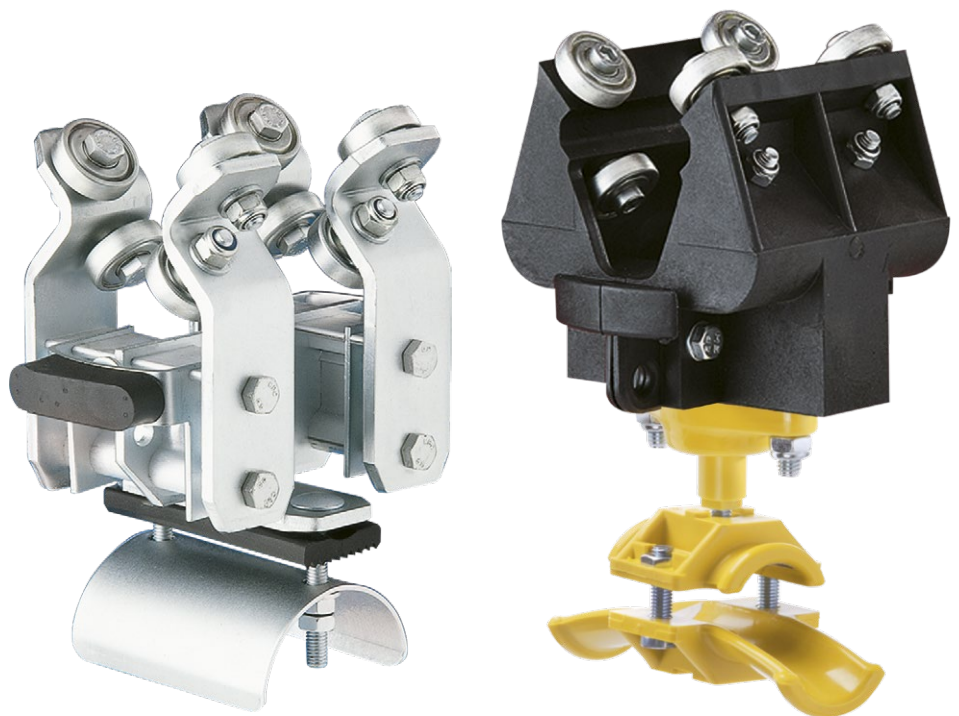


# Festoon Systems for Square Rails

Program 0270 | 0280





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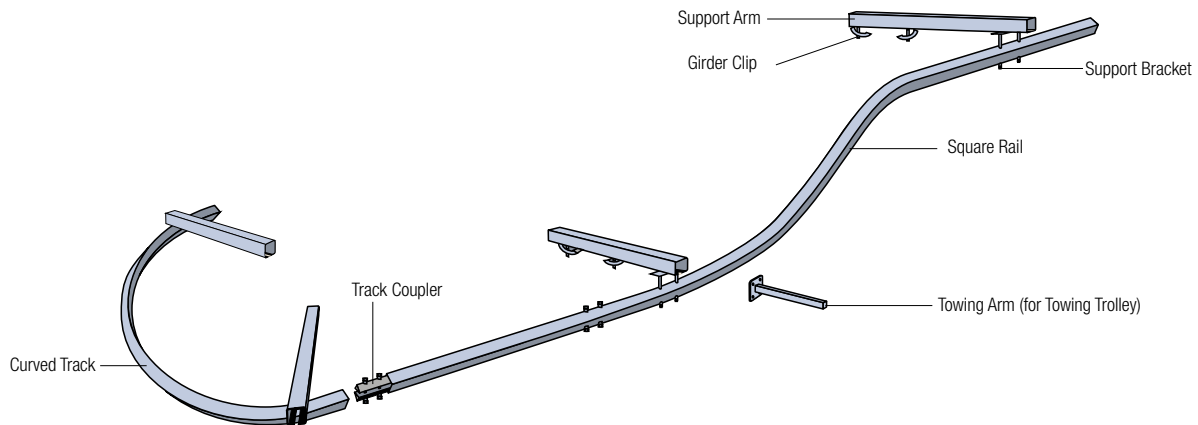


# System Arrangement

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## Square Rails for Curved Track

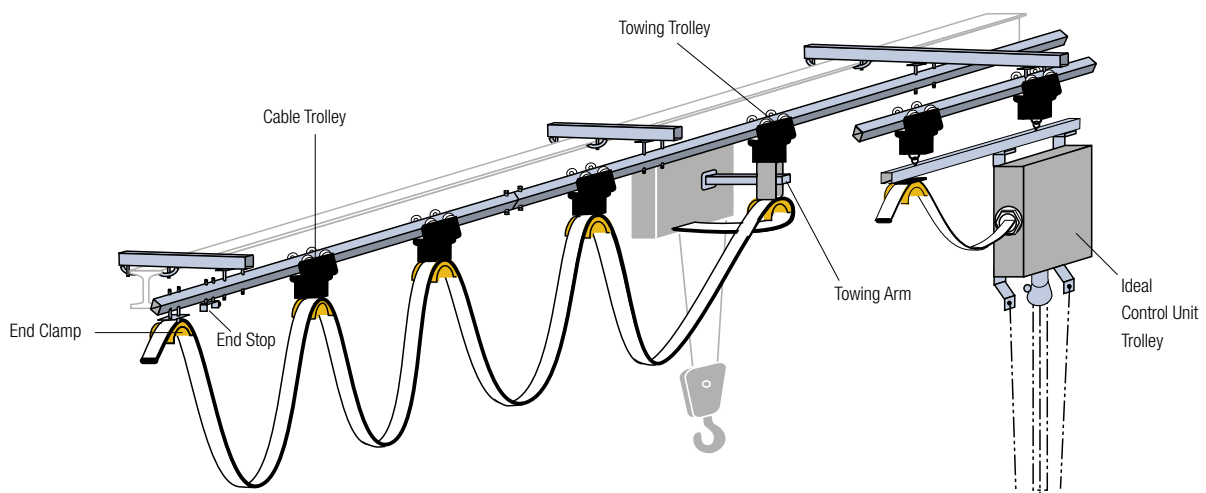
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## Cable Trolley System for Flat Cables

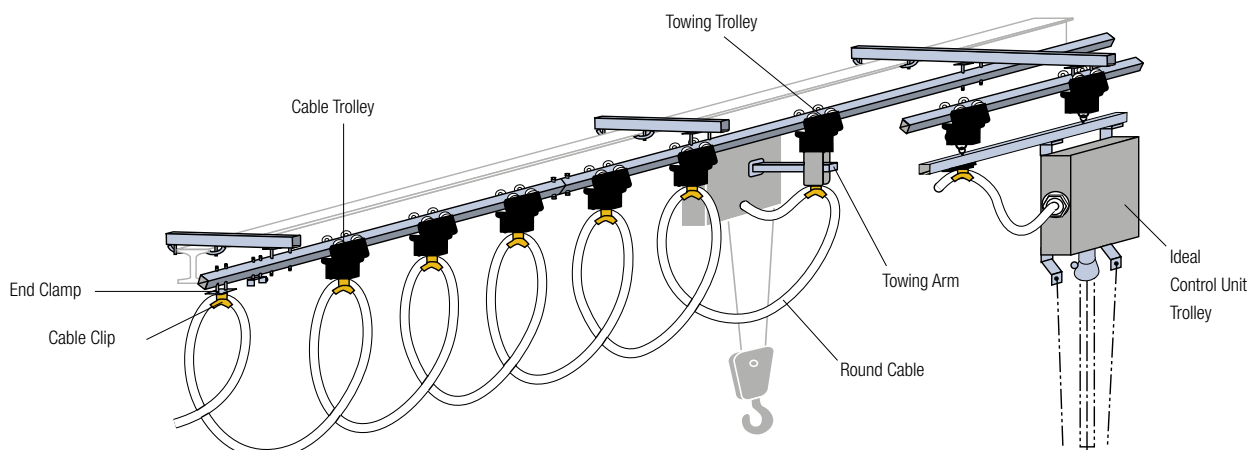
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## Cable Trolley System for Round Cables

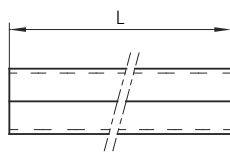
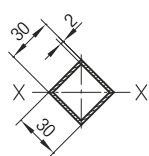
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# Square Rails and Accessories for Curved Tracks

## Program 0270

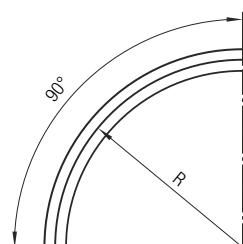
### Square Rails 30 x 30



| Part No.  | Material         | L [mm] | Static Values                                          | Weight [kg/m] |
|-----------|------------------|--------|--------------------------------------------------------|---------------|
| 027200-6  | Galvanized Steel | 6000   | $I_x = 2.95 \text{ cm}^4$<br>$W_x = 1.39 \text{ cm}^3$ | 1.77          |
| 027200-4* | Steel            | 4000   |                                                        |               |
| 027400-6  | Stainless Steel  | 6000   |                                                        |               |
| 027400-4  | Steel (V4A)      | 4000   |                                                        |               |

\* Standard range

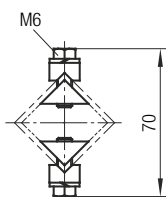
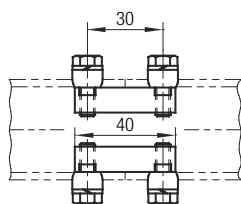
### 90° Curves



| Part No.      | Material              | R [mm] | Stretched Length [mm] | Cable Loop max. 0.7 x R | Weight [kg] |
|---------------|-----------------------|--------|-----------------------|-------------------------|-------------|
| 027203-00400* | Galvanized Steel      | 400    | 630                   | 280                     | 1.10        |
| 027203-00600* |                       | 600    | 945                   | 420                     | 1.70        |
| 027203-00800* |                       | 800    | 1260                  | 560                     | 2.25        |
| 027203-01000* |                       | 1000   | 1570                  | 700                     | 2.80        |
| 027203-01200* |                       | 1200   | 1885                  | 840                     | 3.35        |
| 027203-01400* |                       | 1400   | 2200                  | 980                     | 3.90        |
| 027203-01600* |                       | 1600   | 2510                  | 1120                    | 4.45        |
| 027203-01800* |                       | 1800   | 2890                  | 1260                    | 5.00        |
| 027203-02000* | Stainless Steel (V4A) | 2000   | 3140                  | 1400                    | 5.55        |
| 027403-01000  |                       | 1000   | 1570                  | 700                     | 2.80        |
| 027403-01200  |                       | 1200   | 1885                  | 840                     | 3.35        |
| 027403-01400  |                       | 1400   | 2200                  | 980                     | 3.90        |
| 027403-01600  |                       | 1600   | 2510                  | 1120                    | 4.45        |
| 027403-01800  |                       | 1800   | 2890                  | 1260                    | 5.00        |
| 027403-02000  |                       | 2000   | 3140                  | 1400                    | 5.55        |

\* Standard range

### Track Couplers



| Part No. | Material              | Weight [kg] |
|----------|-----------------------|-------------|
| 027210*  | Galvanized Steel      | 0.10        |
| 027410   | Stainless Steel (V4A) | 0.10        |

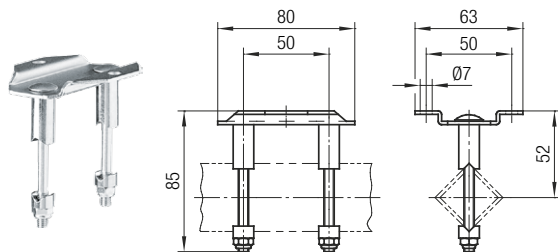
\* Standard range

# Square Rails and Accessories for Curved Tracks

## Program 0270

### Track Support Brackets

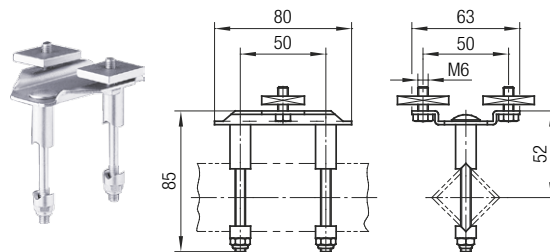
For ceiling mounting



| Part No. | Material    | Max. Load [kg] | Weight [kg] |
|----------|-------------|----------------|-------------|
| 027220*  | Galv. Steel | 125            | 0.14        |
| 027420   | SST (V4A)   | 125            | 0.14        |

\* Standard range

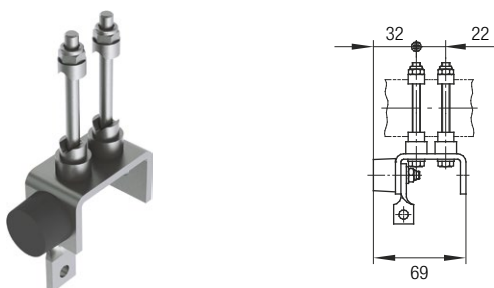
For mounting on Support Arms 30 x 32 x 2 and 40 x 40 x 2.5 mm



| Part No. | Material    | Max. Load [kg] | Weight [kg] |
|----------|-------------|----------------|-------------|
| 027222*  | Galv. Steel | 125            | 0.14        |
| 027422   | SST (V4A)   | 125            | 0.14        |

\* Standard range

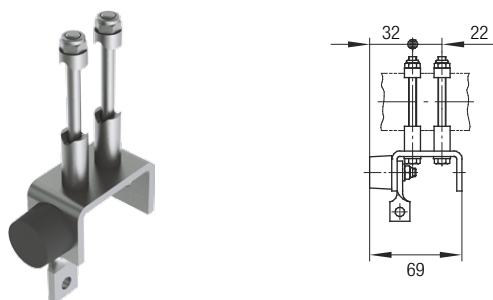
### End Stops for Plastic Cable Trolleys



| Part No. | Material                             | Weight [kg] |
|----------|--------------------------------------|-------------|
| 027112*  | Galvanized Steel; Rubber Buffer      | 0.21        |
| 027408   | Stainless Steel (V4A); Rubber Buffer | 0.21        |

\* Standard range

### End Stop for Steel Cable Trolleys

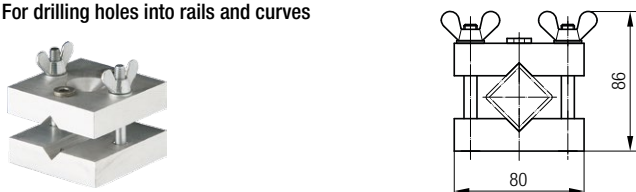


| Part No. | Material                        | Weight [kg] |
|----------|---------------------------------|-------------|
| 027111*  | Galvanized Steel; Rubber Buffer | 0.21        |

\* Standard range

### Drilling Fixture

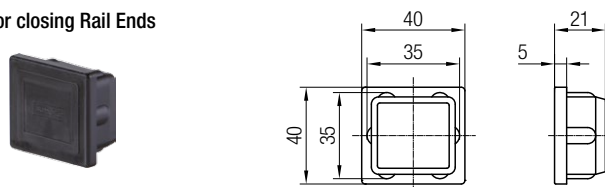
For drilling holes into rails and curves



| Part No. | Material                                                                      | Weight [kg] |
|----------|-------------------------------------------------------------------------------|-------------|
| 027211   | Body: Aluminum<br>Drill Sleeve: Hardened Steel<br>Fasteners: Galvanized Steel | 1.00        |

### End Cap

For closing Rail Ends



| Part No.   | Material | Weight [kg] |
|------------|----------|-------------|
| 020662-31* | Plastic  | 0.004       |

\* Standard range

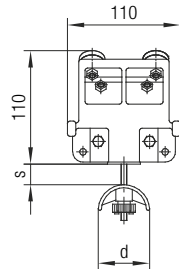
# Cable Trolleys for Flat Cables

## Program 0270

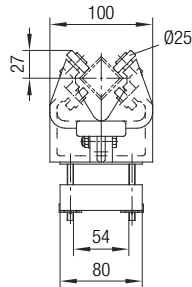
### Plastic Cable Trolley and Cable Support



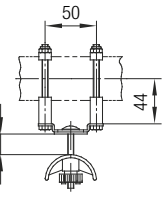
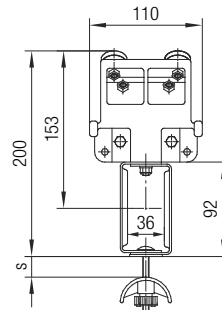
Rollers:  
Ball Bearings, galvanized;  
Cover Plate ZZ.  
Max. Load Capacity: 16 kg



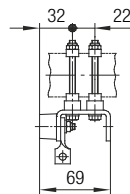
Cable Trolley



Towing Trolley



End Clamp



End Stop  
Part No. 027112

| Cable Trolley<br>Part No. | [kg] | Towing Trolley<br>Part No. | [kg] | End Clamp<br>Part No. | [kg] | d<br>[mm] | s<br>[mm] |
|---------------------------|------|----------------------------|------|-----------------------|------|-----------|-----------|
| 027261*                   | 0.60 | 027267*                    | 1.01 | 027268*               | 0.21 | 50        | 25        |
| 027271*                   | 0.62 | 027277*                    | 1.03 | 027278*               | 0.23 | 80        | 15        |
| 027461 <sup>1)</sup>      | 0.60 | 027467 <sup>1)</sup>       | 1.01 | 027468 <sup>1)</sup>  | 0.21 | 50        | 25        |
| 027471 <sup>1)</sup>      | 0.62 | 027477 <sup>1)</sup>       | 1.03 | 027478 <sup>1)</sup>  | 0.23 | 80        | 15        |

\* Standard range

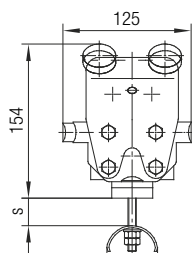
<sup>1)</sup> Stainless Steel (V4A) / Acid-resistant plastic

### Galvanized Steel Cable Trolley and Cable Support; Light Series

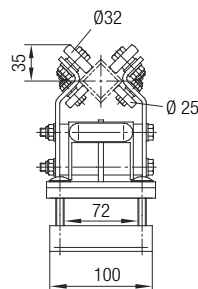


| Cable Trolley<br>Part No. | [kg] | Towing Trolley<br>Part No. | [kg] | End Clamp<br>Part No. | [kg] | d<br>[mm] | s<br>[mm] |
|---------------------------|------|----------------------------|------|-----------------------|------|-----------|-----------|
| 027339-125x100*           | 2.10 | 027349-125x100*            | 2.63 | 027329-100x042*       | 0.54 | 50        | 30        |
| 027340-125x100*           | 2.15 | 027350-125x100*            | 2.68 | 027330-100x068*       | 0.61 | 80        | 15        |

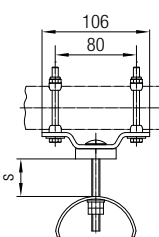
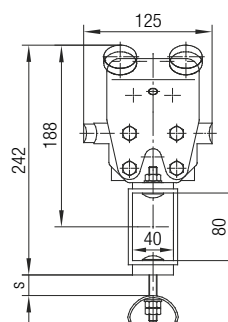
\* Standard range



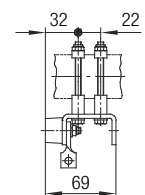
Cable Trolley



Towing Trolley



End Clamp

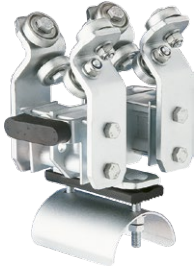


End Stop  
Part No. 027111

# Cable Trolleys for Flat Cables

## Program 0270

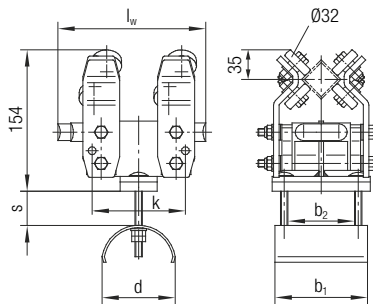
Galvanized Steel Cable Trolley and Cable Support; Heavy Duty Series



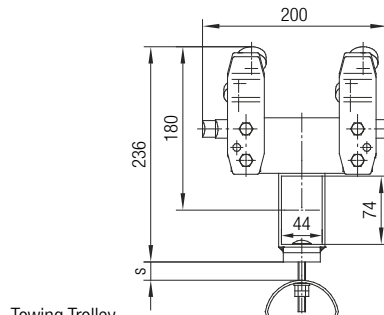
Rollers:  
Ball Bearings, galvanized;  
Cover Plate ZZ.  
Max. Load Capacity: 25 kg

| Cable Trolley<br>Part No. | [kg] | Towing Trolley<br>Part No. | [kg] | End Clamp<br>Part No. | [kg] | d <sub>a</sub><br>[mm] | l <sub>w</sub><br>[mm] | b <sub>1</sub><br>[mm] | b <sub>2</sub><br>[mm] | s<br>[mm] | k<br>[mm] |     |
|---------------------------|------|----------------------------|------|-----------------------|------|------------------------|------------------------|------------------------|------------------------|-----------|-----------|-----|
| 027310-160x100*           | 2.87 | 027320-200x100*            | 3.52 | 027330-100x068*       | 0.68 | 80                     | 160                    | 100                    | 72                     | 38        | 101       |     |
| 027310-160x160*           | 3.11 | 027320-200x160*            | 4.03 | 027330-160x068*       | 0.92 |                        |                        | 160                    | 132                    |           |           |     |
| 027310-200x100            | 2.99 | 027320-200x100*            | 3.52 | 027330-100x068*       | 0.68 |                        | 200                    | 100                    | 72                     | 58        | 141       |     |
| 027310-200x160            | 3.23 | 027320-200x160*            | 4.03 | 027330-160x068*       | 0.92 |                        |                        | 160                    | 132                    |           |           |     |
| 027312-200x100*           | 3.09 | 027322-200x100*            | 3.69 | 027332-100x048*       | 0.78 | 125                    | 200                    | 100                    | 72                     | 35        |           | 181 |
| 027312-200x160*           | 3.42 | 027322-200x160*            | 4.22 | 027332-160x048*       | 1.11 |                        |                        | 160                    | 132                    |           |           |     |
| 027313-250x100*           | 3.34 | 027323-250x100*            | 3.94 | 027333-100x048*       | 0.98 | 160                    | 250                    | 115                    | 72                     | 42        | 181       |     |
| 027313-250x160*           | 3.76 | 027323-250x160*            | 4.56 | 027333-160x048*       | 1.38 |                        |                        | 175                    | 132                    |           |           |     |

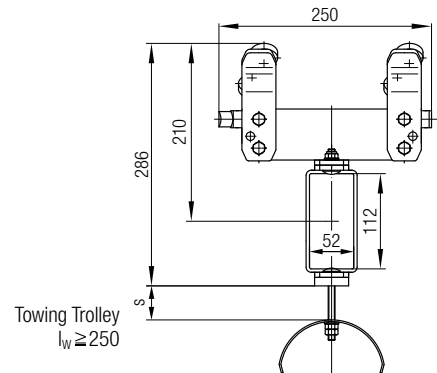
\* Standard range



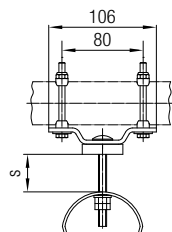
Cable Trolley



Towing Trolley  
 $l_w \leq 200$



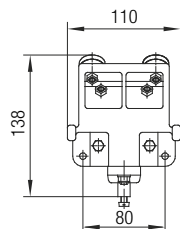
Towing Trolley  
 $l_w \geq 250$



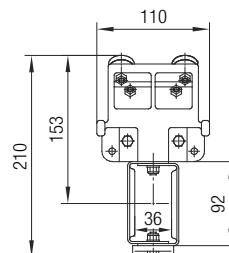
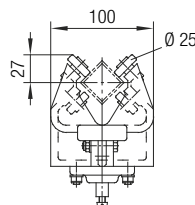
End Clamp

# Cable Trolleys for Round Cable and Hose Program 0270

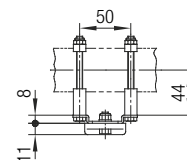
## Plastic Cable Trolleys with Ball Joints for Cable Clips (Part No. 020131 below)



Cable Trolley  
Part No. 027291



Towing Trolley  
Part No. 027297

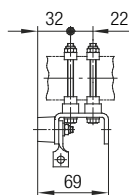


End Clamp  
Part No. 027298

Rollers:  
Ball Bearings, galvanized;  
Cover Plate ZZ.  
Max. Load Capacity: 16 kg

Several Cable Clips  
can be combined

End Stop  
Part No. 027112

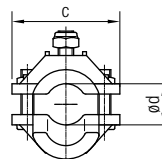
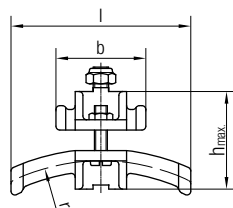


| Cable Trolley<br>Part No. | [kg] | Towing Trolley<br>Part No. | [kg] | End Clamp<br>Part No. | [kg] |
|---------------------------|------|----------------------------|------|-----------------------|------|
| 027291*                   | 0.59 | 027297*                    | 0.97 | 027298*               | 0.18 |
| 027491 <sup>1)</sup>      | 0.59 | 027497 <sup>1)</sup>       | 0.97 | 027498 <sup>1)</sup>  | 0.18 |

\* Standard range

<sup>1)</sup> Stainless Steel (V4A) / Acid-resistant plastic

## Cable Clips - to be connected to the Trolley Ball Joint

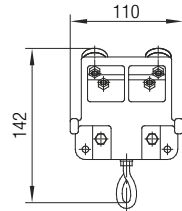


| Part No.   | for Cables<br>ø d [mm] | r [mm] | l [mm] | h [mm] | b [mm] | c [mm] | Body Material          | Hardware Finish     | Weight<br>[kg] |
|------------|------------------------|--------|--------|--------|--------|--------|------------------------|---------------------|----------------|
| 020131-16* | 10...16                | 80     | 70     | 38     | 35     | 42     | Plastic                | Galvanized Steel    | 0.04           |
| 020131-25* | 17...25                | 125    | 100    | 47     | 50     | 50     |                        |                     | 0.06           |
| 020131-36* | 26...36                | 180    | 140    | 58     | 70     | 64     |                        |                     | 0.12           |
| 020431-16  | 10...16                | 80     | 70     | 38     | 35     | 42     | Acid-resistant Plastic | Stainless Steel V4A | 0.04           |
| 020431-25  | 17...25                | 125    | 100    | 47     | 50     | 50     |                        |                     | 0.06           |
| 020431-36  | 26...36                | 180    | 140    | 58     | 70     | 64     |                        |                     | 0.12           |

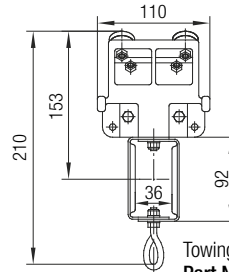
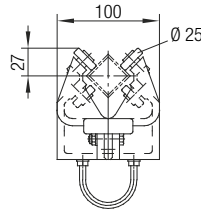
\* Standard range

# Cable Trolleys for Round Cable and Hose Program 0270

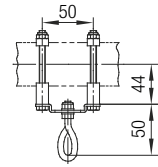
## Plastic Cable Trolleys with Brackets for Cable Clips (Part No. 020133 below)



Cable Trolley  
Part No. 027281



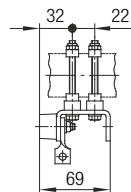
Towing Trolley  
Part No. 027287



End Clamp  
Part No. 027288

Rollers:  
Ball Bearings, galvanized;  
Cover Plate ZZ.  
Max. Load Capacity: 16 kg

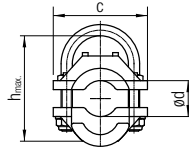
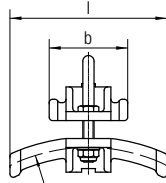
End Stop  
Part No. 027112



| Cable Trolley<br>Part No. | [kg] | Towing Trolley<br>Part No. | [kg] | End Clamp<br>Part No. | [kg] |
|---------------------------|------|----------------------------|------|-----------------------|------|
| 027281*                   | 0.57 | 027287*                    | 0.99 | 027288*               | 0.21 |

\* Standard range

## Cable Clips - to be connected to the Trolley Bracket



| Part No.   | for Cables<br>Ø d [mm] | r<br>[mm] | l<br>[mm] | h<br>[mm] | b<br>[mm] | c<br>[mm] | Weight<br>[kg] |
|------------|------------------------|-----------|-----------|-----------|-----------|-----------|----------------|
| 020133-16* | 10...16                | 80        | 70        | 38        | 35        | 42        | 0.05           |
| 020133-25* | 17...25                | 125       | 100       | 47        | 50        | 50        | 0.07           |
| 020133-36* | 26...36                | 180       | 140       | 58        | 70        | 64        | 0.14           |

\* Standard range

Material: Plastic;  
Fasteners:  
Galvanized Steel

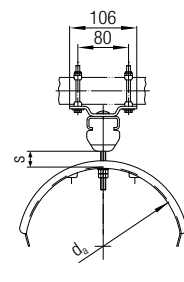
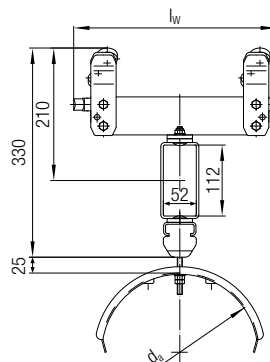
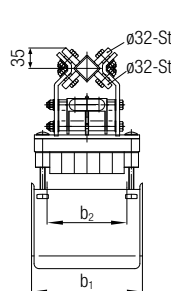
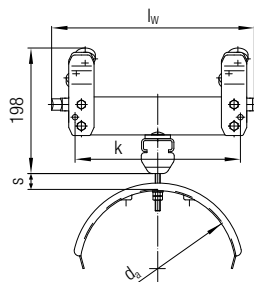
Cable Clips 020131 can be mounted  
underneath Cable Clips with Brackets 020133

## Galvanized Steel Cable Trolleys; Heavy Duty Series



| Cable Trolley<br>Part No. | [kg] | Towing Trolley<br>Part No. | [kg] | End Clamp<br>Part No. | [kg] | d <sub>a</sub><br>[mm] | l <sub>w</sub><br>[mm] | b <sub>1</sub><br>[mm] | b <sub>2</sub><br>[mm] | s<br>[mm] | k<br>[mm] |
|---------------------------|------|----------------------------|------|-----------------------|------|------------------------|------------------------|------------------------|------------------------|-----------|-----------|
| 027873-200x100            | 3.44 | 027883-200x100             | 4.21 | 027893-100            | 1.06 | 160                    | 200                    | 115                    | 65                     | 16        | 141       |
| 027873-200x160            | 3.86 | 027883-200x160             | 4.75 | 027893-160            | 1.18 |                        |                        | 175                    | 125                    |           |           |
| 027874-250x160            | 4.21 | 027884-250x160             | 5.10 | 027894-160            | 1.83 | 200                    | 250                    | 175                    | 125                    | 20        | 181       |
| 027874-250x200            | 4.61 | 027884-250x200             | 5.38 | 027894-200            | 2.23 |                        |                        | 215                    | 165                    |           |           |
| 027875-320x160            | 4.66 | 027885-320x160             | 5.55 | 027895-160            | 2.08 | 250                    | 320                    | 175                    | 125                    | 25        | 251       |
| 027875-320x200            | 5.06 | 027885-320x200             | 5.83 | 027895-200            | 2.48 |                        |                        | 215                    | 165                    |           |           |

Rollers:  
Ball Bearings, galvanized;  
Cover Plate ZZ.  
Max. Load Capacity: 25 kg



# Ideal Control Unit Trolley Program 0270

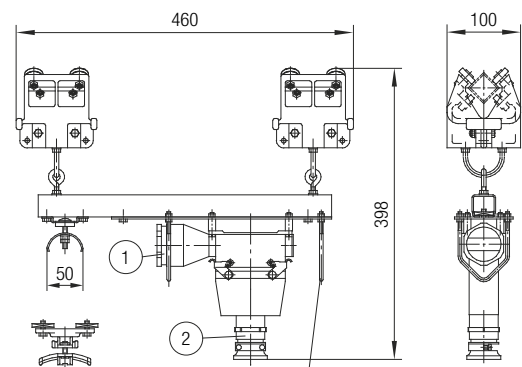
## Ideal Control Unit Trolley with Plug and Socket Connection



Rated Voltage 400 V; Rated Current 16 A;  
Protection Type IP55 as defined by DIN 40050;  
Screw Connection 2.5 mm<sup>2</sup>

| Part No.   | Number of poles | Fittings |       | Weight [kg] |
|------------|-----------------|----------|-------|-------------|
|            |                 | ①        | ②     |             |
| 027178-16* | 16 + PE         | 25x42    | 25x21 | 3.72        |
| 027178-24* | 24 + PE         | 25x42    | 32x29 | 4.10        |

\* Standard range



Strain Relief for Control Unit

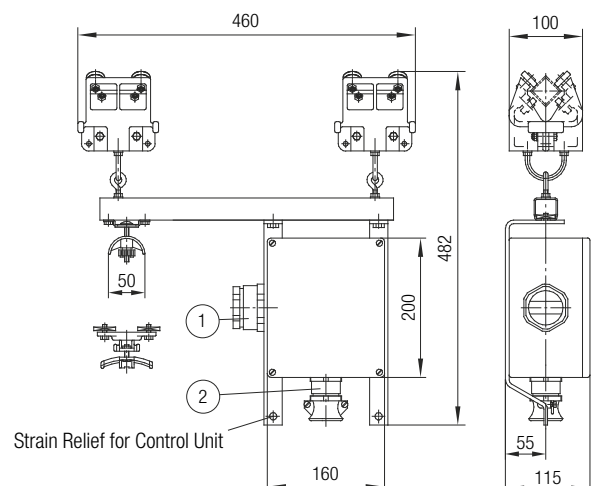
## Ideal Control Unit Trolley with Plastic Terminal Box



Rated Voltage 400 V; Rated Current 16 A;  
Protection Type IP55 as defined by DIN 40050;  
Terminal Block 4 mm<sup>2</sup>

| Part No.   | Number of poles | Fittings |       | Weight [kg] |
|------------|-----------------|----------|-------|-------------|
|            |                 | ①        | ②     |             |
| 027174-16* | 16 + PE         | 50x42    | 25x21 | 5.46        |
| 027174-24  | 24 + PE         | 50x42    | 32x29 | 5.86        |

\* Standard range

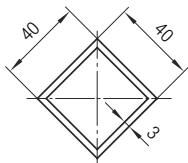


Strain Relief for Control Unit

# Square Rails and Accessories for Curved Tracks

## Program 0280

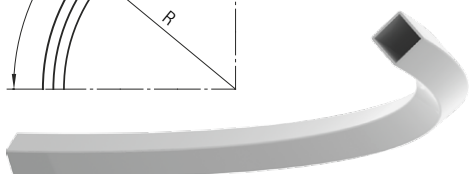
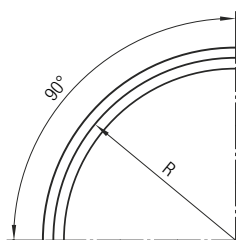
### Square Rail 40 x 40



| Part No.  | Material         | L [mm] | Static Values                                          | Weight [kg/m] |
|-----------|------------------|--------|--------------------------------------------------------|---------------|
| 028100-6* | Galvanized Steel | 6000   | $I_x = 9.91 \text{ cm}^4$<br>$W_x = 3.66 \text{ cm}^3$ | 3.32          |

\* Standard range

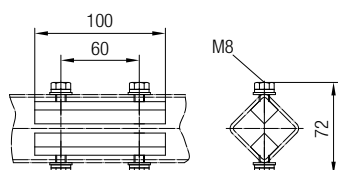
### 90° Curves



| Part No.      | Material         | R [mm] | Stretched Length [mm] | Cable Loop max. 0.7 x R | Weight [kg] |
|---------------|------------------|--------|-----------------------|-------------------------|-------------|
| 028102-01000* | Galvanized Steel | 1000   | 1570                  | 700                     | 5.20        |
| 028102-01200* |                  | 1200   | 1885                  | 840                     | 6.25        |
| 028102-01400* |                  | 1400   | 2200                  | 980                     | 7.30        |
| 028102-01600* |                  | 1600   | 2510                  | 1120                    | 8.30        |
| 028102-01800* |                  | 1800   | 2890                  | 1260                    | 9.60        |
| 028102-02000* |                  | 2000   | 3140                  | 1400                    | 10.40       |

\* Standard range

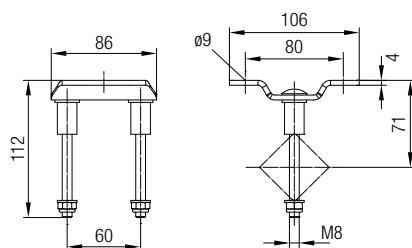
### Track Coupler



| Part No. | Material         | Weight [kg] |
|----------|------------------|-------------|
| 028105*  | Galvanized Steel | 0.33        |

\* Standard range

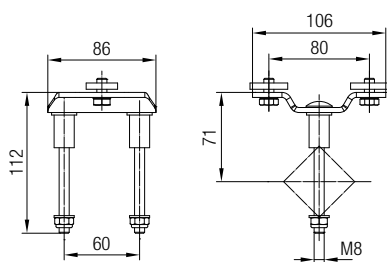
### Track Support Bracket for Ceiling Mounting



| Part No. | Material         | Max. Load [kg] | Weight [kg] |
|----------|------------------|----------------|-------------|
| 028120*  | Galvanized Steel | 250            | 0.33        |

\* Standard range

### Track Support Bracket for mounting on Support Arm 40 x 40 x 2.5 mm

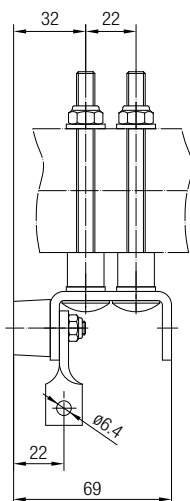


| Part No. | Material         | Max. Load [kg] | Weight [kg] |
|----------|------------------|----------------|-------------|
| 028121*  | Galvanized Steel | 250            | 0.39        |

\* Standard range

# Accessories for Program 0280

## End Stop

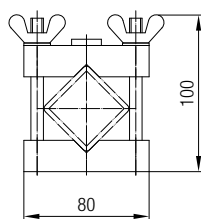


| Part No. | Material                        | Weight [kg] |
|----------|---------------------------------|-------------|
| 028111*  | Galvanized Steel; Rubber Buffer | 0.22        |

\* Standard range

## Drilling Fixture

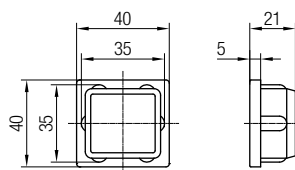
For drilling holes into rails and curves



| Part No. | Materials                                                                     | Weight [kg] |
|----------|-------------------------------------------------------------------------------|-------------|
| 028107   | Body: Aluminum<br>Drill Sleeve: Hardened Steel<br>Fasteners: Galvanized Steel | 1.09        |

## End Cap

For closing Rail Ends



| Part No.   | Material | Weight [kg] |
|------------|----------|-------------|
| 020662-40* | Plastic  | 0.004       |

\* Standard range

# Cable Trolleys for Flat Cable/Round Cable

## Program 0280

### Galvanized Steel Cable Trolleys; for Flat Cables

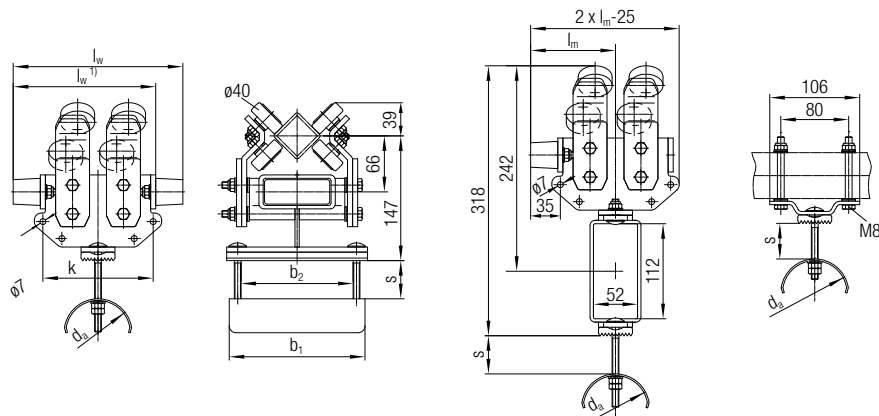


| Cable Trolley Part No. | [kg] | Towing Trolley Part No. | [kg] | End Clamp Part No. | [kg] | $d_a$ [mm] | $l_w$ [mm]        | $b_1$ [mm] | $b_2$ [mm] | $s$ [mm] | $k$ [mm] | $l_m$ [mm] |
|------------------------|------|-------------------------|------|--------------------|------|------------|-------------------|------------|------------|----------|----------|------------|
| 028250-200x100*        | 4.62 | 028260-200x100*         | 5.26 | 028230-100x068*    | 0.57 | 80         | 200               | 100        | 72         | 45       | 130      | 100        |
| 028250-200x160*        | 4.86 | 028260-200x160*         | 5.62 | 028230-160x068*    | 0.86 |            |                   | 160        | 132        |          |          |            |
| 028252-250x100*        | 4.91 | 028262-250x100*         | 5.55 | 028232-100x068*    | 0.68 | 125        | 250               | 100        | 72         | 50       | 180      | 125        |
| 028252-250x160*        | 5.24 | 028262-250x160*         | 6.00 | 028232-160x068*    | 1.34 |            |                   | 160        | 132        |          |          |            |
| 028253-250x160*        | 5.34 | 028263-250x160*         | 6.10 | 028233-160x068*    | 1.50 | 160        | 250               | 175        | 132        | 35       | 180      | 125        |
| 028253-250x200*        | 5.73 | 028263-250x200*         | 6.37 | 028233-200x068*    | 1.95 |            |                   | 215        | 172        |          |          |            |
| 028253-290x160         | 5.44 | 028263-320x160          | 6.20 | 028233-160x068*    | 1.50 |            | 288 <sup>1)</sup> | 175        | 132        | 50       | 250      | 160        |
| 028253-290x200         | 5.83 | 028263-320x200          | 6.47 | 028233-200x068*    | 1.95 |            |                   | 215        | 172        |          |          |            |

\* Standard range

<sup>1)</sup> Cable Trolley with Rubber Buffer on one side

Rollers:  
Ball Bearings, galvanized;  
Sealing Disk RS.  
Max. Load Capacity: 36 kg



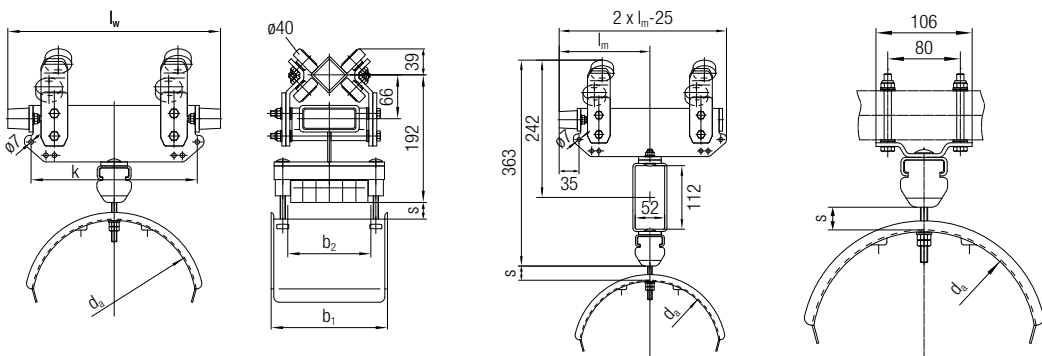
### Galvanized Steel Cable Trolleys; for Round Cables



| Cable Trolley Part No. | [kg] | Towing Trolley Part No. | [kg] | End Clamp Part No. | [kg] | $d_a$ [mm] | $l_w$ [mm] | $b_1$ [mm] | $b_2$ [mm] | $s$ [mm] | $k$ [mm] | $l_m$ [mm] |
|------------------------|------|-------------------------|------|--------------------|------|------------|------------|------------|------------|----------|----------|------------|
| 028464-250x100         | 5.15 | 028474-250x100*         | 5.92 | 028394-100*        | 1.38 | 200        | 250        | 115        | 65         | 20       | 180      | 125        |
| 028464-250x160*        | 5.72 | 028474-250x160*         | 6.61 | 028394-160*        | 1.93 |            |            | 175        | 125        |          |          |            |
| 028465-320x160*        | 6.17 | 028475-320x160*         | 7.10 | 028395-160*        | 2.18 | 250        | 320        | 175        | 125        | 25       | 250      | 160        |
| 028465-320x250         | 6.87 | 028475-320x250*         | 7.76 | 028395-250*        | 2.88 |            |            | 265        | 215        |          |          |            |
| 028467-400x160*        | 7.03 | 028477-400x160*         | 7.92 | 028397-160*        | 2.78 | 320        | 400        | 175        | 132        | 32       | 330      | 200        |
| 028467-400x250         | 7.83 | 028477-400x250          | 8.72 | 028397-250         | 3.58 |            |            | 265        | 215        |          |          |            |

\* Standard range

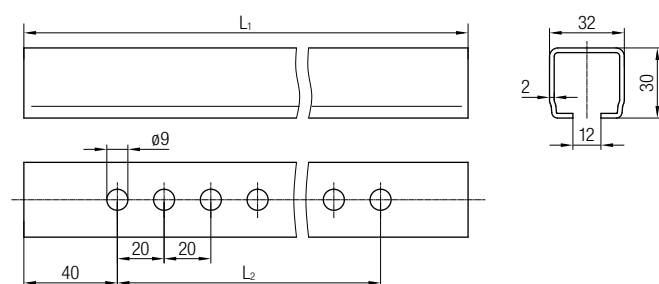
Rollers:  
Ball Bearings, galvanized;  
Sealing Disk RS.  
Max. Load Capacity: 36 kg



# Accessories for Cable Trolleys

## Program 0270/0280

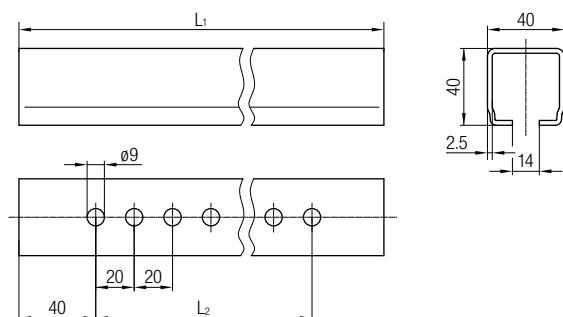
### Punched Support Arms 30 x 32 x 2 mm for Program 0270



| Part No.     | L <sub>1</sub> [mm] | L <sub>2</sub> [mm] | Material         | Weight [kg] |
|--------------|---------------------|---------------------|------------------|-------------|
| 020185-0250  | 250                 | 200                 | Galvanized Steel | 0.39        |
| 020185-0315  | 315                 | 260                 |                  | 0.50        |
| 020185-0400  | 400                 | 340                 |                  | 0.63        |
| 020185-0500* | 500                 | 340                 |                  | 0.78        |
| 020185-0630  | 630                 | 340                 |                  | 0.98        |
| 020185-0800  | 800                 | 340                 |                  | 1.25        |
| 020185-1000* | 1000                | 340                 |                  | 1.55        |
| 020185-1250  | 1250                | 340                 |                  | 1.95        |

\* Standard range

### Punched Support Arms 40 x 40 x 2.5 mm for Program 0270/0280



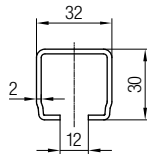
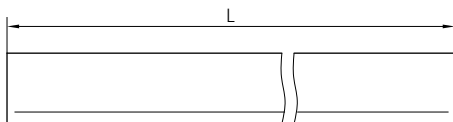
| Part No.     | L <sub>1</sub> [mm] | L <sub>2</sub> [mm] | Material         | Weight [kg] |
|--------------|---------------------|---------------------|------------------|-------------|
| 020186-0250  | 250                 | 200                 | Galvanized Steel | 0.63        |
| 020186-0315  | 315                 | 260                 |                  | 0.79        |
| 020186-0400  | 400                 | 340                 |                  | 1.00        |
| 020186-0500* | 500                 | 340                 |                  | 1.25        |
| 020186-0630  | 630                 | 340                 |                  | 1.58        |
| 020186-0800  | 800                 | 340                 |                  | 2.00        |
| 020186-1000* | 1000                | 340                 |                  | 2.50        |
| 020186-1250  | 1250                | 340                 |                  | 3.13        |

\* Standard range

# Accessories for Cable Trolleys

## Program 0270/0280

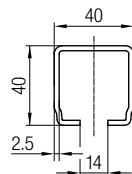
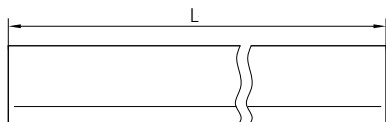
### Unpunched Support Arms 30 x 32 x 2 mm for Program 0270



| Part No.     | L [mm] | Material         | Weight [kg] |
|--------------|--------|------------------|-------------|
| 020275-0250  | 250    | Galvanized Steel | 0.39        |
| 020275-0400  | 400    |                  | 0.63        |
| 020275-0500* | 500    |                  | 0.78        |
| 020275-0630  | 630    |                  | 0.98        |
| 020275-0800  | 800    |                  | 1.25        |
| 020275-1000* | 1000   |                  | 1.55        |
| 020275-1250  | 1250   |                  | 1.95        |

\* Standard range

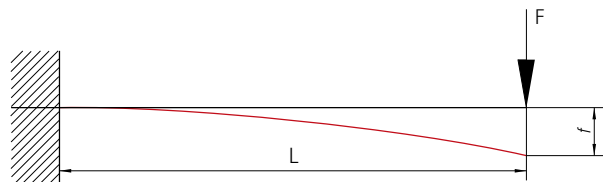
### Unpunched Support Arms 40 x 40 x 2.5 mm for Program 0270/0280



| Part No.     | L [mm] | Material         | Weight [kg] |
|--------------|--------|------------------|-------------|
| 020276-0450  | 450    | Galvanized Steel | 1.13        |
| 020276-0550  | 550    |                  | 1.38        |
| 020276-0650* | 650    |                  | 1.63        |
| 020276-0840  | 840    |                  | 2.10        |
| 020276-0950  | 950    |                  | 2.38        |
| 020276-1000  | 1000   |                  | 2.50        |
| 020276-1150* | 1150   |                  | 2.88        |

\* Standard range

### Permissible Load for Support Arms



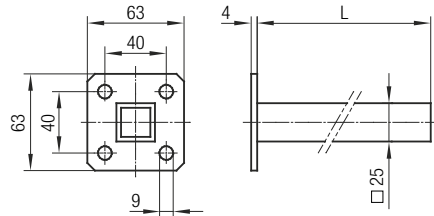
#### Note:

- Calculated with  $\sigma = 140 \text{ N/mm}^2$  tension
- $f$  = associated max. deflection

|                                 |        | L [mm] |       |      |      |      |      |      |      |      |
|---------------------------------|--------|--------|-------|------|------|------|------|------|------|------|
|                                 |        | 0.25   | 0.40  | 0.50 | 0.65 | 0.80 | 1.00 | 1.25 | 1.52 | 2.00 |
| Support Arm<br>30 x 32 x 2 mm   | F [kg] | 76.0   | 47.5  | 38.0 | 29.0 | 24.0 | 19.0 | 15.0 | 12.5 | 9.50 |
|                                 | f [cm] | 0.08   | 0.20  | 0.32 | 0.60 | 0.90 | 1.40 | 2.20 | 3.30 | 5.70 |
| Support Arm<br>40 x 40 x 2.5 mm | F [kg] | 164.5  | 103.0 | 82.0 | 63.0 | 51.5 | 41.0 | 33.0 | 27.0 | 20.5 |
|                                 | f [cm] | 0.07   | 0.20  | 0.30 | 0.45 | 0.70 | 1.10 | 1.70 | 2.50 | 4.30 |

# Accessories for Cable Trolleys Program 0270/0280

## Towing Arms



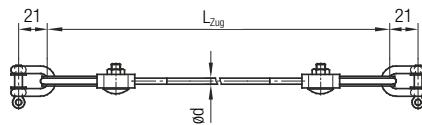
| Part No.    | L [mm] | Material   | Weight [kg] |
|-------------|--------|------------|-------------|
| 020195-400  | 400    | Galvanized | 0.60        |
| 020195-630* | 630    | Steel      | 1.00        |

\* Standard range

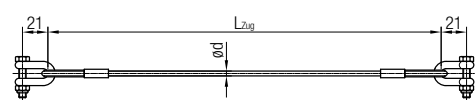
## Tow Ropes



Type A



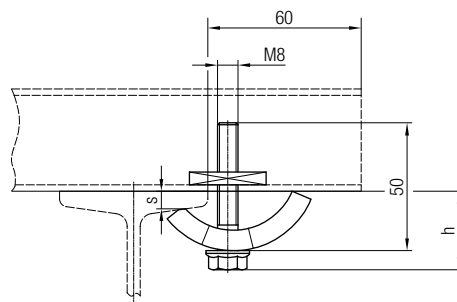
Type B



| Part No.   | ød [mm] | Type | Material                | Weight [kg] | for Program                     |
|------------|---------|------|-------------------------|-------------|---------------------------------|
| 020316-04* | 4       | A    | Plastic                 | 0.12        | 0270 Plastic Cable Trolleys     |
| 020329-04* | 4       | B    | Galv. Steel; PVC jacket | 0.16        | 0270 Steel Cable Trolleys; 0280 |
| 020328-04* | 4       | B    | Galvanized Steel        | 0.20        | 0270 Steel Cable Trolleys; 0280 |

\* Standard range

## Girder Clips, clamping thickness range 4 - 20 mm



| Part No.   | Material            | Weight [kg] |
|------------|---------------------|-------------|
| 020180-08* | Galvanized Steel    | 0.15        |
| 020480-08  | Stainless Steel V4A | 0.15        |

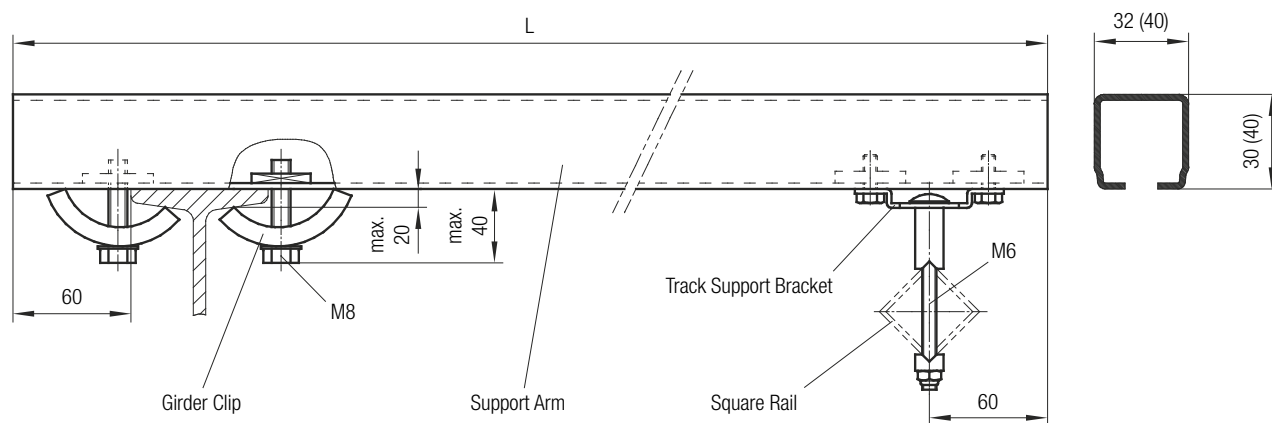
\* Standard range

| Clamping thickness  | s | 4  | 6  | 8  | 10 | 12 | 16 | 20 |
|---------------------|---|----|----|----|----|----|----|----|
| Installation height | h | 31 | 32 | 33 | 34 | 35 | 37 | 40 |

# Accessories for Cable Trolleys

## Program 0270/0280

### Application Example



# Project Planning

## Determining the Support Distance for Square Rail Program 0270

### Technical Data / Calculation Assumptions

The required support distance of the square rail can be determined using the diagram below. The following calculation assumptions have been taken into consideration:

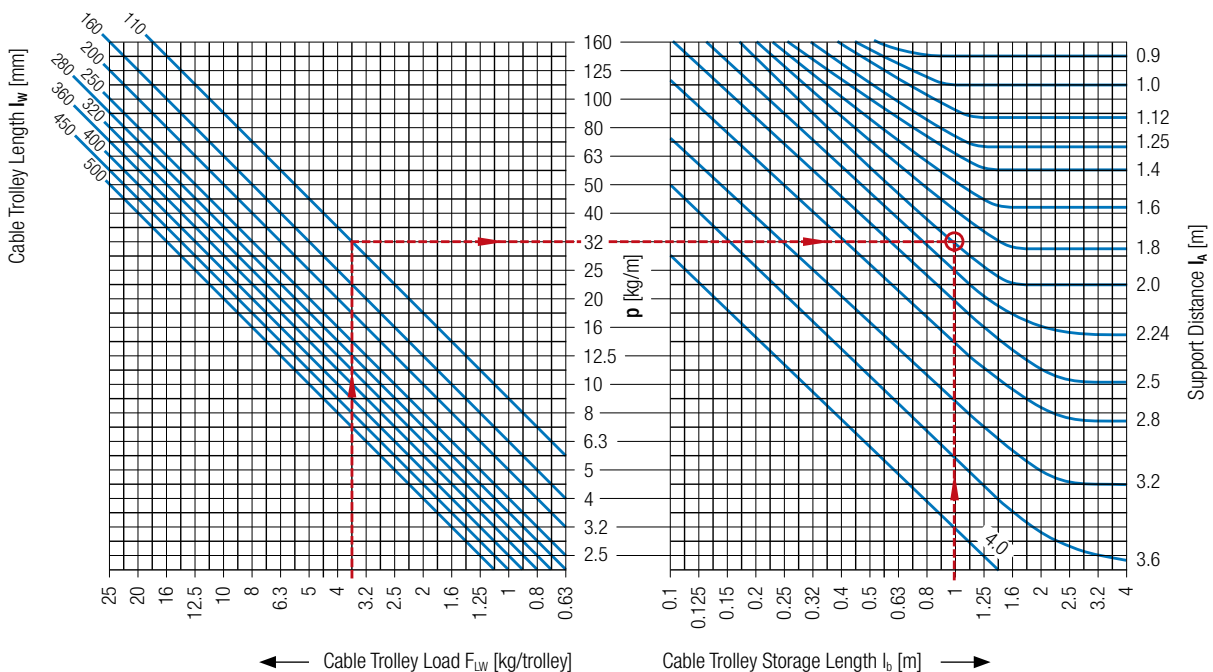
1. Simply-supported beam, uniform load symmetrical to middle of the beam
2. The load of one trolley  $F_{LW}$  [kg/trolley] is distributed over trolley length  $l_w$  as a uniform load  $p$  [kg/m]
3. Total length of the uniform load results from the cable trolley storage length  $l_b$  [m] of all trolleys side by side
4.  $\sigma_{b_{zul}} = 100 \text{ N/mm}^2$
5.  $f = l_A/250$  permissible deflection from the load and net weight of the rail
6. As track support bracket load the load of a field symmetrical to the mounting (bracket) is assumed

### Example:

Given:

$F_{LW}$  = Cable Trolley Load: 3.6 kg (X axis value on the left-hand graph below)  
 $l_w$  = Cable Trolley Length: 110 mm (blue line on the left graph)  
 $Z$  = Overall number of Cable Trolleys: 9  
 $l_b$  = Cable Trolley Storage Length: 0.99 m (X axis on the right-hand graph below)  
 (m) =  $Z \times l_w / 1000$

## Load Diagram for Square Rail 30 x 30 x 2 (020275)



### Result for Square Rail 30 x 30 x 2

#### From Diagram:

Required Support Distance  $l_A = 2.0 \text{ m}$

Note: Support distance in curves should not exceed two thirds of the required support distance for a straight track.

# Project Planning

## Determining the Support Distance for Square Rail Program 0280

### Technical Data / Calculation Assumptions

The required support distance of the square rail can be determined using the diagram below. The following calculation assumptions have been taken into consideration:

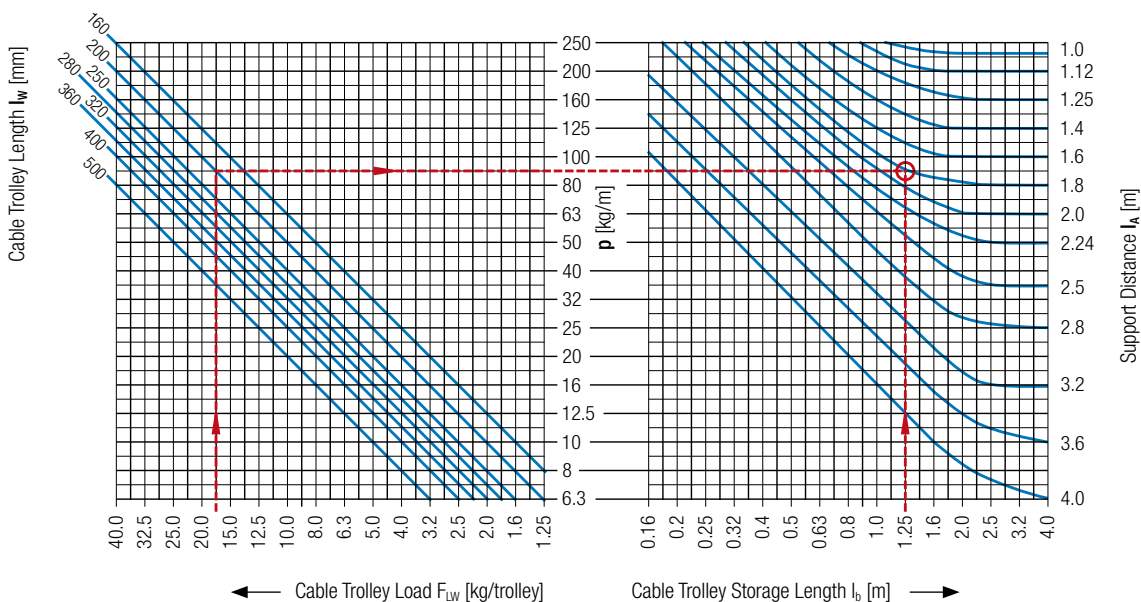
1. Simply-supported beam, uniform load symmetrical to middle of the beam
2. The load of one trolley  $F_{LW}$  [kg/trolley] is distributed over trolley length  $l_w$  as a uniform load  $p$  [kg/m]
3. Total length of the uniform load results from the cable trolley storage length  $l_b$  [m] of all trolleys side by side
4.  $\sigma_{b_{zul}} = 100 \text{ N/mm}^2$
5.  $f = l_b/250$  permissible deflection from the load and net weight of the rail
6. As track support bracket load the load of a field symmetrical to the mounting (bracket) is assumed

### Example:

Given:

$F_{LW}$  = Cable Trolley Load: 18 kg (X axis value on the left-hand graph below)  
 $l_w$  = Cable Trolley Length: 200 mm (blue line on the left graph below)  
 $Z$  = Overall number of Cable Trolleys: 6  
 $l_b$  = Cable Trolley Storage Length: 1.20 m (X axis value on the right-hand graph below)  
 (m) =  $Z \times l_w / 1000$

## Load Diagram for Square Rail 40 x 40 x 3 (020276)



### Result for Square Rail 40 x 40 x 3

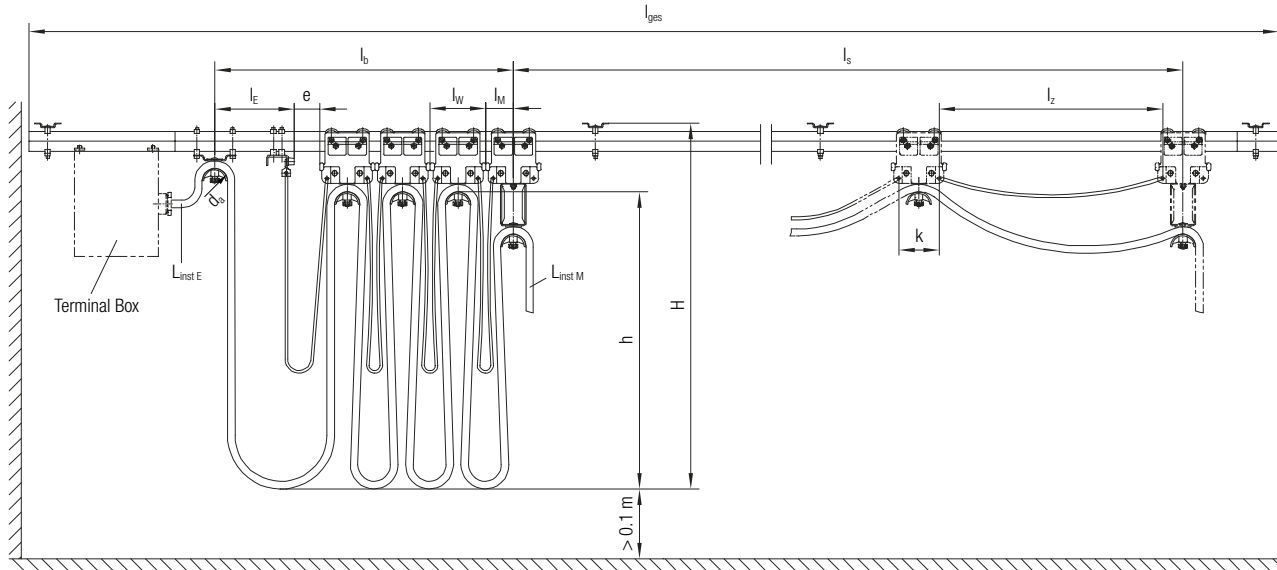
#### From Diagram:

Required Support Distance  $l_A = 1.8 \text{ m}$

Note: Support distance in curves should not exceed two thirds of the required support distance for a straight track.

# Project Planning

## Technical Data



## Calculating the number of Cable Loops, required Cable Length, and Loop Length

Number of loops:

$$n = \frac{f(l_s + e)}{2 \cdot h + 1.25 d_a - f \cdot l_w}$$

Cable Trolley storage length:

$$l_b \approx n \cdot l_w + e \quad [\text{m}]$$

Cable system length:

$$L_{\text{Syst}} = f(l_s + l_b) \quad [\text{m}]$$

Total cable length:

$$L_{\text{Best}} = L_{\text{Syst}} + L_{\text{instE}} + L_{\text{instM}} \quad [\text{m}]$$

Required length of tension relief:

$$l_z = \frac{1.05(l_s + l_b)}{n} - k \quad [\text{m}]$$

For plastic Cable Trolleys:  $k = 0.08 \quad [\text{m}]$   
 For steel Cable Trolleys:  $k = l_w - 0.06 \quad [\text{m}]$

Loop length:

$$L_{\text{Schl}} = \frac{L_{\text{Syst}}}{n} \quad [\text{m}]$$

Loop depth:

$$h = \frac{L_{\text{Schl}}}{2} - 0.63 \cdot d_a \leq 0.7 \cdot R_{\text{min}} \quad [\text{m}]$$

- $d_a$  [m] = Cable Support diameter
- $e$  [m] = Tolerance in the Cable Trolley storage length (recommended  $\geq 0.1 \text{ m}$ )
- $f$  = Length factor for cables (1.2 for square rails)
- $h$  [m] = Loop depth (measured from top edge of Cable Support)
- $H$  [m] = Overall installation space
- $l_b$  [m] = Cable Trolley storage length incl. tolerance "e"
- $l_s$  [m] = Travel distance
- $l_w$  [m] = Cable Trolley length
- $l_z$  [m] = Length of tension relief
- $L_{\text{Best}}$  [m] = Total cable length
- $L_{\text{instE}}$  [m] = Length for fixed installation, End Clamp side
- $L_{\text{instM}}$  [m] = Length for fixed installation, Towing Trolley side
- $L_{\text{Schl}}$  [m] = Loop length
- $L_{\text{Syst}}$  [m] = Required cable length measured from middle of the End Clamp to middle of the Towing Trolley / Cable Clamp
- $n$  = Number of loops
- $R_{\text{min}}$  [m] = Smallest radius for curved track

The maximum permissible cable loop depends on the smallest radius to be passed. Loops which do not pass this radius can be larger accordingly.

# Your Applications – our Solutions

Festoon systems from Conductix-Wampfler represent only one of the many solutions made possible by the broad spectrum of Conductix-Wampfler components for the transport of energy, data and fluid media. The solutions we deliver for your applications are based on your specific requirements. In many cases, a combination of several different Conductix-Wampfler systems can prove advantageous. You can count on all of Conductix-Wampfler's Business Units for hands-on engineering support – coupled with the perfect solution to meet your energy management and control needs.



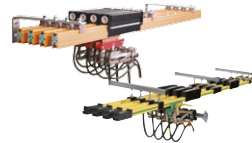
## Cable reels

Motorized reels and spring reels by Conductix-Wampfler hold their own wherever energy, data and media have to cover the most diverse distances within a short amount of time - in all directions, fast and safe.



## Festoon systems

It's hard to imagine Conductix-Wampfler cable trolleys not being used in virtually every industrial application. They're reliable and robust and available in an enormous variety of dimensions and designs.



## Conductor rails

Whether they're enclosed conductor rails or expandable single-pole systems, the proven conductor rails by Conductix-Wampfler reliably move people and material.



## Non-insulated conductor rails

Extremely robust, non-insulated conductor rails with copper heads or stainless steel surfaces provide the ideal basis for rough applications, for example in steel mills or shipyards.



## Energy guiding chains

The "Jack of all trades" when it comes to transferring energy, data, air and fluid hoses. With their wide range, these energy guiding chains are the ideal solution for many industrial applications.



## Slip ring assemblies

Whenever things are really "moving in circles", the proven slip ring assemblies by Conductix-Wampfler ensure the flawless transfer of energy and data. Here, everything revolves around flexibility and reliability!



## Inductive Power Transfer IPT®

The no-contact system for transferring energy and data. For all tasks that depend on high speeds and absolute resistance to wear.



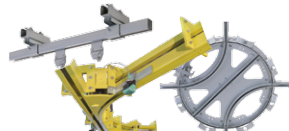
## Reels, retractors and balancers

Whether for hoses or cables, as classical reels or high-precision positioning aids for tools, our range of reels and spring balancers take the load off your shoulders.



## Jib booms

Complete with tool transporters, reels, or an entire media supply system – here, safety and flexibility are key to the completion of difficult tasks.



## Conveyor systems

Whether manual, semiautomatic or with Power & Free – flexibility is achieved with full customization concerning layout and location.

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## **Conductix-Wampfler**

has just one critical mission:

To provide you with energy and data transmission systems that will keep your operations up and running 24/7/365.

To contact your nearest sales office, please refer to:

**[www.conductix.com/  
contact-search](http://www.conductix.com/contact-search)**

