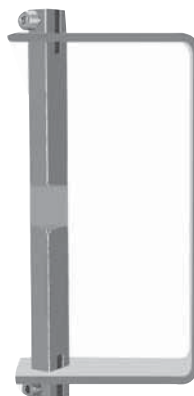
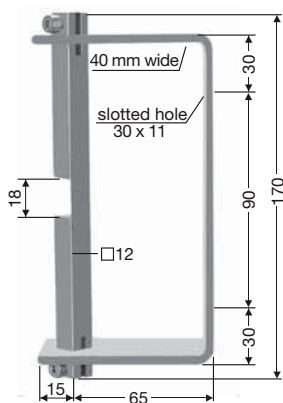
| Type                     | Weight kg | Order- No. |
|--------------------------|-----------|------------|
| <b>KBK<sup>(1)</sup></b> | 0,030     | 153 519    |

## Collector bracket

for KST 15 thru KDSTLU 120 collectors,

for KST 30 thru KSTLU 55 collectors,

for control collectors only



| Type                 | Weight kg | Order- No. |
|----------------------|-----------|------------|
| <b>UMAS 12 HS -A</b> | 0,600     | 152 233    |

| Type                 | Weight kg | Order- No. |
|----------------------|-----------|------------|
| <b>UMAS 12 HS -B</b> | 0,600     | 152 232    |

| Type              | Weight kg | Order- No. |
|-------------------|-----------|------------|
| <b>UMAS 12 ST</b> | 0,600     | 152 234    |

## Contact grease

for joints and feeds

100 ml for approx. 200 joints

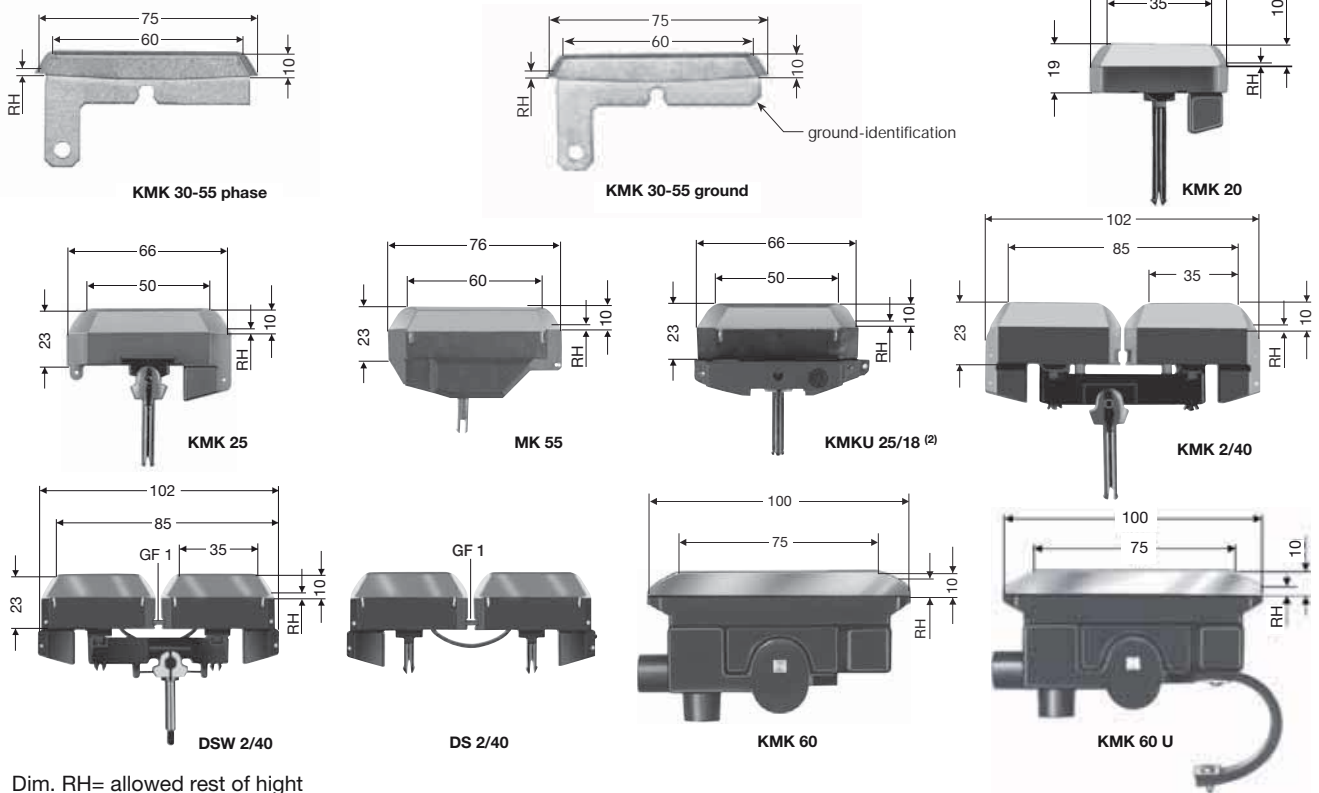
Order- No. 121 502

<sup>(1)</sup> with stainless steel hardware



# COLLECTOR COMPONENTS FOR U 15

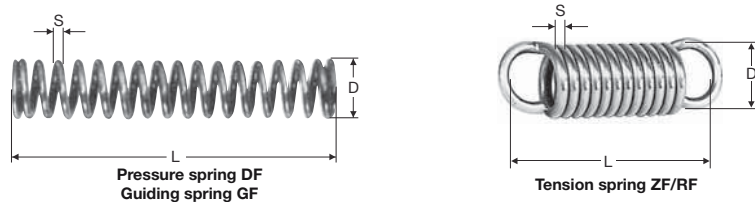
## Carbon brushes



Dim. RH= allowed rest of height

| Type                          | for collectors        | width of carbon brushes mm | RH mm | Weight kg | Order- No. |
|-------------------------------|-----------------------|----------------------------|-------|-----------|------------|
| <b>KMK 30-55 PH</b>           | KST 30 – KSTL 55      | 4,40                       | 1,50  | 0,031     | 154 440    |
| <b>KMK 30-55 PE</b>           | KST 30 – KSTL 55      | 4,40                       | 1,50  | 0,034     | 154 453    |
| <b>KMK 20</b>                 | KST 20                | 4,50                       | 5,50  | 0,020     | 155 068    |
| <b>KMK 25</b>                 | KST 25, KSF 25        | 4,20                       | 1,50  | 0,030     | 155 000    |
| <b>MK 55</b>                  | KESR 32-55            | 4,20                       | 3,50  | 0,042     | 168 225    |
| <b>KMKU 25/18</b>             | KSFU 25               | 4,20                       | 1,50  | 0,035     | 155 002    |
| <b>KMK 2/40</b>               | KST 2/40              | 3,80                       | 1,00  | 0,050     | 168 135    |
| <b>DSW 2/40<sup>(1)</sup></b> | KDS 2/40              | 3,80                       | 1,00  | 0,050     | 168 151    |
| <b>DS 2/40</b>                | KDS 2/40              | 3,80                       | 1,00  | 0,050     | 168 065    |
| <b>KMK 60</b>                 | KST 15 – KDSTL 120    | 4,00                       | 3,00  | 0,110     | 153 512    |
| <b>KMK 60 U</b>               | KSTLU 15 – KDSTLU 120 | 4,00                       | 3,00  | 0,120     | 153 513    |

## Springs



| Type        | for collectors                                      | S mm | D mm  | L mm  | Order- No. |
|-------------|---|------|-------|-------|------------|
| <b>ZF 1</b> | KST 20, KST 25                                      | 0,63 | 5,40  | 22,00 | 153 514    |
| <b>ZF 2</b> | KST 2/40  | 0,85 | 6,45  | 24,00 | 153 515    |
| <b>ZF 3</b> | KST 15 thru KDST 120                                | 1,10 | 10,80 | 28,50 | 153 516    |
| <b>ZF 4</b> | KSTL 15 thru KDSTL 120 and KSTLU 15 thru KDSTLU 120 | 1,30 | 11,00 | 29,00 | 153 517    |
| <b>DF 1</b> | KSFR 2/40   | 1,00 | 7,00  | 38,00 | 153 847    |
| <b>DF 2</b> | KSF 25  | 0,90 | 7,70  | 43,00 | 153 848    |
| <b>DF 3</b> | KDS 2/40  | 0,55 | 9,55  | 24,00 | 152 011    |
| <b>DF 4</b> | KESL 32-63  | 1,10 | 6,40  | 41,00 | 157 312    |
| <b>RF 3</b> | KSF 25, KSFR 2/40, KESR 32-55                       | 0,40 | 4,40  | 31,00 | 153 849    |
| <b>GF 1</b> | KSFR 2/40   | 0,35 | 2,00  | 22,00 | 153 850    |

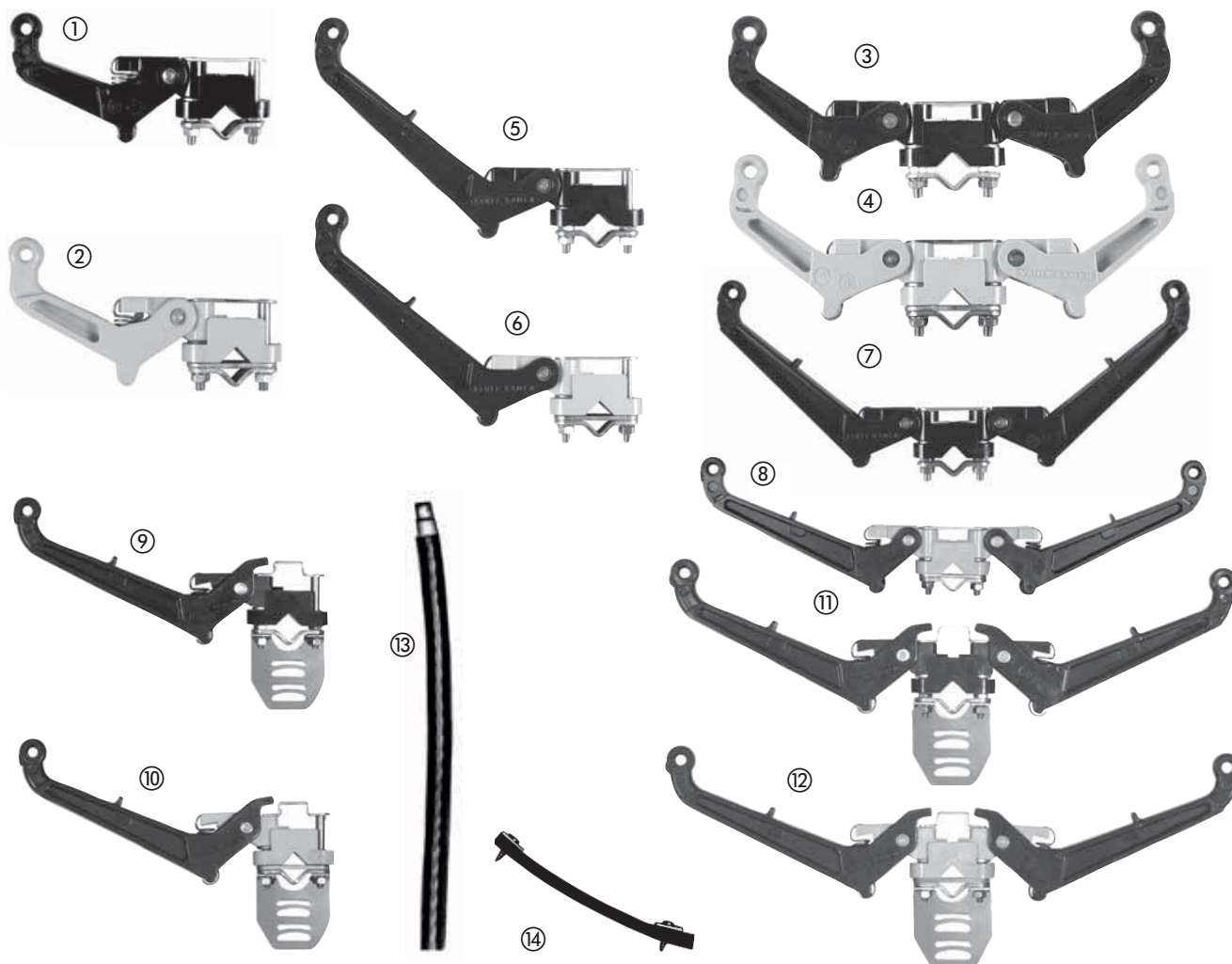
<sup>(1)</sup> Also spare part for collector KSFR 2/40 (old type)  
<sup>(2)</sup> 18 mm wide

# COLLECTOR COMPONENTS FOR U 15



For KST 15 thru KDSTLU 120

| Part-No. | Description   |           | Weight kg | Order- No.        |
|----------|---|-----------|-----------|-------------------|
| 1        | Collector base for KST 15 thru KST 60   | phase PH  | 0,080     | 153 736           |
| 2        | Collector base for KST 15 thru KST 60   | groun PE  |           | 153 737           |
| 3        | Collector base for KDST 30 thru KDST 120 (double arm)   | phase PH  | 0,100     | 153 738           |
| 4        | Collector base for KDST 30 thru KDST 120 (double arm)   | ground PE |           | 153 739           |
| 5        | Collector base for KSTL 15 thru KSTL 60   | phase PH  | 0,090     | 153 740           |
| 6        | Collector base for KSTL 15 thru KSTL 60   | ground PE |           | 153 741           |
| 7        | Collector base for KDSTL 30 thru KDSTL 120 (double arm)   | phase PH  | 0,130     | 153 742           |
| 8        | Collector base for KDSTL 30 thru KDSTL 120 (double arm)   | ground PE |           | 153 743           |
| 9        | Collector base for KSTLU 15 thru KSTLU 60   | phase PH  | 0,090     | 153 804           |
| 10       | Collector base for KSTLU 15 thru KSTLU 60   | groun PE  |           | 153 805           |
| 11       | Collector base for KDSTLU 30 thru KDSTLU 120 (double arm)   | phase PH  | 0,130     | 153 806           |
| 12       | Collector base for KDSTLU 30 thru KDSTLU 120 (double arm)   | ground PE |           | 153 807           |
| 13       | Connecting cable AEA 2,5 PH, 2 m long / AEA-KSTLU-2,5 PH, 2 m long                                | phase PH  | 0,072     | 151 374 / 156 431 |
|          | Connecting cable AEA 2,5 PE, 2 m long / AEA-KSTLU-2,5 PE, 2 m long                                | ground PE |           | 151 375 / 156 432 |
| 13       | Connecting cable AEA 6 PH, 2 m long / AEA-KSTLU-6 PH, 2 m long                                    | phase PH  | 0,260     | 153 744 / 156 433 |
|          | Connecting cable AEA 6 PE, 2 m long / AEA-KSTLU-6 PE, 2 m long                                    | ground PE |           | 153 745 / 156 434 |
| 13       | Connecting cable AEA 10 PH, 2 m long / AEA-KSTLU-10 PH, 2 m long                                  | phase PH  | 0,400     | 153 746 / 156 427 |
|          | Connecting cable AEA 10 PE, 2 m long / AEA-KSTLU-10 PE, 2 m long                                  | ground PE |           | 153 747 / 156 435 |
| 14       | Rubber spring <sup>(1)</sup> for KSTLU 15, KSTLU 40, KSTLU 60, KDSTLU 30<br>KDSTLU 80, KDSTLU 120 |           | 0,008     | 153 748           |



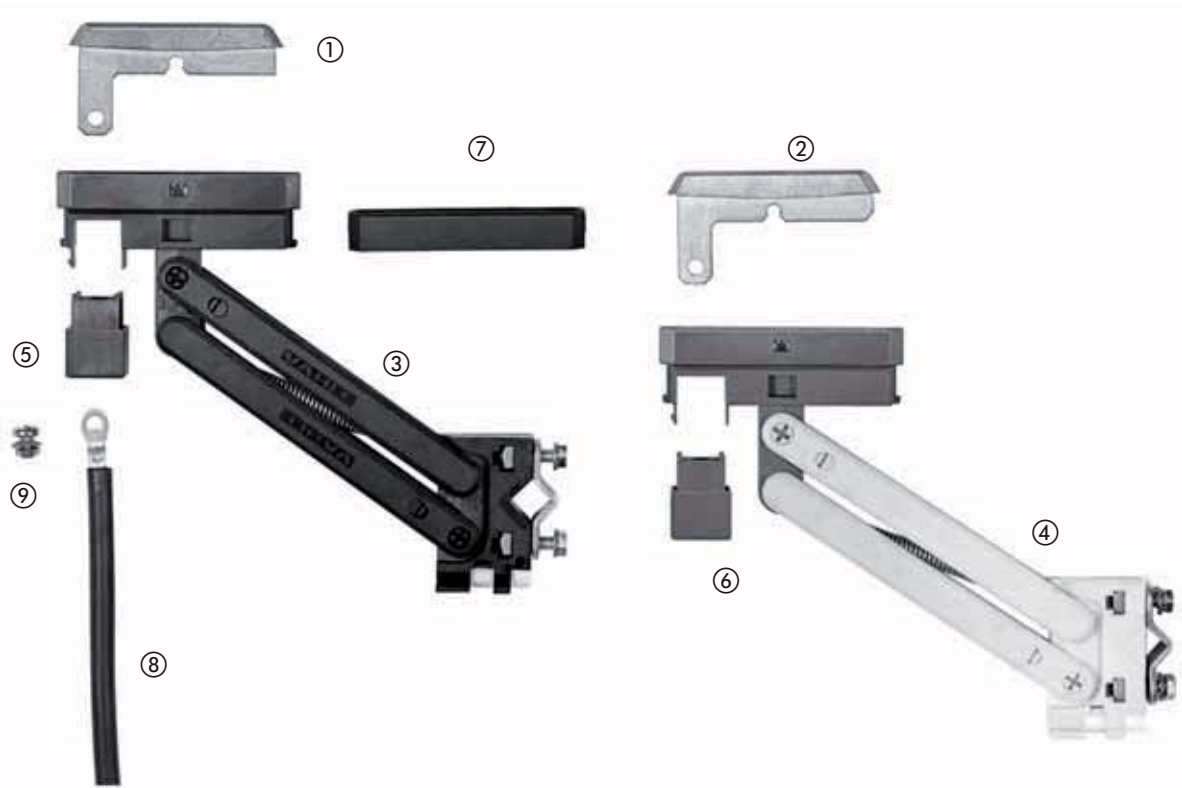
<sup>(1)</sup> Rubber spring will be included when ordering KMK 60 U brush.



# COLLECTOR COMPONENTS FOR U 15

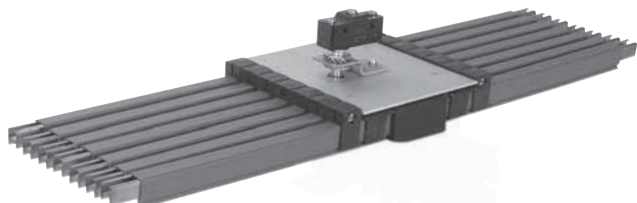
For KST 30-55 thru KSTLU 30-55

| Part.-No. | Description                           |           | Weight kg | Order- No. |
|-----------|---------------------------------------|-----------|-----------|------------|
| 1         | Brush                                 | phase PH  | 0,031     | 154 440    |
| 2         | Brush                                 | ground PE | 0,031     | 154 453    |
| 3         | Collector base & arm KST, complete    | phase PH  | 0,083     | 152 275    |
|           | Collector base & arm KSTL, complete   | phase PH  |           | 152 279    |
| 4         | Collector base & arm KST, complete    | ground PE | 0,083     | 152 276    |
|           | Collector base & arm KSTL, complete   | ground PE |           | 152 281    |
| 5         | Terminal cap (black)                  | phase PH  | 0,002     | 152 291    |
| 6         | Terminal cap (green)                  | ground PE | 0,002     | 152 292    |
| 7         | Spacer for KSTU 30-55 only            |           | 0,003     | 152 293    |
| 8         | Connecting cable RKA 2.5 PH, 2 m long | phase PH  | 0,130     | 154 447    |
|           | Connecting cable RKA 2.5 PE, 2 m long | ground PE |           | 154 448    |
| 8         | Connecting cable RKA 6 PH, 2 m long   | phase PH  | 0,250     | 154 449    |
|           | Connecting cable RKA 6 PE, 2 m long   | ground PE |           | 154 450    |
| 9         | Terminal bolt                         |           | 0,002     | 152 658    |





## Brush wear indicator KVT 15 N



Shown KVT 15 N-7 in a 7-poles system

The following collectors are suitable for the KVT 15 N 4-7:

KST 20; KST 25  
 KSF 25-  
 KESR 32-55 .- .- 18  
 KESL 32-55 .- .- 18  
 KESL 32-63 S- .- 18  
 KST 30 thru KSTU 55  
 KST 15 thru KDSTLU 120  
 KSFU 25-

The brush wear indicator automatically checks the wear of carbon brushes. The indicator is infinitely variable to the wearing height of carbon brushes. A worn down carbon brush actuates an impulse. It is recommended to place the indicator near a maintenance area in order to open automatically a switch leading the monorail hoist to the repair zone.

Size of web cut of monorail track: 120 x 50 mm (L x H)

Pay attention to the installation instructions. PE always at No 4. Other positioning on request.

### Brush wear indicator for U 15 with micro-switch

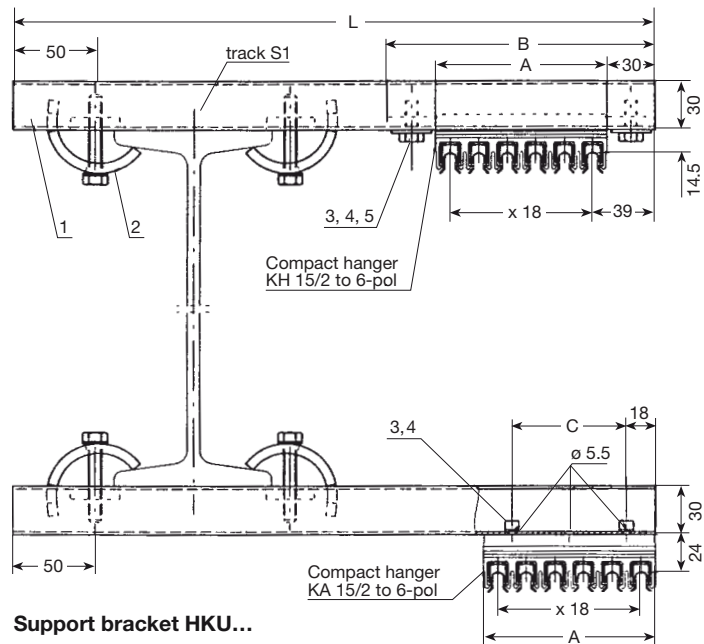
| Type              | Poles | Dim. a mm | Weight kg | Order- No. |
|-------------------|-------|-----------|-----------|------------|
| <b>KVT 15 N-4</b> | 4     | 76        | 0,860     | 161 720    |
| <b>KVT 15 N-5</b> | 5     | 94        | 1,020     | 161 721    |
| <b>KVT 15 N-6</b> | 6     | 112       | 1,165     | 161 722    |
| <b>KVT 15 N-7</b> | 7     | 130       | 1,310     | 161 723    |





# BRACKETS • SNAP-ON BRACKETS FOR U 15

Support bracket HKO...



Support bracket HKU...

| Type    | Length L mm | Order- No. |
|---------|-------------|------------|
| HKO 400 | 400         | 161 605    |
| HKO 500 | 500         | 161 606    |
| HKO 600 | 600         | 161 607    |
| HKO 700 | 700         | 161 608    |
| HKO 800 | 800         | 161 609    |
| HKO 900 | 900         | 161 610    |
| HKU 400 | 400         | 161 799    |
| HKU 500 | 500         | 161 800    |
| HKU 600 | 600         | 161 801    |
| HKU 700 | 700         | 161 802    |
| HKU 800 | 800         | 161 803    |
| HKU 900 | 900         | 161 804    |

| Type    | Dim. A mm | Dim. B mm | Dim. C mm |
|---------|-----------|-----------|-----------|
| KH 15/2 | 36        | 96        | –         |
| KH 15/3 | 54        | 114       | –         |
| KH 15/4 | 72        | 132       | 36        |
| KH 15/5 | 90        | 150       | 36        |
| KH 15/6 | 108       | 168       | 72        |



## Compact Configuration, 124 m, 5-pole + ground electrification system for 100 Amps.

| Qty. | Description  | Type                   | Order- No. |
|------|--|------------------------|------------|
| 100  | VAHLE unipole insulated conductors, 6 m long phase PH  | <b>U 15/25 C-6</b>     | 162 136    |
| 5    | VAHLE unipole insulated conductors, 2 m long phase PH  | <b>U 15/25 C-2</b>     | 162 132    |
| 20   | VAHLE unipole insulated conductors, 6 m long ground PE | <b>U 15/25 C-6</b>     | 162 196    |
| 1    | VAHLE unipole insulated conductor, 2 m long ground PE  | <b>U 15/25 C-2</b>     | 162 192    |
| 10   | expansion sections each 1 m long phase PH              | <b>UDV 15/25 C K 4</b> | 160 276    |
| 2    | expansion sections each 1 m long ground PE             | <b>UDV 15/25 C K 4</b> | 160 277    |
| 120  | joint splices  | <b>UV 15 K 4</b>       | 160 102    |
| 6    | feed terminals   | <b>UEG 15 K 4</b>      | 160 216    |
| 36   | locating clamps  | <b>USK 15 K 4</b>      | 160 106    |
| 12   | end caps   | <b>UK 15 - L</b>       | 160 109    |
| 125  | compact hangers  | <b>KH 15/6</b>         | 160 139    |
| 125  | bracket profiles, 200 mm long                          | <b>HU 15/200</b>       | 161 434    |
| 5    | current collectors phase PH                            | <b>KST 25</b>          | 155 013    |
| 1    | current collector ground PE                            | <b>KST 25</b>          | 155 014    |
| 1    | contact grease   |                        | 121 502    |

## Standard configuration, 40 m, 3-pole + ground electrification system for 10 Amps.

| Qty. | Description  | Type               | Order- No. |
|------|--|--------------------|------------|
| 18   | VAHLE unipole insulated conductors, 6 m long phase PH  | <b>U 15/25 E-6</b> | 162 156    |
| 3    | VAHLE unipole insulated conductors, 4 m long phase PH  | <b>U 15/25 E-4</b> | 162 154    |
| 6    | VAHLE unipole insulated conductors, 6 m long ground PE | <b>U 15/25 E-6</b> | 162 216    |
| 1    | VAHLE unipole insulated conductor, 4 m long ground PE  | <b>U 15/25 E-4</b> | 162 214    |
| 24   | joint splices  | <b>UV 15 K 4</b>   | 160 102    |
| 4    | feed terminals   | <b>UE 15 K 4</b>   | 160 107    |
| 8    | locating clamps  | <b>USK 15 K 4</b>  | 160 106    |
| 8    | end caps   | <b>UK 15-L</b>     | 160 109    |
| 164  | insulated hangers                                      | <b>UA 15</b>       | 160 113    |
| 3    | current collectors phase PH                            | <b>KST 25</b>      | 155 013    |
| 1    | current collectors ground PE                           | <b>KST 25</b>      | 155 014    |
| 1    | contact grease   |                    | 121 502    |



# INSTALLATION TOOLS FOR U 15

## Curve tool

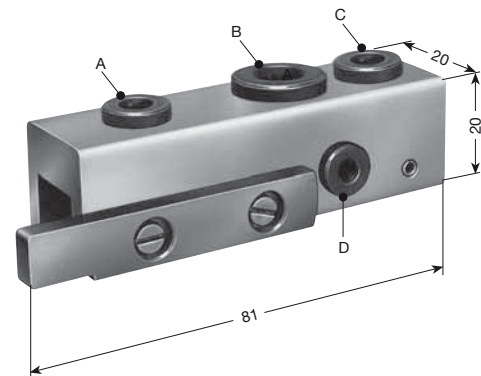
Bending of conductor rails U 15 vertical and horizontal  
Motor powered tool available on request.  
The filler rod is to be ordered separately.



| Type                          | Weight kg | Order- No. |
|-------------------------------|-----------|------------|
| <b>BVU 15</b>                 | 10,000    | 160 147    |
| <b>FU 15</b> Filler-rod (4 m) | 0,340     | 160 735    |

## Drill jig

The drill guide should be used when conductor ends have to be prepared for end caps or transfer guides on site.  
Drill B and D for end caps.  
Drill B for transfer guide US 15 and USE 15.



| Type         | Weight kg | Order- No. |
|--------------|-----------|------------|
| <b>BS 15</b> | 0,100     | 160 148    |

Please see installation instructions for U 15.

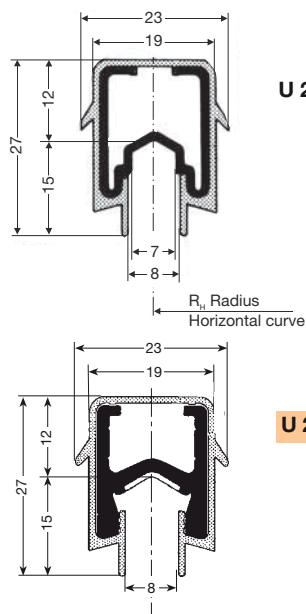
## Punch tool

To prepare shroud holes for US 15 T thru USE 15 TS  
and LT/ LT-U 15 thru LTE / LTE-U15.



| Type          | Weight kg | Order- No. |
|---------------|-----------|------------|
| <b>HST 15</b> | 4,300     | 160 322    |





**U 25 C**

**U 25 AE**

### Conductor code:

U = unipole insulated conductor  
 25 = shroud size  
 50-125 = conductor cross sectional area (mm<sup>2</sup>)  
 C = copper conductor  
 AE = Aluminium conductor contact surface stainless steel.

### Support spacing:

- for straight runs & for inside & outside curves: 1500 mm  
 - horizontal curves: up to R<sub>H</sub> = 10 m<sup>(1)</sup>: 750 mm  
 - horizontal curves: above R<sub>H</sub> = 10 m<sup>(1)</sup>: 1500 mm

### Length:

6 m is standard length, shorter lengths are available

### Bending of conductors:

factory prepared from R = 800 mm on site:  
 horizontal curves: from R = 7000 mm  
 inside & outside curves: from R = 2500 mm  
 AE-conductor on request.

### Conductor spacing:

on standard hangers 50 – 80 mm  
 on compact hangers 50 mm  
 Chemical and electrical properties and temperature resistance see page 4.

Heating system available on request.

<sup>(1)</sup> Recommendation.

## Type of conductor rail

| Type  | U 25/50 C | U 25/75 C | U 25/100 C | U 25/125 C | U 25/90 AE | U 25/125 AE |
|---|-----------|-----------|------------|------------|------------|-------------|
| Weight kg/m   | 0,550     | 0,772     | 1,000      | 1,260      | 0,450      | 0,540       |
| <b>Standard shroud, color green -30 to + 55 °C</b>        |           |           |            |            |            |             |
| Order- No. phase <sup>(2)</sup>                           | 171 02 •  | 171 03 •  | 171 04 •   | 171 20 •   | 171 24 •   | 171 28 •    |
| Order- No. PE <sup>(2)</sup>                              | 171 12 •  | 171 13 •  | 171 14 •   | 171 21 •   | 171 25 •   | 171 29 •    |
| <b>High temperature shroud, color grey -30 to + 85 °C</b> |           |           |            |            |            |             |
| Order- No. phase <sup>(2)</sup>                           | 171 07 •  | 171 08 •  | 171 09 •   | 171 22 •   | 171 26 •   | 171 30 •    |
| Order- No. PE <sup>(2)</sup>                              | 171 17 •  | 171 18 •  | 171 19 •   | 171 23 •   | 171 27 •   | 171 31 •    |

## Engineering data

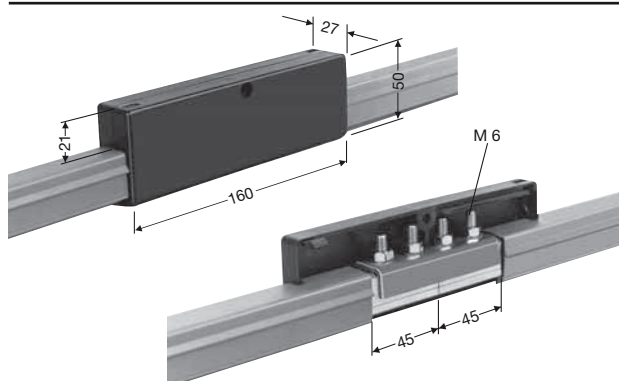
| Conductor Rail Type              | Cross sectional area mm <sup>2</sup> | Leakage distance of covers mm | max. voltage (UL) V | max. Amp. capacity A at 35 °C | Resistance <sup>(3)</sup> Ohm/1000 m | Impedance <sup>(3)</sup> Ohm/1000 m based on 50 HZ & conductor spacing |       |
|----------------------------------|--------------------------------------|-------------------------------|---------------------|-------------------------------|--------------------------------------|--|-------|
|                                  |                                      |                               |                     |                               |                                      | 50 mm  | 80 mm |
| <b>U 25/ 50 C</b>                | 50                                   | 53                            | 1000 (600)          | 200                           | 0,351                                | 0,378  | 0,388 |
| <b>U 25/ 75 C</b>                | 75                                   | 53                            | 1000 (600)          | 300                           | 0,239                                | 0,269  | 0,283 |
| <b>U 25/100 C</b>                | 100                                  | 53                            | 1000 (600)          | 400                           | 0,180                                | 0,219  | 0,236 |
| <b>U 25/125 C</b>                | 125                                  | 53                            | 1000 (600)          | 450                           | 0,140                                | 0,188  | 0,208 |
| <b>U 25/ 90 AE<sup>(4)</sup></b> | 90                                   | 53                            | 1000 (600)          | 230                           | 0,347                                | 0,369  | 0,380 |
| <b>U 25/125 AE<sup>(4)</sup></b> | 125                                  | 53                            | 1000 (600)          | 320                           | 0,240                                | 0,271  | 0,285 |

## Selection of conductors

in accordance to ampere load and environmental conditions.

**U 25 / ... C** copper conductors for power and control system application.

**U 25 / ... AE** Aluminium conductor and stainless steel conductor surface for power and control system



## Bolted joint splices

Typ UV 25, UV 25 K 4, UV 25 AE and UV 25 AE K 4 applicable as feed terminal, too.

| Type                              | connectin cable max. mm <sup>2</sup> | Weight kg | Order- No. |
|-----------------------------------|--------------------------------------|-----------|------------|
| <b>UV 25</b>                      | 2 x 16                               | 0,190     | 170 595    |
| <b>UV 25 K 4<sup>(5)</sup></b>    | 2 x 16                               | 0,190     | 170 596    |
| <b>UV 25 AE</b>                   | 2 x 16                               | 0,150     | 170 960    |
| <b>UV 25 AE K 4<sup>(5)</sup></b> | 2 x 16                               | 0,150     | 170 961    |

Are adequate fo feed terminal UE

<sup>(2)</sup> The last number of the part number indicates the length. Please add 1, 2 ... 6 for your required short length. Interim values have to be rounded up.

<sup>(3)</sup> With frequenz of 50 Hz and 20 °C

<sup>(4)</sup> With the AE-conductor collectors which constantly stay at one position or work with a very low travel speed (< 10 m/min.) may only operate with 50% of their continous current.

<sup>(5)</sup> Stainless Steel

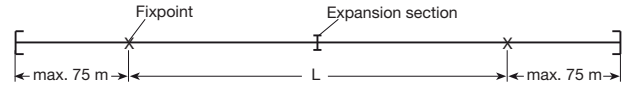


# ACCESSORIES FOR U 25

## Expansion sections

factory assembled on 1.5 m long conductor section incl. one rigid joint and will be installed from 150 m of system length on.

Expansion areas (distances between fixpoints = L)

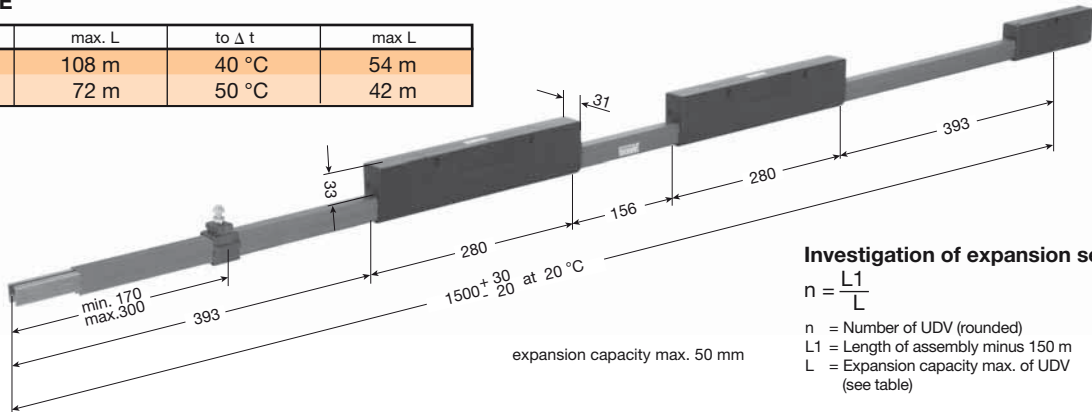


For UDV 25 C

| to Δ t | max. L | to Δ t | max L  |
|--------|--------|--------|--------|
| 20 °C  | 147 m  | 40 °C  | 73,5 m |
| 30 °C  | 97,5 m | 50 °C  | 58,5 m |

For UDV 25 AE

| to Δ t | max. L | to Δ t | max L |
|--------|--------|--------|-------|
| 20 °C  | 108 m  | 40 °C  | 54 m  |
| 30 °C  | 72 m   | 50 °C  | 42 m  |

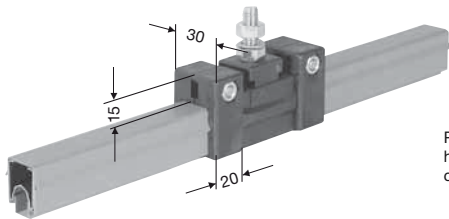


Standard shroud, color green

| Type                         | Weight kg | Order- No. phase | Order- No. ground |
|------------------------------|-----------|------------------|-------------------|
| UDV 25 C K 4 <sup>(1)</sup>  | 2,550     | 171 057          | 171 058           |
| UDV 25 AE K 4 <sup>(1)</sup> | 1,900     | 171 059          | 171 060           |

High temperature shroud, color gray

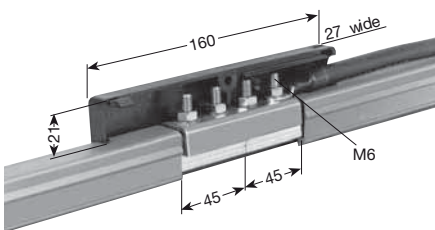
| Type                         | Weight kg | Order- No. phase | Order- No. ground |
|------------------------------|-----------|------------------|-------------------|
| UDV 25 C K 4 <sup>(1)</sup>  | 2,550     | 171 067          | 171 068           |
| UDV 25 AE K 4 <sup>(1)</sup> | 1,900     | 171 069          | 171 070           |



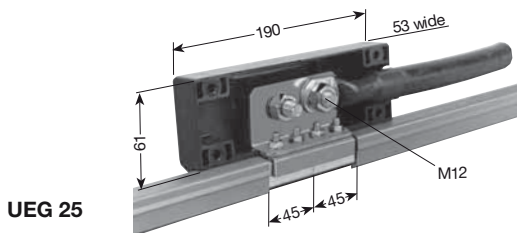
Pictures shows a insulated hanger with 2 locating clamps (fixpoint)

## Locating clamp

| Type                      | Weight kg | Order- No. |
|---------------------------|-----------|------------|
| USK 25 K 4 <sup>(1)</sup> | 0,024     | 170 010    |



UE 25



UEG 25

Cables & lugs by others. UEG requires staggered arrangement with conductor spacing of less than 80 mm. Type M = factory assembled.

## Feed terminals

Types UE 25, UE 25 K 4<sup>(1)</sup>, UE 25 AE and UE 25 AE K 4<sup>(1)</sup> are adequate to bolted joint splice

| Type                            | Connecting cable max. mm <sup>2</sup> | Weight kg | Order- No. |
|---------------------------------|---------------------------------------|-----------|------------|
| UE 25                           | 2 x 16                                | 0,190     | 170 599    |
| UE 25 M                         | 2 x 16                                | 0,190     | 170 394    |
| UEG 25                          | 2 x 95                                | 0,560     | 170 597    |
| UEG 25-M                        | 2 x 95                                | 0,560     | 170 396    |
| UE 25 K 4 <sup>(1)</sup>        | 2 x 16                                | 0,190     | 170 600    |
| UE 25 K 4 <sup>(1)</sup> -M     | 2 x 16                                | 0,190     | 170 395    |
| UEG 25 K 4 <sup>(1)</sup>       | 2 x 95                                | 0,560     | 170 598    |
| UEG 25 K 4 <sup>(1)</sup> -M    | 2 x 95                                | 0,560     | 170 397    |
| UE 25 AE                        | 2 x 16                                | 0,150     | 171 158    |
| UE 25 AE M                      | 2 x 16                                | 0,150     | 171 217    |
| UEG 25 AE                       | 2 x 95                                | 0,456     | 170 962    |
| UEG 25 AE-M                     | 2 x 95                                | 0,456     | 170 964    |
| UE 25 AE K 4 <sup>(1)</sup>     | 2 x 16                                | 0,150     | 171 159    |
| UE 25 AE K 4 <sup>(1)</sup> -M  | 2 x 16                                | 0,150     | 171 218    |
| UEG 25 AE K 4 <sup>(1)</sup>    | 2 x 95                                | 0,456     | 170 963    |
| UEG 25 AE K 4 <sup>(1)</sup> -M | 2 x 95                                | 0,456     | 170 965    |



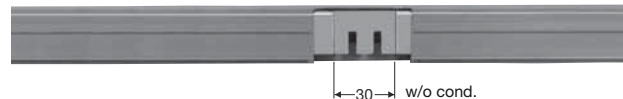
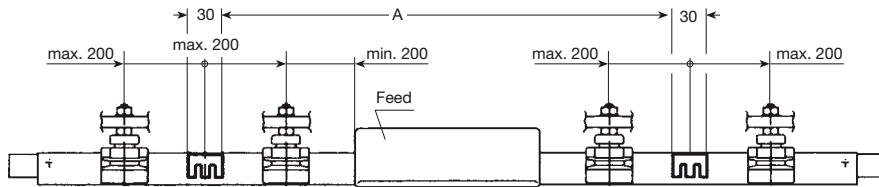
## Contact Grease

for joints and feeds

100 ml for approx. 200 joints

Order- No. 121 502

## Isolating sections



Type M = Factory assembled per system layout  
 Type L = loose delivery as a single item with 2 locking pins (+)3x20.  
 On both sides of the isolating section a hanger has to be considered.  
 Distance max. 200 mm from center isolating section.  
 Conductors, hangers and feed points have to be ordered separately.

| Type         | Weight kg | Order- No. |
|--------------|-----------|------------|
| IT/U 25/30 M | 0,015     | 170 070    |
| IT/U 25/30 L | 0,015     | 170 071    |

In order to avoid voltage bridging and for clearing of maintenance, control and live areas use two isolating sections.  
 For the distance A number and type of collectors as well as the length of the braking distance of the machinery has to be considered.

## End caps

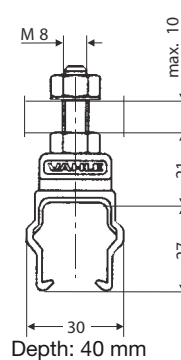
c/w locking pin



Type M = factory assembled  
 Type L = Loose

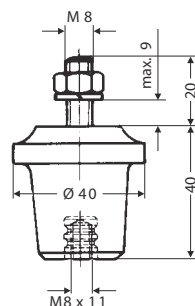
| Type    | Weight kg | Order- No. |
|---------|-----------|------------|
| UK 25-M | 0,005     | 170 793    |
| UK 25-L | 0,005     | 170 013    |

## Insulated hangers <sup>(1)</sup>



| Type                     | Weight kg | Order- No. |
|--------------------------|-----------|------------|
| UA 25                    | 0,040     | 170 761    |
| UA 25 K 4 <sup>(2)</sup> | 0,040     | 170 762    |

## Insulators <sup>(1)</sup>

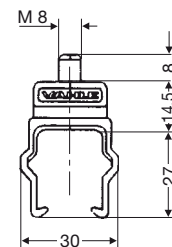


cantilever = 3000 N  
 creepage distance = 60 mm

| Type                         | Weight kg | Order- No. |
|------------------------------|-----------|------------|
| GH 40-M 8                    | 0,100     | 170 146    |
| GH 40-M 8 K 4 <sup>(2)</sup> | 0,100     | 170 148    |

## Rail holders

to be used with insulator

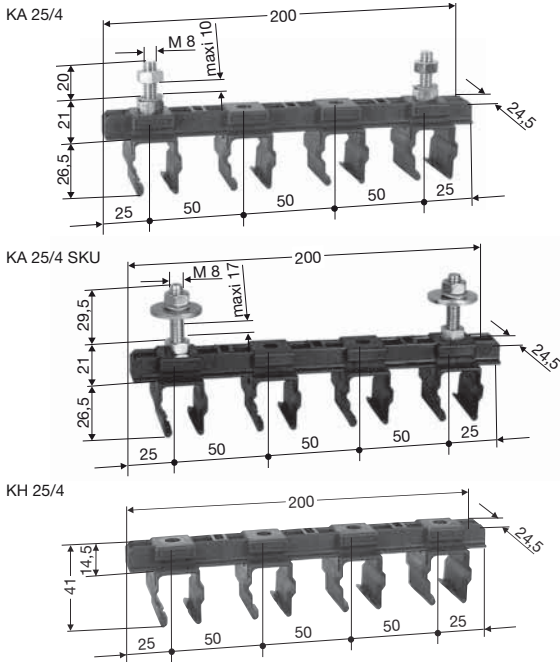


| Type                      | Weight kg | Order- No. |
|---------------------------|-----------|------------|
| UAK 25                    | 0,023     | 170 868    |
| UAK 25 K 4 <sup>(2)</sup> | 0,023     | 170 869    |

<sup>(1)</sup> Use flat washers (see page 26) on both sides of brackets with slotted holes.  
<sup>(2)</sup> with stainless steel hardware



# ACCESSORIES FOR U 25



## Compact hangers, 2 - 4-pole<sup>(1)</sup>

Any number of conductors can be assembled by cutting/ combining the compact hangers.

Conductor spacing 50 mm.

Hanger KA 25 is for direct bolting to the supporting structure

Hanger KH to be used with bracket profile 38/17.

Hanger KA 25/4-SKU to be used with mounting bracket SKU.

| Type                           | Weight kg | Order-No. |
|--------------------------------|-----------|-----------|
| KA 25/2                        | 0,084     | 170 838   |
| KA 25/3                        | 0,102     | 170 839   |
| KA 25/4                        | 0,120     | 170 840   |
| KA 25/2 K 4 <sup>(2)</sup>     | 0,084     | 170 853   |
| KA 25/3 K 4 <sup>(2)</sup>     | 0,102     | 170 854   |
| KA 25/4 K 4 <sup>(2)</sup>     | 0,120     | 170 855   |
| KA 25/4-SKU                    | 0,151     | 170 878   |
| KA 25/4 K 4-SKU <sup>(2)</sup> | 0,151     | 171 431   |
| KH 25/2                        | 0,034     | 170 848   |
| KH 25/3                        | 0,050     | 170 849   |
| KH 25/4                        | 0,070     | 170 850   |

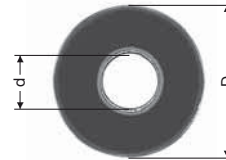
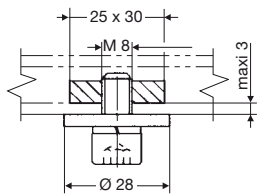


## Bracket profiles 38/17

| Type      | Length mm | Poles | Weight kg | Order- No. |
|-----------|-----------|-------|-----------|------------|
| HU 25/400 | 400       | 4 - 5 | 0,830     | 170 667    |
| HU 25/600 | 600       | 10    | 1,160     | 170 668    |

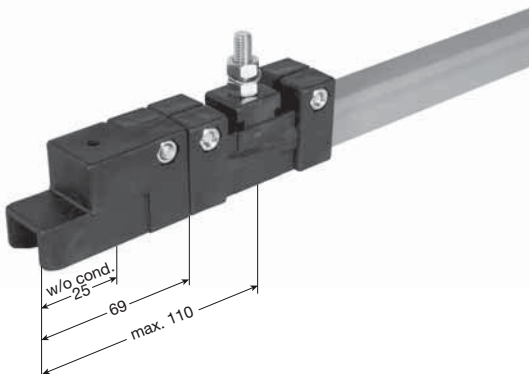
Longer brackets furnished on special order.<sup>(3)</sup>

## Attachment hardware for Compact hanger KH 25/...



| Type                    | Weight kg | Order- No. |
|-------------------------|-----------|------------|
| SE 8                    | 0,055     | 170 677    |
| SE 8 K 4 <sup>(2)</sup> | 0,055     | 170 955    |

| Type                          | Thread | d mm | D mm | S mm | Weight kg | Order- No. |
|-------------------------------|--------|------|------|------|-----------|------------|
| Washer 8,4                    | M 8    | 8,40 | 24   | 2,00 | 0,007     | 170 624    |
| Washer 8,4 K 4 <sup>(2)</sup> | M 8    | 8,40 | 24   | 2,00 | 0,007     | 170 625    |



## Transfer guide

This guide serve for transfer or power interrupting applications.

Additional hangers are to se planed and ordered seperately.

| Type                     | Weight kg | Order- No. |
|--------------------------|-----------|------------|
| US 25 K 4 <sup>(2)</sup> | 0,060     | 170 329    |

Max. horizontal and vertical offset using collectors  
 KSTL 15-60 - KDSTL 120 ± 3 mm, air gap 2-5 mm  
 KSTL 100/25 - KDSTU 350/25 ± 3 mm, air gap 5-8 mm

Transfer guide US 25 is fastened to conductor ends by means of a stainless screw.

<sup>(1)</sup> Attachment hardware to be ordered separately; two flat washers to be used in slotted holes.

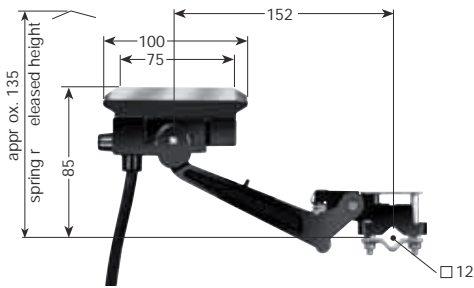
<sup>(2)</sup> with stainless steel hardware

<sup>(3)</sup> Delivery incl. 2 Attachment hardware SE 8.

# COLLECTORS FOR U 25<sup>(1)</sup>

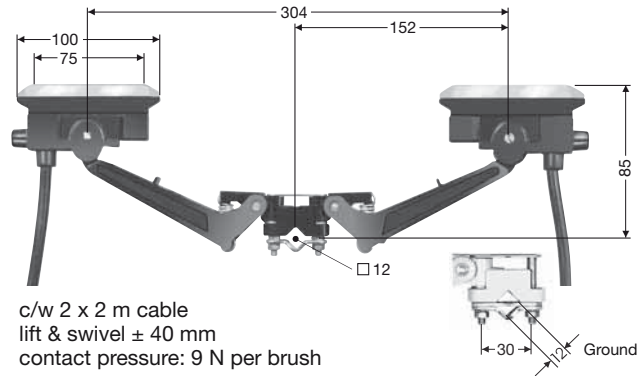


## Current collectors



c/w 2 m cable  
lift & swivel  $\pm 40$  mm  
contact pressure: 9 N

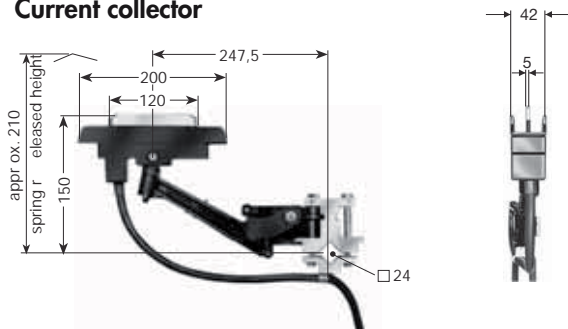
## Double current collectors



c/w 2 x 2 m cable  
lift & swivel  $\pm 40$  mm  
contact pressure: 9 N per brush

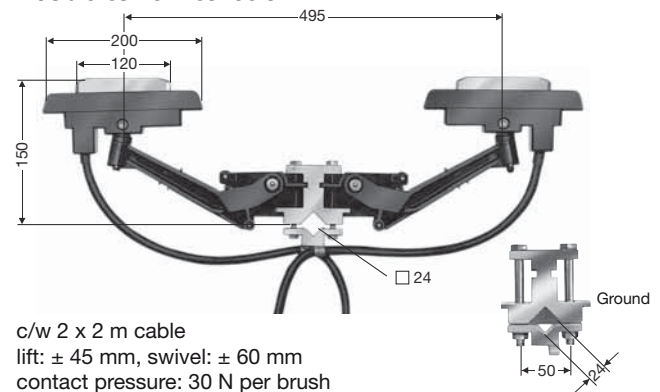
| Type           | Am-pacity A | Connecting cable  |          | Weight kg | Order- No. |         | Type             | Am-pacity A | Connecting cable  |          | Weight kg | Order- No. |         |
|----------------|-------------|-------------------|----------|-----------|------------|---------|------------------|-------------|-------------------|----------|-----------|------------|---------|
|                |             | A/mm <sup>2</sup> | o max/mm |           | phase      | ground  |                  |             | A/mm <sup>2</sup> | o max/mm |           | phase      | ground  |
| <b>KSTL 15</b> | 15          | 2,50              | 4,40     | 0,272     | 150 893    | 150 894 | <b>KDSTL 30</b>  | 30          | 2,50              | 4,40     | 0,492     | 150 899    | 150 901 |
| <b>KSTL 40</b> | 40          | 6,00              | 11,00    | 0,453     | 152 860    | 152 870 | <b>KDSTL 80</b>  | 80          | 6,00              | 11,00    | 0,822     | 152 980    | 152 990 |
| <b>KSTL 60</b> | 60          | 10,00             | 12,50    | 0,591     | 153 677    | 153 678 | <b>KDSTL 120</b> | 120         | 10,00             | 12,50    | 1,188     | 153 681    | 153 682 |

## Current collector



c/w 2 m cable  
lift:  $\pm 45$  mm, swivel:  $\pm 60$  mm  
contact pressure: 30 N

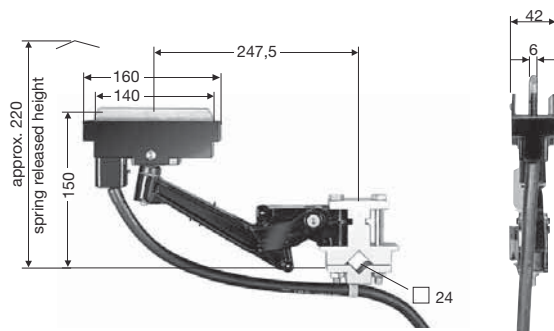
## Double current collector



c/w 2 x 2 m cable  
lift:  $\pm 45$  mm, swivel:  $\pm 60$  mm  
contact pressure: 30 N per brush

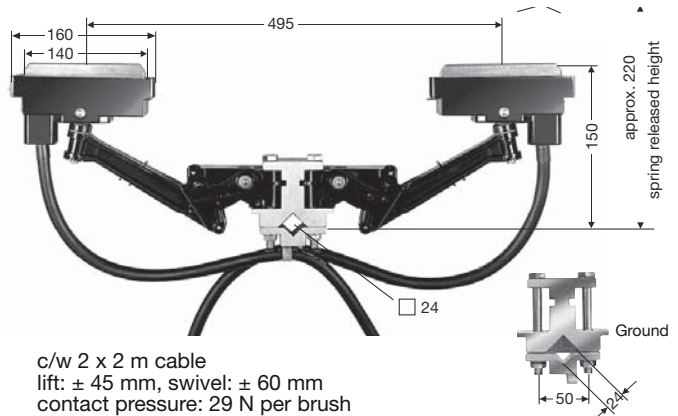
| Type              | Am-pacity A | Connecting cable  |          | Weight kg | Order- No. |         | Type               | Am-pacity A | Connecting cable  |          | Weight kg | Order- No. |         |
|-------------------|-------------|-------------------|----------|-----------|------------|---------|--------------------|-------------|-------------------|----------|-----------|------------|---------|
|                   |             | A/mm <sup>2</sup> | o max/mm |           | phase      | ground  |                    |             | A/mm <sup>2</sup> | o max/mm |           | phase      | ground  |
| <b>KST 100/25</b> | 100         | 16,00             | 14,50    | 1,707     | 170 319    | 170 320 | <b>KDST 200/25</b> | 200         | 16,00             | 14,50    | 3,077     | 170 321    | 170 322 |
| <b>KST 125/25</b> | 125         | 25,00             | 16,50    | 1,800     | 171 017    | 171 018 | <b>KDST 250/25</b> | 250         | 25,00             | 16,50    | 3,100     | 171 019    | 171 020 |

## Current collectors For transfer funnel use KSTU 140/25 or KSTU 175/25<sup>(2)</sup>.



c/w 2 m cable  
lift:  $\pm 45$  mm, swivel:  $\pm 60$  mm  
contact pressure: 29 N

## Double current collectors For transfer funnel use KDSTU 280/25 or KDSTU 350/25<sup>(2)</sup>.



c/w 2 x 2 m cable  
lift:  $\pm 45$  mm, swivel:  $\pm 60$  mm  
contact pressure: 29 N per brush

| Type               | Am-pacity A | Connecting cable  |          | Weight kg | Order- No. |         | Type                | Am-pacity A | Connecting cable  |          | Weight kg | Order- No. |         |
|--------------------|-------------|-------------------|----------|-----------|------------|---------|---------------------|-------------|-------------------|----------|-----------|------------|---------|
|                    |             | A/mm <sup>2</sup> | o max/mm |           | phase      | ground  |                     |             | A/mm <sup>2</sup> | o max/mm |           | phase      | ground  |
| <b>KST 140/25</b>  | 140         | 25,00             | 16,50    | 1,660     | 170 538    | 170 539 | <b>KDST 280/25</b>  | 280         | 25,00             | 16,50    | 3,020     | 170 542    | 170 543 |
| <b>KST 175/25</b>  | 175         | 35,00             | 18,50    | 1,700     | 171 037    | 171 038 | <b>KDST 350/25</b>  | 350         | 35,00             | 18,50    | 3,100     | 171 047    | 171 048 |
| <b>KSTU 140/25</b> | 140         | 25,00             | 16,50    | 1,700     | 170 540    | 170 541 | <b>KDSTU 280/25</b> | 280         | 25,00             | 16,50    | 3,100     | 170 544    | 170 545 |
| <b>KSTU 175/25</b> | 175         | 35,00             | 18,50    | 1,800     | 171 039    | 171 040 | <b>KDSTU 350/25</b> | 350         | 35,00             | 18,50    | 3,200     | 171 049    | 171 050 |

<sup>(1)</sup> The collector of the AE-conductor which are working with only  $\leq 10$  m/min. travel speed or stand most of the time are only permitted to work with 50 % of the continuous current.

<sup>(2)</sup> Special collectors for aggressive environments on request.



# COMPONENTS & COLLECTOR BRACKETS FOR U 25

## Transfer funnels, 2-pole up to 6-pole

assembled per system layout.

Transfer funnels are necessary for passing switches and turntables.

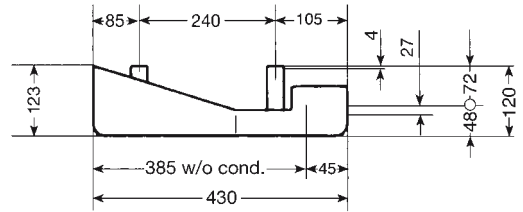
Conductor spacing 50 mm.

The following collectors have to be used:

For pendant arrangement: KSTU 140/25, KSTU 175/25, KDSTU 280/25 or KDSTU 350/25.

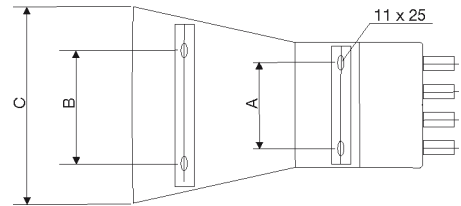
For lateral arrangement: KSTUR 140/25 on request.

$V_{max} = 100$  m/min

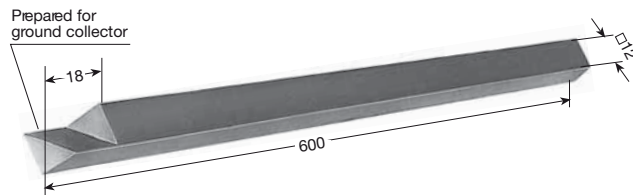


Insulated conductor rails are to be ordered separately.

| Type     | Poles | dim. A mm | dim. B mm | dim. C mm | Order- No. |
|----------|-------|-----------|-----------|-----------|------------|
| EMK 25/2 | 2     | 46        | 83        | 216       | 170 492    |
| EMK 25/3 | 3     | 88        | 125       | 258       | 170 493    |
| EMK 25/4 | 4     | 130       | 167       | 300       | 170 494    |
| EMK 25/5 | 5     | 172       | 209       | 342       | 170 495    |
| EMK 25/6 | 6     | 214       | 251       | 384       | 170 496    |

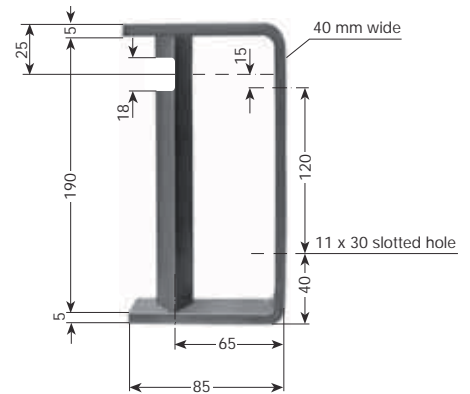


## Collector brackets for KSTL 15 thru KDSTL 120



| Type  | Weight kg | Order- No. |
|-------|-----------|------------|
| UM 12 | 0,710     | 153 506    |

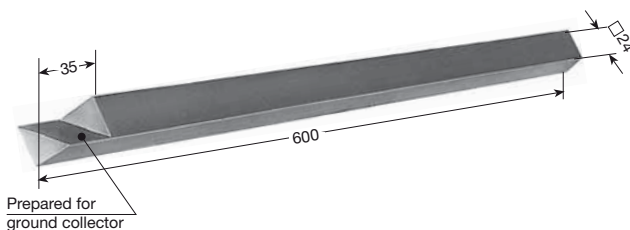
Longer brackets furnished on special order. With brackets above 600 mm length a support has to be considered on site, to avoid a bending or twisting of the collector bracket.



| Type   | Weight kg | Order- No. |
|--------|-----------|------------|
| UMA 12 | 0,640     | 170 334    |

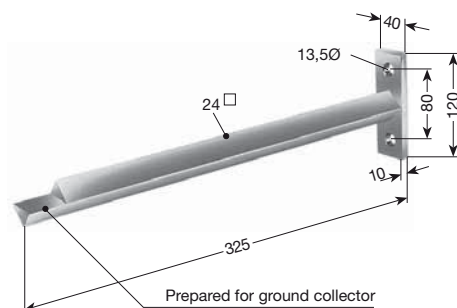
Suitable for conductor spacing 50 mm (3-poles + ground).

## Collector brackets for KST 100/25 thru KDSTU 350/25



| Type  | Weight kg | Order- No. |
|-------|-----------|------------|
| UM 24 | 2,600     | 175 076    |

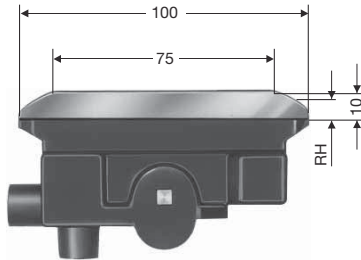
Longer brackets furnished on special order. With brackets above 600 mm length a support has to be considered on site, to avoid a bending or twisting of the collector bracket.



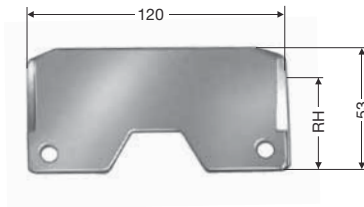
| Type   | Weight kg | Order- No. |
|--------|-----------|------------|
| UMF 24 | 2,850     | 170 272    |



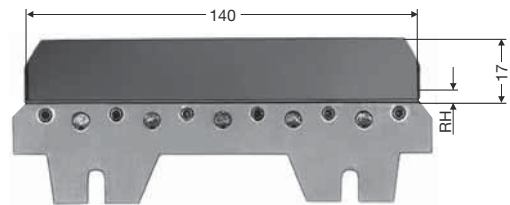
## Copper-graphite brush



KMK 60



KMK 100/25

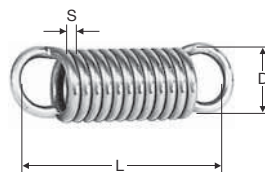


KMK 140/25

Dim. RH: allowed rest of height

| Type              | for current collector  | RH<br>mm | Weight<br>kg | Order- No. |
|-------------------|--|----------|--------------|------------|
| <b>KMK 60</b>     | KSTL 15, KSTL 40, KSTL 60,<br>KDSTL 30, KDSTL 80, KDSTL 120  | 7,50     | 0,110        | 153 512    |
| <b>KMK 100/25</b> | KST 100/25, KDST 200/25, KST 125/25, KDST 250/25   | 38,00    | 0,180        | 170 768    |
| <b>KMK 140/25</b> | KST 140/25, KDST 280/25, KSTU 140/25, KDSTU 280/25<br>KST 175/25, KDST 350/25, KSTU 175/25, KDSTU 350/25 | 1,00     | 0,152        | 170 164    |

## Tension spring (stainless steel)



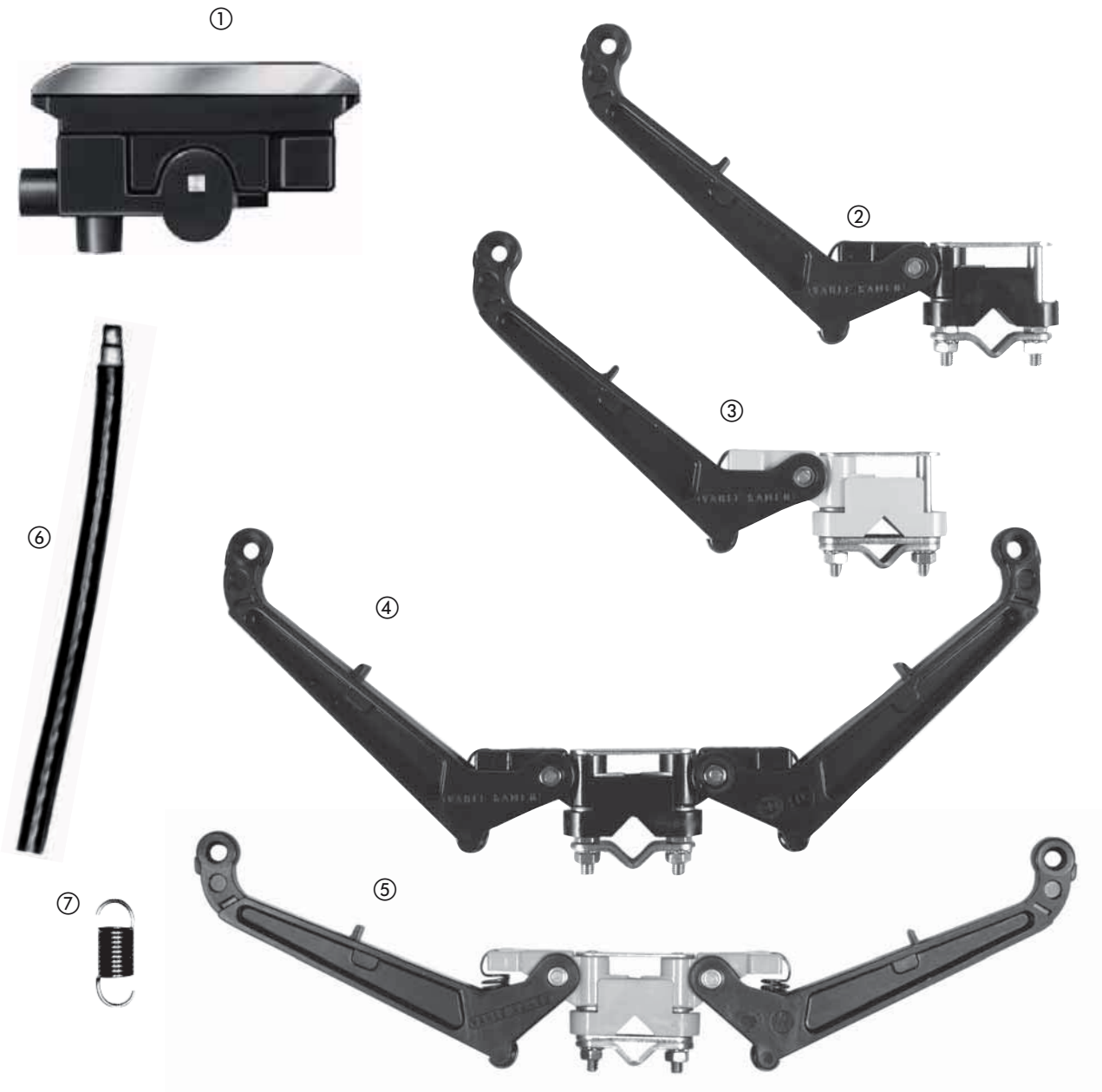
| Type        | for current collectors   | S<br>mm | D<br>mm | L<br>mm | Weight<br>kg | Order- No. |
|-------------|--|---------|---------|---------|--------------|------------|
| <b>ZF 4</b> | KSTL 15, KSTL 40, KSTL 60,<br>KDSTL 30, KDSTL 80, KDSTL 120  | 1,30    | 11,00   | 29,00   | 0,004        | 153 517    |
| <b>ZF 6</b> | KST 100/25, KDST 200/25, KST 125/25, KDST 250/25<br>KST 140/25, KDST 280/25, KSTU 140/25, KDSTU 280/25<br>KST 175/25, KDST 350/25, KSTU 175/25, KDSTU 350/25 | 2,25    | 17,30   | 56,50   | 0,023        | 170 167    |



# COLLECTOR COMPONENTS FOR U 25

## Spares for collectors KSTL 15 thru KDSTL 120

| Part.-No. | Description   |           | Weight kg | Order- No. |
|-----------|---|-----------|-----------|------------|
| 1         | Brush (see page 31)                                     | -         | -         |            |
| 2         | Collector base for KSTL 15 thru KSTL 60                 | phase PH  | 0,090     | 153 740    |
| 3         | Collector base for KSTL 15 thru KSTL 60                 | ground PH |           | 153 741    |
| 4         | Collector base for KDSTL 30 thru KDSTL 120              | phase PH  | 0,130     | 153 742    |
| 5         | Collector base for KDSTL 30 thru KDSTL 120              | ground PE |           | 153 743    |
| 6         | Connecting cable AEA 2.5 mm <sup>2</sup> , PH, 2 m long | phase PH  | 0,072     | 151 374    |
|           | Connecting cable AEA 2.5 mm <sup>2</sup> , PE, 2 m long | ground PE |           | 51 375     |
| 6         | Connecting cable AEA 6 mm <sup>2</sup> , PH, 2 m long   | phase PH  | 0,260     | 153 744    |
|           | Connecting cable AEA 6 mm <sup>2</sup> , PE, 2 m long   | ground PE |           | 153 745    |
| 6         | Connecting cable AEA 10 mm <sup>2</sup> , PH, 2 m long  | phase PH  | 0,400     | 153 746    |
|           | Connecting cable AEA 10 mm <sup>2</sup> , PE, 2 m long  | ground PE |           | 153 747    |
| 7         | Tension spring (see page 31)                            |           |           |            |



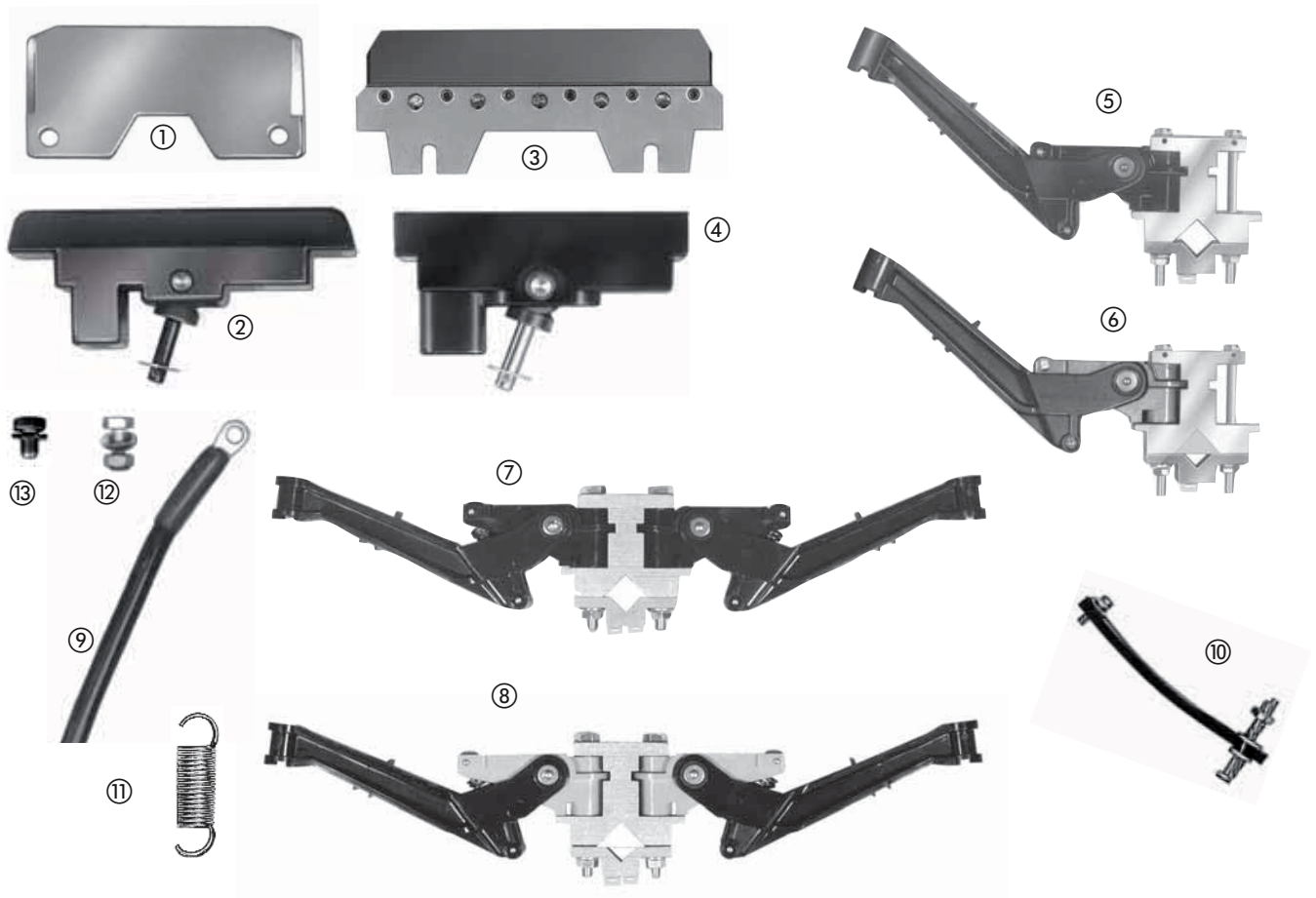


# COLLECTOR COMPONENTS FOR U 25



## Spares for Collectors KST 100/25 thru KDSTU 350/25

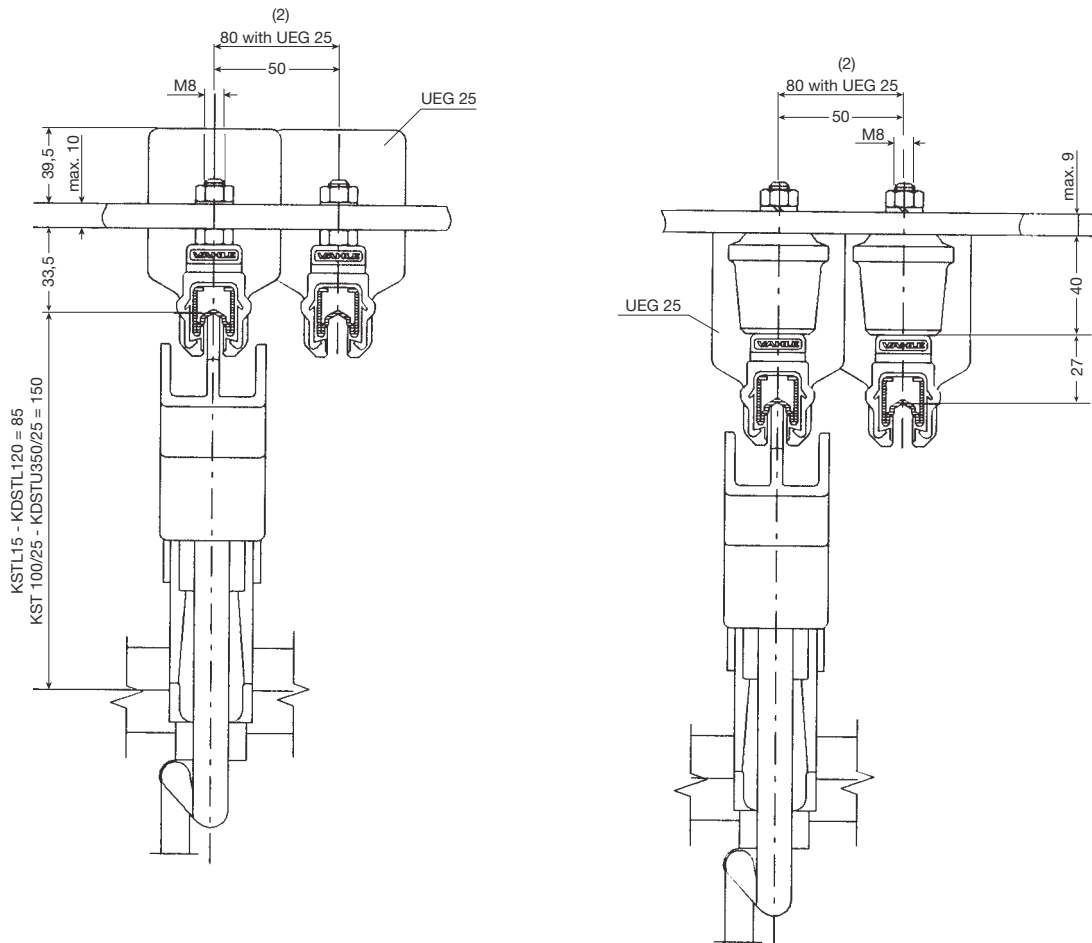
| Part-No. | Description  |           | Weight kg | Order- No. |
|----------|--|-----------|-----------|------------|
| 1        | Brush KMK 100/25 (see page 31)   |           | -         | -          |
| 2        | Brush holder for KST 100, KST 125, KDST 200, KDST 250  |           | 0,195     | 170 338    |
| 3        | Brush KMK 140/25 (see page 29)   |           | -         | -          |
| 4        | Brush holder for KST 140, KDST 280, KST 175, KDST 350  |           | 0,375     | 170 169    |
| 4        | Brush holder <sup>(1)</sup> for KSTU 140/25, KDSTU 280/25, KSTU 175/25, KDSTU 350/25                             |           | 0,375     | 170 406    |
| 5        | Collector base for KST 100, KST 125, KST 140 and KST 175   | phase PH  | 0,578     | 170 340    |
| 6        | Collector base for KST 100, KST 125, KST 140 and KST 175   | ground PE |           | 170 341    |
| 5        | Collector base for KSTU 140, KSTU 175  | phase PH  | 0,555     | 170 555    |
| 6        | Collector base for KSTU 140, KSTU 175  | ground PE |           | 170 556    |
| 7        | Collector base for KDST 200, KDST 250, KDST 280, and KDST 350  | phase PH  | 0,795     | 170 342    |
| 8        | Collector base for KDST 200, KDST 250, KDST 280, and KDST 350  | ground PE |           | 170 343    |
| 7        | Collector base for KDSTU 280, KDSTU 350  | phase PH  | 0,795     | 170 557    |
| 8        | Collector base for KDSTU 280, KDSTU 350  | ground PE |           | 170 558    |
| 9        | Connecting cable RKA 16/8 mm <sup>2</sup> , PH, 2 m long   | phase PH  | 0,614     | 170 344    |
|          | Connecting cable RKA 16/8 mm <sup>2</sup> , PE, 2 m long   | ground PE | 0,459     | 170 345    |
| 9        | Connecting cable RKA 25/8 mm <sup>2</sup> , PH, 2 m long   | phase PH  | 0,840     | 170 173    |
| 9        | Connecting cable RKA 25/8 mm <sup>2</sup> , PE, 2 m long   | ground PE | 0,600     | 170 174    |
| 9        | Connecting cable RKA 35/8 mm <sup>2</sup> , PH, 2 m long   | phase PH  | 0,840     | 170 997    |
|          | Connecting cable RKA 35/8 mm <sup>2</sup> , PE, 2 m long   | ground PE | 0,600     | 170 998    |
| 10       | Rubber spring complete for KSTU 140, KDSTU 280, KSTU 175, KDSTU 350  |           | 0,035     | 170 412    |
| 11       | Tension spring (see page 29)   |           | -         | -          |
| 12       | Terminal bolt M 8 x 20 K 4 for KST 100, KST 125, KDST 200 and KDST 250   |           | 0,022     | 170 818    |
| 13       | Terminal bolt M 8 x 12 K 4 for KST 140, KST 175, KSTU 140, KSTU 175, KDST 280, KDST 350, KDSTU 280 und KDSTU 350 |           | 0,010     | 170 871    |



<sup>(1)</sup> Rubber spring (No. 10) is part of the brush holder.



# ARRANGEMENT AND EXAMPLE FOR ORDERING U 25



## 273 m power supply system, 3-pole + ground

| Qty. | Description   | Type      | Order- No.                       |         |
|------|---|-----------|----------------------------------|---------|
| 132  | VAHLE unipole insulated conductors, 6 m long            | phase PH  | <b>U 25/75 C-6</b>               | 171 036 |
| 3    | VAHLE unipole insulated conductors, 5 m long cut to 4.5 | phase PH  | <b>U 25/75 C-5</b>               | 171 035 |
| 44   | VAHLE unipole insulated conductors, 6 m long            | ground PE | <b>U 25/50 C-6<sup>(1)</sup></b> | 171 126 |
| 1    | VAHLE unipole insulated conductor, 5 m long cut to 4.5  | ground PE | <b>U 25/50 C-5<sup>(1)</sup></b> | 171 125 |
| 9    | Expansion sections, 1.5 m long                          | phase PH  | <b>UDV 25 C K 4</b>              | 171 057 |
| 3    | Expansion sections, 1.5 m long                          | ground PE | <b>UDV 25 C K 4</b>              | 171 058 |
| 176  | Bolted joint splices                                    |           | <b>UV 25</b>                     | 170 595 |
| 8    | Feed terminals  |           | <b>UEG 25</b>                    | 170 597 |
| 32   | Locating clamps   |           | <b>USK 25 K 4</b>                | 170 010 |
| 8    | End caps  |           | <b>UK 25-L</b>                   | 170 013 |
| 732  | Insulated hangers                                       |           | <b>UA 25</b>                     | 170 761 |
| 3    | Double collectors                                       | phase PH  | <b>KDST 280/25</b>               | 170 542 |
| 1    | Collector   | ground PE | <b>KST 140/25</b>                | 170 539 |
| 1    | Collector bracket                                       |           | <b>UM 24</b>                     | 175 076 |
| 1    | Contact grease  |           |                                  | 120 017 |

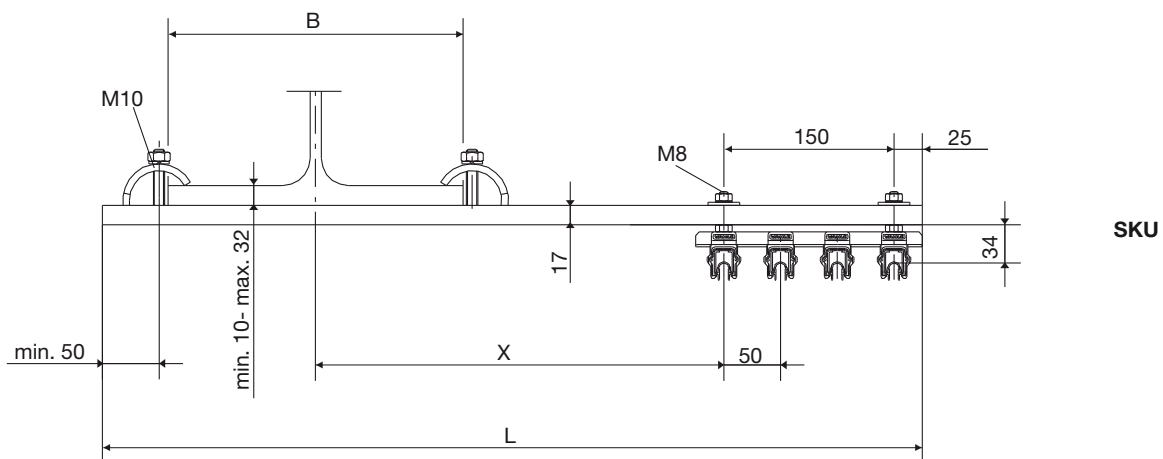
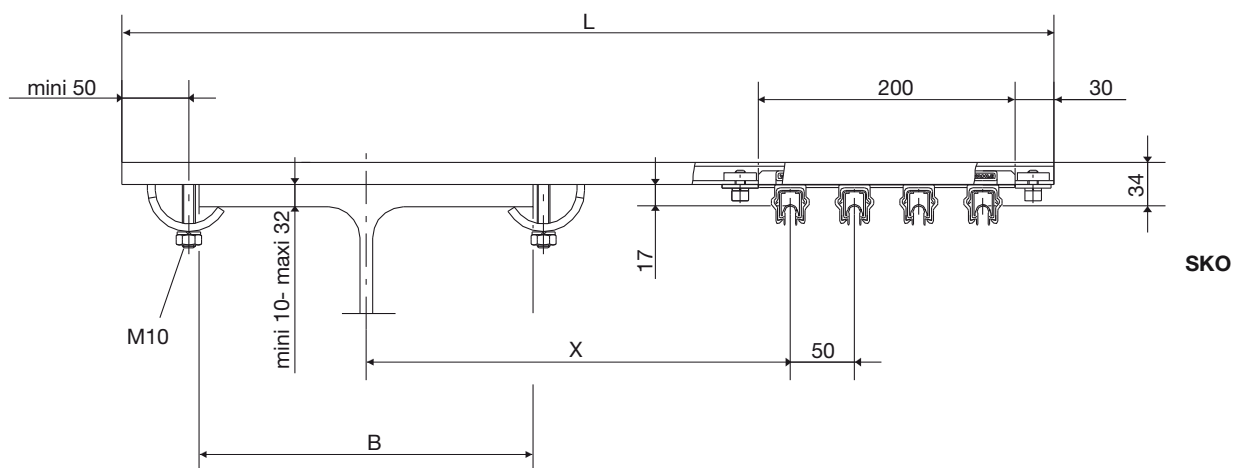
<sup>(1)</sup> Capacity reduces per VDE 0100, part 540.

<sup>(2)</sup> In a compact arrangement or a phase distance < 80 mm the feed points UEG have to be arranged staggered at a min. of 300 mm.

# MOUNTING BRACKETS FOR U 25



For flange thickness D from 10 to 32 mm



for KH 25/4 and KA 25/4

| I-Beam flange width B mm | Distance X for brackets |         |         |         |         |         |         |         |         |         |
|--------------------------|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|                          | SKO                     |         |         |         |         | SKU     |         |         |         |         |
|                          | L = 500                 | L = 600 | L = 700 | L = 800 | L = 900 | L = 500 | L = 600 | L = 700 | L = 800 | L = 900 |
| upto 80                  | 170-195                 | 170-295 | 170-395 | 170-495 | –       | 120-225 | 120-325 | 120-425 | 120-525 | –       |
| from 80 upto 120         | –                       | 190-275 | 190-375 | 190-475 | 190-575 | 140-205 | 140-305 | 140-405 | 140-505 | 140-605 |
| from 120 upto 160        | –                       | 210-255 | 210-355 | 210-455 | 210-555 | 160-185 | 160-285 | 160-385 | 160-485 | 160-585 |
| from 160 upto 200        | –                       | 230-235 | 230-335 | 230-435 | 230-535 | –       | 180-265 | 180-365 | 180-465 | 180-565 |
| from 200 upto 260        | –                       | –       | 260-305 | 260-405 | 260-505 | –       | 210-235 | 210-335 | 210-435 | 210-535 |

Compact hangers, rail holders and insulators are to be ordered separately

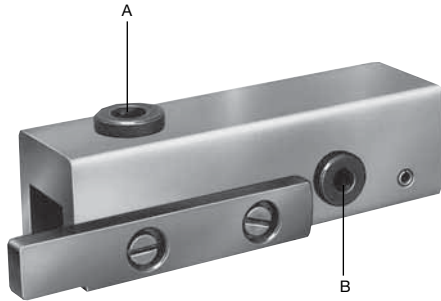
| SKO     |            | SKU     |            | L mm | Weight ca. kg |
|---------|------------|---------|------------|------|---------------|
| Type    | Order- No. | Type    | Order- No. |      |               |
| SKO 500 | 170 094    | SKU 500 | 170 104    | 500  | 0,690         |
| SKO 600 | 170 095    | SKU 600 | 170 105    | 600  | 0,780         |
| SKO 700 | 170 096    | SKU 700 | 170 106    | 700  | 0,870         |
| SKO 800 | 170 097    | SKU 800 | 170 107    | 800  | 0,960         |
| SKO 900 | 170 098    | SKU 900 | 170 108    | 900  | 1,050         |



## INSTALLATION TOOLS FOR U 25

### Drilling jig for end cap

Drill A and B for end cap

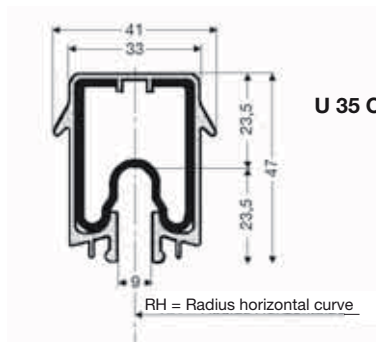


See installation instructions for U25

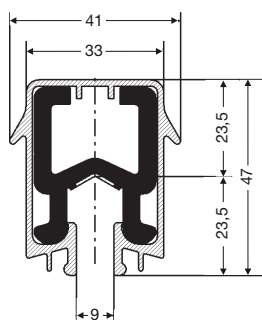
| Type  | Weight kg | Order-No. |
|-------|-----------|-----------|
| BS 25 | 0,100     | 170 207   |



Inclined elevator A Coruña



**U 35 C**



**U 35 AE**

**Conductor code:**

- U = unipole insulated conductor
- 35 = shroud size
- 200, 230, 300, 400, 450, 500, 600 = conductor cross sectional area (mm<sup>2</sup>)
- C = copper conductor
- AE = Aluminium conductor contact surface stainless steel

**Length:**

6,25 m standard length and short length

**Support spacing:**

- for straight runs and vertical inside and outside curves: 2500 mm
- for horizontal curves up to  $R_H = 15\text{ m}^{(1)}$ : 1250 mm
- for horizontal curves over  $R_H = 15\text{ m}$ : 2500 mm

**Conductor spacing:**

- 90 mm for collectors UST 200/35, UDST 400/35 and feed UE
- 130 mm for collectors UST 300/35, UDST 600/35 and feed UEG

**Bending of conductors:**

factory prepared on request

**Heating system:**

available

See page 4 for shroud properties.

## Type of conductor rail

| Typ  | U 35/200 C | U 35/300 C | U 35/400 C | U 35/500 C | U 35/230 AE | U 35/450 AE | U 35/600 AE |
|--|------------|------------|------------|------------|-------------|-------------|-------------|
| Weight (kg/m)  | 2,400      | 3,400      | 4,300      | 6,100      | 1,070       | 1,650       | 2,112       |
| <b>Standard shroud, color green -30 to + 55 °C</b>           |            |            |            |            |             |             |             |
| Order- No. phase <sup>(2)</sup>                              | 175 20•    | 175 21•    | 175 22•    | 175 33     | 175 41•     | 175 45•     | 175 64•     |
| Order- No. ground <sup>(2)</sup>                             | 175 26•    | 175 27•    | 175 28•    | 175 34     | 175 42•     | 175 46•     | 175 66•     |
| <b>High temperature shroud, color gray -30 to + 85 °C</b>    |            |            |            |            |             |             |             |
| Order- No. phase <sup>(2)</sup>                              | 175 23•    | 175 24•    | 175 25•    | 175 35     | 175 43•     | 175 47•     | 175 62•     |
| Order- No. ground <sup>(2)</sup>                             | 175 29•    | 175 30•    | 175 31•    | 175 36     | 175 44•     | 175 48•     | 175 65•     |
| <b>HT design (130°), colour granite grey -30 to + 130 °C</b> |            |            |            |            |             |             |             |
| Order- No. phase <sup>(2)</sup>                              | 175 71•    | 175 73•    | 175 87•    | 175 75•    | 175 77•     | 175 79•     | 175 85•     |
| Order- No. ground <sup>(2)</sup>                             | 175 72•    | 175 74•    | 175 88•    | 175 76•    | 175 78•     | 175 80•     | 175 86•     |

## Engineering Data

| Type                       | Cross sectional area copper mm <sup>2</sup> | Leakage Distance of covers mm | max. voltage V | Continuous Amp. capacity A/35 °C | Resistance <sup>(3)</sup> | Impedance <sup>(3)</sup> Ohm/1000 m on 50 Hz, conductor spacing |        |
|----------------------------|---|-------------------------------|----------------|----------------------------------|---------------------------|---|--------|
|                            |   |                               |                |                                  | Ohm/1000 m                | 90 mm   | 130 mm |
| U 35/200 C                 | 200   | 85                            | 1000           | 600                              | 0,094                     | 0,156   | 0,174  |
| U 35/300 C                 | 300   | 85                            | 1000           | 720                              | 0,060                     | 0,138   | 0,159  |
| U 35/400 C                 | 400   | 85                            | 1000           | 860                              | 0,046                     | 0,132   | 0,154  |
| U 35/500 C                 | 500   | 85                            | 1000           | 1250                             | 0,034                     | 0,131   | 0,152  |
| U 35/230 AE <sup>(4)</sup> | 230   | 85                            | 1000           | 500                              | 0,134                     | 0,183   | 0,199  |
| U 35/450 AE <sup>(4)</sup> | 450   | 85                            | 1000           | 800                              | 0,069                     | 0,143   | 0,163  |
| U 35/600 AE <sup>(4)</sup> | 600   | 85                            | 1000           | 1000                             | 0,052                     | 0,136   | 0,156  |

(1) Recommended

(2) The last number of part-no. Mentions the single length per meter. Please add the required length with 1,2...6. For short length please round the number up.

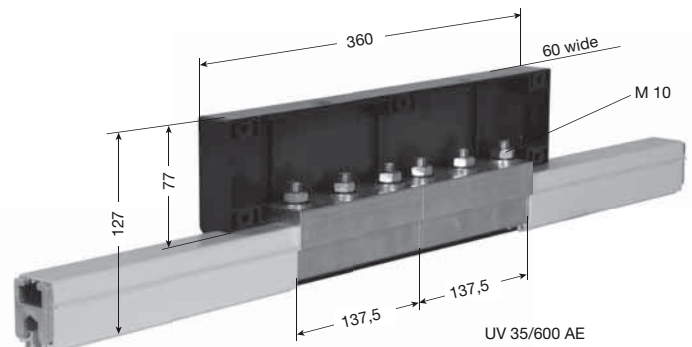
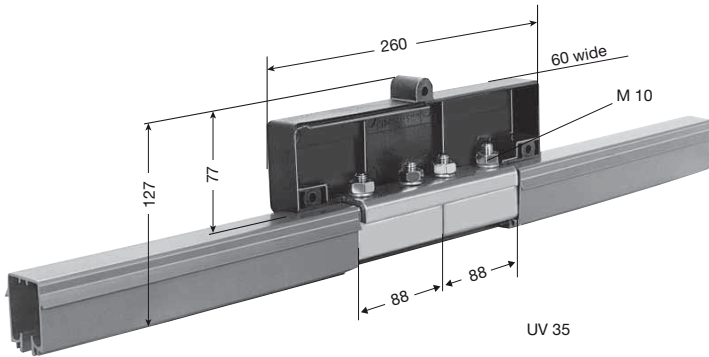
(3) With frequenz of 50 Hz and 20 °C

(4) With the AE-conductor, collectors, which work mainly on one position or with a very low travel speed  $\leq 10\text{ m/min}$ . are only permitted to work with 50% of the continuous current.



# ACCESSORIES FOR U 35

## Bolted joint splices

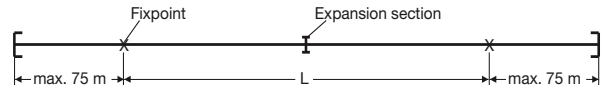


| Type                            | Weight kg | Order-No. | Type                               | Weight kg | Order-No. |
|---------------------------------|-----------|-----------|------------------------------------|-----------|-----------|
| UV 35/200                       | 0,882     | 175 574   | UV 35/200 HT                       | 0,882     | 175 797   |
| UV 35/300                       | 1,000     | 175 012   | UV 35/300 HT                       | 1,000     | 175 799   |
| UV 35/400                       | 1,034     | 175 126   | UV 35/400 HT                       | 1,034     | 175 737   |
| UV 35/500                       | 1,273     | 175 369   | UV 35/500 HT                       | 1,273     | 175 739   |
| UV 35/200 K 4 <sup>(1)</sup>    | 0,882     | 175 575   | UV 35/200 HT K 4 <sup>(1)</sup>    | 0,882     | 175 798   |
| UV 35/300 K 4 <sup>(1)</sup>    | 1,000     | 175 013   | UV 35/300 HT K 4 <sup>(1)</sup>    | 1,000     | 175 800   |
| UV 35/400 K 4 <sup>(1)</sup>    | 1,034     | 175 127   | UV 35/400 HT K 4 <sup>(1)</sup>    | 1,034     | 175 738   |
| UV 35/500 K 4 <sup>(1)</sup>    | 1,273     | 175 370   | UV 35/500 HT K 4 <sup>(1)</sup>    | 1,273     | 175 740   |
| UV 35/230 AE                    | 0,674     | 175 491   | UV 35/230 AE HT                    | 0,674     | 175 836   |
| UV 35/450 AE                    | 0,776     | 175 492   | UV 35/450 AE HT                    | 0,776     | 175 838   |
| UV 35/600 AE                    | 1,100     | 175 619   | UV 35/600 AE HT                    | 1,100     | 175 847   |
| UV 35/230 AE K 4 <sup>(1)</sup> | 0,674     | 175 495   | UV 35/230 AE HT K 4 <sup>(1)</sup> | 0,674     | 175 837   |
| UV 35/450 AE K 4 <sup>(1)</sup> | 0,776     | 175 496   | UV 35/450 AE HT K 4 <sup>(1)</sup> | 0,776     | 175 839   |
| UV 35/600 AE K 4 <sup>(1)</sup> | 1,100     | 175 618   | UV 35/600 AE HT K 4 <sup>(1)</sup> | 1,100     | 175 848   |



## Expansion sections

Factory assembled on 2.5 m conductor section incl. one rigid joint. The 2.5 m expansion assembly is part of the system length and will be installed from 150 m of system length on.



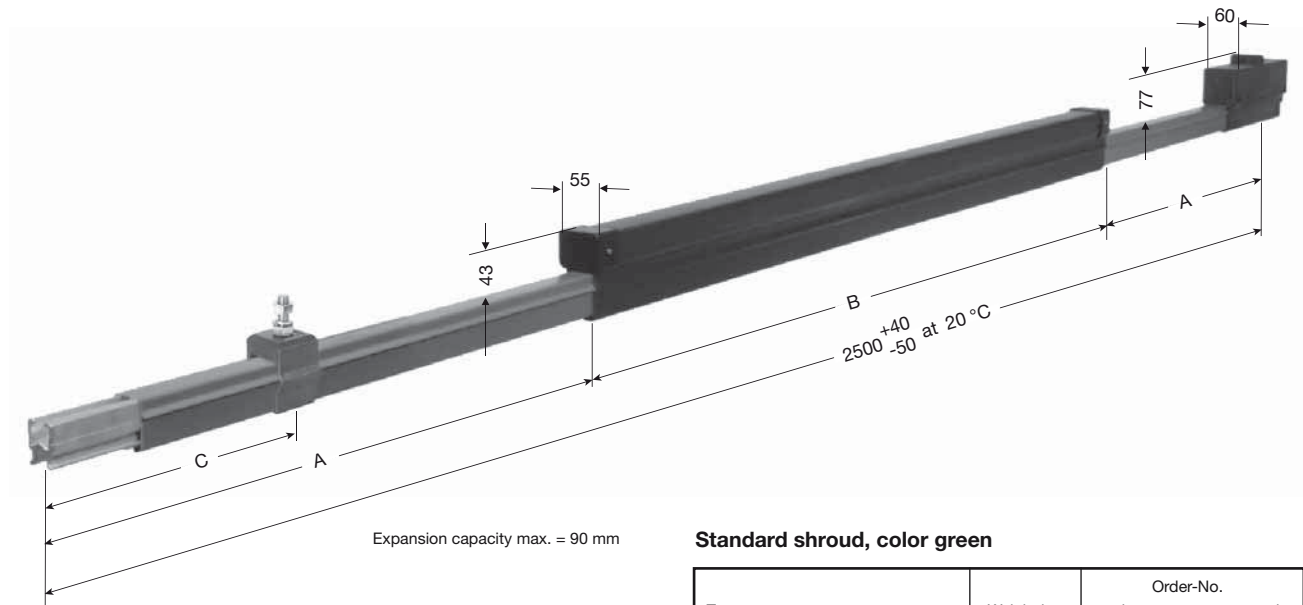
### Expansion area (Distance between the fixpoints = L) for UDV 35/200-500 C

| to Δ t | max. L | to Δ t | max L   |
|--------|--------|--------|---------|
| 30 °C  | 176 m  | 50 °C  | 105,5 m |
| 40 °C  | 132 m  | 60 °C  | 88,0 m  |

### Expansion area (Distance between the fixpoints = L) for UDV 35/230-600 AE

| bis Δ t | max. L  | bis Δ t | max L  |
|---------|---------|---------|--------|
| 30 °C   | 130,0 m | 50 °C   | 78,0 m |
| 40 °C   | 97,5 m  | 60 °C   | 65,0 m |

|                       | A     | B    | C min.-max. |
|-----------------------|-------|------|-------------|
| UDV 35/200-400 C K 4  | 631,5 | 1237 | 300-500     |
| UDV 35/500 C K 4      | 631,5 | 1237 | 300-500     |
| UDV 35/230-450 AE K 4 | 631,5 | 1237 | 300-500     |
| UDV 35/600 AE K 4     | 509,0 | 1482 | 300-390     |



### Determination of expansion sections

$$n = \frac{L1}{L}$$

n = Number of UDV (rounded up)  
 L1 = system length minus 150 m  
 L = max. expansion capacity of UDV (see table)

### Standard shroud, color green

| Type                                  | Weight kg | Order-No. |         |
|---------------------------------------|-----------|-----------|---------|
|                                       |           | phase     | ground  |
| UDV 35/200-400 C K 4 <sup>(1)</sup>   | 16,00     | 175 527   | 175 528 |
| UDV 35/500 C K 4 <sup>(1)</sup>       | 17,50     | 175 540   | 175 541 |
| UDV 35 /230-450 AE K 4 <sup>(1)</sup> | 7,00      | 175 517   | 175 518 |
| UDV 35 /600 AE K 4 <sup>(1)</sup>     | 12,00     | 175 670   | 175 671 |

### High temperature shroud, color gray

| Type                                 | Weight kg | Order-No. |         |
|--------------------------------------|-----------|-----------|---------|
|                                      |           | phase     | ground  |
| UDV 35/200-400 C K 4 <sup>(1)</sup>  | 16,000    | 175 529   | 175 530 |
| UDV 35/500 C K 4 <sup>(1)</sup>      | 17,500    | 175 542   | 175 543 |
| UDV 35/230-450 AE K 4 <sup>(1)</sup> | 7,000     | 175 519   | 175 520 |
| UDV 35/600 AE K 4 <sup>(1)</sup>     | 12,00     | 175627    | 175 672 |

### HT design, colour granite grey

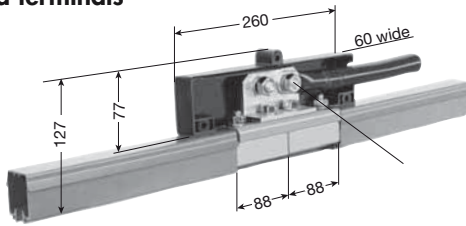
| Type                                    | Weight kg | Order-No. |         |
|---|-----------|-----------|---------|
|   |           | phase     | ground  |
| UDV 35/200-400 C HT K 4 <sup>(1)</sup>  | 16,000    | 175 700   | 175 701 |
| UDV 35/500 C HT K 4 <sup>(1)</sup>      | 17,500    | 175 702   | 175 703 |
| UDV 35/230-450 AE HT K 4 <sup>(1)</sup> | 7,000     | 175 719   | 175 720 |
| UDV 35/600 AE HT K 4 <sup>(1)</sup>     | 12,000    | 175 849   | 175 850 |

<sup>(1)</sup> with stainless steel hardware

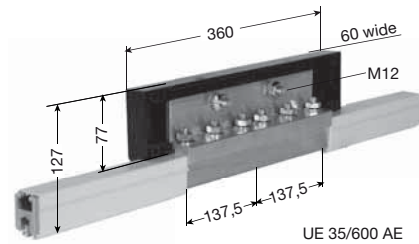


# ACCESSORIES FOR U 35

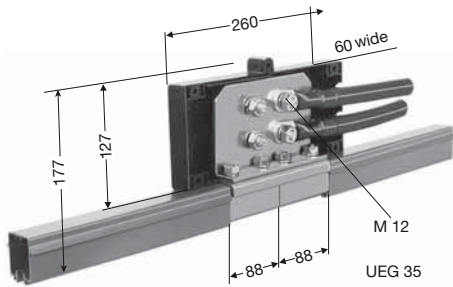
## Feed terminals



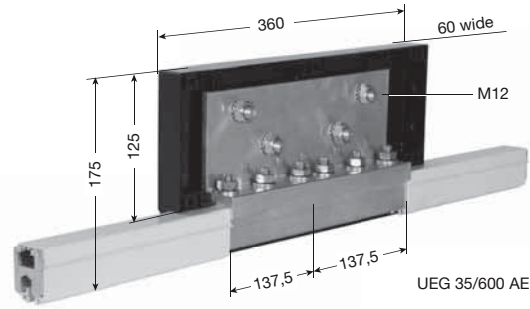
UE 35



UE 35/600 AE



UEG 35



UEG 35/600 AE

| Type                                     | Connecting cable max. mm <sup>2</sup> | Weight kg | Order-No. | Type  | Connecting cable max. mm <sup>2</sup> | Weight kg | Order-No. |
|--|---------------------------------------|-----------|-----------|---|---------------------------------------|-----------|-----------|
| <b>UE 35/200-400</b>                     | 2 x 150                               | 1,264     | 175 040   | <b>UE 35/200-400 HT</b>                     | 2 x 150                               | 1,264     | 175 824   |
| <b>UE 35/200-400-M</b>                   | 2 x 150                               | 1,264     | 175 548   | <b>UE 35/200-400 HT-M</b>                   | 2 x 150                               | 1,264     | 175 826   |
| <b>UE 35/200-400 K4<sup>(1)</sup></b>    | 2 x 150                               | 1,264     | 175 043   | <b>UE 35/200-400 HT K4<sup>(1)</sup></b>    | 2 x 150                               | 1,264     | 175 825   |
| <b>UE 35/200-400 K4<sup>(1)</sup>-M</b>  | 2 x 150                               | 1,264     | 175 549   | <b>UE 35/200-400 HT K4<sup>(1)</sup>-M</b>  | 2 x 150                               | 1,264     | 175 827   |
| <b>UE 35/500</b>                         | 2 x 150                               | 1,204     | 175 397   | <b>UE 35/500 HT</b>                         | 2 x 150                               | 1,204     | 175 828   |
| <b>UE 35/500-M</b>                       | 2 x 150                               | 1,204     | 175 907   | <b>UE 35/500 HT-M</b>                       | 2 x 150                               | 1,204     | 175 845   |
| <b>UE 35/500 K4<sup>(1)</sup></b>        | 2 x 150                               | 1,204     | 175 398   | <b>UE 35/500 HT K4<sup>(1)</sup></b>        | 2 x 150                               | 1,204     | 175 829   |
| <b>UE 35/500 K4<sup>(1)</sup>-M</b>      | 2 x 150                               | 1,204     | 175 908   | <b>UE 35/500 HT K4<sup>(1)</sup>-M</b>      | 2 x 150                               | 1,204     | 175 846   |
| <b>UEG 35/200-400</b>                    | 4 x 185                               | 1,930     | 175 105   | <b>UEG 35/200-400 HT</b>                    | 4 x 185                               | 1,930     | 175 780   |
| <b>UEG 35/200-400-M</b>                  | 4 x 185                               | 1,930     | 175 147   | <b>UEG 35/200-400 HT-M</b>                  | 4 x 185                               | 1,930     | 175 788   |
| <b>UEG 35/200-400 K4<sup>(1)</sup></b>   | 4 x 185                               | 1,930     | 175 106   | <b>UEG 35/200-400 HT K4<sup>(1)</sup></b>   | 4 x 185                               | 1,930     | 175 787   |
| <b>UEG 35/200-400 K4<sup>(1)</sup>-M</b> | 4 x 185                               | 1,930     | 175 324   | <b>UEG 35/200-400 HT K4<sup>(1)</sup>-M</b> | 4 x 185                               | 1,930     | 175 789   |
| <b>UEG 500</b>                           | 4 x 185                               | 1,998     | 175 371   | <b>UEG 500 HT</b>                           | 4 x 185                               | 1,998     | 175 747   |
| <b>UEG 500-M</b>                         | 4 x 185                               | 1,998     | 175 394   | <b>UEG 500 HT-M</b>                         | 4 x 185                               | 1,998     | 175 778   |
| <b>UEG 500 K4<sup>(1)</sup></b>          | 4 x 185                               | 1,998     | 175 372   | <b>UEG 500 HT K4<sup>(1)</sup></b>          | 4 x 185                               | 1,998     | 175 777   |
| <b>UEG 500 K4<sup>(1)</sup>-M</b>        | 4 x 185                               | 1,998     | 175 417   | <b>UEG 500 HT K4<sup>(1)</sup>-M</b>        | 4 x 185                               | 1,998     | 175 779   |
| <b>UE 35 AE</b>                          | 2 x 150                               | 0,872     | 175 489   | <b>UE 35 AE HT</b>                          | 2 x 150                               | 0,872     | 175 830   |
| <b>UE 35 AE-M</b>                        | 2 x 150                               | 0,872     | 175 905   | <b>UE 35 AE HT-M</b>                        | 2 x 150                               | 0,872     | 175 903   |
| <b>UE 35 AE-K4<sup>(1)</sup></b>         | 2 x 150                               | 0,872     | 175 490   | <b>UE 35 AE HT-K4<sup>(1)</sup></b>         | 2 x 150                               | 0,872     | 175 831   |
| <b>UE 35 AE-K4<sup>(1)</sup>-M</b>       | 2 x 150                               | 0,872     | 175 906   | <b>UE 35 AE HT-K4<sup>(1)</sup>-M</b>       | 2 x 150                               | 0,872     | 175 904   |
| <b>UE 35/600 AE</b>                      | 2 x 150                               | 1,617     | 175 693   | <b>UE 35/600 AE HT</b>                      | 2 x 150                               | 1,617     | 175 909   |
| <b>UE 35/600 AE-M</b>                    | 2 x 150                               | 1,617     | 175 707   | <b>UE 35/600 AE HT-M</b>                    | 2 x 150                               | 1,617     | 175 910   |
| <b>UE 35/600 AE-K4<sup>(1)</sup></b>     | 2 x 150                               | 1,617     | 175 694   | <b>UE 35/600 AE HT-K4<sup>(1)</sup></b>     | 2 x 150                               | 1,617     | 175 911   |
| <b>UE 35/600 AE-K4<sup>(1)</sup>-M</b>   | 2 x 150                               | 1,617     | 175 708   | <b>UE 35/600 AE HT-K4<sup>(1)</sup>-M</b>   | 2 x 150                               | 1,617     | 175 912   |
| <b>UEG 35 AE</b>                         | 4 x 185                               | 1,278     | 175 487   | <b>UEG 35 AE HT</b>                         | 4 x 185                               | 1,278     | 175 832   |
| <b>UEG 35 AE-M</b>                       | 4 x 185                               | 1,278     | 175 521   | <b>UEG 35 AE HT-M</b>                       | 4 x 185                               | 1,278     | 175 834   |
| <b>UEG 35 AE-K4<sup>(1)</sup></b>        | 4 x 185                               | 1,278     | 175 488   | <b>UEG 35 AE HT-K4<sup>(1)</sup></b>        | 4 x 185                               | 1,278     | 175 833   |
| <b>UEG 35 AE-K4<sup>(1)</sup>-M</b>      | 4 x 185                               | 1,278     | 175 522   | <b>UEG 35 AE HT-K4<sup>(1)</sup>-M</b>      | 4 x 185                               | 1,278     | 175 835   |
| <b>UEG 35/600 AE</b>                     | 4 x 185                               | 2,058     | 175 674   | <b>UEG 35/600 AE HT</b>                     | 4 x 185                               | 2,058     | 175 841   |
| <b>UEG 35/600 AE-M</b>                   | 4 x 185                               | 2,058     | 175 675   | <b>UEG 35/600 AE HT-M</b>                   | 4 x 185                               | 2,058     | 175 843   |
| <b>UEG 35/600 AE-K4<sup>(1)</sup></b>    | 4 x 185                               | 2,058     | 175 628   | <b>UEG 35/600 AE HT-K4<sup>(1)</sup></b>    | 4 x 185                               | 2,058     | 175 842   |
| <b>UEG 35/600 AE-K4<sup>(1)</sup>-M</b>  | 4 x 185                               | 2,058     | 175 676   | <b>UEG 35/600 AE HT-K4<sup>(1)</sup>-M</b>  | 4 x 185                               | 2,058     | 175 844   |

Cable lugs and cables by others. UEG requires staggered arrangement with conductor spacing of less than 130 mm. M = factory assembled.

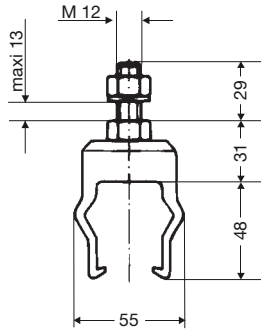




Contact grease for joints & feeds

100 ml for approx. 200 joints

Order-No. 121 502



Allowed change power 3600 N



UA 35



UAD 35

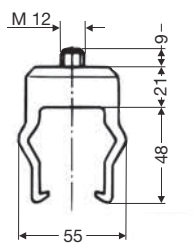
Depth: 50 mm

## Insulated hangers

| Type                      | Weight kg | Order-No. |
|---------------------------|-----------|-----------|
| UA 35                     | 0,120     | 175 137   |
| UA 35 K 4 <sup>(1)</sup>  | 0,120     | 175 138   |
| UAD 35                    | 0,110     | 175 667   |
| UAD 35 K 4 <sup>(1)</sup> | 0,110     | 175 637   |

## Rail holders

to be used with insulator



Depth: 50 mm

Allowed change power 3600 N

| Type                      | Weight kg | Order- No. |
|---------------------------|-----------|------------|
| UAK 35                    | 0,060     | 175 139    |
| UAK 35 K 4 <sup>(1)</sup> | 0,060     | 175 140    |

## Locating clamp

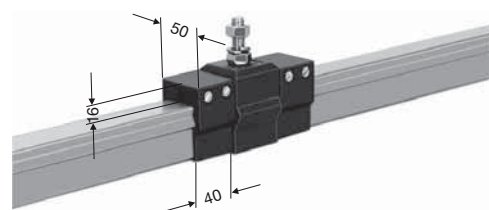


Photo shows hanger with two locating clamps for an anchor point.

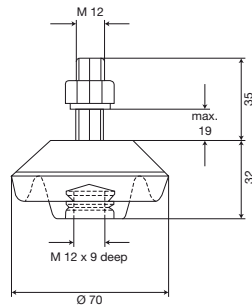
| Type                      | Weight kg | Order- No. |
|---------------------------|-----------|------------|
| USK 35 K 4 <sup>(1)</sup> | 0,074     | 175 039    |

<sup>(1)</sup> with stainless steel hardware



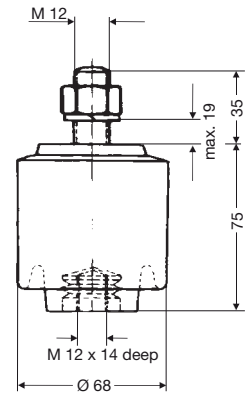
# ACCESSORIES FOR U 35

## Insulators



Cantilever = 4500 N  
Creepage distance = 69 mm

| Type                                 | Weight kg | Order- No. |
|--------------------------------------|-----------|------------|
| <b>GHH 30-M 12</b>                   | 0,210     | 175 052    |
| <b>GHH 30-M 12 K 4<sup>(1)</sup></b> | 0,210     | 175 054    |

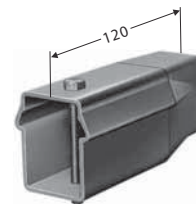


Cantilever = 6500 N  
Creepage distance = 115 mm

| Type                                 | Weight kg | Order- No. |
|--------------------------------------|-----------|------------|
| <b>GHH 75-M 12</b>                   | 0,560     | 175 056    |
| <b>GHH 75-M 12 K 4<sup>(1)</sup></b> | 0,560     | 175 058    |

## End caps

with locking pin



Typ M = factory assembled per layout  
Typ L = loose

| Type           | Weight kg | Order- No. |
|----------------|-----------|------------|
| <b>UK 35-M</b> | 0,064     | 175 171    |
| <b>UK 35-L</b> | 0,064     | 175 060    |

## Transfer guides

Usage in conductor interrupts.  
Installation in systems according to layout drawing  
max. vertical and horizontal offset ± 6 mm  
air gap at transit max. 20 mm

Additional hangers and locating clamps have to be ordered separately.

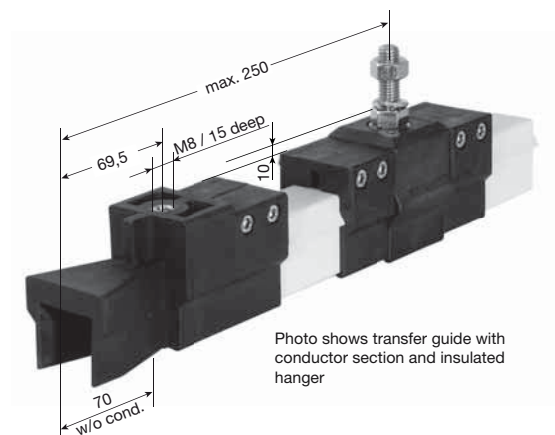


Photo shows transfer guide with conductor section and insulated hanger

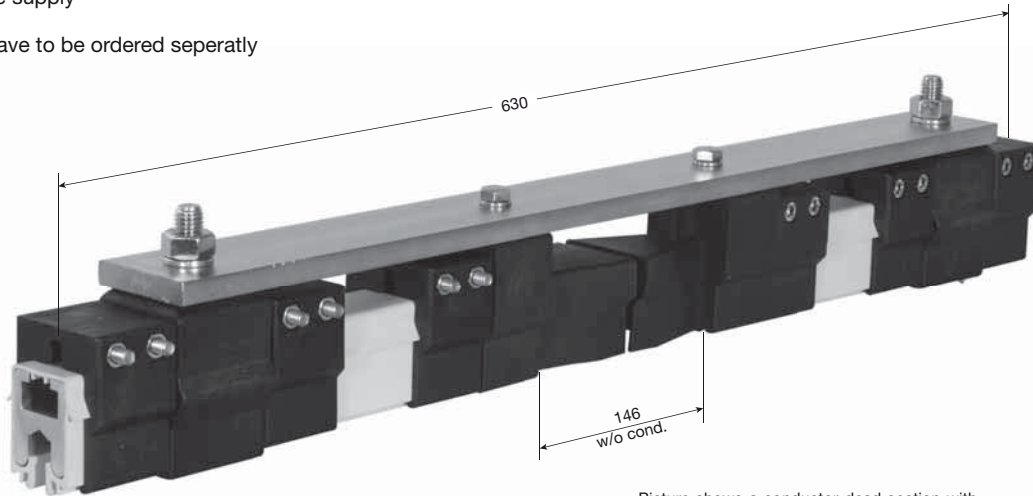
| Type                              | Weight kg | Order- No. |
|-----------------------------------|-----------|------------|
| <b>US 35 AE K 4<sup>(1)</sup></b> | 0,120     | 175 678    |
| <b>US 35 C K 4<sup>(1)</sup></b>  | 0,120     | 175 677    |



## Conductor dead sections

Type M = factory assembled according to layout drawing  
 Type L = loose supply

Conductors have to be ordered separately



Picture shows a conductor dead section with conductor section and 4 loose attached locating clamps.

| Type         | Weight kg | Order-No. |
|--------------|-----------|-----------|
| LT/U 35 AE-L | 1,330     | 175 629   |
| LT/U 35 C-L  | 1,330     | 175 679   |

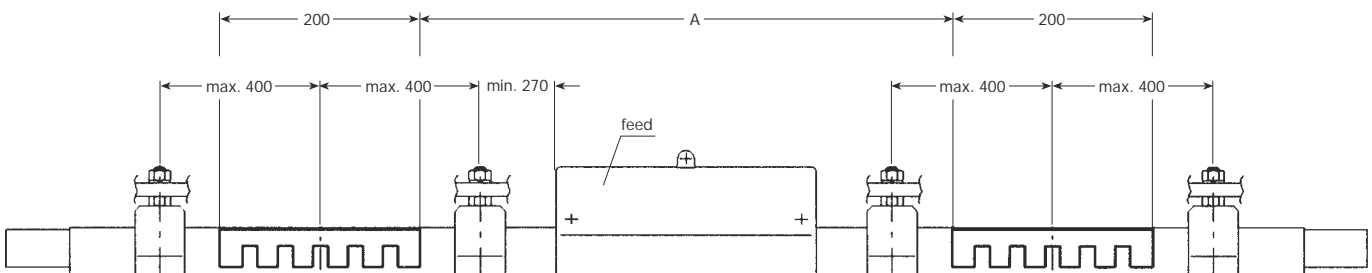
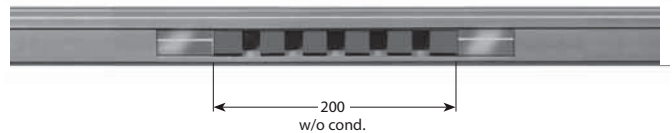
| Type         | Weight kg | Order-No. |
|--------------|-----------|-----------|
| LT/U 35 AE-M | 1,330     | 175 636   |
| LT/U 35 C-M  | 1,330     | 175 699   |

## Isolating sections

Type M = factory assembled according to layout drawing  
 Type L = loose supply as single item  
 On both sides of the isolating section a hanger has to be considered.  
 Distance max. 400 mm from center isolating section.

Conductors, hangers and feed points have to be ordered separately.

**Attention: with factory assembled isolating sections the feed terminals have to be factory assembled aswell.**



In order to avoid voltage bridging and for clearing of maintenance, control and live areas use two isolating sections.  
 For the distance A number and type of collectors aswell as the length of the braking distance of the machinery has to be considered.

| Type          | Weight kg | Order-No. |
|---------------|-----------|-----------|
| IT/U 35/200 M | 0,200     | 175 062   |
| IT/U 35/300 M | 0,200     | 175 063   |
| IT/U 35/400 M | 0,200     | 175 064   |
| IT/U 35/500 M | 0,200     | 175 399   |
| IT/U 35/230 M | 0,200     | 175 499   |
| IT/U 35/450 M | 0,200     | 175 500   |

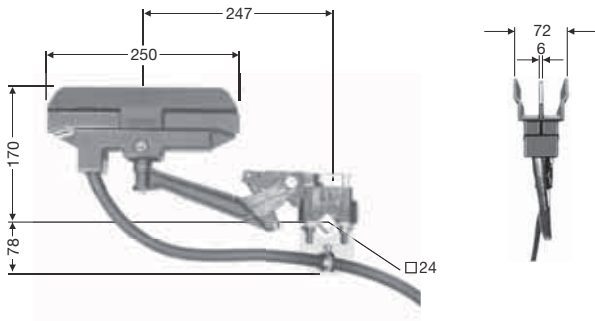
| Type          | Weight kg | Order-No. |
|---------------|-----------|-----------|
| IT/U 35/200 L | 0,200     | 175 101   |
| IT/U 35/300 L | 0,200     | 175 102   |
| IT/U 35/400 L | 0,200     | 175 103   |
| IT/U 35/500 L | 0,200     | 175 400   |
| IT/U 35/230 L | 0,200     | 175 497   |
| IT/U 35/450 L | 0,200     | 175 498   |



# COLLECTOR COMPONENTS FOR U 35

## Current Collectors

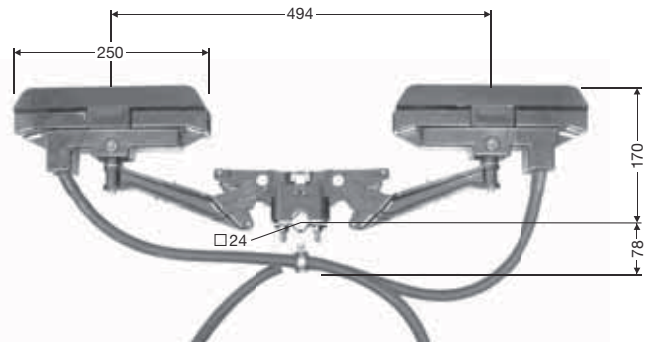
Use current collectors USTR in case of lateral opened conductor system



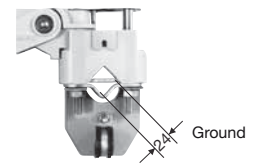
c/w 3 m cable  
(pendent 2,6 m)  
lift & swivel  $\pm 50$  mm  
contact pressure ca. 30 N

## Double current collectors

Use current collectors UDSTR in case of lateral opened conductor system



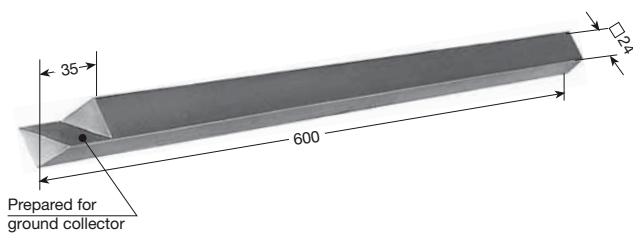
c/w 2 x 3 m cable  
(pendent 2.6 m)  
lift & swivel  $\pm 50$  mm  
contact pressure: ca. 30 N per brush



| Type           | Am-pacity A | Connecting cable A/ mm <sup>2</sup> | Connecting cable ø max/ mm | Weight kg | Order- No. phase - black | Order- No. ground - yellow | Type            | Am-pacity A | Connecting cable A/ mm <sup>2</sup> | Connecting cable ø max/ mm | Weight kg | Order- No. phase - black | Order- No. ground - yellow |
|----------------|-------------|-------------------------------------|----------------------------|-----------|--------------------------|----------------------------|-----------------|-------------|-------------------------------------|----------------------------|-----------|--------------------------|----------------------------|
| UST 200/35     | 200         | 50                                  | 21                         | 4,000     | 175 068                  | 175 069                    | UDST 400/35     | 400         | 50                                  | 21                         | 7,000     | 175 072                  | 175 073                    |
| USTR 200/35    | 200         | 50                                  | 21                         | 4,000     | 175 169                  | 175 170                    | UDSTR 400/35    | 400         | 50                                  | 21                         | 7,000     | 175 185                  | 175 186                    |
| UST 200/35 HT  | 200         | 50                                  | 21                         | 4,000     | 175 893                  | 175 894                    | UDST 400/35 HT  | 400         | 50                                  | 21                         | 7,000     | 175 695                  | 175 696                    |
| USTR 200/35 HT | 200         | 50                                  | 21                         | 4,000     | 175 895                  | 175 896                    | UDSTR 400/35 HT | 400         | 50                                  | 21                         | 7,000     | 175 769                  | 175 770                    |

With the AE-conductor, collectors, which work mainly on one position or with a very low travel speed  $\leq 10$  m/min. are only permitted to be work with 50% of the continuous current.

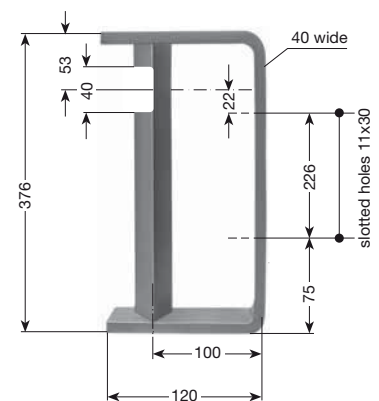
## Collector brackets



| Type  | Weight kg | Order- No. |
|-------|-----------|------------|
| UM 24 | 2,600     | 175 076    |

Longer brackets furnished on special order.

With brackets above 600 mm length a support has to be considered on site, to avoid a bending or twisting of the collector bracket.



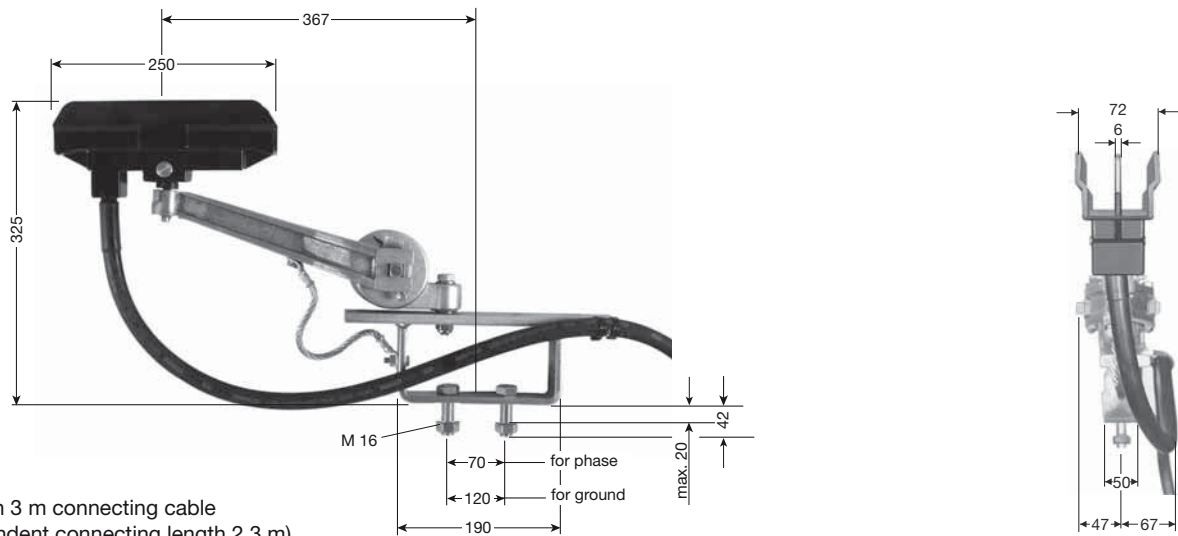
| Type   | Weight kg | Order- No. |
|--------|-----------|------------|
| UMA 24 | 2,800     | 175 125    |

Suitable for conductor rail distance 90 mm (3-poles + ground)



## Current collectors

With lateral opened conductor rail systems the collector USTR has to be used. With phase distance <130 mm staggered arrangement.

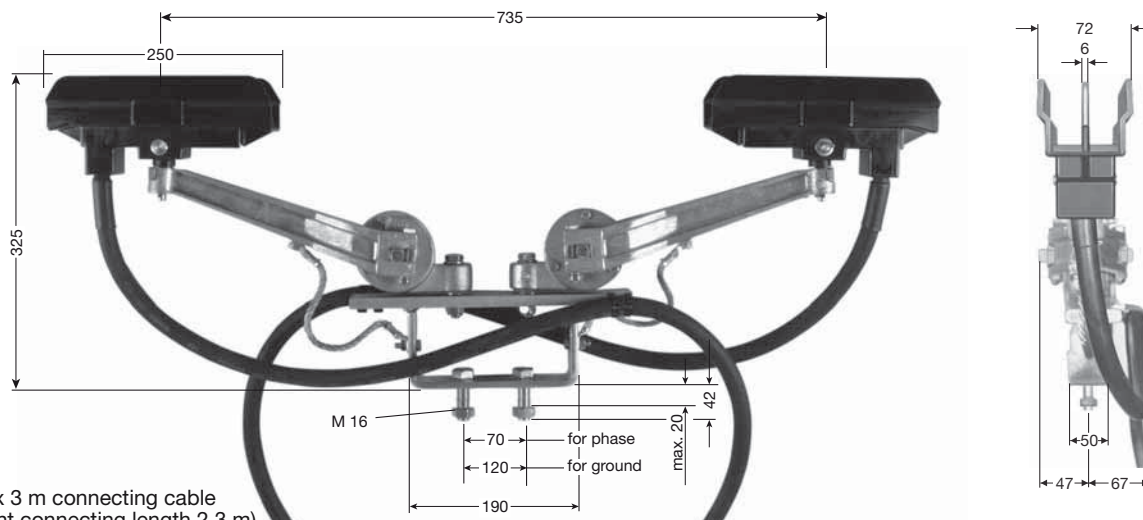


with 3 m connecting cable  
 (pendent connecting length 2,3 m)  
 Lift +/- 70 mm, lateral swivel +/- 80 mm  
 Contact pressure: 50-70 N

| Type                  | Am-<br>pacity<br>A <sup>(1)</sup> | Connecting cable      |              | Weight<br>kg | Order- No.       |                    |
|-----------------------|-----------------------------------|-----------------------|--------------|--------------|------------------|--------------------|
|                       |                                   | A/<br>mm <sup>2</sup> | ø max/<br>mm |              | phase -<br>black | ground -<br>yellow |
| <b>UST 300/35</b>     | 300                               | 95                    | 26           | 10,900       | 175 087          | 175 088            |
| <b>USTR 300/35</b>    | 300                               | 95                    | 26           | 10,900       | 175 320          | 175 321            |
| <b>UST 300/35 HT</b>  | 300                               | 95                    | 26           | 10,900       | 175 897          | 175 898            |
| <b>USTR 300/35 HT</b> | 300                               | 95                    | 26           | 10,900       | 175 899          | 175 900            |

## Double current collectors

With lateral opened conductor rail systems the collector UDSTR has to be used. With phase distance <130 mm staggered arrangement.



with 2 x 3 m connecting cable  
 (pendent connecting length 2,3 m)  
 Lift +/- 70 mm, lateral swivel +/- 80 mm  
 Contact pressure: 50-70 N

| Type                   | Am-<br>pacity<br>A <sup>(1)</sup> | Connecting cable      |              | Weight<br>kg | Order- No.       |                    |
|------------------------|-----------------------------------|-----------------------|--------------|--------------|------------------|--------------------|
|                        |                                   | A/<br>mm <sup>2</sup> | ø max/<br>mm |              | phase -<br>black | ground -<br>yellow |
| <b>UDST 600/35</b>     | 600                               | 95                    | 26           | 18,300       | 175 089          | 175 090            |
| <b>UDSTR 600/35</b>    | 600                               | 95                    | 26           | 18,300       | 175 174          | 175 175            |
| <b>UDST 600/35 HT</b>  | 600                               | 95                    | 26           | 18,300       | 175 697          | 175 698            |
| <b>UDSTR 600/35 HT</b> | 600                               | 95                    | 26           | 18,300       | 175 901          | 175 902            |

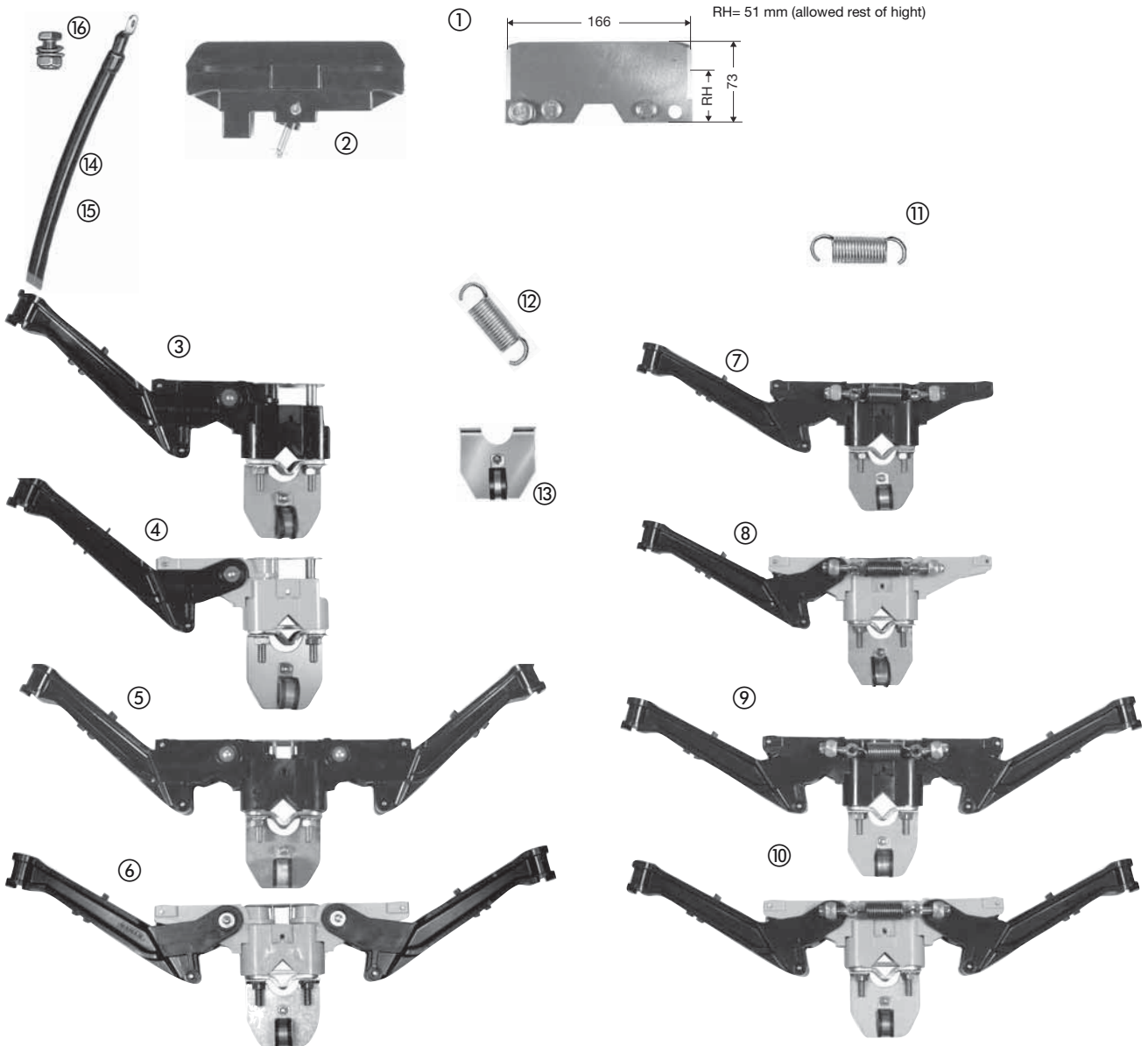
<sup>(1)</sup> The collector of the AE-conductor which are working with only ≤ 10 m/min. travel speed or stand most of the time are only permitted to work with 50 % of the continuous current.rden.



# COLLECTOR COMPONENTS FOR U 35

## Spares for collectors UST 200/35, UDST 400/35, USTR 200/35, UDST 400/35

| Part-No. | Description   | Weight kg | Order-No. |
|----------|---|-----------|-----------|
| 1        | Brush KMU 300/35 with fixing and connecting screw                             | 0,400     | 175 077   |
| 2        | Brush holder  | 0,500     | 175 078   |
| 3        | Collector base for UST 200/35   | 0,550     | 175 080   |
| 4        | Collector base for UST 200/35   |           | 175 081   |
| 5        | Collector base for UDST 400/35  | 0,795     | 175 082   |
| 6        | Collector base for UDST 400/35  |           | 175 083   |
| 7        | Collector base for USTR 200/35  | 0,780     | 175 550   |
| 8        | Collector base for USTR 200/35  |           | 175 551   |
| 9        | Collector base for UDSTR 400/35   | 0,940     | 175 552   |
| 10       | Collector base for für UDSTR 400/35   |           | 175 553   |
| 11       | Lateral tension spring ZF 6 for USTR 200/35 and UDSTR 400/35                  | 0,023     | 170 167   |
| 12       | Tension spring ZF 7 for UST 200/35, UDST 400/35, USTR 200/35 and UDSTR 400/35 | 0,030     | 160 719   |
| 13       | Cable attachment clamp  | 0,150     | 175 107   |
| 14       | Connecting cable RKA 50 mm <sup>2</sup> , 3 m long                            | 2,220     | 175 084   |
|          | Connecting cable RKA-HT 50 mm <sup>2</sup> , 3 m long                         |           | 175 657   |
| 15       | Connecting cable RKA 50 mm <sup>2</sup> , 3 m long                            | 2,220     | 175 085   |
|          | Connecting cable RKA-HT 50 mm <sup>2</sup> , 3 m long                         |           | 175 658   |
| 16       | Terminal bolt M 12 x 25 K4  | 0,054     | 175 401   |

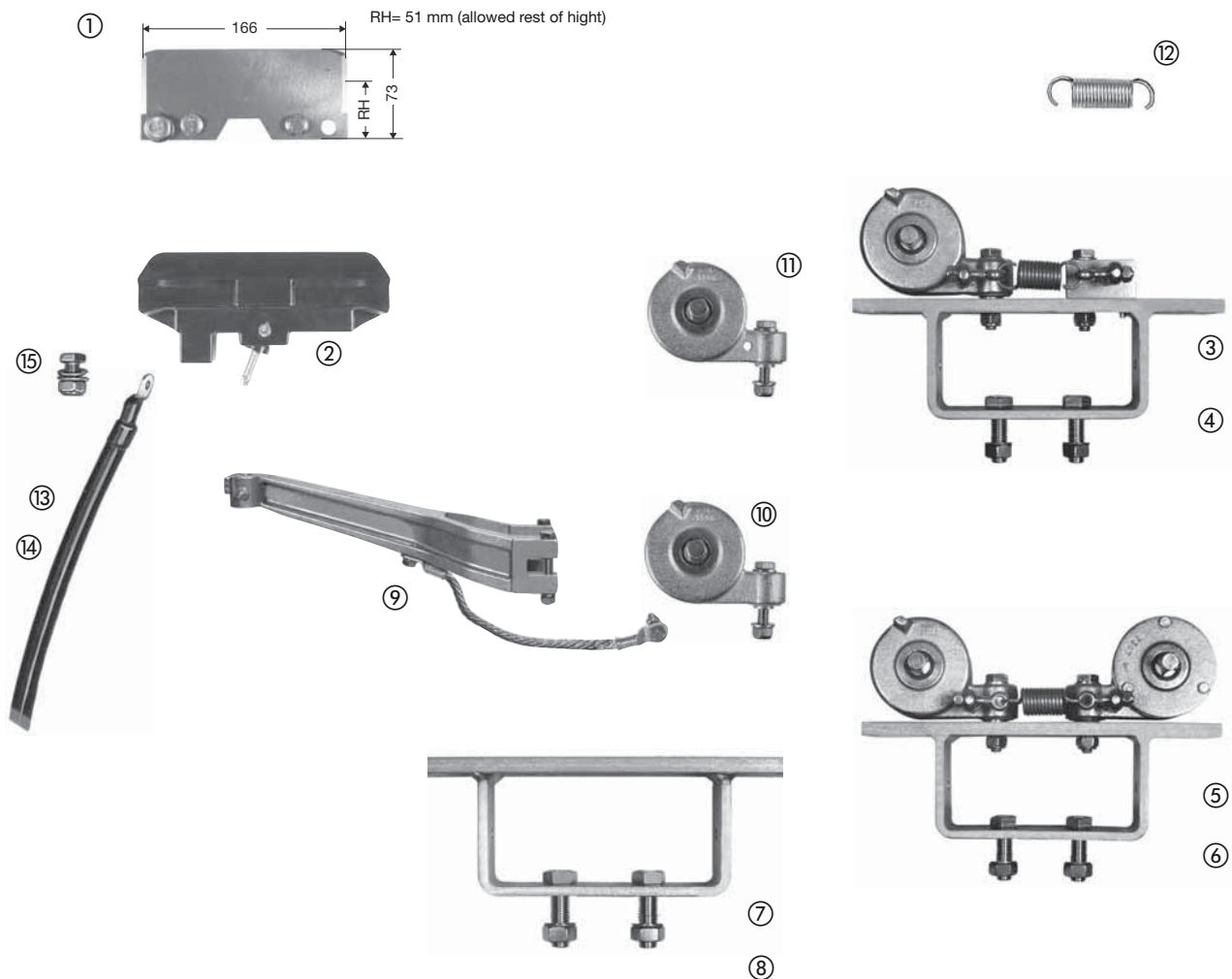


# COLLECTOR COMPONENTS FOR U 35



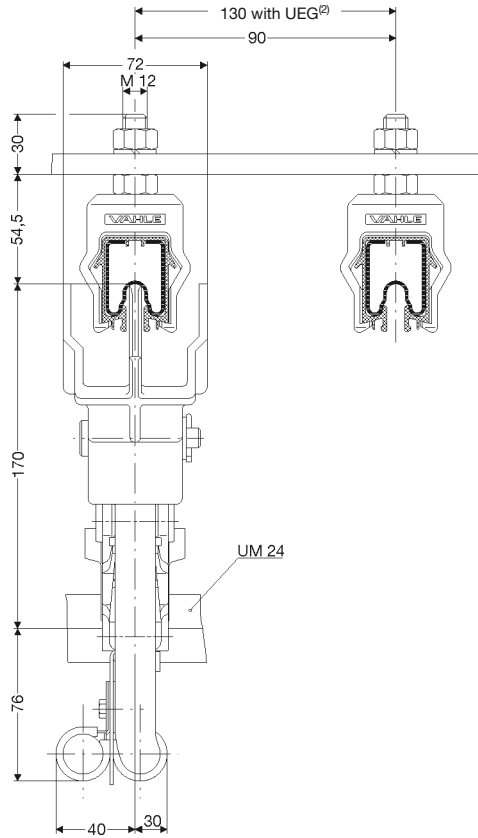
## Spares for collectors UST 300/35, UDST 600/35, USTR 300/35 and UDSTR 600/35

| Part-No. | Description   |           | Weight kg | Order-No. |
|----------|---|-----------|-----------|-----------|
| 1        | Brush KMU 300/35 with fixing and connecting screw         |           | 0,400     | 175 077   |
| 2        | Brush holder  |           | 0,500     | 175 078   |
| 3        | Collector base for USTR 300/35                            | phase PH  | 6,380     | 175 554   |
| 4        | Collector base for USTR 300/35                            | ground PE |           | 175 555   |
| 5        | Collector base for UDSTR 600/35                           | phase PH  | 8,050     | 175 556   |
| 6        | Collector base for UDSTR 600/35                           | ground PE |           | 175 557   |
| 7        | Base plate, complete                                      | phase PH  |           | 175 095   |
| 8        | Base plate, complete                                      | ground PE |           | 175 096   |
| 9        | Lever, complete   |           |           | 175 093   |
| 10       | Spring housing, complete for UST 300/35 and UDST 600/35   |           |           | 175 094   |
| 11       | Spring housing, complete for USTR 300/35 and UDSTR 600/35 |           |           | 175 562   |
| 12       | Lateral tension spring for USTR 300/35 and UDSTR 600/35   |           |           | 175 558   |
| 13       | Connecting cable RKA 95 mm <sup>2</sup> , 3 m long        | phase PH  | 3,750     | 175 149   |
|          | Connecting cable RKA HT 95 mm <sup>2</sup> , 3 m long     |           | 3,750     | 175 659   |
| 14       | Connecting cable RKA 95 mm <sup>2</sup> , 3 m long        | ground PE |           | 175 150   |
|          | Connecting cable RKA HT 95 mm <sup>2</sup> , 3 m long     |           | 3,750     | 175 660   |
| 15       | Terminal bolt M 12 x 25 K4                                |           | 0,054     | 175 401   |

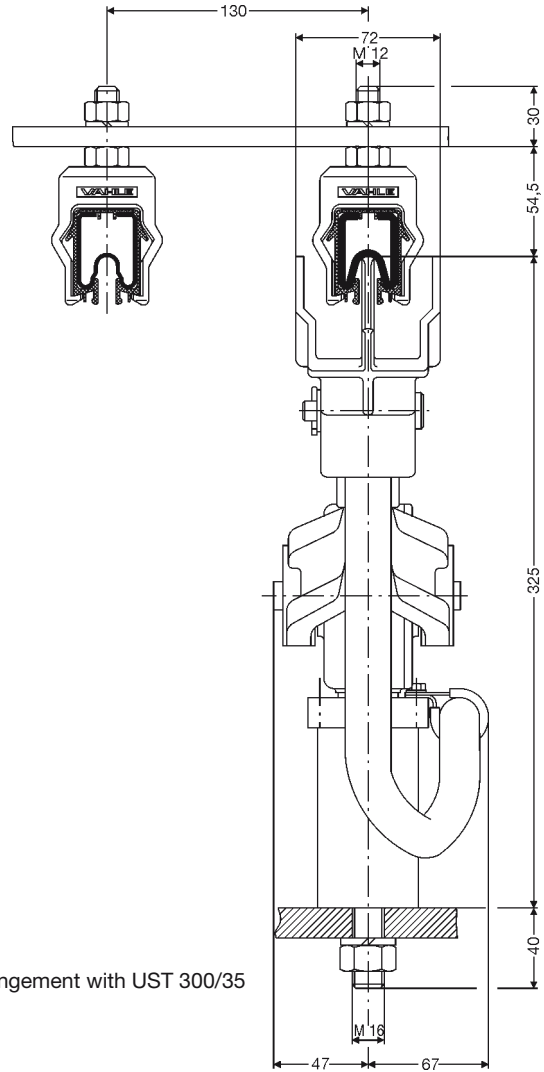




# ARRANGEMENT AND EXAMPLE FOR ORDERING U 35



Arrangement with UDST 400/35



Arrangement with UST 300/35

## 250 m power supply system 720 A, 3-pole + ground

| Qty | Description  | Type  | Order- No. |
|-----|--|---|------------|
| 117 | VAHLE unipole insulated conductors, 6.25 m long            | phase PH <b>U 35/300 C-6</b>                | 175 216    |
| 3   | VAHLE unipole insulated conductors, 4 m long cut to 3.75 m | phase PH <b>U 35/300 C-2</b>                | 175 214    |
| 39  | VAHLE unipole insulated conductors, 6.25 m long            | ground PE <b>U 35/200 C-6<sup>(1)</sup></b> | 175 266    |
| 1   | VAHLE unipole insulated conductor, 4 m long cut to 3.75 m  | ground PE <b>U 35/200 C-2<sup>(1)</sup></b> | 175 264    |
| 3   | Expansion sections, 2.5 m long                             | phase PH <b>UDV 35/200-400 C K4</b>         | 175 527    |
| 1   | Expansion sections, 2.5 m long                             | ground PE <b>UDV 35/200-400 C K4</b>        | 175 528    |
| 117 | Bolted joint splice  | <b>UV 35/300</b>                            | 175 012    |
| 39  | Bolted joint splice  | <b>UV 35/200</b>                            | 175 574    |
| 8   | Feed terminal  | <b>UE 35/200-400</b>                        | 175 040    |
| 16  | Locating clamps  | <b>USK 35 K 4</b>                           | 175 039    |
| 8   | End caps   | <b>UK 35-L</b>                              | 175 060    |
| 404 | Insulated hangers  | <b>UA 35</b>                                | 175 137    |
| 6   | Double collectors  | phase PH <b>UDST 400/35</b>                 | 175 072    |
| 1   | Double collector   | ground PE <b>UDST 400/35</b>                | 175 073    |
| 2   | Collector brackets   | <b>UM 24</b>                                | 175 076    |
| 1   | Contact grease   |   | 121 502    |

<sup>(1)</sup> Cross section reduction according to VDE 0100, part 540

<sup>(2)</sup> With a phase distance < 130 mm the feed terminals UEG have to be staggered arranged min. 400 mm from each other.



# EARTHING SPIDER SYSTEM

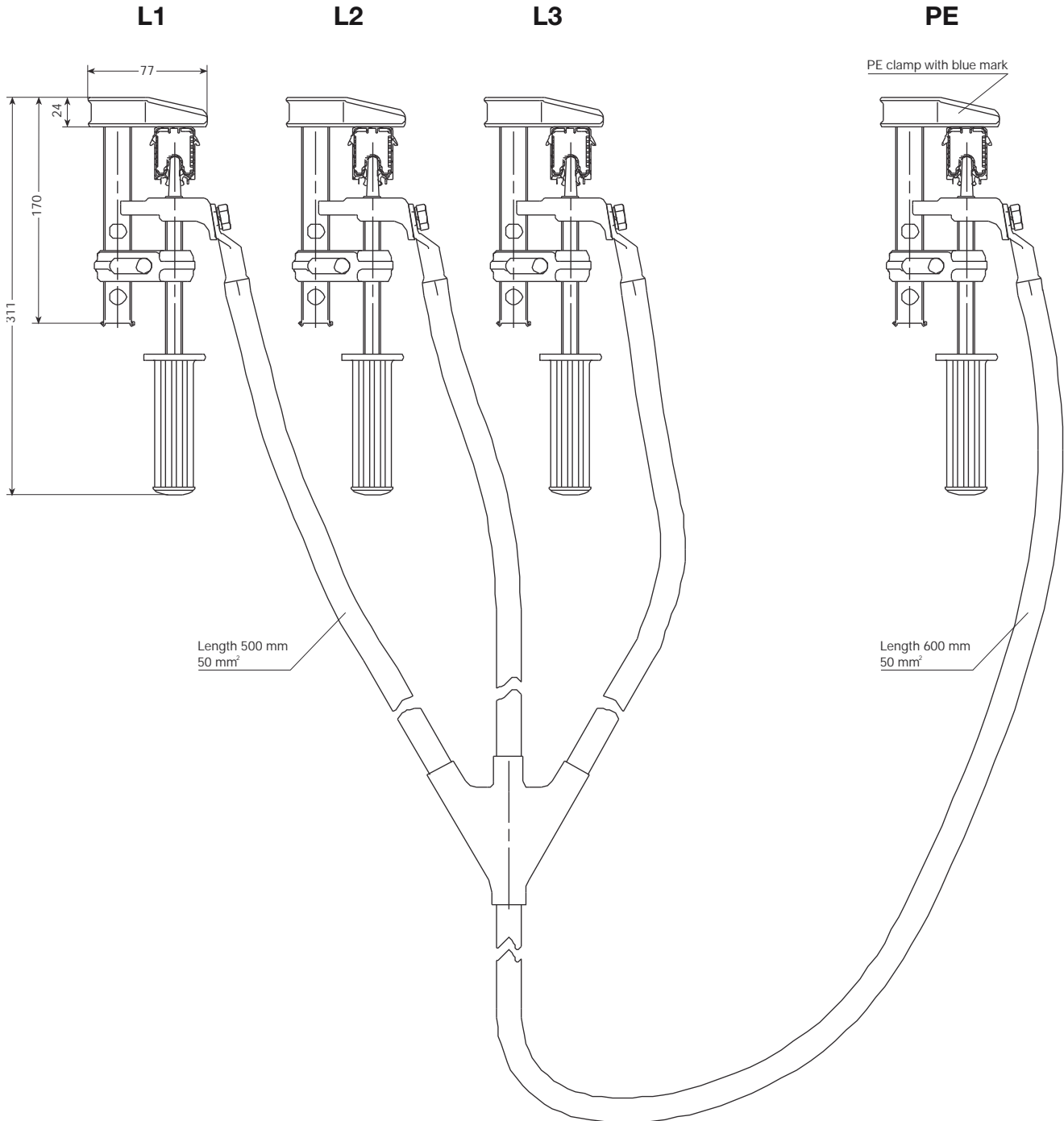


## Earthing spider system, 4-pole for insulated conductors – VDE 0105 Part 100 (EN 50110-1)

Serves for earthing and short-circuiting the phase conductors with the ground conductor in the case of maintenance work.

The system consists of terminal clamps for the conductors and copper wire ropes.

Earthing spider system cannot be used together with compact conductor arrangement.



| Type       | for conductor type | Copper section of wire rope | Order- No. |
|------------|--------------------|-----------------------------|------------|
| <b>EUK</b> | U 25 und U 35      | 50 mm <sup>2</sup>          | 130 035    |



# QUESTIONNAIRE FOR INSULATED CONDUCTOR SYSTEMS

Company: \_\_\_\_\_ Date: \_\_\_\_\_  
 Tel: \_\_\_\_\_ Fax: \_\_\_\_\_  
 E-Mail: \_\_\_\_\_ Internet: \_\_\_\_\_

1. Number of powerail systems: \_\_\_\_\_
2. Type of equipment to be powered: \_\_\_\_\_
3. Operating voltage: \_\_\_\_\_ Volts, Frequency: \_\_\_\_\_ Hz  
 Three phase voltage:  AC voltage:  DC voltage:
4. Track length: \_\_\_\_\_
5. Number of conductors: \_\_\_\_\_ (Neutral: \_\_\_\_\_ control: \_\_\_\_\_ ground: \_\_\_\_\_)
6. Mounted position of powerail:
  - Powerail pendant, collector cable facing to the bottom
  - Powerail pendant, collector cable lateral payout <sup>(1)</sup>
  - Support distance m  Other: \_\_\_\_\_
7. Number of consumers per system: \_\_\_\_\_
8. Indoor:  Outdoor:
9. Other operating conditions (humidity, dust, chemical influence etc.) \_\_\_\_\_
10. Ambient temperature: \_\_\_\_\_ °C min. \_\_\_\_\_ °C max.
11. Hall expansion gaps: \_\_\_\_\_ pc. \_\_\_\_\_ max. expansion
12. Position and number of feed points<sup>(1)</sup>: \_\_\_\_\_
13. Position and number of dead sections (e.g. maintenance bays)<sup>(1)</sup> \_\_\_\_\_
14. How will the conductor system be arranged?<sup>(1)</sup>: \_\_\_\_\_
15. Brackets required: yes  no  c/c distance beam / powerail \_\_\_\_\_  
 Flange width of beam \_\_\_\_\_
16. Travel speed (long travel): \_\_\_\_\_ in curves: \_\_\_\_\_ at transfers: \_\_\_\_\_
17. Power consumption of the individual consumers: \_\_\_\_\_
18. Max. Voltage drop from the powerail feed point to the consumer considering starting current:  
 3%  or \_\_\_\_\_ %  referring to nominal voltage.

| Motor data      | Crane 1            |                 |   |                    |                  |                    |                               | Crane 2  |                 |                    |  |                  |  |                               |
|-----------------|--------------------|-----------------|---|--------------------|------------------|--------------------|-------------------------------|----------|-----------------|--------------------|--|------------------|--|-------------------------------|
|                 | Power kW           | Nominal current |   |                    | Starting current |                    | Type of Motors <sup>(2)</sup> | Power kW | Nominal current |                    |  | Starting current |  | Type of Motors <sup>(2)</sup> |
| A               | cos φ <sub>N</sub> | % ED            | A | cos φ <sub>A</sub> | A                | cos φ <sub>N</sub> |                               | % ED     | A               | cos φ <sub>A</sub> |  |                  |  |                               |
| Hoist motors    |                    |                 |   |                    |                  |                    |                               |          |                 |                    |  |                  |  |                               |
| Auxiliary hoist |                    |                 |   |                    |                  |                    |                               |          |                 |                    |  |                  |  |                               |
| Long travel     |                    |                 |   |                    |                  |                    |                               |          |                 |                    |  |                  |  |                               |
| Cross travel    |                    |                 |   |                    |                  |                    |                               |          |                 |                    |  |                  |  |                               |
|                 |                    |                 |   |                    |                  |                    |                               |          |                 |                    |  |                  |  |                               |

Mark with \* those motors which can run simultaneously.  
 Mark with Δ those motors which can start up simultaneously.

Further remarks: \_\_\_\_\_  
 \_\_\_\_\_

Signature: \_\_\_\_\_





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