Akapp-Stemmann
A Wabtec Activity

*Flexible with energy!*

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# Conductor system Multiconductor®

## Insulated conductor system for 2 up to 7 conductors

*Technical information*









# Akapp-Stemmann Multiconductor®

- **The ideal conductor system for cranes, conveyors, automated warehouses and many other applications**
- **Current capacity of conductors: 35A, 50A, 80A, 125A, 160A, 250A and 320A**
- **Conductor housing for 7 uninterrupted conductors**
- **Adjustable to almost all heights**
- **Flexible sealing against dust, moisture and corrosion**
- **Superb high travel speeds possible**
- **Particularly suitable for transmission of control and signals**
- **Virtually maintenance free**



*Akapp-Stemmann Multiconductor system has a unique concept, based on free expansion of housing and conductors. Due to the absence of plug connectors, the conductors offer the most reliable transmission of energy and signals.*

*However, Multiconductor offers more! The illustration below shows the automatic concrete skipper installation whereby the positioning system is integrated in the conductor housing.*



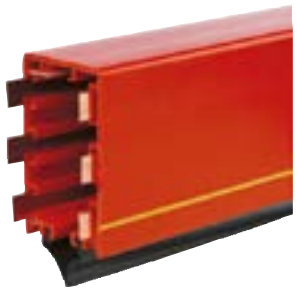
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# Multiconductor® housing RN7

## innumerable possibilities and variations!

The conductor housing RN7 is available in various models, indicated in the summary as listed below. As such you are able to optimally gear your installation to the industrial circumstances. It provides you with the opportunity to easily adjust variations in the occupancy of the (copper) conductors, to tune your installation to your changing industrial circumstances.

All conductor models can be provided with flexible, rubber sealings, model AS7 (refer to photograph).
Protection class of all conductor models is IP23. Including **rubber sealing** AS7 the protection class is **IP44**.



*RN7+AS7*

### Standard performances:

**Type RN7**
Colour: signal red.
With 7 channels for a choice of 2, 3, 4, 5, 6 or 7 conductors.
Temperature range as of -30 °C up to +60 °C.

The anti-reverse rib (A) in the housing ensures that the collector trolley can only be installed in one way and prevents cross phasing. A continous yellow stripe (B) on one side of the housing ensures correct fitting of het system. The PVC with a high impact strength is self extinguishing.

**Type RN7W**
Colour: white. Dimensions similar to type RN7.
Temperature range as of -30 °C up to +60 °C.

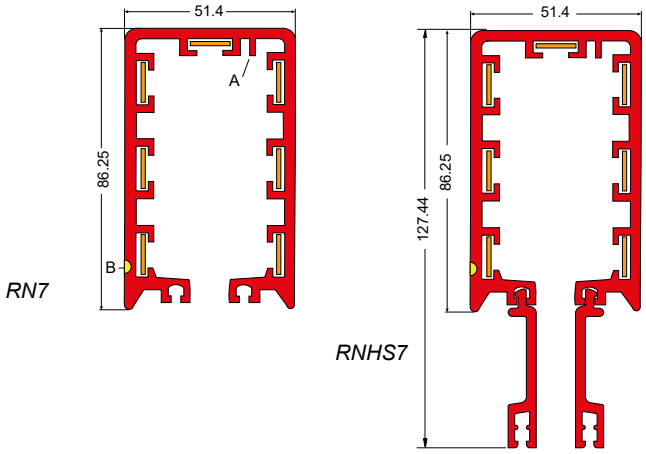
When radiant heat is applicable, such as in green houses, a white conductor housing is advised.

**Type RNV7**
Colour: grey white. Dimensions similar to type RN7.
Temperature range as of -20 °C up to +80 °C.

For applications with higher environmental temperatures.

**Type RNHS7**
Colour: signal red.
Temperature range as of -30 °C up to +60 °C.

Due to the spacer strips at the bottom side this conductor housing model is well suited for installations positioned at a low level. The strips provide additional protection against splashing water. Max. travel speed **100 m/min**.




### Technical data of housings

**Material**
Unplasticized Hard-PVC with approximate values:

| | |
|---|---|
| Notch shock strength | 5-10 kJ/m² |
| E-modulus | 2500-3000 N/mm² |
| Softening point (Vicat) | 81-83°C |
| Lineair expansion | 70.10⁻⁶ m/m/°C |

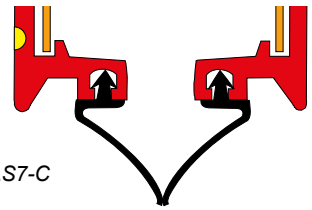
**Elektrical data**

| | |
|---|---|
| Max. voltage | 690V (CE/CCC)<br>600V (UL) |
| Volume resistivity with 100 V | >4.10¹⁵ Ω/cm |
| Dielectric strength with 50 Hz | >30 kV/mm |
| Flame class UL94 | V0 |

Length of housing 4 m standard

### Flexible sealing strips AS7-C

**Type AS7-C chloroprene, colour black**
This is used to ensure the suitability of a Multiconductor installation for application in a **dusty**, **humid** or even **corrosive** atmosphere. Corrosion of copper conductors is nearly always prevented! This sealing is recommended for all outdoor installations and specific industries e.g. **concrete brick-works**, **coal storage and transhipment**, **dairies**, **galvanising plants**, **textile production** etc.
Multiconductor RN(HS)7 **with AS7-C** meets protection degree **IP44** and is permitted to be mounted on every desired height. Travel speed max. **500 m/min** (RNHS7 **100 m/min.**).



*AS7-C*

There are tools available for easily mounting of the sealing strips. See page 21.

| AKAPP NO. | DESCRIPTION | | red | white | linear exp. coeff. $10^{-6}$ m/m/°C | min. temp. °C | max. temp. °C | max. travel speed (m/min.) *) | HS, extra protection | combined with transfer guides | combined with curves |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1001050 | PVC housing, red | RN7 | x | | 70 | -30 | 60 | 500 | | x | x |
| 1000940 | PVC housing, white | RN7W | | x | 70 | -30 | 60 | 500 | | x | x |
| 1001360 | PVC housing,extra protection | RNHS7 | x | | 70 | -30 | 60 | 100 | x | | x |
| 1001960 | PVC housing VICAT 93 | RNV7 | | x | 70 | -20 | 80 | 500 | | x | x |
| 1004000 | Sealing strip, chloroprene | AS7-C | | | | -20 | 80 | 100 | | x | x |

**) Depending on the configuration of the installation and the collector trolley(s)*

# Ultimate logistical control

## uninterrupted feed at all times

Each Multiconductor installation is supplied with the joint-free flat copper conductors, rolled on and based on track length. Copper strips are available for current intensities of **35**, **50**, **80**, **125** and **160A** (D.C. 80%). Material: electrolytic copper.

When 2 strips are parallel connected for each of the 3 phases of a three-phase system, current intensities of **250A** (2x125) and **320A** (2x160) are possible. The 7th conductor being utilised as earth supply.

Upon parallel installation of various Multiconductor installations a significant higher current capacities can be attained. By means of parallel installation the **multipole** installations can be assembled; **of importance with regard to control purposes**.

Partially due to the joint-free conductors the Multiconductor **is well suited** for **control current and signal transfer**; eventually whilst using silver-plated conductors.
Contact your Akapp-Stemmann supplier on this subject.

### Silver-plated copper conductors

The use of silver-plated copper (CU50 only) may be considered for low current transfers (>40mA; <1A at min. 24V) and/or under corrosive conditions. At high concentrations (>20%) of e.g. hydrochloric acid or ammonia fumes, silver-plated copper is recommended. This can also result in a (more) reliable signal transfer in extremely hot with humid conditions (e.g. beer breweries). Always use **silver graphite brushes** when using silver-plated copper. We are happy to advise you further.

### Installation of the copper conductors

Following the installation of the conductor housings the flat copper conductors can easily be drawn into the copper channels directly from the cable drum. This can be easily and quickly effected by means of the copper pulling cassette, pulling block and pulling attachment, available as an option.

A simple stretchblock is supplied for conductors CU125 and CU160. This is designed to make installation easier and also to reduce any resistance on very long installations.

**Volt drop in copper conductors.** By virtue of the continuous conductor concept, Volt drop in the Multiconductor system is kept to an absolute and constant minimum.
With a power factor (cos. $\phi$) of < 1 the figures mentioned in the adjacent table have to be changed accordingly, e.g. with cos $\phi$ = 0.85 the Volt drop figures have to be multiplied by 0.85.

### Arrangement of the copper conductors

Whilst using the standard conductor housings and the 5 different copper conductors, a vast array of combinations is possible. Please find some examples below.



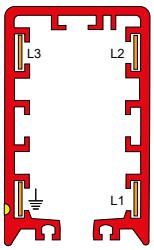



For applications where higher temperatures exist, the resistance, and therefore the Volt drop, increases.
**Solution:** using next size copper conductors.

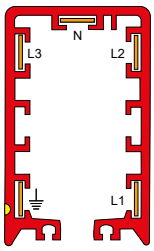
| **Volt drop** in V /meter Multiconductor/ A nominal current, cos $\varphi$ = 1, +20 °C ambient | | | |
|---|---|---|---|
| **copper conductor** | **3 phase ~** | **1 phase ~ en =** | When utilizing 2 copper conductors in parallel the volt drop values in the table will be halved. On request, impedance data can be supplied |
| CU35 * | 0.00588 | 0.00679 | |
| CU50 | 0.00339 | 0.00391 | |
| CU80 | 0.00217 | 0.00251 | |
| CU 125 | 0.00119 | 0.00138 | |
| CU 160 | 0.00092 | 0.00106 | |
| with + 35 °C multiply by 1.079; | | | |
| with + 45 °C multiply by 1.118; | | | |
| with + 55 °C multiply by 1.157. | | | |

* Copper conductors 35A can not be combined with expansion joints

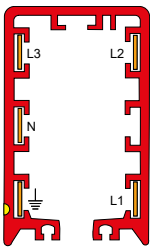
**Attention**: the earth conductor is always located at the yellow marker line!



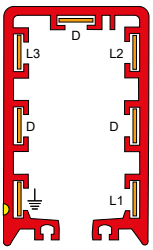
standard
4-pole



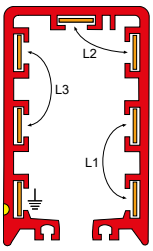
standard
5-pole



5-pole, for
installations with
curves



3 phase+earth and
3 conductors D for
control and signals



per phase 2
conductors in
parallel+earth

| AKAPP NO. | DESCRIPTION | | max. $I_n$ (DC=80%) (A) | dimension mm (b x d) | Cross section ($mm^2$) | linear exp. K-6 $10^{-6}$ m/m/°C | DC resistance Ω/m | specific conductance (ρ) Sm/mm2 | max. length track part (m) | max. speed (m/min.) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1002170 | Copper conductor 35A | CU35 | 35 | 12.7 x 0.4 | 5.08 | 17.00 | 0.003444882 | 58 | 60 | 80 |
| 1002560 | Copper conductor 50A | CU50 | 50 | 12.6 x 0.7 | 8.82 | 17.00 | 0.001984127 | 58 | 525 | 500 |
| 1002640 | Copper conductor 80A | CU80 | 80 | 12.5 x 1.1 | 13.75 | 17.00 | 0.001272727 | 58 | 325 | 500 |
| 1002720 | Copper conductor 125A | CU125 | 125 | 12.5 x 2.0 | 25.00 | 17.00 | 0.0007 | 58 | 200 | 500 |
| 1002870 | Copper conductor 160A RN7 | CU160/7 | 160 | 12.5 x 2.6 | 32.50 | 17.00 | 0.000538462 | 58 | 150 | 500 |
| 1003370 | Copper conductor silv. 50A | CU50/AG | 50 | 12.6 x 0.7 | 8.82 | 17.00 | 0.001984127 | 58 | 525 | 500 |

# Hanging and fixing of the housing

## free expansion at all times!

The principle of the Akapp-Stemmann conductor bar systems with uninterrupted conductors is based on the free expansion of the pvc housing and the internal conductors. The conductor housing is therefore suspended in sliding hangers in which these conductors - upon the occurrence of differences of expansion - can slide continuously and who are fixed at the feed point only by means of a **fixed point clamp** at the construction.

Sliding hangers and fixed point clamps are available in 4 types, for maximal adaption to the environmental conditions. See adjecent frame.

**Finishing of metal sliding hangers and joints**

**Type Z** - Galvanised, for **normal indoor installations**.

**Type L** - Galvanised + epoxy coated, for **outdoors and corrosive environments**.

**Type LR** - As Type L, with stainless steel bolts and nuts AISI304

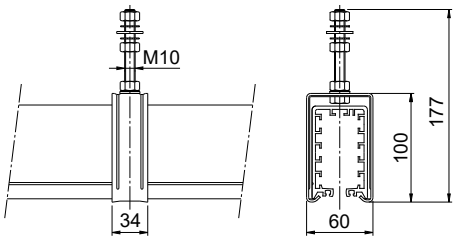
**Type R** - Stainless steel AISI304, for **corrosive environments**.

### Sliding hanger

**Types BN7-Z, BN7-L, BN7-R** and **BN7-LR**
The sliding hangers are fastened to the suspension frame by means of a bolt. As such the installation can be **aligned vertically**.
Centre distance of hanger supports:

| Type copper conductor *) | No. conduct. | Speed <250 m/min. ΔT <40 °C | Speed <250 m/min. ΔT >40 °C | Speed >250 m/min. |
|---|---|---|---|---|
| CU35 - CU50 - CU80 | 4 - 5 | 2000mm | 2000mm | 1000mm |
| | 6 - 7 | 2000mm | 1333mm | 1000mm |
| Cu125 - Cu160 | 4 - 7 | 1333mm | 1333mm | 1000mm |

**) When using different copper strips in one housing, the heaviest copper strip determines the suspension distance*

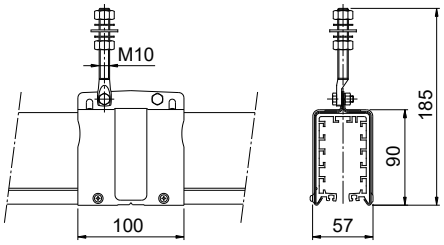





*BN7-L*

### Fixed point clamp

**Types VMN7-Z, VMN7-L, VMN7-R** and **VMN7-LR**
The complete conductor system is to be fastened to the suspension frame by means of a self-gripping fixed point clamp. As of this location, the conductor housing can slide freely in the sliding hangers when expansion differences, due to temperature variation, occurs.





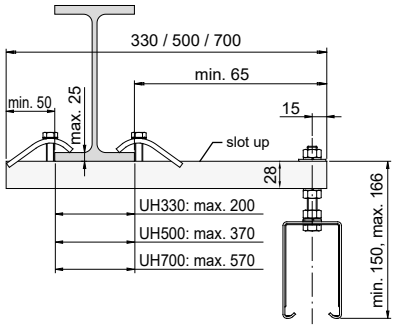

*VMN7-L*

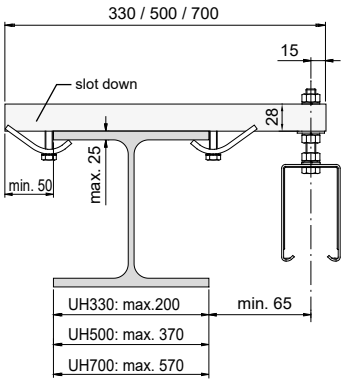
### Support bracket

**Type UH330/(R): l=330 mm, galvanised/(SS)**
**Type UH500/(R): l=500 mm, galvanised/(SS)**
**Type UH700/(R): l=700 mm, galvanised/(SS)**

Special length on request. These brackets have clamps attached to sliding nut assemblies thus facilitating a flexible mounting arrangement, capable of accomodating various sizes of RSJ (INP) beams and allowing simple **horizontal alignment**.

**Note**: For fast mounting on site, **pre-mounted** support brackets with sliding hanger are available on request. Please ask our sales department.




| AKAPP NO. | DESCRIPTION | | ambient is dry | humid | chem. agr. |
|---|---|---|---|---|---|
| 1004570 | Sliding hanger galvanised | BN7-Z | x | | |
| 1004650 | Sliding hanger expoxy coated | BN7-L | | x | |
| 1004420.B0000 | Sliding hanger galv.+epox.+SS-A2 | BN7-LR | | | x |
| 1005540 | Sliding hanger SS-A2/304 | BN7-R | | | x |
| 1005200 | Rolling hanger galvanised | RB7 | x | x | |
| 1004960 | Fixed point clamp galvanised | VMN7-Z | x | | |
| 1005070 | Fixed point clamp galv.+epoxy coat. | VMN7-L | | x | |
| 1005320 | Fixed point clamp galv.+epox.+A2 | VMN7-LR | | | x |
| 1005780 | Fixed point clamp A2/304 | VMN7-R | | | x |

| AKAPP NO. | DESCRIPTION | | length (mm) |
|---|---|---|---|
| 1018010 | Support bracket galvanised 330mm | UH330 | 330 |
| 1018160 | Support bracket galvanised 500mm | UH500 | 500 |
| 1018320 | Support bracket galvanised 700mm | UH700 | 700 |
| 1018370.B0000 | Support bracket stainl. steel 330mm | UH330-R | 330 |
| 1018380 | Support bracket stainl. steel 500mm | UH500-R | 500 |
| 1018390 | Support bracket stainl. steel 700mm | UH700-R | 700 |

# Joint clamps

## for the easy connection of conductor housings

The lengths of the housing are connected by means of standard joint clamps. There are 2 variations:

- standard metal joint clamp
- ABS expansion joint clamp

Metal joint clamps are available in 4 types, to ensure a maximum tuning to the operating conditions. Also refer to the upper right frame on page 5.

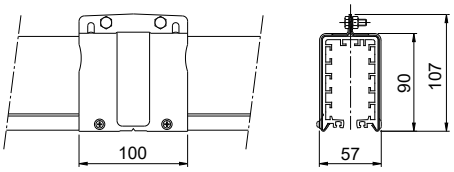


*VN7-Z*

### Joint clamp

**Types VN7-Z, VN7-L, VN7-R and VN7-LR**
The conductor housings are connected by means of a self-gripping joint clamp.

The self-drilling screws, as supplied, ensure an extra firm connection with longer system lenghs (from 80 m length 2 pc. per joint; from 200 m length 4 pc. per joint).

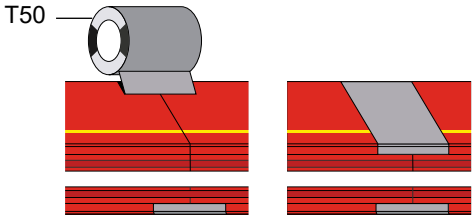





*VN7-L*

### Insulating tape

**Type T50** (50 mm width, roll of 10 m)
This adhesive tape is used to ensure a permanent shroud around the housing joints, prior to fitting the joint clamps, for both indoor and outdoor installations.
1 roll is sufficient for 35 joints.

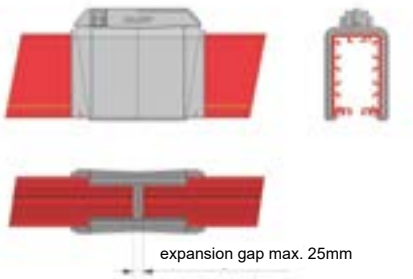


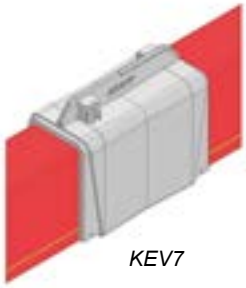

### Expansion joint

**Type KEV7**
Must be used in situations where the rail system cannot expand freely. Such as with multiple feed points, curves, funnels, isolation sections or a combination of these. This creates more than one “fixed point” in the system. This is also necessary with extremely long tracks, where the contraction/expansion can no longer be fully accommodated in the end cap.

The additional expansion space in the rail is realized by setting a gap between the rail segments in the KEV7. The size of the required gap depends on the mounting temperature and the maximum operating temperature ($\Delta T$). Each rail segment between 2 or more “fixed points” must be provided with its own fixed point clamp in addition to the KEV7.

**Important:** Before assembly, always consult the instructions and layout drawing provided! Please contact us for further advice if you have any questions.



*KEV7*

| AKAPP NO. | DESCRIPTION | | ambient is | | | with VN7-. | with VN7-. and humidity | max. free expansion in joint (mm) | Use T50 |
|---|---|---|---|---|---|---|---|---|---|
| | | | dry | humid | chemical agressive | | | | |
| 1004730 | Joint clamp galvanised | VN7-Z | x | | | | | 0 | x |
| 1004810 | Joint clamp galv+epox. | VN7-L | | x | | | | 0 | x |
| 1004340 | Joint clamp galv.+epox.+SS-A2 | VN7-LR | | | x | | | 0 | x |
| 1005620 | Joint clamp SS-A2/304 | VN7-R | | | x | | | 0 | x |
| 1006040 | Insulating tape 10m x 50mm | T50 | | | | x | x | 0 | |
| 1005465 | Expansion joint | KEV7 | x | x | x | | | 25 | |
| 1005466 | Joint clamp for galv. plant | KV7 | x | x | x | | x | 0 | x |

# End feed boxes

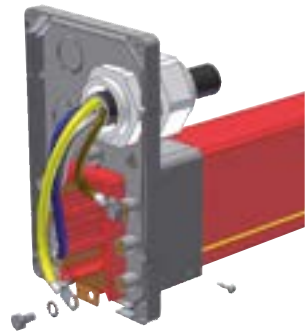
## efficient and reliable solutions

You can connect the fixed power supply to the Multiconductor system from almost anywhere (see also page 8).

End feed boxes are used for the connection of the feeding cable to the outer end of the Multiconductor system.

All feed boxes are fitted with metric glands. It is possible to use extra glands and/or several diameter ranges from type EB40.

End feed clamps are required for connection of copper conductors 125A or 160A (see details below).

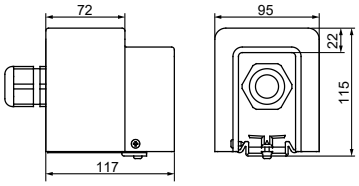


*EB40 (open)*

### End feed boxes

**Type EBS32**

Compact end feed box with cable gland M32, suitable for cables Ø18-Ø21 mm. Connecting screws M6 included.





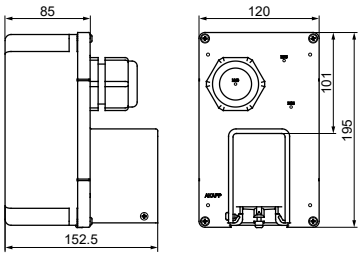

*EBS32*

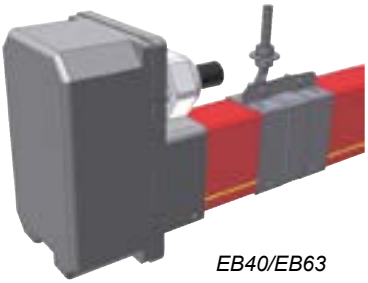
**Type EB40**

End feed box for with cable gland M40, suitable for cables Ø22-Ø27 mm. The push-through holes offer easy mounting of various cable glands. Connecting screws M6 included.

**Type EB63**

As end feed box EB40, but with cable gland M63, suitable for cables Ø37-Ø44 mm.
Connecting screws M6 included.



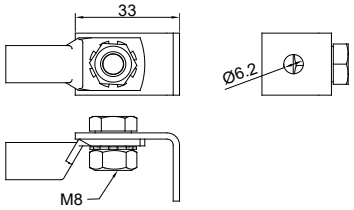



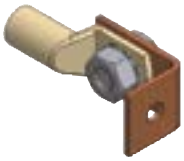
*EB40/EB63*

### End feed clamps

**Type EC160**

Required for connecting copper conductors 125A or 160A to the cable lug of the connection cable. To be ordered seperately.



*EC160*

Special arrangements and gland sizes on request.

| AKAPP NO. | DESCRIPTION | | max. temp. (°C) | diameter range feeding cable (mm) | max. copper conductors mounted | $I_{max}$ (80% DC) non-parallel (A) | $I_{max}$ (80% DC) parallel (A) | protection degree without AS7 | protection degree with AS7 |
|---|---|---|---|---|---|---|---|---|---|
| 1006830 | End feed box with 1xM32 | EBS32 | 80 | 18-21 | 4xCU80 / 7xCU50 | 80 | - | IP23 | IP44 |
| 1006800 | End feed box with 1xM40 | EB40 | 80 | 22-27 | 4xCU125 / 7xCU80 | 125 | - | IP23 | IP44 |
| 1006810 | End feed box with 1xM63 | EB63 | 80 | 37-44 | 4xCU160 / 7xCU80 | 160 | - | IP23 | IP44 |
| 1006820 | End feed box | EB | 80 | no glands | | | | IP23 | IP44 |
| 1013010 | End feed clamp | EC160 | 80 | | | 160 | | | |
| 1011890 | Line feed box 1xM20/1xM16 | LBS | 80 | 1x 7-12 - 1x 5-8 | 4xCU50 / 6xCU80 *) | 80 | - | IP23 | IP44 |
| 1006900 | Line feed box 1xM40 | LB40 | 80 | 22-27 | 4xCU125 / 7xCU80 | 125 | - | IP23 | IP44 |
| 1006910 | Line feed box 1xM63 | LB63 | 80 | 37-44 | 4xCU160 / 7xCU125 | 160 | 250 | IP23 | IP44 |
| 1006920 | Line feed box 4xM32 | LB32-4 | 80 | 4x 18-21 | 4xCU160 | 160 | - | IP23 | IP44 |
| 1006930 | Line feed box 7xM32 | LB32-7 | 80 | 7x 18-21 | 7xCU160 | 160 | 320 | IP23 | IP44 |
| 1006940 | Line feed box | LB | 80 | no glands | | | | IP23 | IP44 |
| 1006035 | Line feed clamp holder | RN7-LCH | 80 | | | | | | |
| 1006035.B0001 | Line feed clamp holder | RNHS-LCH | 80 | | | | | | |
| 1006950 | Set line feed | RN-LH | 80 | | | | | | |

**) When using additional glands M20*

# Line feed boxes

## designed for more flexibility

Lines feed boxes are used for the connection of the feeder cable on any random point of the system. The feeder cable is connected to line feed clamps, kept in place by the line clamp holder that is partly slided over the 2 housing parts in which up to 7 line feed clamps (see page 9) can be fitted. The copper conductors will not be interrupted!

Basis of the line feed boxes is the modular collar that is fitted with push through holes to fit various glands M32 to M63 in size (type LBS for glands M16 and M20).

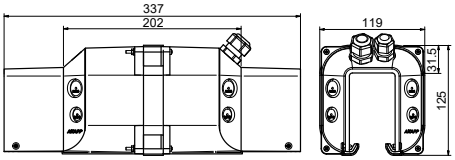
The line feed clamp holder (LCH or LH) connects 2 adjacent rail housings and holds the line feed clamps at the same time.

The principle is a 90–120 mm Line feed clamp holder that slides over 2 housing parts. Then it is screwed on the sides.

Line feed clamps are fitted, copper goes through the line feed clamps and is connected to a power cable. Cover comes over the collars and clicks into position.

### Line feed boxes types LB

**Type LBS**
Line feed box for connection of copper conductors up to 80A. With 1 gland M20 for cables Ø7-Ø12 mm and 1 gland M16 for cables Ø5-Ø8 mm.

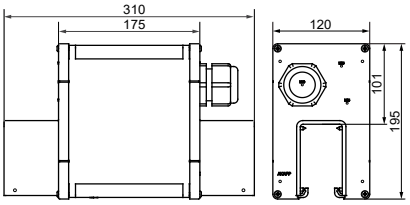





*LBS*

**Type LB40**
Line feed box for connection of copper conductors up to 125A. With 1 gland M40 for cables Ø22-Ø27 mm.

**Type LB63**
Line feed box for connection of copper conductors up to 160A. With 1 gland M63 for cables Ø37-Ø44 mm.

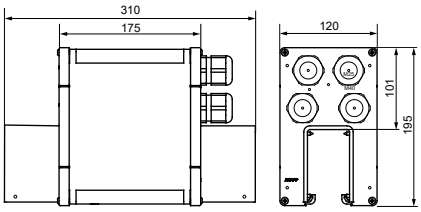


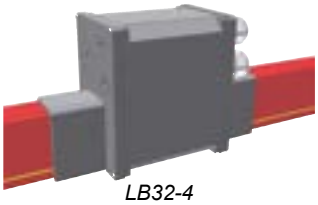



*LB40/LB63*

**Type LB32-4**
Similar to LB63, but with 4 glands M32 for cables Ø18-Ø21 mm.

**Type LB32-7**
Similar to LB32-4, but with 7 glands M32 for cables Ø18-Ø21 mm.



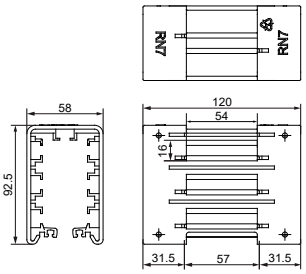



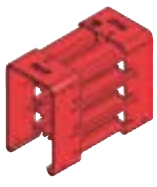
*LB32-4*

### Line feed clamp holders

**Type RN7-LCH**
Applicable for line feed connections with continuous copper (all sizes), irrespective the number of poles. The required line feed clamps have to be ordered seperately.

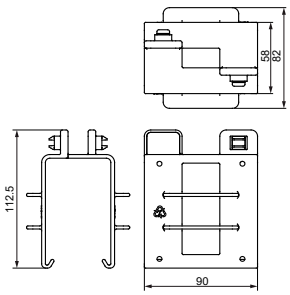
**Type RNHS7-LCH**
Similar to RN7-LCH, but with spacer strips for use with extra hand-safe housing RNHS7.



*RN7-LCH*

**Type RN-LH**
Applicable for line feed connections with continuous copper that require joints in the line feed (i.e. in multi curved systems, very long tracks etc.). The RN-LH is composed of 2 halves that "click" together around the rail housing leaving the copper joints free. Includes bolts/nuts M6 for connections of conductors.






*RN-LH*
*(mounted)*

*See table with part no's on page 7.*

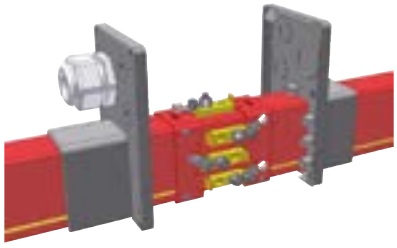
# Connecting the copper conductors

## skilful solutions with clamps and boxes

All line feed systems require clamp holders and feed clamps to connect the copper conductors within the rail housing to the cores of the supply cable (see also page 8).

There are 2 types of feed clamps: LC80 and LC200.

To connect the copper conductors to a cable terminal in a transition box, the transition cables OK25 or OK35 can be used. In some cases, it can replace a feeding cable with a too large outer diameter.

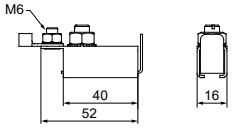


*LCH + LC80*

### Feed clamps

**Type LC80**

To be applied for mounting copper conductors Cu35 - Cu80.

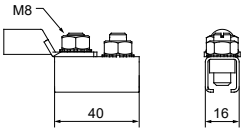



*LC80*



**Type LC200**

To be applied for mounting copper conductors Cu125 - Cu160.




*LC200*



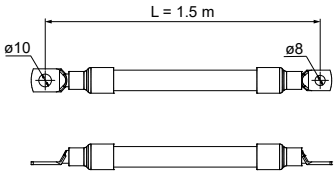
### Transition cables

**Type OK25**

Cable 1x 25 mm2, length 1.5 m, with 2 cable lugs (pre-assembled on one side). For max. current capacity 125A or 250A (with 2 cables in parallel con-nection) and Cu125 copper conductor. To be used with Transition box OGV320 (see below).

**Type OK35**

Cable 1x 35 mm2, length 1.5 m, with 2 cable lugs (pre-assembled on one side). For max. current capacity 320A (with 2 cables in parallel connection and Cu160 copper conductor). To be used with Transition box OGV320 (see below).



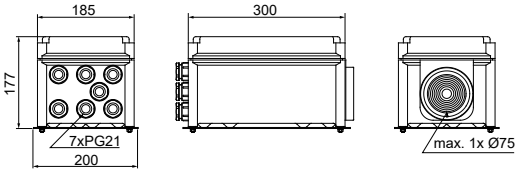



*Transition cable series OK*

### Transition box for for feed connection Multiconductor

**Type OGV320**

Complete with 2x5 bolts M10 for cable lug con-nections, 7 glands PG21 and a special grommet for cables of Ø20 - Ø75 mm.






*OGV320*

| LINE FEED CLAMPS<br>AKAPP NO | DESCRIPTION | NUMBER | max. current (A) (100% D.C.) | with type line feed holder |
|---|---|---|---|---|
| 1012750 | Feed clamp small LC80 | 1 per conductor | 72 | RN7-LCH |
| 1013000 | Feed clamp LC200 | 1 per conductor | 179 | RN7-LCH |

| TRANSITION CABLES<br>AKAPP NO | DESCRIPTION | NUMBER | max. current (A) (100% D.C.) | with type transition box |
|---|---|---|---|---|
| 1499560 | Cable, 1x25 mm², L=1.5m OK25 | 1 per conductor | 129 | OGV320 |
| 1499640 | Cable, 1x35 mm², L=1.5m OK35 | 1 per conductor | 158 | OGV320 |

| TRANSITION BOX<br>AKAPP NO | DESCRIPTION | NUMBER | max. current (A) (100% D.C.) | protection degree |
|---|---|---|---|---|
| 1010510 | Overgangskast OGV320 | 1 per system | 286.3 | IP44 |

# Other components

## end caps, inspection units

An end cap is to be mounted for sealing off the open ends of a Multiconductor system.

In order to eliminate length differences between copper conductors and pvc housing due to temperature variations, it is important that the conductors have sufficient length within the end cap. For installations with extreme length differences, extra long end caps can be applied. Your Akapp-Stemmann supplier can advise you further on this subject.

An inspection unit is fitted with 2 joint clamps VN7 in Multiconductor installations where inspection of the trolley is not possible by removing an end cap or end feed. E.g. on endless curved tracks or on applications where several collector trolleys are fitted, or where a special location area for the inspection is available.

Alternatively, a special wooden wedge set can be used for taking out and inserting a trolley. Both possibilities are described on this page.

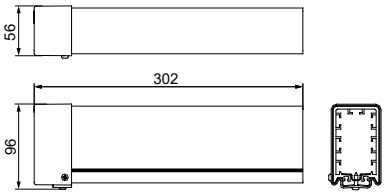
### End caps

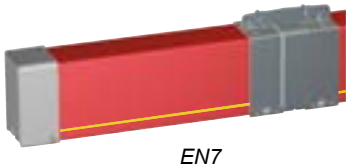
**Type EN7**
Length 300 mm. Attached to the housing by means of a joint clamp (to be ordered seperately). See photo.

**Type EN7W**
Similar to EN7, but colour white.

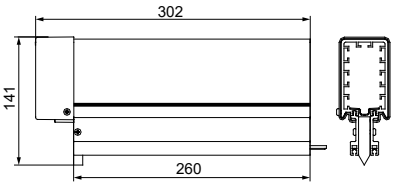
**Type ENHS7**
For Multiconductor RNHS7, similar to EN7, however with distance strips. Please confirm left or right variant when ordering (see picture next and table below).

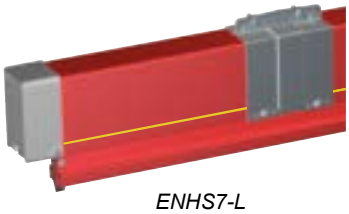
**Type ENV7**
For Multiconductor RNV7. Similar to EN7, but for temperature range -20 °C to +80 °C. Colour grey white.



*EN7*



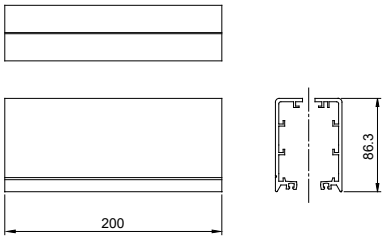



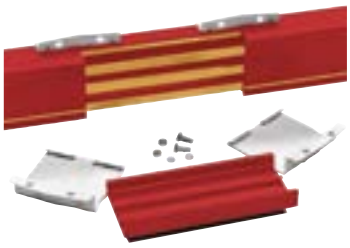
*ENHS7-L*

### Inspection unit

**Type UN7**
Length 200 mm. The inspection unit is fitted with 2 joint clamps VN7 in Multiconductor systems. Inspection units for **curves** can be supplied on request.

**Type UNHS7**
For Multiconductor RNHS7.

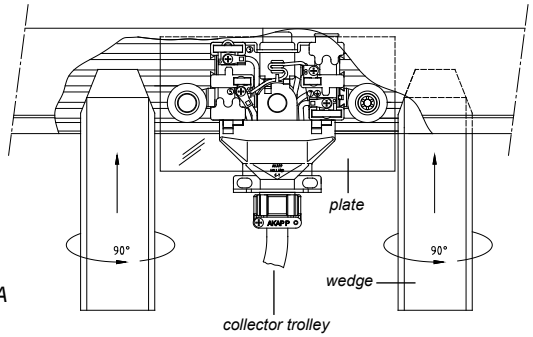


*UN7*

### Wooden wedge set

**Type OBA**
For fast taking out and inserting trolleys at almost any location of a Multiconductor system. The set consists of two wooden wedges with two pvc plates. By inserting the wedges into the housing and then turning it, the housing will widen and the trolley can be taken out easily. When inserting the trolley again, the two plates can be used to guide it into the housing.




*OBA*

| AKAPP NO. | DESCRIPTION | | length (m) | red | white | grey | max. poles | IP23 | sealing rubber AS7 optional | IP44 with AS7 | HS, extra protection |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1014140 | End cap red | EN7 | 0.30 | x | | | 7 | x | x | x | |
| 1014800 | End cap white | EN7W | 0.30 | | x | | 7 | x | x | x | |
| 1014370 | End cap red for RNHS7 | ENHS7-L | 0.30 | x | | | 7 | x | x | x | x |
| 1014420 | End cap red for RNHS7 | ENHS7-R | 0.30 | x | | | 7 | x | x | x | x |
| 1014690 | End cap for RNV7 | ENV7 | 0.30 | | | x | 7 | x | x | x | |
| 1015030 | Inspection unit red | UN7 | 0.30 | x | | | 7 | x | x | x | |
| 1015260.B0000 | Inspection unit red f. RNHS7 | UNHS7 | 0.30 | x | | | 7 | x | x | x | x |

# Collector trolleys

## overview of the standard series

The current conduction of the Multiconductor to the device to be fed is effected through the collector trolley. The contact with the flat copper conductors is maintained **uninterruptedly** by means of flexible, **extreme wear-resistant** carbon brushes manufactured from a specific copper-carbon alloy.

The collector trolley is pulled into the Multiconductor by the moving machine to be fed and by means of a trolley towing arm mounted onto this machine.

There are different **series of collector trolleys**, each specifically adapted to certain applications. There are often several types available within the series. This page contains a brief description of each series of trolleys. More detailed descriptions and application options can be found per series on the indicated pages.

On page 24 you'll find more information on all collector trolley series concerning maintenance and spare parts.

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### Collector trolleys series C(L)7 - see pages 12, 13

| | | |
|---|---|---|
| Application | : | systems with 2 - 7 conductors |
| Max. current | : | 35A, 70A and 100A |
| Duty cycle (D.C.) | : | 60% |
| Temperature range | : | -20 °C up to +80 °C<br>(types ../LT -30 °C up to +80 °C) |
| Travel speed | : | 100 m/min. |
| Connecting cable | : | standard length 1m, also<br>3m en 5m lengths possible |
| Special performances | : | for high travel speeds, curves,<br>transfer guides, dusty environments,<br>profile with extra protection |



*series C(L)7*

### Collector trolleys series C(L)4 - see page 14

| | | |
|---|---|---|
| Application | : | systems with 4 conductors |
| Max. current | : | 35A, 70A and 100A |
| Duty cycle (D.C.) | : | 60% |
| Temperature range | : | -20 °C up to +80 °C |
| Travel speed | : | 60 m/min. |
| Connecting cable | : | standard length 1m, also<br>3m en 5m lengths possible |
| Special performances | : | none |



*series C(L)4*

### Collector trolleys series C(L)4-40 - see page 15

| | | |
|---|---|---|
| Application | : | systems with 4 conductors and 2 carbon brushes per conductor required |
| Max. current | : | 40A |
| Duty cycle (D.C.) | : | 60% |
| Temperature range | : | -20 °C up to +50 °C |
| Travel speed | : | 100 m/min. |
| Connecting cable | : | standard length 1m, also<br>3m en 5m lengths possible |
| Special performances | : | for high travel speeds |



*series C(L)4-40*

### Collector trolleys series S(L)7 - see pages 13, 20

| | | |
|---|---|---|
| Application | : | systems with 2 - 7 conductors and applied with curves with radius <600 mm |
| Max. current | : | 35A |
| Duty cycle (D.C.) | : | 60% |
| Temperature range | : | -20 °C up to +60 °C |
| Travel speed | : | 60 m/min. |
| Connecting cable | : | standard length 1m, also<br>3m en 5m lengths possible |
| Special performances | : | no |



*series S(L)7*

# Collector trolleys series C(L)7

## standard series for high performance

Collector trolleys series C(L)7 can be used in almost all common operating situations. By using high-quality components, maintenance and wear are kept to a minimum.

The trolleys are supplied as standard with a connection cable with a length of approx. 1 m (../1M). Connection cables of 3 and 5 meters in length are also possible (../3M, resp. ../5M).

Connection cables with silicone sheath (../LT) are used at ambient temperatures down to -30 °C.

Collector trolleys type C7.. do not have a connection cable.

Standard collector trolleys, supplied with low wear Nylon wheels, are suitable for **traverse speeds** up to **100 m/min**. For **higher traverse speeds**, for **heavy duty** and/or for **dusty environments** the collector trolleys are fitted with **dust proof**, **ball beared wheels** (type “S”). See also special current collectors, page 13. **Traverse speeds >250 m/min.** require special adaptions to the Multiconductor installation. Please contact us for further advice.

On page 24 you’ll find more information on all collector trolley series concerning maintenance and spare parts.

### Standard collector trolleys

Multiconductor collector trolleys are available for range 2 to 7 conductors with current carrying capacities of **35A**, **70A** and **100A** (D.C. 60%). The 70A and 100A types are made up of 2, respectively 3 separate collector trolleys, connected to each other. Applicable from -20 °C (types ../LT from -30 °C) up to +80 °C.

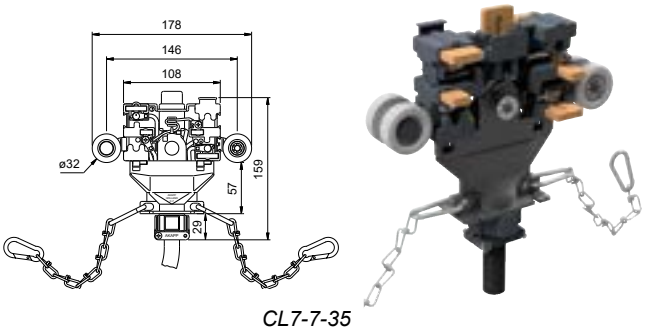
The connection of the trolley and the apparatus/machine to be fed is via a transition box (ordered separately) which can be located adjacent to the collector trolley towing arm position (see page 15).

**Selection chart of standard collector trolleys + transition boxes**

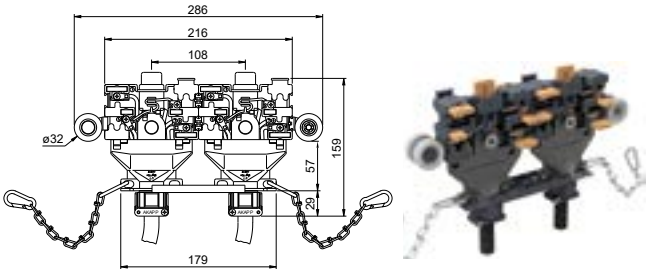
| A max. | 35 | | 70 | | 100 | |
|---|---|---|---|---|---|---|
| number of poles | type trolley | type trans. box | type trolley | type trans. box | type trolley | type trans. box |
| 2 | CL7-2-35 | TTB35-4 | CL7-2-70 | TTB70-4 | CL7-2-100 | TTB100-4 |
| 3 | CL7-3-35 | | CL7-3-70 | | CL7-3-100 | |
| 4 | CL7-4-35 | | CL7-4-70 | | CL7-4-100 | |
| 5 | CL7-5-35 | TTB35-7 | CL7-5-70 | TTB70-7 | CL7-5-100 | TTB100-7 |
| 6 | CL7-6-35 | | CL7-6-70 | | CL7-6-100 | |
| 7 | CL7-7-35 | | CL7-7-70 | | CL7-7-100 | |

When application of **2 or 3 separate collector trolleys per apparatus to be fed** (e.g. for transfer installations), the following transition boxes are used:

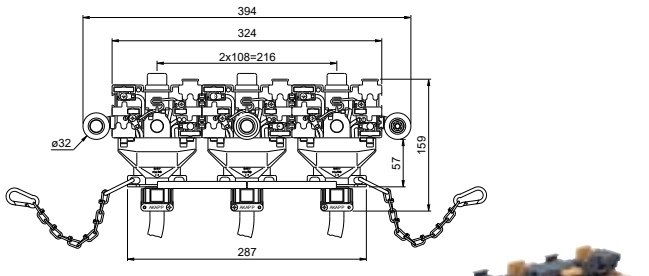
| number of trolleys | type trolleys | type transition box |
|---|---|---|
| 2 collector trolleys | CL7-2 t/m 4-35 | TTB70-4 |
| 2 collector trolleys | CL7-5 t/m 7-35 | TTB70-7 |
| 2 collector trolleys | CL7-2 t/m 5-70 | OG300-7 |
| 2 collector trolleys | CL7-6 t/m 7-70 | OG300-7 |
| 2 collector trolleys | CL7-2 t/m 4-100 | OG300-7 |
| 2 collector trolleys | CL7-5 t/m 7-100 | OG300-7 |
| 3 collector trolleys | CL7-2 t/m 4-35 | TTB100-4 |
| 3 collector trolleys | CL7-5 t/m 7-35 | TTB100-7 |
| 3 collector trolleys | CL7-2 t/m 4-70 | OG300-7 |
| 3 collector trolleys | CL7-5 t/m 7-70 | OG300-7 |




*CL7-7-35*




*CL7-7-70*




*CL7-7-100*

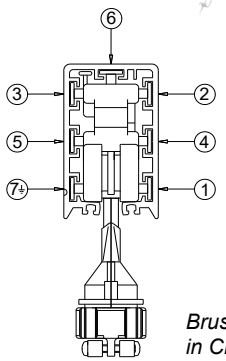
### Carbon brushes

The collector trolleys are supplied as standard with carbon brushes for 35A, positioned according to the table below.

The brushes in positions 4 and 5 are both fitted as double brushes (“twin brushes”). Twin brushes are smaller than the others and their capacity is 35A per set. Advantages of this construction are a **perfect balanced** collector trolley and an **improved transmission of control signals**.

| CARBON BRUSH TYPES | | Standard carbon brushes | | Silver graphite brushes* | |
|---|---|---|---|---|---|
| Application | Brush position in collector trolley | Art.no. | for normal conductors | Art.no. | for silvered conductors |
| Phase brush** norm. | 1,2,3 en 6 | 1411021 | K91P | 1412221 | KZ91P |
| Phase brush** twin | 4 en 5 | 1410601 | C91D | 1410621 | CZ91D |
| Ground brush | 7 | 1410521 | C91A | 1410531 | CZ91A |

* Silvergraphite brushes are softer than the conductors
** Also suitable for DC




*Brush positions in CL7*

# Collector trolleys series C(L)7 and S7

## adaptions for special applications

By connecting copper strips **in parallel**, the maximum current of both the copper strips and the current collector is doubled. Below you will find more information about the options.

Apart from the numerous models of the standard collector trolleys, a vast array of special models are possible and available. Collector trolleys of the CL7 series can easily be adapted to **exceptional** circumstances such as installations with **very high traverse speeds**, **transfer guides**, **curves**, **expansion gaps** etcetera.
Collector trolleys can be adapted by means of wheelsets to be ordered separately; easy to assemble using a dovetail construction. Just install or exchange the wheel sets and create the trolley that fits the specific needs.
You can of course also order trolleys with the adaptions you need. In the table below, an overview of the possibilities is listed, together with the respective suffix. Please refer to these suffixes when ordering.

For unlisted models, please contact your supplier of Akapp-Stemmann.

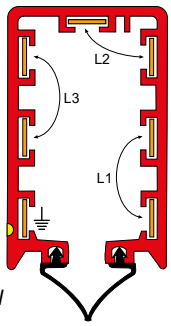
Current collector trolleys series S(L)7 are available for **installations with curves**.

**Current collecting capacity doubles when parrallel connecting copper conductors.**

A Multiconductor with 7 copper conductors offers the opportunity to double the current capacity when 3 phase ~, by application of 2 conductors per phase in parallel. The 7th conductor is utilised for the earth supply.

The **extra capacity** is also reflected with regard to the selection of suitable **collector trolleys**. See table next.

| 7-pole trolleys and transition boxes with parallel connected copper conductors 3P+E | | |
|---|---|---|
| A max. | type collector trolley | type transition box |
| 70 | CL7-7-35 | TTB70-4 |
| 140 | CL7-7-70 | TTB140-4-2 |
| 200 | CL7-7-100 | OG300-7 |
| 280 | CL7-7-70 2 pcs | OG300-7 |




*RN7-7-160/parallel*

### Collector trolleys for special applications

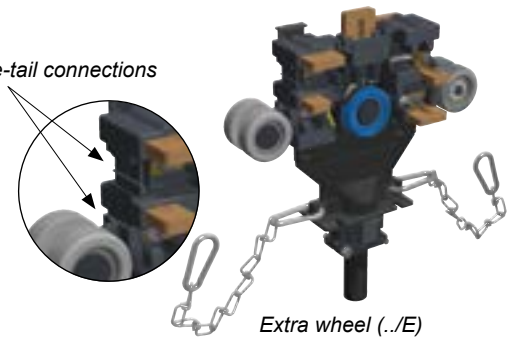
There are numerous possibilities to adapt the standard collector trolley series CL7, e.g. application of wheel sets, which can be fitted or exchanged very easily by means of dovetail joints (see picture).

A number of options are shown below.

| Application | Performance | Type |
|---|---|---|
| Expansion joints (KEV's) | Extra wheels | CL7-..-../E |
| Curves | Top wheels + Side wheels | CL7-..-../T/Z |
| Transfer guide large (ITN) and gap >10mm *Gap ≤10mm - see ITKN* | Top wheels + Side wheels + Extra wheels + specal bow | CL7-..-../T/Z/E |
| Transfer guide small (ITKN) | Top wheels + Side wheels + Extra wheels | CLTG7-..-../T/Z/E |
| Dusty environment | Dust proof, ball beared wheels | CL7-..-../S |
| High travel speeds * | Dust proof, ball beared wheels + Top wheels | CL7-..-../T/S |
| Low temperatures ** | Silicon sheath connect. cable | CL7-..-../LT |
| Outlet connecting cable 90° | 90 degree gland | CL7-..-../HWK |
| Silvered conductors | Silver graphite brushes | CL7-..-../AG |
| Connecting cable length | Length 1, 3 or 5 m | CL7-..-/..M |
| Profile with extra protection (RNHS7) | Collector trolley met extended bow | CL7-...-../HS |
| Galvanising plants | Pull chain and wheel circlips of stainless steel | CL7-..-../RVS |

** up to 250 m/min.* *** up to -30 °C, **no** ball beared wheels possible*

*Dove-tail connections*



*Extra wheel (../E)*



*Top wheels (beared ../T/S, or not beared ../T)*

*Top wheels and side wheels (../T/Z)*





*90 degree gland (../HWK)*

### Collector trolleys for Multiconductor RNHS7

#### Types CL7-4-35/HS and CL7-7-35/HS

For Multiconductor type RNHS7 special trolleys with an elongated lower moulding are utilised. For 4 or 7 conductors. Other types on request. Max. travel speed 100 m/min.



*CL7-7-35/HS (for RNHS7)*

### Collector trolleys for curves

#### Type S7-..-35

For installations with curves of a radius <600 mm, special flexible current collectors are required. See also page 20. More information via your Akapp-Stemmann supplier.



*S7-4-35 (for BRN7)*

# Collector trolleys series C(L)4

## economic solutions

If no high demands are made on the collector trolley in an installation with Multiconductor, it is possible to use a collector trolley type C(L)4.. These collector trolleys are available only for systems with 4 conductors. The 70A and 100A collector trolleys are formed by mounting 2 resp. 3 separate trolleys 35A on a metal strip (see the figures opposite).

All collector trolleys can be delivered with or without 1 m cable (type “C4-..”, resp. “CL4-..”).

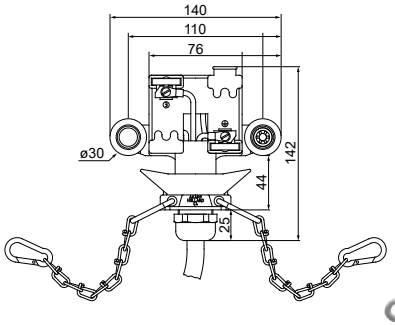
It is recommended to use a transition box when connecting the trolley with the apparatus to be fed. This box (order separately) can be mounted on the towing arm (see figure on page 15).

These collector trolleys are supplied with Nylon wheels, suitable for **traverse speeds** up to **60 m/min**. For **higher traverse speeds** and for **heavy duty environments** you should use collector trolleys of series ‘C(L)7-..’. See page 12 and further for more details.

### Standard collector trolleys

Series C4 collector trolleys are available for 4 conductors with current carrying capacities of **35A**, **70A** and **100A** (D.C. 60%).
Applicable from -20 °C up to +80 °C.

Collector trolleys type CL4 are fitted as standard with a supply cable. The connection with the apparatus/machine to be fed is via a transition box (ordered separately) which can be located adjacent to the collector trolley towing arm position (see page 15).



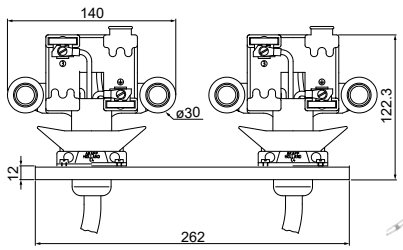



*CL4-35*

### Carbon brushes

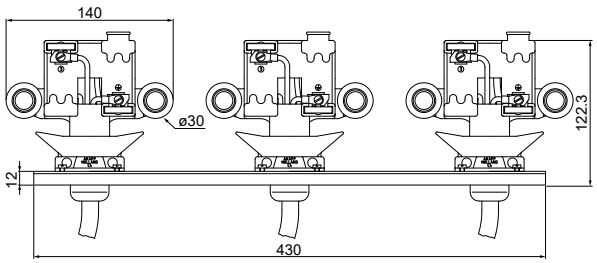
The collector trolleys type CL4 are supplied as standard with carbon brushes for 35A, according to the table below.

| CARBON BRUSH TYPES | | | Standard brushes |
|---|---|---|---|
| Art. no. | Application | Brush position in collector trolley | for normal conductors |
| 1411021 | Phase brush compl. | 1, 2 and 3 | K91P |
| 1410521 | Earth brush compl. | 4 | C91A |






*CL4-70*






*CL4-100*

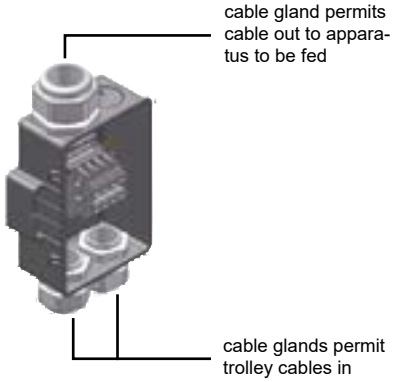
### Transition boxes for collector trolleys

This unit facilitates the connection of the flexible cable from the collector trolley with the fixed wiring from the apparatus/machine being fed.

Using the included attachments, the transition box can be mounted easily on the (Akapp-Stemmann) towing arm or close to the apparatus/ machine.

Types of transition boxes:

| type transition box | for collector trolley | gland inlet | gland outlet |
|---|---|---|---|
| TTB35-4 | C(L)4-35 | 1xM32 | 1xM32 |
| TTB70-4 | C(L)4-70 | 2xM32 | 1xM40 |
| TTB100-4 | C(L)4-100 | 3xM32 | 1xM40 |




*TTB70-4*

# Collector trolleys series CL4-40

## the compact solution for double brushes per phase

Type CL4-40 is a singular collector trolley with double carbon brushes per phase and is used for conditions in which double carbon brushes must be used in conductor bar systems.

For those cases, the CL4-40 trolley is a good and cost effective solution.

In addition, the CL4-40 will improve the cost effectiveness of systems that are controlled by frequency inverters.

The CL4-40 is a 4 pole trolley, capacity 40 Amps at 60% duty cycle at 50 °C. Applicable from -20 °C up to +50 °C.
The CL4-40 uses twin carbon brushes C91D for phases and special twin ground brushes C91DA.

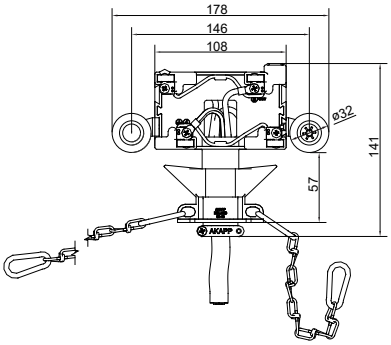
All CL4-40 trolleys are available with cable lengths of 1, 3 or 5 m. For standard cable length 1 m, the indication is /1M. For other cable lengths add /3M or /5M to the type description.

### Standard collector trolleys

**Type CL4-40**
4-pole trolley with standard wheels.
Max. speed 100 m/min.
For all RN-types of housings.
Standard fitted with 1m cable.

**Type CL4-40/S**
4-pole trolley with ball beared wheels.
Max. speed 250 m/min.
For all RN-types of housings.
Standard fitted with 1m cable.

Note: Trolleys without cable are also possible. Please cancel the “L” in the type description; e.g. type ‘C4-40’ is a 40 Amps trolley without cable.






*CL4-40*



*CL4-40/S*

### Collector trolley complete with towing arm and trolley transition box

**Type CL4-40/BMV/TTB**
For easy ordering, we created a fully assembled version of the collector trolley CL4-40, complete with towing arm BMV35 and trolley transition box TTB35. See table below for order reference. For dimensions see table on page 16 (top).



*CL4-40/BMV/TTB*

### Carbon brushes and wheel sets

The following parts are applicable:

| AKAPP NO. | DESCRIPTION | TYPE |
|---|---|---|
| 1410601 | Carbon brush twin phase | C91D *) |
| 1410631 | Carbon brush twin ground | C91DA |
| 1630100 | Wheel set standard (grey) | W *) |
| 1630110 | Wheel set high speed (blue) | WS *) |

**) similar as on CL7 collector*

| AKAPP NO. | DESCRIPTION | EXTENSIONS ext. 1 | EXTENSIONS ext. 2 | max. $I_n$ (A) (D.C.=100%) | number of poles | max. speed (m/min) | APPLICABLE FOR expansion joint (KEV) | dust proof *) | acid proof | RNHS profile | data silvered | vertical curves |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1088600 | Collector trolley + cable | /1M | | 31.00 | 4 | 100 | - | x | - | - | - | - |
| 1088600.B0003 | Collector trolley + cable CL4-40 | /3M | | 31.00 | 4 | 100 | - | x | - | - | - | - |
| 1088600.B0005 | Collector trolley + cable CL4-40 | /5M | | 31.00 | 4 | 100 | - | x | - | - | - | - |
| 1088620 | Collector trolley + cable CL4-40 | /S | /1M | 31.00 | 4 | 250 | - | x | - | - | - | - |
| 1088620.B0003 | Collector trolley + cable CL4-40 | /S | /3M | 31.00 | 4 | 250 | - | x | - | - | - | - |
| 1088620.B0005 | Collector trolley + cable CL4-40 | /S | /5M | 31.00 | 4 | 250 | - | x | - | - | - | - |
| 1088640 | Assembly CL4-40/BMV/TTB | | | 31.00 | 4 | 100 | - | x | - | - | - | - |

**) if sealing strips AS7 are applied*

# Accessoires for collector trolleys

## towing arms, transition boxes

A towing arm is attached to the moving machinery and connected to the collector trolley via chains.

The arrangement is such that when pulling in either direction one of the collector towing chains is taut, the other remaining slack. In this way lateral movements of the crane, hoist, etc. are not transmitted to the trolley.

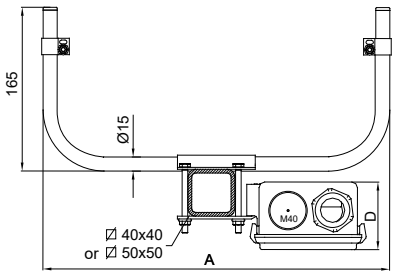
This tolerance provides ultimate **security of service**!

**Attention**: The towing connector on the arm should be installed 10 mm lower than the towing connection on the trolley in the highest position and at 30 mm lower than the towing connection on the trolley in the lowest position and should be aligned directly below the housing opening in the vertical plane.

A transition box can be mounted on the towing arm or close by the apparatus/machine. This unit facilitates the connection of the flexible cable from the collector trolley with the fixed wiring from the apparatus/machine being fed.

### Standard performances of towing arms

| type towing arm | for collector trolley |
|---|---|
| BMV35 | 35A / 40A |
| BMV70 | 70A |
| BMV100 | 100A |

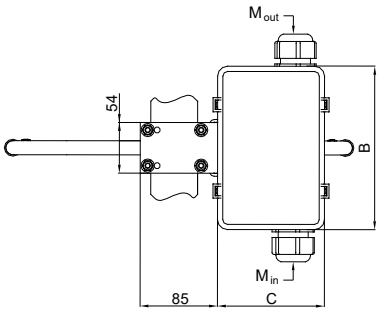



| | BMV35 + TTB35 | BMV70+ TTB70 | BMV100 + TTB100 |
|---|---|---|---|
| A | 370 | 505 | 640 |
| B | 175 | 175 | 195 |
| C | 115 | 115 | 160 |
| D | 70 | 70 | 80 |
| Input | 1xM32 | 2xM32 | 3xM32 |
| Output | 1xM32 | 1xM40 | 1xM40 |

### Transition boxes for collector trolleys

| type of transition box | dimensions lxwxh mm | connecting terminals | cable inlet |
|---|---|---|---|
| TTB35-4 and TTB35-7 | 175x115x70 | 4 st. 4 mm² | 2 glands M32 |
| | | 7 st. 4 mm² | |
| TTB70-4 and TTB70-7 | 175x115x70 | 4 st. 10 mm² | 2 glands M32 1 gland M40 |
| | | 7 st. 10 mm² | |
| TTB100-4 and TTB100-7 | 195x160x80 | 4 st. 16 mm² | 3 glands M32 1 gland M40 |
| | | 7 st. 16 mm² | |
| TTB140-4-2 | 195x160x80 | 4 st. 35 mm² | 2 glands M32 1 gland M50 |
| OG300-7 | 300x190x180 | 7 st. bolts M10 | 6 glands PG21 1 special inlet 20-70 mmØ |

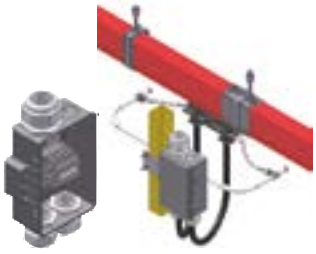
The box types TTB35 up to TTB140 can be mounted directly on the fastening clamp of the towing arm type BMV. Box type OG300 is supplied with a mounting plate, which ensures easy mounting of these boxes to the apparatus to be fed.



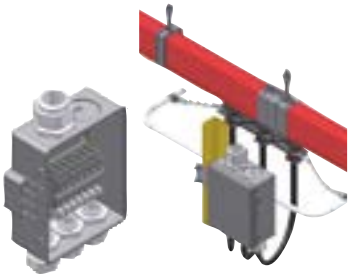

*BMV + TTB*



*BMV35 + TTB35-4*



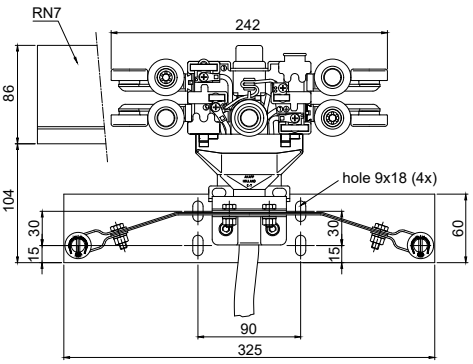
*BMV70 + TTB70-4*



*BMV100 + TTB100-7*

### Spring loaded towing arm

**Type MVSP35** for trolleys 35A
For installations with large transfer guides (type ITN7, see page 18) special spring loaded towing arms must be used (see picture), if the distance (gap) between the transfer guides is >10 mm.






*CLTG7-7-35/T/Z/E/1M + MVSP*

*For the article numbers of the products listed here, see the overview on page 17.*

# Overview standard collector trolleys

## incl. towing arms and transition boxes

In the chart below you can view the most common standard collector trolleys of the series CL7. The Akapp-Stemmann reference numbers and some details are listed for each type.

This overview however does not show all possibilities. For further information on this (see also page 13), we recommend you to contact your Akapp-Stemmann supplier.

The other charts show all towing arms and transition boxes including their reference numbers.

### Selection chart standard collector trolleys

| AKAPP NO. | DESCRIPTION | max In (A) (ID=100%) | number of poles | max. speed m/min. | APPLICABLE FOR: expansion joint (KEV) | transfer guides ITN7 | trechters ITKN7 | HS, extra protection | silvered copper |
|---|---|---|---|---|---|---|---|---|---|
| 1088470 | Collector trolley + cable CL4-35/1M | 27,11 | 4 | 60 | - | - | - | - | - |
| 1088470.B0003 | Collector trolley + cable CL4-35/3M | 27,11 | 4 | 60 | - | - | - | - | - |
| 1088470.B0002 | Collector trolley + cable CL4-35/5M | 27,11 | 4 | 60 | - | - | - | - | - |
| | | | | | | | | | |
| 1089360 | Collector trolley + cable CL4-70/1M | 54,22 | 4 | 60 | - | - | - | - | - |
| 1089360.B0001 | Collector trolley + cable CL4-70/3M | 54,22 | 4 | 60 | - | - | - | - | - |
| | | | | | | | | | |
| 1089750 | Collector trolley + cable CL4-100/1M | 77,46 | 4 | 60 | - | - | - | - | - |
| 1089750.B0001 | Collector trolley + cable CL4-100/3M | 77,46 | 4 | 60 | - | - | - | - | - |
| | | | | | | | | | |
| 1093440 | Collector trolley + cable CL7-4-35/1M | 27,11 | 4 | 100 | - | - | - | - | - |
| 1093440.B0001 | Collector trolley + cable CL7-4-35/3M | 27,11 | 4 | 100 | - | - | - | - | - |
| 1093440.B0014 | Collector trolley + cable CL7-4-35/5M | 27,11 | 4 | 100 | - | - | - | - | - |
| 1093510 | Collector trolley + cable CL7-5-35/1M | 27,11 | 5 | 100 | - | - | - | - | - |
| 1093510.B0001 | Collector trolley + cable CL7-5-35/3M | 27,11 | 5 | 100 | - | - | - | - | - |
| 1093580.B0000 | Collector trolley + cable CL7-6-35/1M | 27,11 | 6 | 100 | - | - | - | - | - |
| 1093650 | Collector trolley + cable CL7-7-35/1M | 27,11 | 7 | 100 | - | - | - | - | - |
| 1093650.B0002 | Collector trolley + cable CL7-7-35/3M | 27,11 | 7 | 100 | - | - | - | - | - |
| | | | | | | | | | |
| 1093860 | Collector trolley + cable CL7-4-70/1M | 54,22 | 4 | 100 | - | - | - | - | - |
| 1093860.B0002 | Collector trolley + cable CL7-4-70/3M | 54,22 | 4 | 100 | - | - | - | - | - |
| 1093930.B0000 | Collector trolley + cable CL7-5-70/1M | 54,22 | 5 | 100 | - | - | - | - | - |
| 1093930.B0006 | Collector trolley + cable CL7-5-70/3M | 54,22 | 5 | 100 | - | - | - | - | - |
| 1094000.B0000 | Collector trolley + cable CL7-6-70/1M | 54,22 | 6 | 100 | - | - | - | - | - |
| 1094070 | Collector trolley + cable CL7-7-70/1M | 54,22 | 7 | 100 | - | - | - | - | - |
| 1094070.B0002 | Collector trolley + cable CL7-7-70/3M | 54,22 | 7 | 100 | - | - | - | - | - |
| | | | | | | | | | |
| 1094280 | Collector trolley + cable CL7-4-100/1M | 77,46 | 4 | 100 | x | - | - | - | - |
| 1094280.B0001 | Collector trolley + cable CL7-4-100/3M | 77,46 | 4 | 100 | x | - | - | - | - |
| 1094350.B0000 | Collector trolley + cable CL7-5-100/1M | 77,46 | 5 | 100 | x | - | - | - | - |
| 1094420.B0000 | Collector trolley + cable CL7-6-100/1M | 77,46 | 6 | 100 | x | - | - | - | - |
| 1094490 | Collector trolley + cable CL7-7-100/1M | 77,46 | 7 | 100 | x | - | - | - | - |
| 1094490.B0007 | Collector trolley + cable CL7-7-100/3M | 77,46 | 7 | 100 | x | - | - | - | - |
| | | | | | | | | | |
| 1094730.B0012 | Collector trolley + cable CLTG7-4-35/T/Z/E/3M | 27,11 | 4 | 100 | x | x | - | - | - |
| 1094780.B0006 | Collector trolley + cable CLTG7-5-35/T/Z/E/1M | 27,11 | 5 | 100 | x | x | - | - | - |
| 1094880.B0003 | Collector trolley + cable CLTG7-5-35/T/Z/E/3M | 27,11 | 5 | 100 | x | x | - | - | - |
| 1094910.B0017 | Collector trolley + cable CLTG7-7-35/S/T/Z/E/5M | 27,11 | 7 | 100 | x | x | - | - | - |
| | | | | | | | | | |
| 1093480.B0002 | Collector trolley + cable CL7-4-35/S/T/Z/E/1M | 27,11 | 4 | 250 | x | x *) | x | - | - |
| 1093550.B0002 | Collector trolley + cable CL7-5-35/S/T/Z/E/1M | 27,11 | 5 | 250 | x | x *) | x | - | - |
| | | | | | | | | | |
| 1093480.B0012 | Collector trolley + cable CL7-4-35/S/T/Z/E/HWK/3M | 27,11 | 4 | 250 | x | x *) | x | - | - |
| 1093590.B0012 | Collector trolley + cable CL7-6-35/S/T/Z/E/HWK/1M | 27,11 | 6 | 250 | x | x *) | x | - | - |
| 1093550.B0023 | Collector trolley + cable CL7-7-35/S/T/Z/E/HWK/3M | 27,11 | 7 | 250 | x | x *) | x | - | - |

*Collector trolley series CL4-40 see page 15*

**) if distance (gap) between transfer guides >10mm, use CLTG7-.. 35/T/Z/E/1M*

### Selection chart towing arms

| AKAPP NO. | DESCRIPTION | | COLLECTOR TROLLEY |
|---|---|---|---|
| 1019055 | Towing arm | BMV35 | ..-..-35 / ..-..40 |
| 1019135 | Towing arm | BMV70 | ..-..-70 |
| 1019215 | Towing arm | BMV100 | ..-..-100 |
| 1018940 | Towing arm, stainl.st. | BMV35-R | ..-..-35 |
| 1019830 | Towing arm, stainl.st. | BMV70-R | ..-..-70 |
| 1019910 | Towing arm, stainl.st. | BMV100-R | ..-..-100 |
| 1019440 | Spring loaded tow.arm | MVSP35 | ..-..-35 |

### Selection chart transition boxes

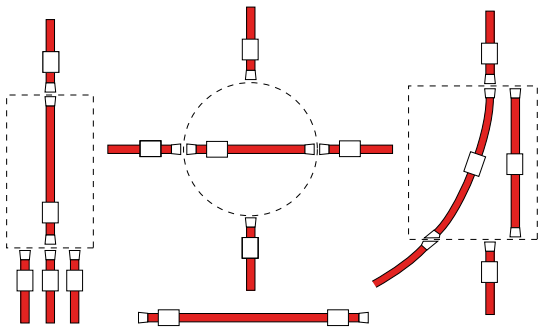
| AKAPP NO. | DESCRIPTION | |
|---|---|---|
| 1020000 | Transition box for collector trolleys | TTB35-4 |
| 1020010 | Transition box for collector trolleys | TTB35-7 |
| 1020020 | Transition box for collector trolleys | TTB70-4 |
| 1020030 | Transition box for collector trolleys | TTB70-7 |
| 1020040 | Transition box for collector trolleys | TTB100-4 |
| 1020050 | Transition box for collector trolleys | TTB100-7 |
| 1020060 | Transition box for collector trolleys | TTB140-4-2 |
| 1010430 | Transition box for collector trolleys | OG300-7 |

# Other components

## transfer guides

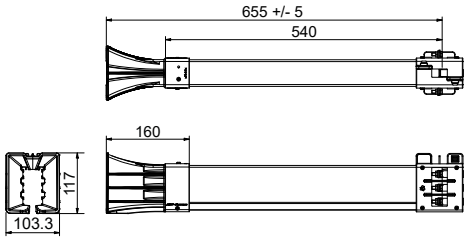
These units are used for creating track sections for turn or slide switches (see drawing). The type is related to the mechanical tolerance of the transfer system itself.

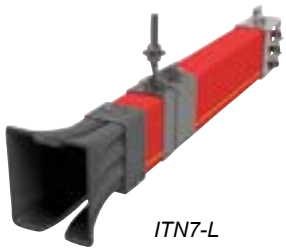
**The correct execution of a transfer guide shall be detailed by your Akapp-Stemmann supplier after receipt of a clear description and a situation drawing of the installation to be fed.**



### Type ITN7

Suitable for mechanical tolerances vertical and horizontal planes of less than 10 mm; infinite gap.

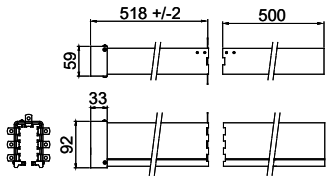


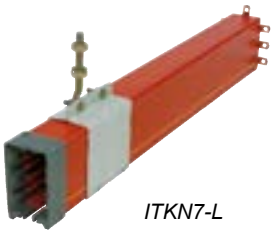



*ITN7-L*

### Type ITKN7

Suitable for mechanical tolerances, vertical and horizontal planes less than 2 mm and gap less than 2 mm.



*ITKN7-L*

### Applicable for all types of transfer guides:

Max. travel speed on transfer guides is 60 m/min.

Transfer guide **ITN7** includes: 1 trumpet to which is fitted 540 mm of housing RN7, in which are already fitted copper conductors CU125. To attach the transfer guide section to the existing Multiconductor system, a line feed clampholder RN-LH is provided (see also page 8). To be ordered separately: a line feed box for shrouding the connection between the trumpet housing and opposite RN7-housing and 2 fixed point clamps placed each side of the line feed.

Transfer guide **ITKN7** includes: 1 trumpet to which is fitted 500 mm of housing RN7, in which are already fitted copper conductors CU50, 500 mm of housing RN7 to attach the transfer guide section to the Multiconductor (incl. mounting material). To be ordered separately: a line feed box for shrouding the connection between the trumpet housing and opposite RN7-housing and 2 fixed point clamps placed each side of the line feed.

| AKAPP NO. | DESCRIPTION | left | right | space between transf.guides <= 3mm | vertical tolerance <= 2mm | horizontal tolerance <=2mm | red | white | length m | min. temperature °C | max. temperature °C | max. number of poles | protection degree IP23 *) | sealing rubber AS7 applicable |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1016310 | Transfer guide large red ITN7-L | x | | | | | x | | 0.655 | -30 | 60 | 7 | x | x |
| 1016540 | Transfer guide large red ITN7-R | | x | | | | x | | 0.655 | -30 | 60 | 7 | x | x |
| 1017830.B0000 | Transfer guide large, white ITN7W-L | x | | | | | | x | 0.655 | -30 | 60 | 7 | x | x |
| 1017840.B0000 | Transfer guide large, white ITN7W-R | | x | | | | | x | 0.655 | -30 | 60 | 7 | x | x |
| 1016630.B0000 | Transfer guide vicat, grey white ITNV7-L | x | | | | | | x | 0.655 | -20 | 80 | 7 | x | x |
| 1016640.B0000 | Transfer guide vicat, grey white ITNV7-R | | x | | | | | x | 0.655 | -20 | 80 | 7 | x | x |
| 1017040 | Transfer guide small, red ITKN7-L | x | | x | x | x | x | | 1.025 | -30 | 60 | 7 | x | x |
| 1016930 | Transfer guide small, red ITKN7-R | | x | x | x | x | x | | 1.025 | -30 | 60 | 7 | x | x |

**) for IP23 special versions with insulating strips are available*

# Other components

## conductor isolation sections

Copper conductor isolation sections are used in the event an electrical division between one single or various conductors for i.e. control, is required.

Two models are available:

SO7 - for electrical isolation of 1 - 7 strips

SO1/SRN1 - for electrical isolation of 1 strip

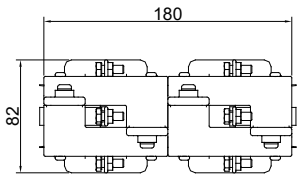
It is important to consider the correct compensation for the expansion differences. If desired, we will inform you about this in more detail.

If one or more isolation sections are applied, we strongly recommend you to send us a situation drawing of the feeding system to determine the correct execution of it.

### Conductor isolation sections

**Type SO7**

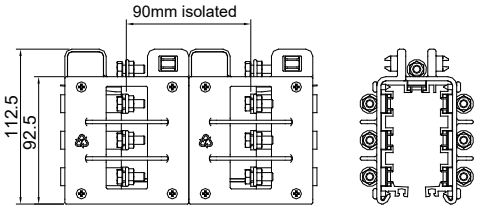
This isolation section is fitted into a Multiconductor in between 2 housings RN7. This section is shrouded with one of the line feed boxes (see page 7, ordered separately) on each side of which a fixed point clamp is positioned (2 pc., ordered separately).






*SO7*

**Type SOHS7** for Multiconductor RNHS7. Similar to S07, but with spacer strips at the bottom, for use with extra hand-safe housing RNHS7.

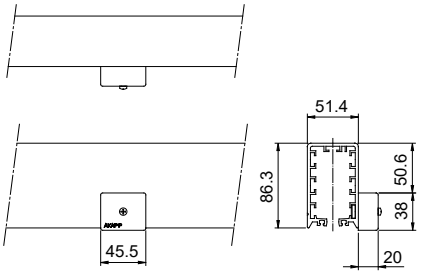



### Special conductor isolation sections:

**Type S01**

In case only 1 or 2 isolations in the controlling current conductors are required, these small isolation sections can be used. At the position of the required isolation, slots are made in the housing, through which the copper conductors are bent outwards. A small isolation section is then placed between the conductors after which the assembly is enclosed by a small cover 45x38x20 mm.

When sealed with silicone-mastic (not supplied) this unit is also suitable for outdoor installations.

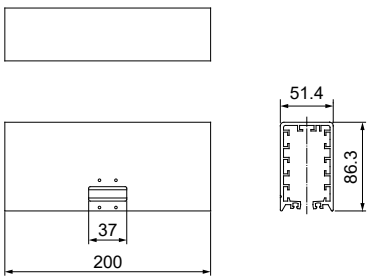


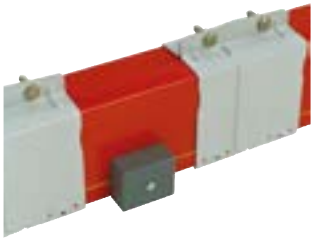



*SO1*

**Type SRN1**

This prepared housing (200 mm length) is available as an alternative to cutting slots in the standard housing and is fitted in the Multiconductor by means of 2 joint clamps typeVN7.



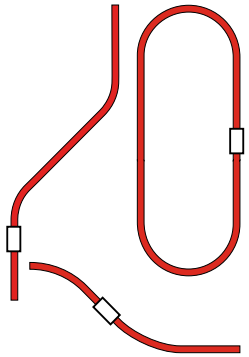
*SRN1*

# Curved tracks

## horizontal and vertical

The Akapp-Stemmann Multiconductor is also used for curved instal-lations such as i.e. at concrete skipper installations. The curved segments are made to measure in the required radius. **A correct drawing is therefore of utmost importance.**

When ordering **horizontal** curves it is important to define the position of the yellow marking stripe on the housing (in inner or outer radius), to take the positioning thereof into consideration with regard to the other conductor segments.



### Curved housings

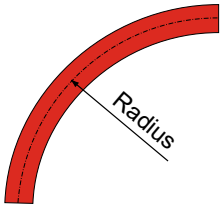
**Type BRN7- .** . . . (radius)

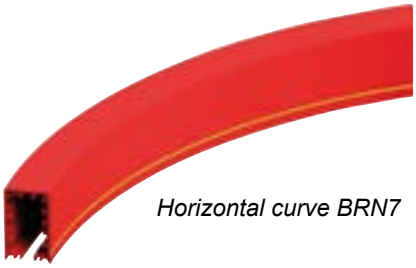
Horizontal curves are available from R=600 mm and vertical curves from R=1800 mm (center sizes, see drawing).

In curves the center distance of the hanger support varies from 600 - 1000 mm (in general min. 2 hanger supports per curved section).

Vertical curves exist in 2 variaties:

**concave**: biggest radius at the bottom (=opening) of the housing;
**convex**: smallest radius at the bottom of the housing. See drawings.

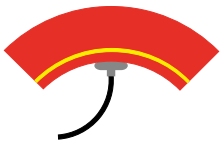


*Horizontal curve BRN7*



*Vertical curve, concave*



*Vertical curve, convex*

**Type BRNHS7- .. (radius)**
Curves for Multiconductor RNHS7.

### Collector trolleys in installations with curves

For installations with curves, only 35A collector trolleys should be used. It is possible to use more collector trolleys in parallel for higher current capacities. For curves with bending radius <600 mm the flexible trolley type S7-..-35 is used (see photo). See also page 13.



*S7-4-35*

### Copper conductors in curved tracks

Should, when horizontal curves are applicable, the copper channel in the topside also be used for a copper conductor, these conductors can be supplied as pre-bend. However this depends on radius of the curve as well as on the thickness of the conductors. The same applies for vertical curves and the copper conductors in the side of the Multiconductor. See table.

In all other cases the copper conductors can be rolled directly from the drum through the curves.

Pre-bend strips are required for installations with following conductors and radii (horizontal or vertical):

| type copper conductor | curves up to radius R |
|---|---|
| CU35 *) | 1200 mm |
| CU50 *) | 1500 mm |
| CU80 | 2000 mm |
| CU125 | **) |
| CU160 | **) |

*) *Copper conductors CU35 and CU50 can not be pre-bend. If required, CU80 shall be applied in the curve(s).*

**) *Please ask your Akapp-Stemmann supplier for further information about the possibilities.*

# Installation tools

## for optimal efficiency

Akapp-Stemmann Multiconductor can easily be installed. All components have been designed as such that a combined installation is perfectly suitable.

However several operations during the installation process may be arranged even more efficient if you should opt for the auxiliary tools as detailed below. Therefore, we strongly recommend you to add these tools to the delivery (refer to the relevant product).

**It is of importance to use the products as detailed below, whenever possible. You could save time. Read the instructions carefully and prior to the use of said products.**

Should you have any questions, please feel free to contact your Akapp-Stemmann supplier. Further information can be obtained via our web site as well (see front cover).

Our Engineering staff could ensure the perfect installation of your Multiconductor, if so required. We would be pleased to submit a fitting quotation! More information on page 25.

### Copper pulling-cassette

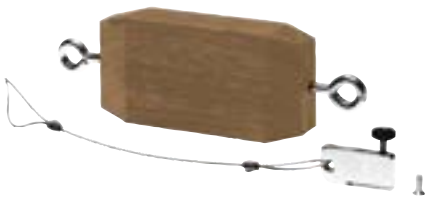
This device can be included in all new installa-tions of the Multiconductor.

The copper rolls are placed onto the cassette after which the roll will be rolled off smoothly. The roll is provided with a feed-through aper-ture. A limiter prevents the rolling off of the roll onto the platform.



### Copper drawing block

In order to smoothen the drawing of the copper conductor into the copper channels of the Multiconductor, a wooden drawing block can be included in all new complete installations. This drawing block includes a drawbar eye into which a rope can be attached. To be used in combination with the aforementioned copper pulling cassette.



### Copper guide strip for KEV

Plastic strip for easily pulling in copper conductors CU50 in Multiconductor systems where expansion joints (KEV) are applied (see also page 6). See picture next.



### Pressing tool for sealing strips ('Tom Thumb')

To be used for the easy application of the flexible rubber seal AS7 to the bottom side of the Multiconductor. In one single movement, the rubber strips can be applied to both rubber channels of the Multiconductor.



### Copper straightener

It is strongly recommended to use this tool for the easy mounting of the copper conductors 125A and 160A in the Multiconductor. The stretcher eliminates the ridged form of the copper during the mounting thereof. This is mainly of importance with regard to track lengths from approximately 50 meter.



| AKAPP NO. | DESCRIPTION | length >25m | AS7 | HS | CU 125 | CU 160 |
|---|---|---|---|---|---|---|
| 1003610 | Drawing block for conductors | x | | | | |
| 1003760 | Tom thumb | x | x | | | |
| 1003800 | Tomb thumb for RNHS5/7 | x | x | x | | |
| 1003850.E0000 | Copper guide strip for KEV | | | | | |
| 1003920 | Straightning device STR125 for CU125 | x | | | x | |
| 1003950 | Straightning device STR125 for CU160 | x | | | | x |
| 1039510 | Reel with core for AS7 | x | x | | | |

| Copper cassette | | Maximum copper length per copper cassette (m) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AKAPP Nr. | Description | CU35 | CU50 | CU80 | CU125 | CU160 | CU200/PR | Inner diameter (mm) |
| 1039820 | Copper cassette 50 x 50 cm complete | 0-60 | 0-130 | 0-80 | n/a | n/a | n/a | 250 |
| 1040220 *) | Copper cassette 80 x 80 cm complete (small core) | n/a | 130-525 | 80-325 | n/a | n/a | n/a | 250 |
| 1040220 *) | Copper cassette 80 x 80 cm complete (big core) | n/a | n/a | n/a | 0-120 | 0-90 | 0-60 | 460 |
| 1040450 | Copper cassette 100 x 100 cm complete | n/a | n/a | n/a | 120-200 | 90-150 | 60-100 | 460 |

**) 1040220 Copper cassette 80 x 80 cm is supplied with a small and a big core.*

# More on Multiconductor

## technical data and temperature control

### General technical data

Maximum voltage: 690V (CE/CCC appr.) / 600V (UL appr.).

For further technical details refer to the components description in this catalogue.

Comprehensive installation instructions will accompany every Akapp-Stemmann conductor system.

### System extensions

It is generally possible to increase the length of an existing system utilising standard components. Please consult the Akapp-Stemmann sales office giving full details of the existing system and required extension.

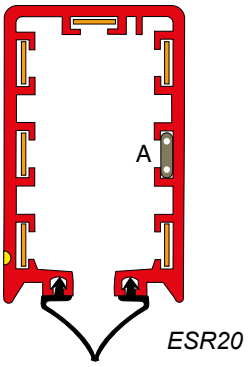
### Design and dimensions

We reserve the right to amend dimensions/design of components in the interests of design advancement without prior notification.

### Multiconductor internal heating

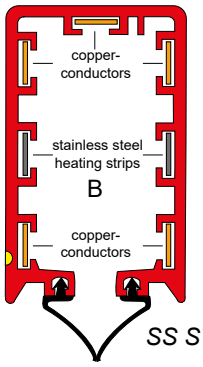
When extreme stringent circumstance apply and condensation and ice is to be prevented, the Multiconductor can be heated along a part or the entire length of the system.

**Type ESR20 (A), Not insulated.**
For up to 6-pole systems. 1 channel fitted with self regulating heating cable. Max. track length 60 m. Connecting voltage: AC 230V. Automatic control of required capacity based on the ambient temperature. Capacity 20W/m at +10 °C.




*ESR20*

**Type SS STRIP (B), Not insulated.**
For systems including a minimum of 2 free channels. Stainless steel strip 13x0.5mm; R=0,1106 Ω/m. Not self regulating; transformer and thermostat needed (not included).



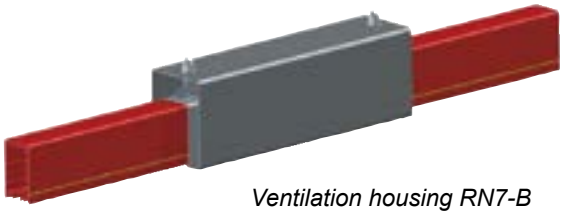

*SS STRIP*

### Ventilation housing

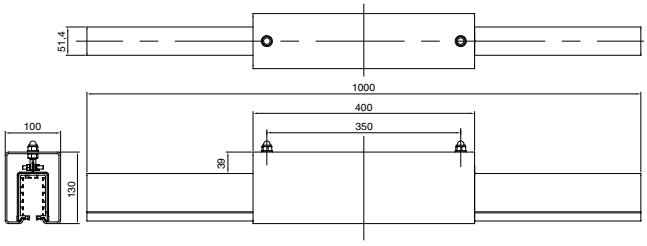
**Type RN7-B**
A ventilation housing can be used in a Multiconductor system where condensation may occur because the system has a transition to a section with a large temperature difference (e.g. from inside to outside). The ventilation housing is then to be placed outside, at 1 meter from the transition point. The copper conductors are **not** interrupted at the ventilation housing.

The ventilation housing consists of 1 meter RN7, with a vented middle section of 400 mm, serving the air flow. Above these openings a protection cap is placed (protection class IP23).

The ventilation housing should be placed horizontally.



*Ventilation housing RN7-B*



# Installation examples

## system configuration

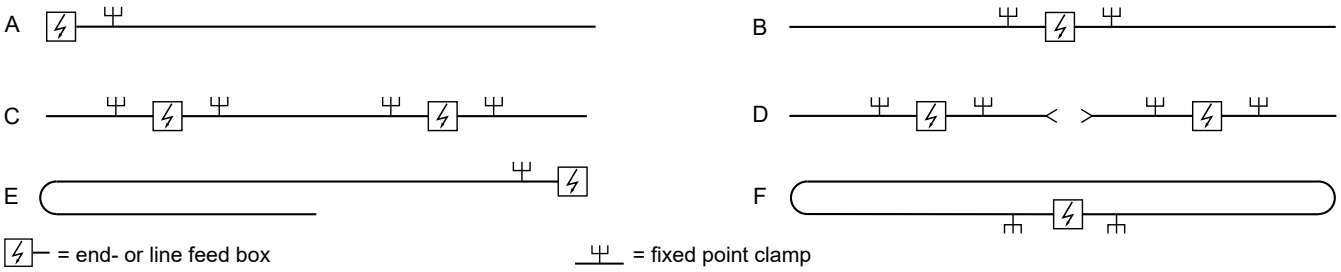
The construction method to be used with Multiconductor is based on “controlled expansion”. This guarantees the solution of expansion related problems which coincide with 3 different elements: synthetics, copper and suspension frame. The linear expansion and shrinking of the PVC conductor housing is 0.07 mm/°C/m. Which is the 5-fold of copper conductors to be mounted into the conductor housing as well as the suspension frame.

The Akapp-Stemmann Multiconductor design permits the free movement of the 3 elements thus resolving problems often experienced with other systems.

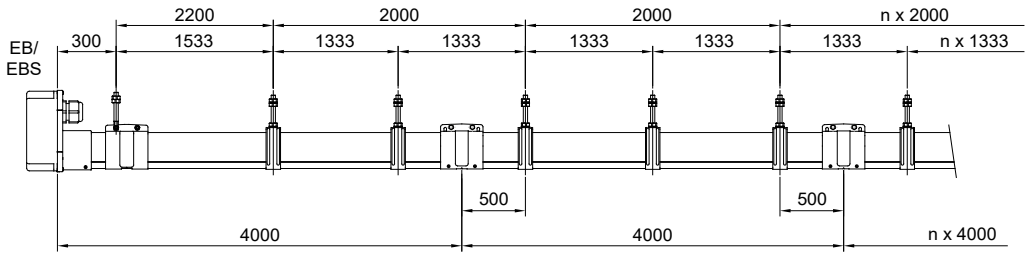
Most common installations with one feed point at the end or somewhere along the installation (see illustration below, examples A or B) are mounted on the basis of free expansion. The expansion movement takes place from the fixed point. Maximum lengths for application of **fixed** joints type VN7 are mentioned in the list on page 4.

For installations where the required system is longer than stated in this list or where similar to one of the **applications C up to F**, please refer to your Akapp-Stemmann sales office for additional installation instructions regarding **expansion**.

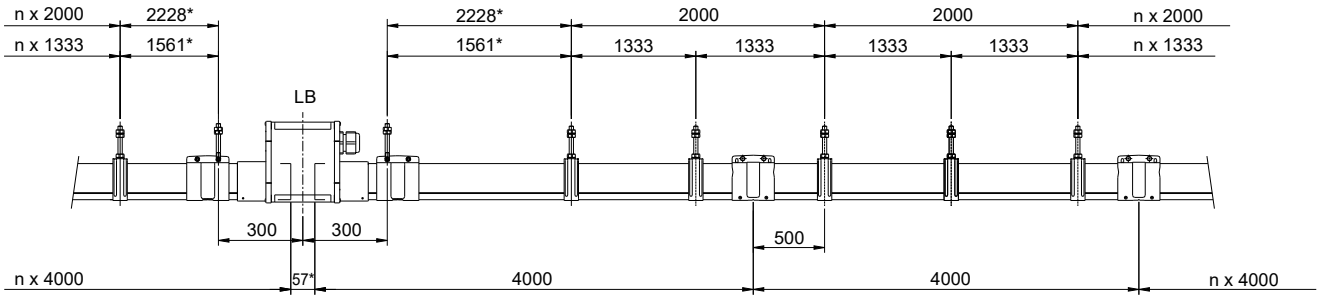
### Multiconductor system construction




### Multiconductor system configuration End feed




### Multiconductor system configuration Line feed




With Akapp-Stemmann Multiconductor an optimum reliability is achieved by the unique composition of this conductor system. We offer our experience following many years of service to industry, covering practically all types of ambient conditions.

We should be most pleased to assist with your system selection. Please do not hesitate to seek the advice of our specialised sales team. For more information you can visit our web site: www.akapp.com.

*All dimensions in this brochure are in mm.*

# Appendix

## Maintenance and spare parts of collector trolleys

When replacing or revising an Akapp-Stemmann collector trolley, the information below needs your special attention to prevent accidents or failures of the installation.

Older trolley models (serie “S”) have a different numbering of the cable wires to the brushes.

The table below shows all information concerning the spare parts, used in each trolley model.

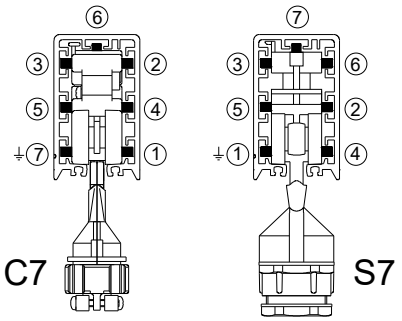
Further information on installing Akapp-Stemmann collector trolleys can be found in the respective manual instruction.

Wabtec Netherlands can provide all extensive manual instructions concerning our conductor bar system and/or other products on demand.

Please visit our webiste www.akapp.com for more information or contact our head office by phone or e-mail. The references are on the front of this brochure.

**ATTENTION!**



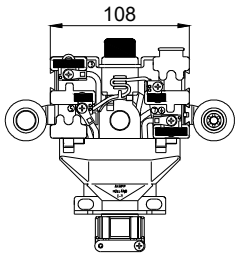



Trolley type S7 has different cable numbering.

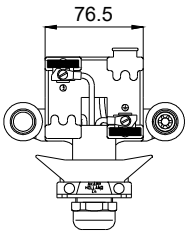
Please check before installing that the internal wiring of the trolley is correct!

Length of the towing chains for 35A trolleys is 5 links and for 70A and 100A trolleys 6 links.

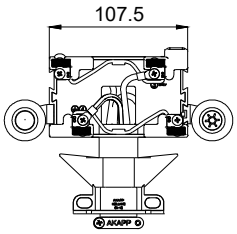
**Spare parts**



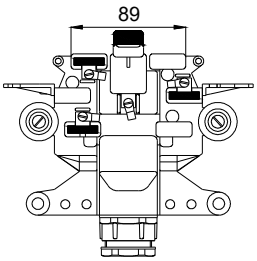

C7




C4




C4-40




S7

| AKAPP NO. | TYPE | DESCRIPTION | C7 | C4 | C4-40 | S7 |
|---|---|---|---|---|---|---|
| 1411021 | K91P | Carbon brush phase | x | x | | |
| 1410521 | C91A | Carbon brush ground | x | x | | |
| 1410601 | C91D | Carbon brush twin phase | x | | x | |
| 1410631 | C91DA | Carbon brush twin ground | | | x | |
| 1412061 | K91A | Carbon brush ground (trolley N7, no image) | | | | |
| 1410131 | B91SP | Carbon brush phase | | | | x |
| 1410211 | B91SA | Carbon brush ground | | | | x |
| 1410051 | B91SN | Carbon brush neutral | | | | x |
| 1630100 | W | Wheel set | x | | x | |
| 1630110 | WS | Wheel set ball beared | x | | x | |
| 1630120 | WZ | Wheel set + side wheel | x | | x | |
| 1630130 | WSZ | Wheel set ball beared + side wheel | x | | x | |
| 1096550 | WE | Set middle wheel | x | | | |
| 1096500 | BG | Set bow | x | | | |
| 1510460 | | Wheel C4 | | x | | |
| 1510230 | | Wheel S7 | | | | x |

# Akapp-Stemmann Service Department

## perfect installation, preventive maintenance

Akapp-Stemmann Multiconductor can be installed quickly and easily due to the well-matched components and the modular construction. The necessary instructions are included with each installation and, of course, we can advise you further on the procedure to be followed if desired.

You can also have our **Service Department** take care of the **installation** of your system(s). Our experienced and expert engineers take all the work off your hands and ensure perfectly functioning system(s).

We are also happy to take care of the **maintenance** of your existing installation(s). We keep your installation(s) in excellent condition through a thorough inspection and possible replacement of wearable parts.

If desired, we will conclude a maintenance contract with you, in which all activities and terms are agreed with you.

### Planning and preparation

If you want our Service Department to install an Akapp-Stemmann system, we will coordinate our activities in close consultation with you. First of all, this requires planning. It is very important that when the work has to be carried out, the location is easily accessible, the materials to be installed can be delivered to the location (or are already available) and that safety is guaranteed for both your and our staff. Any climbing equipment (ladders, scaffolding, etc.) must also be able to be used at the location where necessary.

Naturally, your current business processes must be hindered as little as possible during installation. We therefore make **clear agreements** with you in advance about the planning of the work, so that no undesirable situations arise.

Installation can, if necessary, also be carried out outside normal office hours; also on weekends. The special conditions that apply to this will be discussed with you in advance. We also consult with you in advance about any safety instructions that need to be followed at your location.

Which materials must be installed is in most cases determined in the installation quotation, which we will send you based on your request. It also specifies everything about the mounting conditions.

### Mounting activities

Our experienced engineers are equipped with professional aids and tools and ensure fast and perfect installation, which will fully meet the specifications agreed with you in advance. All components are mounted in accordance with the regulations. This is very important with a view to the **reliability** and **safety** of the installation and the **lifespan** of the components.

It goes without saying that a guarantee can only be given on a system that has been installed and used in accordance with the regulations.

Would you like to have the installation of one or more Multiconductor systems carried out by our Service Department? You can request this through our Sales Department. We provide a suitable offer.




### Maintenance

Every installation needs (periodic) maintenance in order to continue to function reliably and this also applies to the Akapp-Stemmann Multiconductor system.

It is therefore very important that periodic **preventive inspection** and **maintenance** is carried out. The periods within which this must be done depend on the operating conditions and intensity of use of the relevant installation(s).

Wearable parts, such as carbon brushes and trolley wheels, can be replaced during this work before a failure can occur. The condition of other vital parts, such as suspension brackets, connecting joints and copper conductors, must also be carefully checked and repaired where necessary.

You can also call in our Service Department for inspection and maintenance. We know exactly which systems are present at the relevant location and, with the right preparation, we can carry out maintenance as efficiently as possible. Of course we will coordinate with you when it suits you best to prevent or minimize any disruption to your other business processes.

When you conclude a **maintenance contract** with us, we ensure that you are automatically approached by us when the next maintenance is due. You no longer have to worry about this and your systems remain in the best possible condition!

We are happy to inform you about all the possibilities of our Service Department.

# Akapp-Stemmann conductor bar systems

## always a perfect solution!

The Akapp-Stemmann Multiconductor is an ultimate reliable and efficient conductor system, which is world-wide, successfully used in a large number of installations.

This brochure details a brief outline of the unique characteristics.

However, Wabtec Netherlands supplies many con-ductor systems, a fitting solution for the most divers situations, also if accurate positioning is necessary!

Wabtec Netherlands aims to provide all information you need: our professional team is available for free and non committal advice.

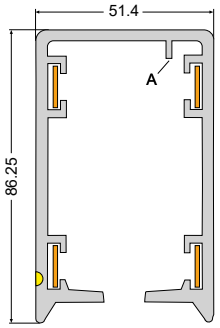
Further information required? Just a telephone call or e-mail will suffice. Please see the front cover for details or check www.akapp.com to find your nearest distributor.

## 4-Ductor

If 4 conductors suffice, no flexible rubber sealing is required, but you do want to make use of all the advantages of the **uninterrupted conductors**, opt for the most ideal conductor system for your organisation, opt for the Akapp-Stemmann 4-Ductor! Ideal, for it has: no expansion problems, a constant and low voltage loss, a choice of 5 current capacities of the conductors (35A, 50A, 80A, 125A and 160A) and virtually no maintenance!

In all, an uninterrupted current supply for a variety of movable and/or mobile equipment at a **very profitable cost-benefit analysis**!



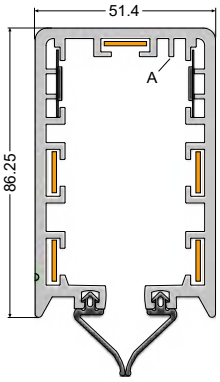



## Power-POZ

Conductor rail with integrated non-contact semi-absolute **positioning system**, developed for use in demanding crane and production installations, such as overhead cranes, the agricultural sector (feeding/spreading robots) and prefab concrete production. The profile has 5 channels for **power supply** up to **160A** and 2 channels for **positioning** by means of a sensor trolley and magnet positioning strip(s).

Maximum length 260m. For longer tracks, a second magnet positioning strip is installed in the opposite channel and a second sensor trolley is used. This makes the maximum **track length** with positioning **520m**.





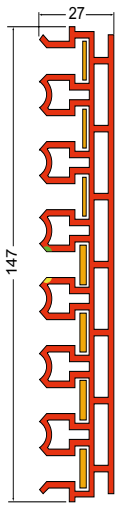

## Pro-Ductor

The most compact, varied conductor system for automated warehouses and many other applications! Suitable for up to 4 (type PR4), 7 (type PR7) or 10 (type PR10) copper conductors. The p.v.c. housing PR7 has a height of only 147 mm and is 27 mm wide and can be applied only centimetres above floor level.

The **uninterrupted** conductors ensure a perfect transmission of both **feed, control** and **data** signals. Choices in current capacity from 50A, 80A, 125A, 160A up to 200A.

Suitable for extreme long travelling lengths and high travel speeds.





Akapp-Stemmann
A Wabtec Activity

*Flexible with energy!*

# Questionnaire
# Multiconductor system



Company : _____ Contact : Mr. / Mrs _____

City : _____ Dept. : _____

Country : _____ E-mail : _____

Date : _____ Phone : _____

Your ref. : _____

We want to deliver an Akapp-Stemmann conductor system which is exactly adapted to your company.
Therefore, we request you to answer the following questions.

| | |
|---|---|
| 1. Type of industry where the Multiconductor is to be used | ..... |
| 2. Number and type of machines to be fed | ..... pcs., ..... |
| 3. Traverse length | ..... m |
| 4. Maximum capacity per machine | ..... kW; ..... H.P.<br>..... $A_{nom}$ , ..... $A_{starting\ current}$ |
| 5. Maximum simultaneous current | ..... kW, ..... A |
| 6. Voltage | ..... V, ..... Hz, ..... phase + earth<br>+ / without zero |
| 7. Number of conductors required | ..... conductors |
| 8. Is a curved section required?<br>If so, please forward a sketch/drawing. | no/ yes, ..... curves with radius ..... mm,<br>..... degrees per curve |
| 9. Maximum travel speed | ..... m/min. |
| 10. Position of feed point | at the beginning of the installation / at ..... m |
| 11. Size of supply cable | ..... x ..... $mm^2$, ..... mm Ø |
| 12. Ambient conditions (in-/outdoors, dust, humid, corrosive elements, explosion hazard etc.)? | ..... m indoors /..... m outdoors<br>inclusive / exclusive flexible sealing |
| 13. Ambient temperature | min. ..... °C, max. ..... °C |
| 14. Are there track transfers required? If yes, please forward detailed information with drawing | no / yes, ..... pcs. transfers |
| 15. Switch frequency and duty cycle (D.C.) of the machinery to be fed | ..... x per ..... ; ..... % D.C. |
| 16. Additional information which might be relevant for the selection of your Multiconductor system | |

**Wabtec Netherlands B.V., Ede, The Netherlands • Tel. +31 88 600 4500**
**E-mail: info@akapp.com • Internet: www.akapp.com**

# Wabtec Netherlands: Flexible with energy!





Wabtec Netherlands is a market leader with our made to order conductor bar systems. We offer you the best possible solution for almost any application in whatever the circumstances. We welcome your inquiries!



Our cable reels prove their worth daily in numerous applications, indoors as well as outdoors. Reliable power consumption and control for cranes, hoists, internal transport carts, electrical tools etc. We can also supply the correct high-flexible cable to meet your needs!



Our festoon systems offer extensive options for the safe and efficient transport of your cables. Thanks to the high quality and reliability, you can use it for  situations, both indoors and outdoors.



Akapp-Stemmann products are designed by the highest standards and are certified by UL, CCC and/or CE.

More information about our products can be found in our brochures, which you can also download from our website: www.akapp.com.

You can also submit your quote request online here. Quick and easy!

Wabtec
NETHERLANDS

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