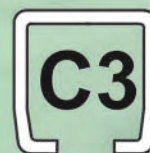


# Cable trolleys and accessories for C-rail system



**UNILIFT®**



## Table of contents

|   |   |
|---|---|
| Main design rules for mobile receivers supply systems ..... | 4 |
| Components of supply C-rail systemj .....                   | 4 |
| C-rail power supply system selection .....                  | 5 |



|  |   |
|--|---|
| Rails <b>C3</b> .....                              | 6 |
| Track coupler <b>LC31</b> .....                    | 6 |
| Track support brackets <b>UC35-1, UC35-2</b> ..... | 6 |
| Track support bracket <b>UC35-3</b> .....          | 7 |
| End caps <b>P50</b> .....                          | 7 |
| Fixible filing profile <b>PRW-01</b> .....         | 7 |
| Bumper <b>ZG-03</b> .....                          | 7 |

|   |   |
|---|---|
| Examples of mounting support arms with girder clips ..... | 8 |
| Permissible support arm load .....                        | 8 |
| Support arm profile .....                                 | 8 |
| Girder clip <b>LK-C30</b> .....                           | 8 |

|  |   |
|--|---|
| Cable trolleys for flat cables sign example .....  | 9 |
| Cable trolleys for round cables sign example ..... | 9 |

### series **C31P**



|                       |    |
|-----------------------|----|
| Cable trolleys .....  | 10 |
| Towing trolleys ..... | 10 |
| End clamps .....      | 11 |

### series **C31R**



|                       |    |
|-----------------------|----|
| Cable trolleys .....  | 12 |
| Towing trolleys ..... | 12 |
| End clamps .....      | 13 |

### series **C32R**



|                       |    |
|-----------------------|----|
| Cable trolleys .....  | 14 |
| Towing trolleys ..... | 14 |
| End clamps .....      | 15 |



|  |    |
|--|----|
| Clamping frame for flat cables .....           | 16 |
| Sectional clamping frame for flat cables ..... | 16 |



|   |    |
|---|----|
| Clamping frame for round cables .....           | 17 |
| Sectional clamping frame for round cables ..... | 17 |



|   |    |
|---|----|
| PVC covered steel rope ties with shackle .....    | 18 |
| PVC covered steel rope ties without shackle ..... | 18 |

|   |    |
|---|----|
| Strengthened steel cable supports ..... | 19 |
| Flanged steel cable supports .....      | 19 |



|   |    |
|---|----|
| Cables for crane industry - general information ..... | 21 |
| Cable glands - general information .....              | 21 |



|  |         |
|--|---------|
| Design tips .....  | 23      |
| Assembly and operation manual for C-rail supply line ..... | 24 - 25 |
| C-rail power supply system selection .....                 | 26 - 27 |

## Main design rules for mobile receivers supply systems

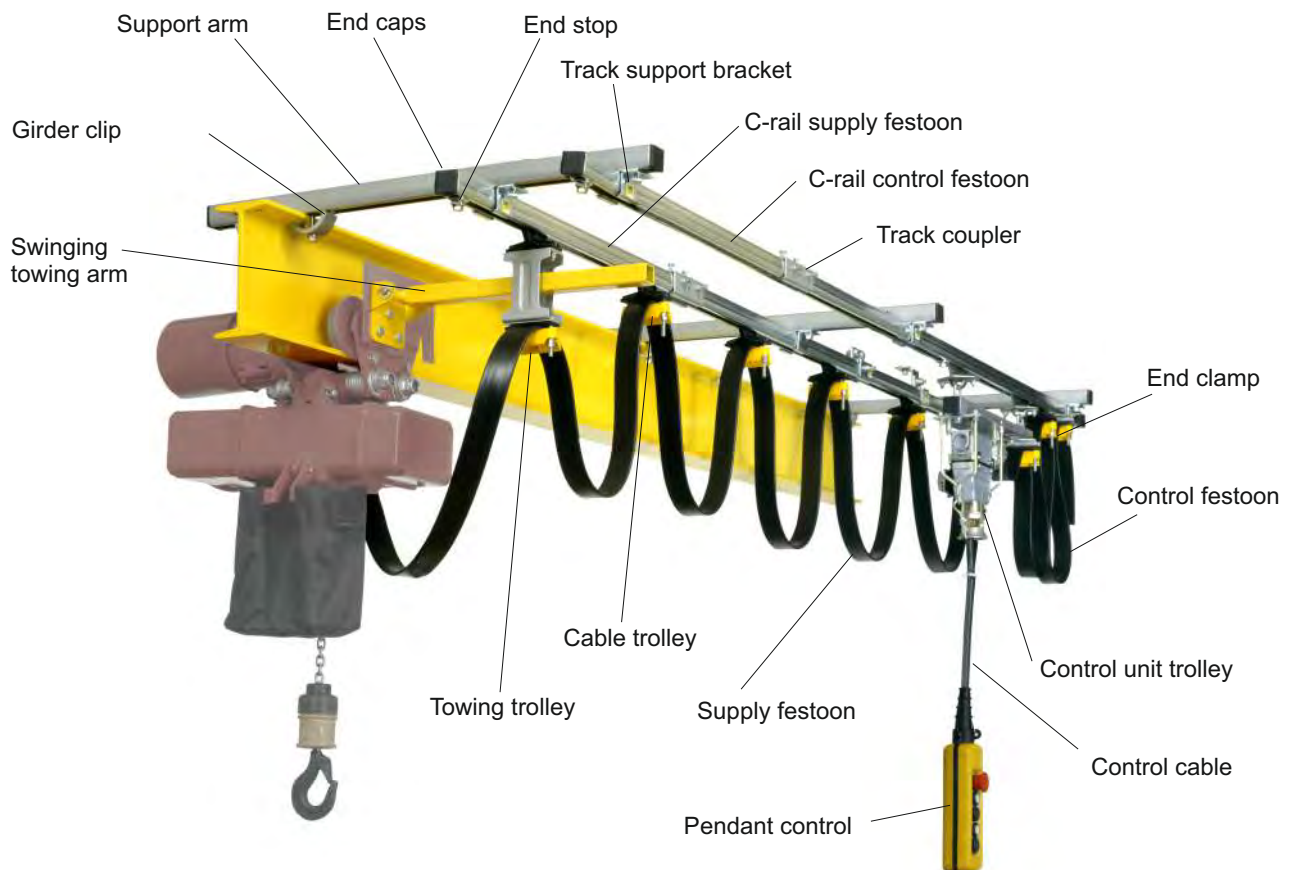
Cable trolleys are intended to work at normal conditions, as:

environment: humidity max. 70 %, non - aggressive, dust free  
working place: indoor / open air  
temperature: -40°C ... +80°C

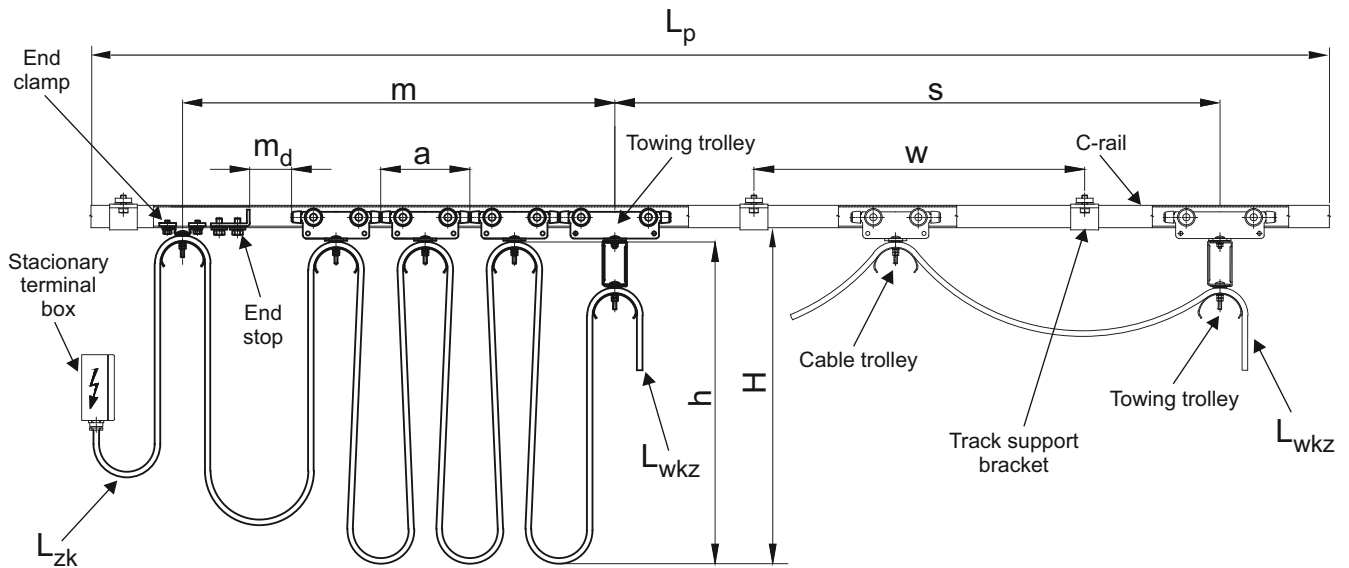
Cable trolleys supply lines can be also applied at especially hard working conditions ( aggressive environment, heat radiation, high humidity, dusty, explosion hazardous area). In that case, please ask us for develop an appropriate technical solution

**When designing the power system must include provisions to prevent accidents**

## Components of supply C-rail system



## C-rail power supply system selection



### DESIGNATIONS:

- s** - length of towing trolley route [m]
- a** - cable trolley length [m]
- z** - number of cable trolleys
- n** - number of loops
- h** - cable loop height [m]  
(for curve track  $h_{max} = 0,3 \cdot \text{curve radius } R$  )
- H** - permissible height of cable loop [m]
- m** - length of trolley storage area [m]
- m<sub>d</sub>** - trolley storage area length addition (minimum  $m_d \geq a$  ) [m]
- f** - cable length addition coefficient  $f = 1,1 \div 1,2$
- D** - cable support diameter [m]
- L<sub>p</sub>** - length of the track of the guide C rail [m]
- L** - length of supply wire from middle of the end clamp to middle of the towing trolley [m]  
(without connecting sections  $L_{zk}$  and  $L_{wkz}$  )
- L<sub>zk</sub>** - cable length from end clamp to crane contact box [m]
- L<sub>wkz</sub>** - cable length from towing trolley to actuator contact box [m]
- L<sub>c</sub>** - total cable length [m]  
(with connecting sections  $L_{zk}$  and  $L_{wkz}$  )

### RELATIONS:

#### Number of loops

$$n = \frac{f \cdot (s + m_d)}{2 \cdot h - f \cdot a + 1,25 \cdot D}$$

#### Number of trolleys

(without towing trolley & end clamp)

$$z = n - 1$$

#### Length of trolleys storage area

$$m = n \cdot a + m_d$$

#### Length of supply wire

(without connecting sections  $L_{zk}$  and  $L_{wkz}$  )

$$L = (s + m) \cdot f$$

#### Total length of supply wire

(with connecting sections  $L_{zk}$  and  $L_{wkz}$  )

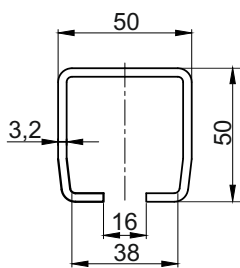
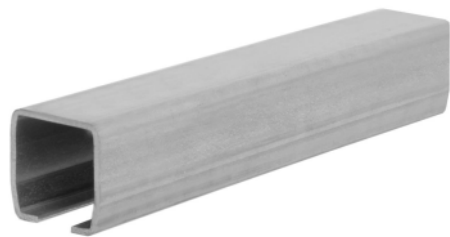
$$L_c = L + L_{zk} + L_{wkz}$$

- w** - the distance between the track support brackets  
(depending on the capacity per unit length).  
In practice this is:
  - straight line -  $1,5 \div 2,0$  m
  - sections curved -  $1,0 \div 1,2$  m

# Cable trolleys and accessories for C-rail system



## Rails C3

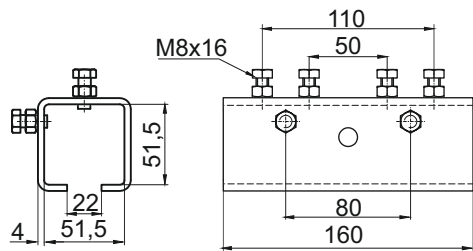


**Material:**  
- cold formed, Sendzimir galvanized steel PN-EN 10327

$I_x$  - axial moment of inertia [cm<sup>4</sup>]  
 $W_x$  - axial section modulus [cm<sup>3</sup>]

| Catalog No. | Type | Length [mm] | $I_x$ [cm <sup>4</sup> ] | $W_x$ [cm <sup>3</sup> ] | Weight [kg/m] |
|-------------|------|-------------|--------------------------|--------------------------|---------------|
| 2500.10     | C3/6 | 6000        | 16,9                     | 6,1                      | 3,94          |

## Track coupler LC31



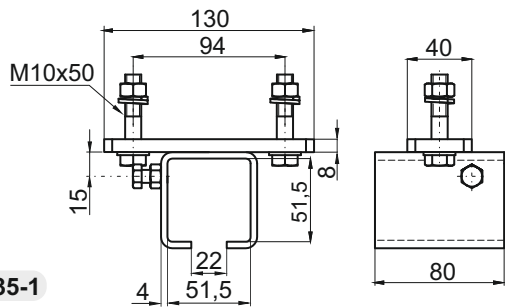
**Material:**  
**body** - dip galvanized steel  
**bolts, nuts** - galvanized steel

| Catalog No. | Type | Weight [kg] |
|-------------|------|-------------|
| 2501.00     | LC31 | 1,07        |

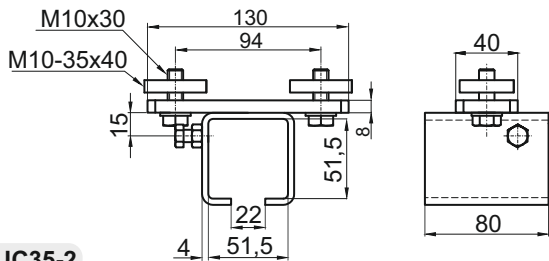
## Track support brackets UC35-1, UC35-2



UC35-1



UC35-2



**Material:**  
**body** - dip galvanized steel  
**bolts, nuts** - galvanized steel

Maximum load: **200 kg**

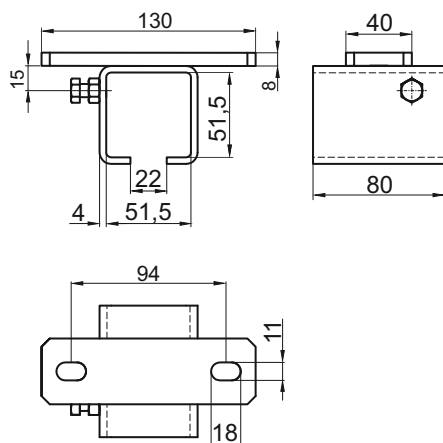
| Catalog No. | Type   | Weight [kg] |
|-------------|--------|-------------|
| 2502.30     | UC35-1 | 0,95        |
| 2502.31     | UC35-2 | 0,98        |



## Track support bracket UC35-3



UC35-3



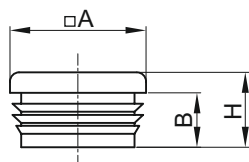
**Material:**

**body** - dip galvanized steel  
**bolts, nuts** - galvanized steel

Maximum load: **200 kg**

| Catalog No. | Type   | Weight [kg] |
|-------------|--------|-------------|
| 2502.32     | UC35-3 | 0,83        |

## End caps P50



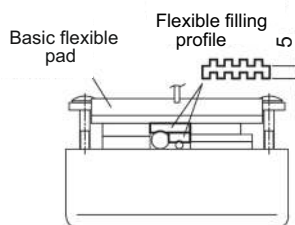
**Material:** plastic

| Catalog No. | Type | For rail | Dimensions [mm] |      |      | Weight [kg] |
|-------------|------|----------|-----------------|------|------|-------------|
|             |      |          | a               | b    | h    |             |
| 1013.02     | P50  | C3       | 50              | 24,5 | 31,0 | 0,006       |

## Flexible filing profile PRW-01



Example



**Material:** thermoplastic elastomer

**!** Profile is available in lengths that are multiples of 1 meter.

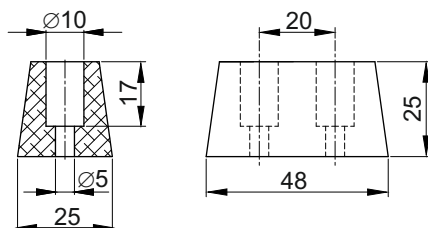
| Catalog No. | Type   | Weight [kg/m] |
|-------------|--------|---------------|
| 1075.00     | PRW-01 | 0,150         |

Flexible profile is designed for fill in the free space in a bunch of cables between clamping surfaces made by cable support and part of trolley or end clamp body.

The application of flexible profile provides steady pressure on the cables in case of the large difference in cross-section.

## Bumper ZG-03

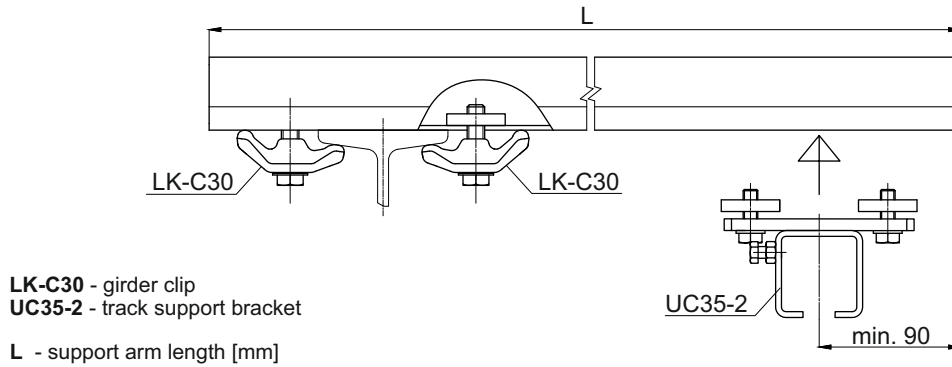
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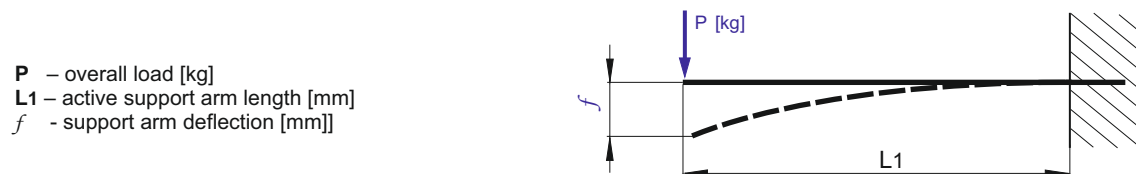
**Material:** rubber EPDM

| Catalog No. | Type  | Weight [kg] |
|-------------|-------|-------------|
| 1080.40     | ZG-03 | 0,030       |

## Examples of mounting support arms with girder clips

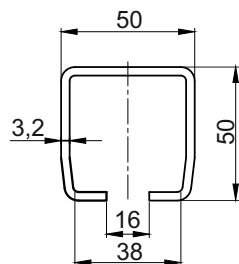
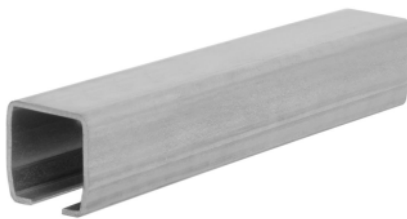


## Permissible support arm load



| Support arm profile    | L1 [mm] |       |
|------------------------|---------|-------|
| <b>C3</b> 50x50x3,2 mm | 700     | 900   |
| P [kg]                 | 116,05  | 89,73 |
| f [mm]                 | 4,0     | 6,9   |

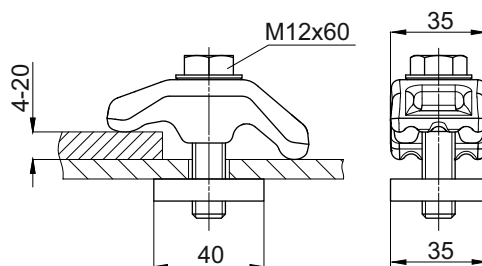
## Support arm profile C3



**Material:**  
 - cold formed, Sendzimir galvanized steel PN-EN 10327

| Catalog No. | Type       | Length L [mm] | Weight [kg] |
|-------------|------------|---------------|-------------|
| 2506.05     | KL-C3/800  | 800           | 3,15        |
| 2506.06     | KL-C3/1000 | 1000          | 3,94        |

## Girder clip LK-C30



**Material:**  
**girder clip** - galvanized forged steel  
**spherical washer** - galvanized steel  
**bolt** - galvanized steel  
**square nut** - galvanized steel

Mechanical strength: **450 [daN]**

| Catalog No. | Type   | Weight [kg] |
|-------------|--------|-------------|
| 1005.40     | LK-C30 | 0,263       |



## Cable trolleys for flat cables sign example



### Cable trolleys sign example:

**WK-P3-200x111xD125**  
**WKZ-P3-200x111xD125**

Type \_\_\_\_\_  
Cable trolley length [mm] \_\_\_\_\_  
Cable support width [mm] \_\_\_\_\_  
Cable support diameter [mm] \_\_\_\_\_



### End clamps sign example:

**ZK-P3-171x111xD125**

Type \_\_\_\_\_  
End clamp length [mm] \_\_\_\_\_  
Cable support width [mm] \_\_\_\_\_  
Cable support diameter [mm] \_\_\_\_\_

## Cable trolleys for round cables sign example



### Cable trolleys sign example:

**WK-R3-250x175xD200**  
**WKZ-R3-250x175xD200**

Type \_\_\_\_\_  
Cable trolley length [mm] \_\_\_\_\_  
Cable support width [mm] \_\_\_\_\_  
Cable support diameter [mm] \_\_\_\_\_



### End clamps sign example:

**ZK-R3-221x175xD200**

Type \_\_\_\_\_  
End clamp length [mm] \_\_\_\_\_  
Cable support width [mm] \_\_\_\_\_  
Cable support diameter [mm] \_\_\_\_\_

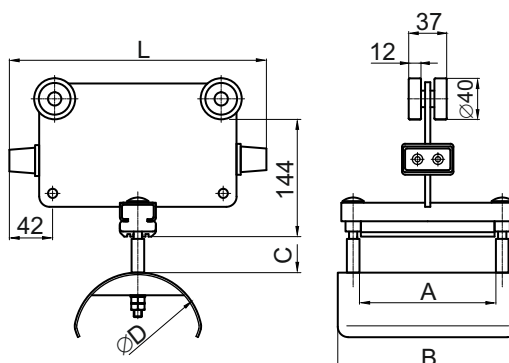
# Cable trolleys and accessories for C-rail system for flat cables



**C3**

## Cable trolleys


series **C31P**



### Material:

- body** - dip galvanized steel
- rollers** - covered rolling bearings
- axle** - galvanized steel
- cable support** - dip galvanized steel
- pressure pad** - thermoplastic elastomer
- bumpers** - rubber EPDM
- bolts, nuts** - galvanized steel

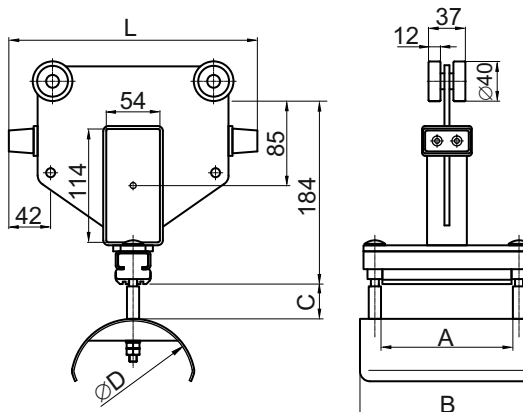
Maximum trolley speed: **100 m/min**  
 Working temperature: **-30°C to +80°C**  
 Maximum trolley load: **50 kg**

**!** The flexible profile **PRW-01**  is helpful to fill gaps in the set of cables (page 7)

| Catalog No. | Type               | Dimensions [mm] |     |     |     |                  | Weight [kg] |
|-------------|--------------------|-----------------|-----|-----|-----|------------------|-------------|
|             |                    | L               | D   | A   | B   | C <sub>max</sub> |             |
| 2510.11     | WK-P3-200x111xD125 | 200             | 125 | 66  | 111 | 30               | 2,10        |
| 2510.12     | WK-P3-200x175xD125 |                 |     | 130 | 175 |                  | 2,27        |
| 2510.21     | WK-P3-250x111xD125 | 250             | 125 | 66  | 111 | 55               | 2,45        |
| 2510.22     | WK-P3-250x175xD125 |                 |     | 130 | 175 |                  | 2,61        |
| 2510.23     | WK-P3-250x175xD160 |                 | 160 | 130 | 175 | 40               | 2,85        |
| 2510.24     | WK-P3-250x206xD160 |                 |     | 161 | 206 |                  | 3,02        |

## Towing trolleys

series **C31P**



### Material:

- body** - dip galvanized steel
- rollers** - covered rolling bearings
- axle** - galvanized steel
- cable support** - dip galvanized steel
- pressure pad** - thermoplastic elastomer
- bumpers** - rubber EPDM
- bolts, nuts** - galvanized steel

Maximum trolley speed: **100 m/min**  
 Working temperature: **-30°C to +80°C**  
 Maximum trolley load: **50 kg**

**!** The flexible profile **PRW-01**  is helpful to fill gaps in the set of cables (page 7)

| Catalog No. | Type                | Dimensions [mm] |     |     |     |                  | Weight [kg] |
|-------------|---------------------|-----------------|-----|-----|-----|------------------|-------------|
|             |                     | L               | D   | A   | B   | C <sub>max</sub> |             |
| 2511.11     | WKZ-P3-200x111xD125 | 200             | 125 | 66  | 111 | 30               | 2,80        |
| 2511.12     | WKZ-P3-200x175xD125 |                 |     | 130 | 175 |                  | 2,97        |
| 2511.21     | WKZ-P3-250x111xD125 | 250             | 125 | 66  | 111 | 55               | 3,15        |
| 2511.22     | WKZ-P3-250x175xD125 |                 |     | 130 | 175 |                  | 3,31        |
| 2511.23     | WKZ-P3-250x175xD160 |                 | 160 | 130 | 175 | 40               | 3,55        |
| 2511.24     | WKZ-P3-250x206xD160 |                 |     | 161 | 206 |                  | 3,75        |

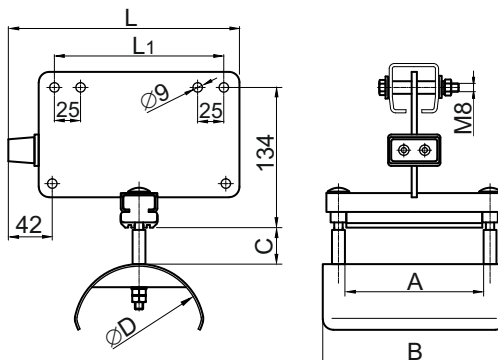
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# Cable trolleys and accessories for C-rail system for flat cables



## End clamps


series **C31P**



### Material:

|                       |                           |
|-----------------------|---------------------------|
| <b>body</b>           | - dip galvanized steel    |
| <b>spacer sleeves</b> | - galvanized steel        |
| <b>cable support</b>  | - dip galvanized steel    |
| <b>pressure pad</b>   | - thermoplastic elastomer |
| <b>bumpers</b>        | - rubber EPDM             |
| <b>bolts, nuts</b>    | - galvanized steel        |

Working temperature: **-30°C to +80°C**  
Maximum end clamp load: **50 kg**

**!** The flexible profile **PRW-01**  is helpful to fill gaps in the set of cables (page 7)



Example of end clamps  
mounting in rail C3

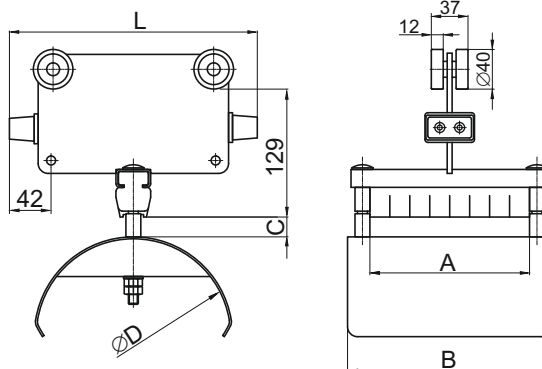
| Catalog No. | Type               | Dimensions [mm] |     |     |     |     |                  | Weight [kg] |
|-------------|--------------------|-----------------|-----|-----|-----|-----|------------------|-------------|
|             |                    | L               | L1  | D   | A   | B   | C <sub>max</sub> |             |
| 2512.11     | ZK-P3-171x111xD125 | 171             | 112 | 125 | 66  | 111 | 30               | 1,85        |
| 2512.12     | ZK-P3-171x175xD125 |                 |     |     | 130 | 175 |                  | 2,02        |
| 2512.21     | ZK-P3-221x111xD125 | 221             | 162 |     | 66  | 111 | 55               | 2,20        |
| 2512.22     | ZK-P3-221x175xD125 |                 |     |     | 130 | 175 |                  | 2,36        |
| 2512.23     | ZK-P3-221x175xD160 |                 |     | 160 | 130 | 175 | 40               | 2,60        |
| 2512.24     | ZK-P3-221x206xD160 |                 |     |     | 161 | 206 |                  | 2,77        |

# Cable trolleys and accessories for C-rail system for round cables



## Cable trolleys

series **C31R**



### Material:

- body** - dip galvanized steel
- rollers** - covered rolling bearings
- axle** - galvanized steel
- cable support** - dip galvanized steel
- pressure pad** - thermoplastic elastomer
- bumpers** - rubber EPDM
- bolts, nuts** - galvanized steel

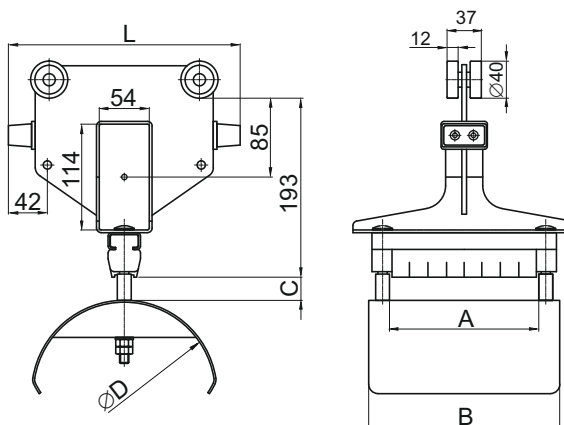
**!** The flexible profile **PRW-01** is helpful to fill gaps in the set of cables (page 7)

Maximum trolley speed: **100 m/min**  
Working temperature: **-30°C to +80°C**  
Maximum trolley load: **50 kg**

| Catalog No. | Type               | Dimensions [mm] |     |     |     |                  | Weight [kg] |
|-------------|--------------------|-----------------|-----|-----|-----|------------------|-------------|
|             |                    | L               | D   | A   | B   | C <sub>max</sub> |             |
| 2530.11     | WK-R3-250x175xD200 | 250             | 200 | 130 | 175 | 25               | 3,17        |
| 2530.12     | WK-R3-250x206xD200 |                 |     | 161 | 206 |                  | 3,50        |
| 2530.13     | WK-R3-250x240xD200 |                 |     | 195 | 240 |                  | 3,75        |

## Towing trolleys

series **C31R**



### Material:

- body** - dip galvanized steel
- rollers** - covered rolling bearings
- axle** - galvanized steel
- cable support** - dip galvanized steel
- pressure pad** - thermoplastic elastomer
- bumpers** - rubber EPDM
- bolts, nuts** - galvanized steel

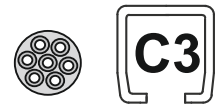
**!** The flexible profile **PRW-01** is helpful to fill gaps in the set of cables (page 7)

Maximum trolley speed: **100 m/min**  
Working temperature: **-30°C to +80°C**  
Maximum trolley load: **50 kg**

| Catalog No. | Type                | Dimensions [mm] |     |     |     |                  | Weight [kg] |
|-------------|---------------------|-----------------|-----|-----|-----|------------------|-------------|
|             |                     | L               | D   | A   | B   | C <sub>max</sub> |             |
| 2531.11     | WKZ-R3-250x175xD200 | 250             | 200 | 130 | 175 | 25               | 3,99        |
| 2531.12     | WKZ-R3-250x206xD200 |                 |     | 161 | 206 |                  | 4,23        |
| 2531.13     | WKZ-R3-250x240xD200 |                 |     | 195 | 240 |                  | 4,46        |

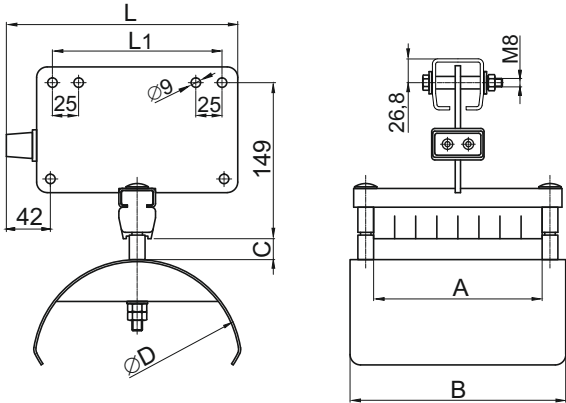
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# Cable trolleys and accessories for C-rail system for round cables



## End clamps

series **C31R**




- Material:**
- body** - dip galvanized steel
  - spacer sleeves** - galvanized steel
  - cable support** - dip galvanized steel
  - pressure pad** - thermoplastic elastomer
  - bumpers** - rubber EPDM
  - bolts, nuts** - galvanized steel

Working temperature: **-30°C to +80°C**  
Maximum end clamp load: **50 kg**



Example of end clamps  
mounting in rail C3

**!** The flexible profile **PRW-01**  is helpful to fill gaps  
in the set of cables (page 7)

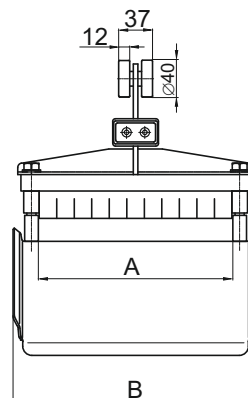
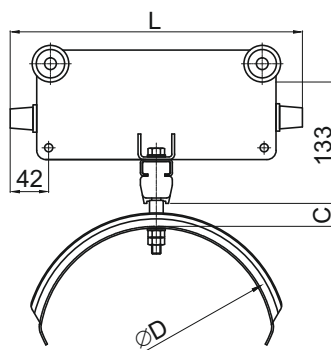
| Catalog No. | Type               | Dimensions [mm] |     |     |     |     |                  | Weight [kg] |
|-------------|--------------------|-----------------|-----|-----|-----|-----|------------------|-------------|
|             |                    | L               | L1  | D   | A   | B   | C <sub>max</sub> |             |
| 2532.11     | ZK-R3-221x175xD200 | 221             | 162 | 200 | 130 | 175 | 25               | 2,98        |
| 2532.12     | ZK-R3-221x206xD200 |                 |     |     | 161 | 206 |                  | 3,26        |
| 2532.13     | ZK-R3-221x240xD200 |                 |     |     | 195 | 240 |                  | 3,51        |

# Cable trolleys and accessories for C-rail system for round cables



## Cable trolleys

series **C32R**



### Material:

- body** - dip galvanized steel
- rollers** - covered rolling bearings
- axle** - galvanized steel
- cable support** - dip galvanized steel
- pressure pad** - thermoplastic elastomer
- bumpers** - rubber EPDM
- bolts, nuts** - galvanized steel

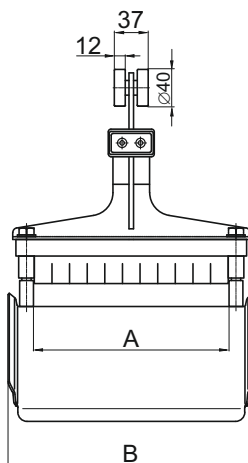
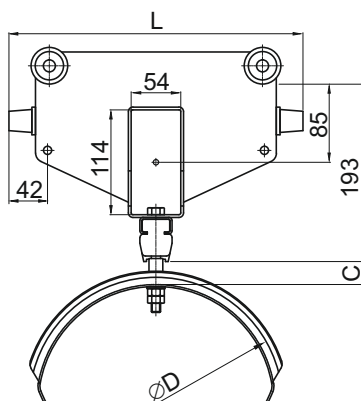
**!** The flexible profile **PRW-01** is helpful to fill gaps in the set of cables (page 7)

Maximum trolley speed: **100 m/min**  
Working temperature: **-30°C to +80°C**  
Maximum trolley load: **50 kg**

| Catalog No. | Type               | Dimensions [mm] |     |     |     |                  | Weight [kg] |
|-------------|--------------------|-----------------|-----|-----|-----|------------------|-------------|
|             |                    | L               | D   | A   | B   | C <sub>max</sub> |             |
| 2530.21     | WK-R3-320x216xD260 | 320             | 260 | 161 | 216 | 25               | 4,74        |
| 2530.22     | WK-R3-320x268xD260 |                 |     | 213 | 268 |                  | 5,08        |

## Towing trolleys

series **C32R**



### Material:

- body** - dip galvanized steel
- rollers** - covered rolling bearings
- axle** - galvanized steel
- cable support** - dip galvanized steel
- pressure pad** - thermoplastic elastomer
- bumpers** - rubber EPDM
- bolts, nuts** - galvanized steel

**!** The flexible profile **PRW-01** is helpful to fill gaps in the set of cables (page 7)

Maximum trolley speed: **100 m/min**  
Working temperature: **-30°C to +80°C**  
Maximum trolley load: **50 kg**

| Catalog No. | Type                | Dimensions [mm] |     |     |     |                  | Weight [kg] |
|-------------|---------------------|-----------------|-----|-----|-----|------------------|-------------|
|             |                     | L               | D   | A   | B   | C <sub>max</sub> |             |
| 2531.21     | WKZ-R3-320x216xD260 | 320             | 260 | 161 | 216 | 25               | 4,91        |
| 2531.22     | WKZ-R3-320x268xD260 |                 |     | 213 | 268 |                  | 5,25        |

KC3 042018 EN

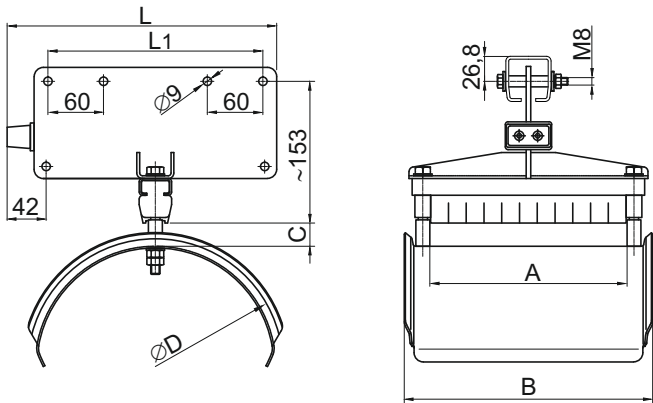


# Cable trolleys and accessories for C-rail system for round cables



## End clamps

series **C32R**




- Material:**
- body** - dip galvanized steel
  - spacer sleeves** - galvanized steel
  - cable support** - dip galvanized steel
  - pressure pad** - thermoplastic elastomer
  - bumpers** - rubber EPDM
  - bolts, nuts** - galvanized steel

Working temperature: **-30°C to +80°C**  
Maximum end clamp load: **50 kg**



Example of end clamps  
mounting in rail C3

**!** The flexible profile **PRW-01**  is helpful to fill gaps  
in the set of cables (page 7)

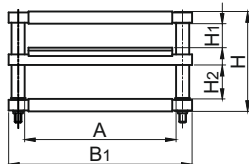
| Catalog No. | Type               | Dimensions [mm] |     |     |     |     |                  | Weight [kg] |
|-------------|--------------------|-----------------|-----|-----|-----|-----|------------------|-------------|
|             |                    | L               | L1  | D   | A   | B   | C <sub>max</sub> |             |
| 2532.21     | ZK-R3-291x216xD260 | 291             | 232 | 260 | 161 | 216 | 25               | 4,44        |
| 2532.22     | ZK-R3-291x268xD260 |                 |     |     | 213 | 268 |                  | 4,78        |

# Cable trolleys and accessories for C-rail system for flat cables



**C3**

## Clamping frame for flat cables



**Material:** body - galvanized steel PVC covered  
spacers - polyamide  
flexible filing profile - thermoplastic elastomer  
axles - galvanized steel  
bolts, nuts - galvanized steel



Exam[ple]

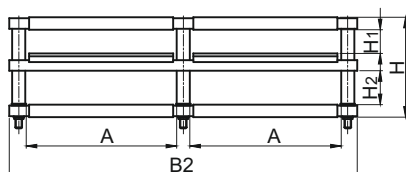
| Catalog No. | Type         | Dimensions [mm] |     |    |    |    | Weight [kg] |
|-------------|--------------|-----------------|-----|----|----|----|-------------|
|             |              | A               | B1  | H1 | H2 | H  |             |
| 3150.11     | UKP-115x50-1 | 88              | 115 | 5  | 15 | 50 | 0,220       |
| 3150.12     | UKP-115x60-1 |                 |     | 10 | 20 | 60 | 0,230       |
| 3150.13     | UKP-115x70-1 |                 |     | 15 | 25 | 70 | 0,235       |
| 3154.11     | UKP-130x60-1 | 104             | 130 | 5  | 15 | 60 | 0,240       |
| 3154.12     | UKP-130x70-1 |                 |     | 10 | 20 | 70 | 0,250       |
| 3154.13     | UKP-130x80-1 |                 |     | 15 | 25 | 80 | 0,260       |
| 3154.14     | UKP-130x90-1 |                 |     | 20 | 30 | 90 | 0,265       |
| 3151.11     | UKP-162x60-1 | 135             | 162 | 5  | 15 | 60 | 0,280       |
| 3151.12     | UKP-162x70-1 |                 |     | 10 | 20 | 70 | 0,290       |
| 3151.13     | UKP-162x80-1 |                 |     | 15 | 25 | 80 | 0,300       |
| 3151.14     | UKP-162x90-1 |                 |     | 20 | 30 | 90 | 0,305       |

Other sizes are possible

## Sectional clamping frame for flat cables



**Material:** body - galvanized steel PVC covered  
spacers - polyamide  
flexible filing profile - thermoplastic elastomer  
axles - galvanized steel  
bolts, nuts - galvanized steel



| Catalog No. | Type         | Dimensions [mm] |     |    |    |    | Weight [kg] |
|-------------|--------------|-----------------|-----|----|----|----|-------------|
|             |              | A               | B2  | H1 | H2 | H  |             |
| 3153.21     | UKP-288x60-2 | 125             | 288 | 10 | 20 | 60 | 0,515       |
| 3153.22     | UKP-288x70-2 |                 |     | 15 | 25 | 70 | 0,520       |
| 3153.23     | UKP-288x80-2 |                 |     | 20 | 30 | 80 | 0,530       |
| 3153.24     | UKP-288x90-2 |                 |     | 25 | 35 | 90 | 0,540       |

Other sizes are possible

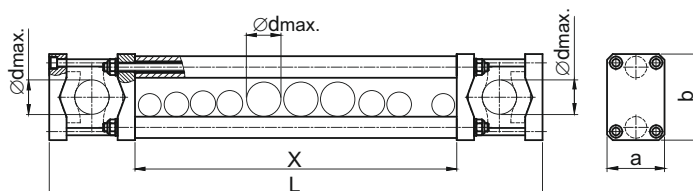
# Cable trolleys and accessories for C-rail system for round cables



## Clamping frame for round cables



**Material:** body - aluminum  
spacers - aluminum  
flexible filing profile - thermoplastic elastomer  
axles - galvanized steel  
bolts, nuts - galvanized steel



Example

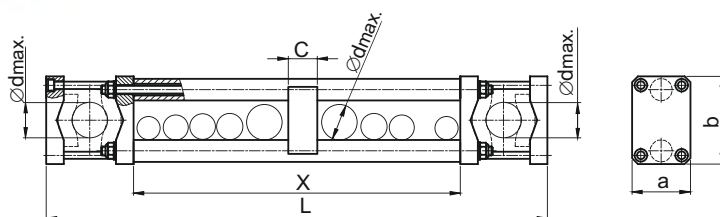
| Catalog No. | Type      | Dimensions [mm]  |     |     |    |    |    | Weight [kg] |
|-------------|-----------|------------------|-----|-----|----|----|----|-------------|
|             |           | d <sub>max</sub> | X   | L   | a  | b  | C  |             |
| 3160.11     | UKR-170-1 | 26               | 80  | 170 | 40 | 60 | 20 | 0,530       |
| 3160.12     | UKR-225-1 |                  | 135 | 225 |    |    |    | 0,575       |
| 3160.13     | UKR-255-1 |                  | 165 | 255 |    |    |    | 0,600       |
| 3160.14     | UKR-290-1 |                  | 200 | 290 |    |    |    | 0,630       |
| 3160.15     | UKR-305-1 |                  | 215 | 305 |    |    |    | 0,645       |

Other sizes are possible

## Sectional clamping frame for round cables



**Material:** body - aluminum  
spacers - aluminum  
flexible filing profile - thermoplastic elastomer  
axles - galvanized steel  
bolts, nuts - galvanized steel

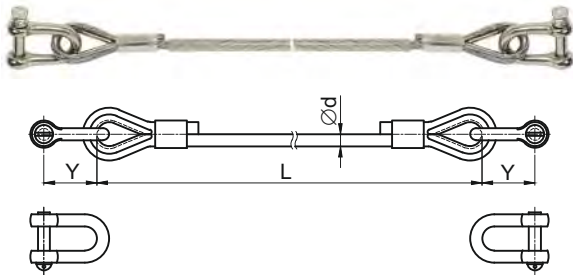


| Catalog No. | Type      | Dimensions [mm]  |     |     |    |    |    | Weight [kg] |
|-------------|-----------|------------------|-----|-----|----|----|----|-------------|
|             |           | d <sub>max</sub> | X   | L   | a  | b  | C  |             |
| 3162.01     | UKR-270-2 | 26               | 150 | 270 | 40 | 60 | 20 | 0,600       |
| 3162.02     | UKR-320-2 |                  | 200 | 320 |    |    |    | 0,640       |
| 3162.03     | UKR-380-2 |                  | 260 | 380 |    |    |    | 0,695       |
| 3162.04     | UKR-440-2 |                  | 320 | 440 |    |    |    | 0,750       |
| 3162.05     | UKR-520-2 |                  | 400 | 520 |    |    |    | 0,810       |

Other sizes are possible.

## PVC covered steel rope ties with shackle

**A** - with shackle



**Material:** rope - galvanized steel PVC covered  
 rope thimble - stainless steel AISI 316  
 shackle - stainless steel AISI 316

| Catalog No. | Type          | Y<br>[mm] | Diameter [mm] |                |
|-------------|---------------|-----------|---------------|----------------|
|             |               |           | cord          | PVC insulation |
| 3000.10A    | CLS-4/6-S-L*) | 27        | 4             | 6              |
| 3000.20A    | CLS-6/8-S-L*) | 35        | 6             | 8              |

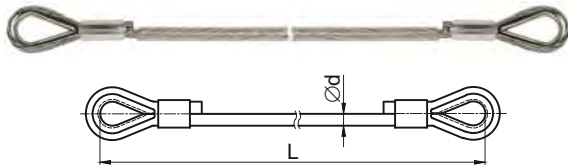
\*) – Add length **L** [mm] to the catalog number

Ø4/Ø6 mm **A** steel rope tie weight = 0,084 [kg] × **L** [m] + 0,064 [kg]

Ø6/Ø8 mm **A** steel rope tie weight = 0,168 [kg] × **L** [m] + 0,154 [kg]

## PVC covered steel rope ties without shackle

**B** - without shackle



**Material:** rope - galvanized steel PVC covered  
 rope thimble - stainless steel AISI 316  
 shackle - stainless steel AISI 316

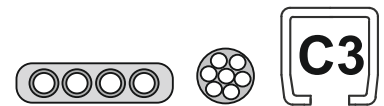
| Catalog No. | Type        | Diameter [mm] |                |
|-------------|-------------|---------------|----------------|
|             |             | cord          | PVC insulation |
| 3000.10B    | CLS-4/6-L*) | 4             | 6              |
| 3000.20B    | CLS-6/8-L*) | 6             | 8              |

\*) – Add length **L** [mm] to the catalog number

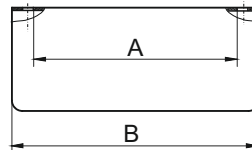
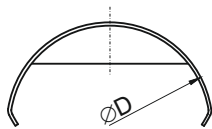
Ø4/Ø6 mm **B** PVC shielded steel rope tie weight = 0,084 [kg] × **L** [m] + 0,010 [kg]

Ø6/Ø8 mm **B** PVC shielded steel rope tie weight = 0,168 [kg] × **L** [m] + 0,014 [kg]

# Cable trolleys and accessories for C-rail system for flat and round cables



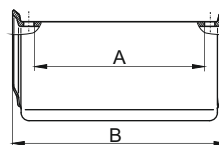
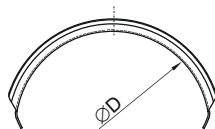
## Strengthened steel cable supports



**Material:** galvanized steel

| Catalog No. | Type     | Dimensions [mm] |     |     | Weight [kg] |
|-------------|----------|-----------------|-----|-----|-------------|
|             |          | D               | A   | B   |             |
| 1082.01     | D125x112 | 125             | 72  | 112 | 0,098       |
| 1082.02     | D125x175 |                 | 135 | 175 | 0,670       |
| 1082.03     | D160x175 | 160             | 135 | 175 | 0,915       |
| 1082.04     | D160x206 |                 | 161 | 206 | 1,040       |
| 1082.06     | D200x175 | 200             | 135 | 175 | 1,200       |
| 1082.07     | D200x206 |                 | 161 | 206 | 1,340       |
| 1082.08     | D200x240 |                 | 195 | 240 | 1,500       |

## Flanged steel cable supports



**Material:** dip galvanized steel

| Catalog No. | Type     | Dimensions [mm] |     |     | Weight [kg] |
|-------------|----------|-----------------|-----|-----|-------------|
|             |          | D               | A   | B   |             |
| 1083.01     | D260x216 | 260             | 161 | 216 | 1,310       |
| 1083.02     | D260x268 |                 | 213 | 268 | 1,790       |

## Cable trolleys and accessories for C-rail system

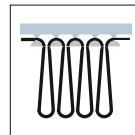




## Cables for crane industry – general information

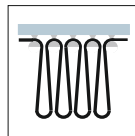
UNILIFT has got a wide offer of festoon cables made by leading producers. Below is the list of typical cables. These cables are mainly applied in: festoon systems, cable reels, energy guiding chains, etc.

Festoon systems consist **flat cables** characterized by flexibility and very low curve radius. They're able to be bundled – what gives reduction of festoon's size. Here are the main types of flat cables (insulation PVC and rubber, shielded or unshielded):



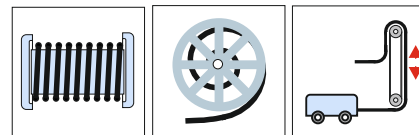
- H05VVH6-F
- H07VVH6-F
- YFLY, KYFLY
- YCFLY, YFCLY, KYCFLY, KYFLCY (EMV)
- NGFLGOU UL
- M(StD)HOU UL (EMC)
- LOSH

Festoon systems consist **round cables** characterized by flexibility and very low curve radius. Here are the main types of flat cables (insulation PUR and rubber, shielded or unshielded):



- FESTOONFLEX PUR-HF
- FESTOONFLEX C-PUR-HF
- KAWEFLEX PUR-HF
- KAWEFLEX C-PUR-HF
- H07RN-F

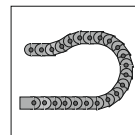
Festoon systems consist **round cables** characterized by flexibility and very low curve radius. Here are the main types of flat cables (insulation PUR and rubber, shielded or unshielded):



- TROMMELFLEX PUR-HF
- TROMMELFLEX-HD SPECIAL
- TROMMELFLEX KSM-S (N)SHTOU-J

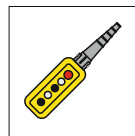
For energy guiding chains the most commonly used cables are:

- FESTOONFLEX PUR-HF
- FESTOONFLEX C-PUR-HF
- TROMMELFLEX KSM-S (N)SHTOU-J
- STN
- STCN (EMV)



Cable for connect the control stations with crane or conveyor devices, hoists, etc. equipped with two integral steel strings:

- FYMYTW
- KASTER



## Cable glands – general information

UNILIFT has to offer a wide assortment of cable glands for cables pointed above.

Cable glands types:

- plastic PG and metric for flat and round cables
- nickel plated brass PG and metric for flat cables,
- special glands,
- universal glands



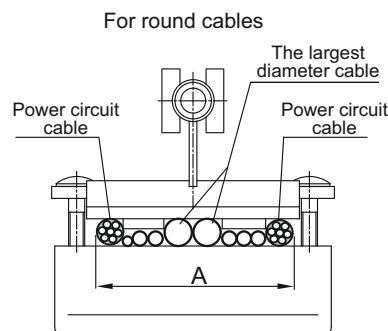
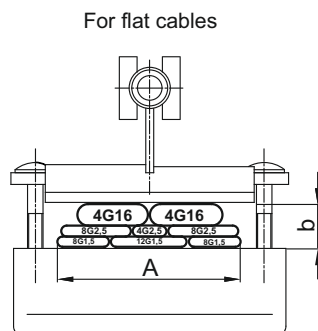
More information is contained in our catalog: „**Electrical cables for cranes, elevators and conveyor systems**”.

Please inquire defining the type, number of wires, conductor cross-section and the required amount in meters.  
We will send you an offer immediately.



## Design tips

### 1. Cable arrangement on cable support



### 2. Cable trolleys selection

- Approximate weight of cables for one trolley:

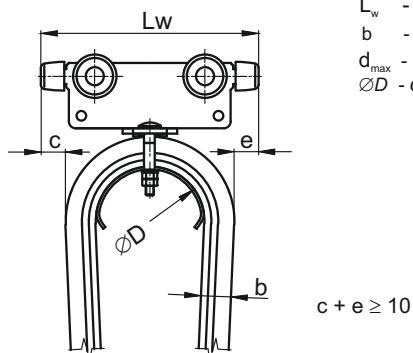
$$F_{kw} = 2 \cdot h \cdot G_k \text{ [kg]}$$

$G_k$  = weight of 1 meter of cable bunch [kg/m]  
 $h$  = cable loop height [m]

- Length and width of cable trolleys for flat cables:

For flat cables:

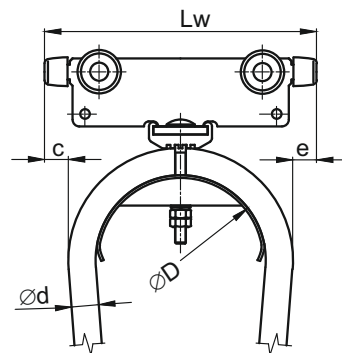
$$L_w = \varnothing D + 2 \cdot b + 10 \text{ [mm]}$$



$L_w$  - approximate cable length [mm]  
 $b$  - flat cable bunch thickness [mm]  
 $d_{max}$  - cable diameter [mm]  
 $\varnothing D$  - cable support diameter [mm]

For round cables:

$$L_w = \varnothing D + 2 \cdot d_{max} + 15 \text{ [mm]}$$

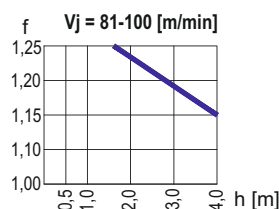
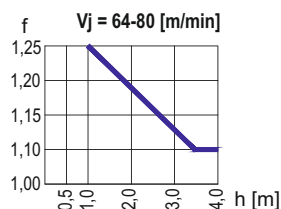
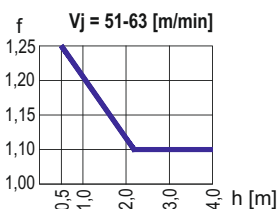
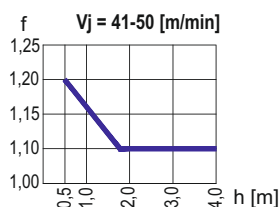
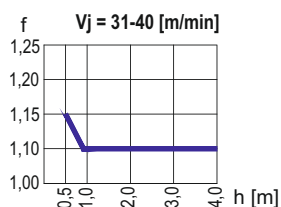
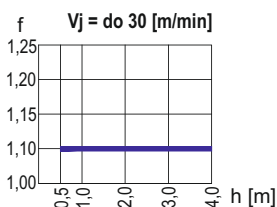


### 3. Cable length addition coefficient in festoon system

Cable length in festoon system (Look: page 5)

$$L = (s + m) \cdot f \text{ [m]}$$

$L$  - approximate cable length [m]  
 $s$  - towing trolley route length [m]  
 $m$  - trolleys storage area length [m]  
 $f$  - cable length addition coefficient



For calculate festoon's cable length coefficient "f" should be considered. Coefficient value depends on working conditions, trolleys speed, height of cable bunch, track shape, etc

## Assembly and operation manual for C-rail supply line

### C-rail track assembly

1. C-rails (for power supply line or control line) should be mounted parallel to receiver's guideway at such a distance that can ensure avoiding collision between moving trolley parts and stationary construction even with swinging cables caused by wind, etc.
2. C-rail track size, supporting structure and distance between track supports should be selected according to overall load (weight of trolleys, cables and rails) and other important working conditions.
3. C-rails can be mounted in many ways. Generally rails are fastened by support arms:
  - to receiver's guideway (I-beam or other) by girder clips
  - to supporting structure by welded support arm brackets
  - to supporting structure, wall, etc. by bolt (screw)-fastened support arm brackets
  - directly to supporting structure, ceiling, etc. by track support bracketsAnother important requirement is to ensure perpendicularity between support arm and C-rail track.
4. Installation of C-rail should be proceed very precisely, paying attention on C-rail sections connection by track couplers. Slip the sections from the both sides of the coupler, so the edges should stick together in the center of the hole placed on the coupler's side wall. The edges of the sections can't have any burrs or irregularities
5. Using four screws on the top wall of track coupler, secure the rails protecting them from slipping out during operation.
6. Mount the end bumper at the end of the track from powered device side. In case of control festoon attach end bumpers on the opposite ends of the track.

### Cable trolleys

All types of cable trolleys are completely assembled by UNILIFT. Supply line elements: cable trolleys, towing trolley and end clamp should be placed on the C-rail in the following order:

1. Towing trolley – from the powered device.
2. Trolleys – between end clamp and towing trolley.
3. End clamp – at the end of trolleys storage area .

### Cables

Wires should be placed and tightened on cable supports in a way that prevents bursting strands and isolation if necessary using additional relief ties. Ties should be sufficiently shorter than the maximum distance between the trolleys. Overhang between cable trolleys should be evenly distributed and only if necessary can be varied.

### Wiring harness insulated clamps

At each cable loop, properly matched clamping frame must be installed:

- loop height up to 2 m – 1 clamp recommended,
- loop height above 2 m – 2 clamps recommended,

The cables should be arranged in insulated clamps according following rules:

for flat cables:

- the largest cross section cables should be placed in upper space of a clamp, without possibility to move
- other cables are placed at the lower space of a clamp and are able to move freely

### Relief rope ties

If necessary, use relief ties fixing them between trolleys and clamp

### Cable festoon assembly preparation

1. Prepare the cable/cables with the calculated length (formulas – page 2 of this catalog) taking into account the connecting sections from towing trolley to terminal box in powered device and from end clamp to terminal box on crane's supporting structure.
2. Measure and mark on the cables position of the towing trolley, other trolleys and end clamp for power festoon and/or control unit trolleys, other trolleys and end clamp for control festoon.
3. Place the wires on the cable supports paying attention to their symmetrical arrangement relative to the body of trolleys/clamps.

## Assembly and operation manual for C-rail supply line

### Cable festoon pre-assembly

UNILIFT can provide pre-assembled cable festoon on a special supporting structure. During the installation of festoon to the device, follow the rules of safety. Assemble should be carry out in such a way to don't cause any damage.

### Trolleys' test drive

The correctness of trolleys' movement along the entire length of the track must be checked after assembly, before start to use the festoon. Pay attention to the connection of rail sections and other important places.

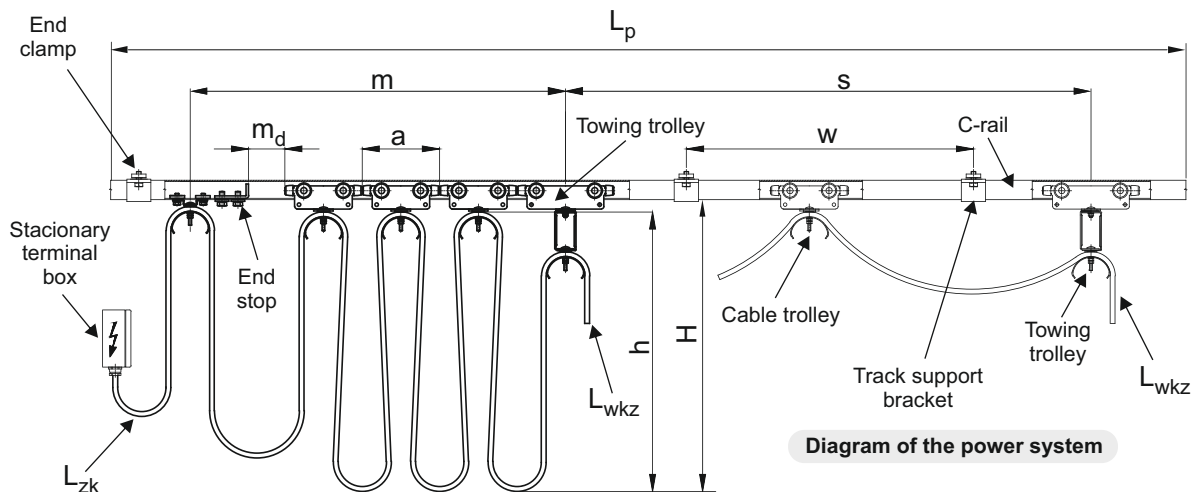
### Inspection and maintenance of supply line

Inspections of all elements of the supply line should be carried out within a period not longer than 3 months.

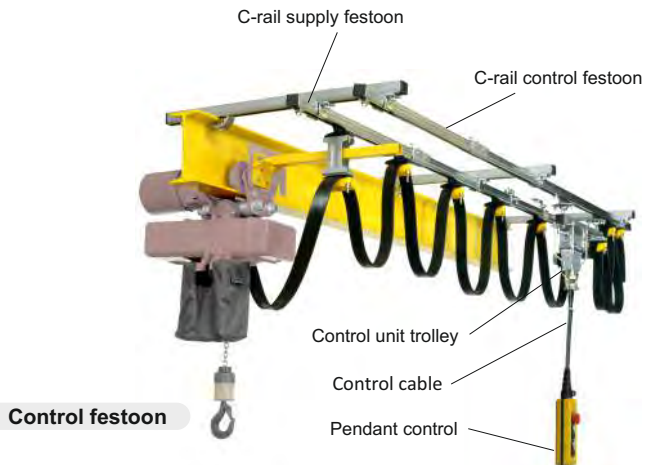
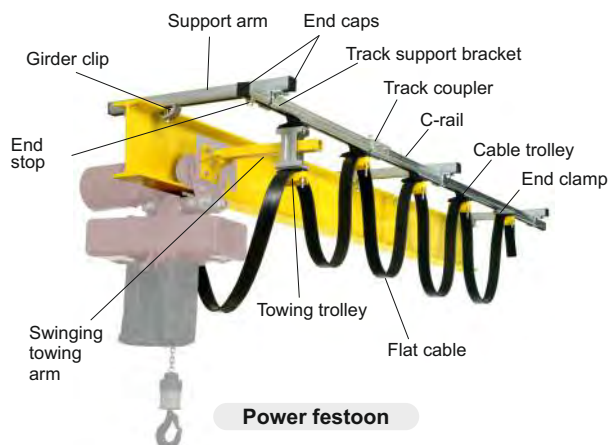
Inspection range:

1. Monitoring of cable trolleys' bearings.
2. Checking of the rail sections connection.
3. Checking the correctness of the towing arm placement for the entire length of the supply line.
4. Checking the cable fastening on trolleys and clamps.

## C-rail power supply system selection



## Components of C-rail supply system



Type of powered device (e.g. crane, hoist, technical device, etc.):

|   |   |  |   |
|---|---|--|---|
| Device localization:                                    | indoor <input type="checkbox"/>                     | outdoor <input type="checkbox"/>   | maritime climate <input type="checkbox"/> |
| Environment:  | normal <input type="checkbox"/>                     | dust, (description) <div style="border: 1px solid black; width: 150px; height: 15px;"></div> |   |
|   | chemically aggressive <input type="checkbox"/>      | (description) <div style="border: 1px solid black; width: 150px; height: 15px;"></div>       |   |
|   | potentially explosive area <input type="checkbox"/> | (description) <div style="border: 1px solid black; width: 150px; height: 15px;"></div>       |   |
| Temperature range:                                      | <input type="text"/> °C min.,                       | <input type="text"/> °C max.   |   |
| Time of trolleys acceleration to rated speed:           | <input type="text"/> s                              |  |   |
| Length of the track of the guide C rail:                | $L_p =$ <input type="text"/> m                      |  |   |
| Supply system length (towing trolley route length):     | $s =$ <input type="text"/> m                        |  |   |
| Permissible trolleys storage area length:               | $m =$ <input type="text"/> m                        |  |   |
| Permissible height of cable loop:                       | $h =$ <input type="text"/> m                        |  |   |
| Trolleys speed:   | <input type="text"/> m/min                          |  |   |
| Cable length from towing clamp to mobile terminal box:  |   | $L_{wkz} =$ <input type="text"/> m   |   |
| Cable length from end clamp to stationary terminal box: |   | $L_{wkz} =$ <input type="text"/> m   |   |

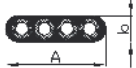



# Cable trolleys and accessories for C-rail system



Cable type: electric ☐ other (e.g. for gas, liquid) ☐

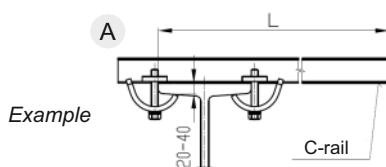
## Supply festoon or/and control festoon cable list:

| Cable type |       |     |        |              |                 |       | Cable dimension<br>(e.g. 4G2,5; 12G1,5) | Supply festoon | Control festoon | Amount of cables<br>in one mounting<br>point | Diameter d of a round<br>cable [mm] or<br>flat cable cross section<br>b x A [mm]<br>  |
|------------|-------|-----|--------|--------------|-----------------|-------|---|----------------|-----------------|--|---|
| Flat       | Round | PVC | Rubber | PVC shielded | Rubber shielded | Other |   |                |                 |  |   |
|            |       |     |        |              |                 |       |   |                |                 |  |   |
|            |       |     |        |              |                 |       |   |                |                 |  |   |
|            |       |     |        |              |                 |       |   |                |                 |  |   |
|            |       |     |        |              |                 |       |   |                |                 |  |   |
|            |       |     |        |              |                 |       |   |                |                 |  |   |
|            |       |     |        |              |                 |       |   |                |                 |  |   |
|            |       |     |        |              |                 |       |   |                |                 |  |   |
|            |       |     |        |              |                 |       |   |                |                 |  |   |

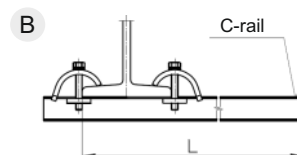
Support arm length:  mm

Support arm fastening by girder clips:

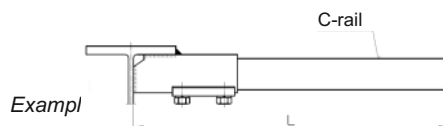
- A on higher shelf ☐
- B on lower ☐



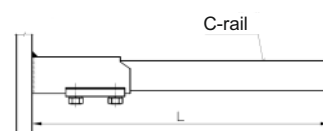
Example



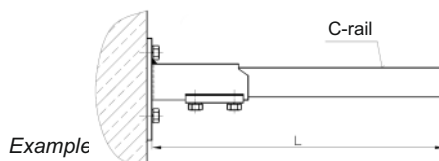
Support arm fastening in KK-C11 bracket: ☐



Example



Support arm fastening in KK-C11P bracket: ☐



Example

Additional notes:

## Contact data:

Company name:

Address:

Contact person:  Office:

Phone number:  e-mail:



## Cable trolleys and accessories for C-rail system



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