Festoon Systems for Wire Ropes
Program 0210/0215
## Contents

### Ropes and Accessories Program 0210 and 0215
- System Components for Wire Ropes with Diameter 6-12 mm .................................................. 2
- Wire Ropes ........................................................................................................................................ 2
- Straining Buckles ................................................................................................................................. 3
- Strainer Brackets ................................................................................................................................. 3

### Cable Trolleys for Flat Cables Program 0210
- Festoon Systems for Flat Cables on Ropes with Diameter 6 mm .................................................. 4
- Plastic Cable Trolleys with Load Capacity up to 6 kg ..................................................................... 4
- Cable Support ......................................................................................................................................... 5
- End Clamp ........................................................................................................................................... 5
- Towing Trolley with Rope Guidance ................................................................................................. 5

### Cable Trolleys for Flat Cables Program 0215
- Festoon Systems for Flat Cables on Ropes with Diameter 8-12 mm ............................................. 6
- Plastic Cable Trolley with Load Capacity up to 10 kg .................................................................. 6
- Plastic Cable Trolley with Load Capacity up to 20 kg ................................................................. 6
- Towing Trolley with Rope Guidance ............................................................................................... 7
- Towing Arm ......................................................................................................................................... 7

### Cable Trolleys for Round Cables and Hoses Program 0210
- Festoon Systems for Round Cables on Rope with Diameter 6 mm .............................................. 8
- Plastic Cable Trolley with Hook or Eye with Load Capacity up to 3 kg ....................................... 8
- Plastic Cable Trolley with Hook or Eye with Load Capacity up to 6 kg ....................................... 8
- Plastic Cable Trolley with Ball Joint with Load Capacity up to 6 kg ......................................... 9
- End Clamp ......................................................................................................................................... 9
- Cable Clips for Trolleys with Hook or Ball Joint ........................................................................... 9
- Cable Support and Towing Arm ......................................................................................................... 9
- Towing Trolley with Rope Guidance .............................................................................................. 9

### Cable Trolleys for Round Cables and Hoses Program 0215
- Festoon Systems for Round Cables on Ropes with Diameter 8-12 mm .................................... 10
- Plastic Cable Trolley with Load Capacity up to 10 kg ................................................................ 10
- Plastic Cable Trolley with Load Capacity up to 20 kg ................................................................ 10
- End Clamp ...................................................................................................................................... 11
- Towing Trolley with Rope Guidance ............................................................................................ 11
- Supplements to the Program on Inquiry ......................................................................................... 11

### Helpful Hints
- Calculation of Tensile Force ........................................................................................................... 12
- Determination of Rope Load and Selection of Required Rope ...................................................... 12
Ropes and Accessories
Program 0210 and 0215

System Components for Wire Ropes with Diameter 6-12 mm

**System Components for Rope ø 6 mm**

- **Strainer brackets**
  - 021141-400
  - 021141-630

- **Ropes**
  - 020305-06
  - 020303-06

**Straining screw**
- 020187-12

**System Components for Ropes ø 8 - 12 mm**

- **Strainer brackets**
  - 021542-0400
  - 021542-0630
  - 021542-1000

- **Straining buckles**
  - 020189-12
  - 020189-16
  - 020189-20

- **Straining screws**
  - 020187-12
  - 020187-16
  - 020187-20

- **Ropes**
  - 020305-08
  - 020303-08
  - 020303-10
  - 020303-12

**Wire Ropes**

- **Material**
  - Rope: galvanized steel
  - Cover: plastic

**Note**
Plastic covered ropes 020305 have the best performance.

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Type</th>
<th>ø d [mm]</th>
<th>ø D [mm]</th>
<th>Min. Brak. Strength F Break [kN]</th>
<th>Perm. Tensil Strength Fzul. [kN]</th>
<th>for Straining Screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>020305-06</td>
<td>with plastic cover</td>
<td>4</td>
<td>6</td>
<td>14.5</td>
<td>3.6</td>
<td>020187-12</td>
</tr>
<tr>
<td>020303-06</td>
<td>without plastic cover</td>
<td>6</td>
<td>-</td>
<td>20.3</td>
<td>5.1</td>
<td>020187-12</td>
</tr>
<tr>
<td>020305-08</td>
<td>with plastic cover</td>
<td>8</td>
<td>8</td>
<td>20.3</td>
<td>5.1</td>
<td>020187-12</td>
</tr>
<tr>
<td>020303-08</td>
<td>without plastic cover</td>
<td>10</td>
<td>-</td>
<td>37.2</td>
<td>9.3</td>
<td>020187-12</td>
</tr>
<tr>
<td>020303-10</td>
<td>without plastic cover</td>
<td>12</td>
<td>-</td>
<td>58.1</td>
<td>14.5</td>
<td>020187-16</td>
</tr>
<tr>
<td>020303-12</td>
<td></td>
<td></td>
<td></td>
<td>81.2</td>
<td>20.3</td>
<td>020187-20</td>
</tr>
</tbody>
</table>

**Straining Screws**

<table>
<thead>
<tr>
<th>Order No.</th>
<th>ø d [mm]</th>
<th>l [mm]</th>
<th>for Rope ø [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>020187-12</td>
<td>M12</td>
<td>330</td>
<td>6 - 8</td>
</tr>
<tr>
<td>020187-16</td>
<td>M16</td>
<td>424</td>
<td>10</td>
</tr>
<tr>
<td>020187-20</td>
<td>M20</td>
<td>458</td>
<td>12</td>
</tr>
</tbody>
</table>

Material: galvanized steel
### Ropes and Accessories
#### Program 0210 and 0215

**Straining Buckles**

<table>
<thead>
<tr>
<th>Order No.</th>
<th>( \phi d ) [mm]</th>
<th>Suitable Strainer Bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>020189-12</td>
<td>13</td>
<td>021542</td>
</tr>
<tr>
<td>020189-16</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>020189-20</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

Material: galvanized steel
Application: for flexible reception of the straining screw

**Strainer Brackets**

**Order No.: 021141-400**
Material: galvanized steel

**Order No.: 021141-630**
Material: galvanized steel

**Order No.: 021542-0400**
Material: galvanized steel

**Order No.: 021542-0630**
Material: galvanized steel

**Order No.: 021542-1000**
Material: galvanized steel

**Notes**
- To be ordered only in connection with straining buckle 020189
- This strainer bracket is also used with two ropes running in parallel
  Distance between ropes = 160 mm
Cable Trolleys for Flat Cables
Program 0210

Festoon Systems for Flat Cables on Rope with Diameter 6 mm

Plastic Cable Trolleys with Load Capacity up to 6 kg

<table>
<thead>
<tr>
<th>Cable Trolley Order No.</th>
<th>dₙ [mm]</th>
<th>lₙ [mm]</th>
<th>b₁ [mm]</th>
<th>b₂ [mm]</th>
<th>s [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>021113</td>
<td>50</td>
<td>85</td>
<td>63</td>
<td>44</td>
<td>17</td>
</tr>
<tr>
<td>021114</td>
<td>80</td>
<td>125</td>
<td>80</td>
<td>54</td>
<td>22</td>
</tr>
</tbody>
</table>

- Type of roller:
  - roller: plastic
  - axle: stainless steel
- Load capacity: 6 kg
Flat Cable Trolleys
Program 0210

Cable Support

Order No.: 021127

Towing Arm
Order No.: 021136
Material: galvanized steel

End Clamp

Order No. 021163

Towing Trolley with Rope Guidance

Order No.: 021123

<table>
<thead>
<tr>
<th>Towing Arm Order No.</th>
<th>L [mm]</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>020195-400</td>
<td>400</td>
<td>galvanized steel</td>
</tr>
<tr>
<td>020195-630</td>
<td>630</td>
<td>galvanized steel</td>
</tr>
</tbody>
</table>
Cable Trolleys for Flat Cables
Program 0215

Festoon Systems for Flat Cables on Ropes with Diameter 8-12 mm

Plastic Cable Trolley with Load Capacity up to 10 kg

Order No. 021631
- Type of roller:
  - roller: plastic
  - axle: stainless steel
- Load capacity: 10 kg

Plastic Cable Trolley with Load Capacity up to 20 kg

Order No. 021632-80
- Type of roller:
  - roller: plastic
  - axle: stainless steel
- Load capacity: 20 kg
Cable Trolleys for Flat Cables
Program 0215

End Clamp

Order No. 020222-080
Note
Mounting under plate 020190
and towing arm 021531

<table>
<thead>
<tr>
<th>Mounting Plate Order No.</th>
<th>ø d [mm]</th>
<th>Suitable Straining Screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>020190-12</td>
<td>13</td>
<td>020187-12</td>
</tr>
<tr>
<td>020190-16</td>
<td>17</td>
<td>020187-16</td>
</tr>
<tr>
<td>020190-20</td>
<td>21</td>
<td>020187-20</td>
</tr>
</tbody>
</table>

Towing Trolley with Rope Guidance

Order No. 021611
• Casing: galvanized steel
• Type of roller:
  - roller: plastic, with steel ball bearing
  - axle: galvanized steel

Towing Arm

Order No.

<table>
<thead>
<tr>
<th>Material</th>
<th>Length [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>galvanized steel</td>
<td>400</td>
</tr>
<tr>
<td>galvanized steel</td>
<td>630</td>
</tr>
<tr>
<td>galvanized steel</td>
<td>1000</td>
</tr>
</tbody>
</table>
Cable Trolleys for Round Cables and Hoses
Program 0210

Festoon Systems for Round Cables on Rope with Diameter 6 mm

Plastic Cable Trolley with Hook or Eye with Load Capacity up to 3 kg

Plastic Cable Trolley with Hook or Eye with Load Capacity up to 6 kg

Cable Collars for Trolleys with Hook

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Cable Diameter [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>020111-10</td>
<td>10</td>
</tr>
<tr>
<td>020111-12,5</td>
<td>12.5</td>
</tr>
<tr>
<td>020111-14</td>
<td>14</td>
</tr>
<tr>
<td>020111-16</td>
<td>16</td>
</tr>
<tr>
<td>020111-18</td>
<td>18</td>
</tr>
<tr>
<td>020111-20</td>
<td>20</td>
</tr>
</tbody>
</table>
Round Cable Trolleys and Hoses
Program 0210

Plastic Cable Trolley with Ball Joint with Load Capacity up to 6 kg

Order No. 021117
Load capacity: 6 kg

End Clamp

Order No. 021164
Note
Suitable cable clip 020131

Cable Clips for Trolleys with Hook or Ball Joint

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Cable Diameter [mm]</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>020131-16</td>
<td>10 - 16</td>
<td></td>
</tr>
<tr>
<td>020131-25</td>
<td>17 - 25</td>
<td></td>
</tr>
<tr>
<td>020131-36</td>
<td>26 - 36</td>
<td></td>
</tr>
</tbody>
</table>

Note
The cable clips can be combined in multiple variations.

Cable Support and Towing Arm

Order No. 021126
Note
Only for one cable. Mounting of additional clips not possible.

Towing Trolley with Rope Guidance

Order No.: 021124
Note
Suitable cable clip 020131

Towing Arm
Order No. 021136
Material: galvanized steel

<table>
<thead>
<tr>
<th>Towing Arm Order No.</th>
<th>I [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>020195-400</td>
<td>400</td>
</tr>
<tr>
<td>020195-630</td>
<td>630</td>
</tr>
</tbody>
</table>
Cable Trolleys for Round Cables and Hoses
Program 0215

Festoon Systems for Round Cables on Ropes with Diameter 8-12 mm

Plastic Cable Trolley with Load Capacity up to 10 kg

Order No. 021621
- Type of roller:
  - roller: plastic
  - axle: stainless steel
- Load capacity: 10 kg

Suitable cable clips 020131 see page 11

Plastic Cable Trolley with Load Capacity up to 20 kg

Order No. 021622
- Type of roller:
  - roller: plastic
  - axle: stainless steel
- Load capacity: 20 kg

Suitable cable clips 020131 see page 11
Round Cable Trolleys and Hoses
Program 0215

End Clamp

End Clamp
Order No. 020214-080

Notes
• Mounting under plate 020190 and towing arm 021531
• Suitable cable clip 020131

<table>
<thead>
<tr>
<th>Mounting Plate Order No.</th>
<th>ø d [mm]</th>
<th>Suitable Straining Screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>020190-12</td>
<td>13</td>
<td>020187-12</td>
</tr>
<tr>
<td>020190-16</td>
<td>17</td>
<td>020187-16</td>
</tr>
<tr>
<td>020190-20</td>
<td>21</td>
<td>020187-20</td>
</tr>
</tbody>
</table>

Towing Trolley with Rope Guidance

Towing Trolley Order No. 021611
Towing Arm Order No. 021531

For more details see page 9

Supplements to the Program on Inquiry

Trolley running on two ropes
Double load capacity

Ideal Control Unit Trolley
for Flat and Round Cables
Helpful Hints

Calculation of Tensile Force

In planning a flexible cable system it is necessary to calculate the carrying capacity of the rope. Normally plastic covered steel ropes are used which are suitable for most applications.

\[ F \text{ [kN]} = \Phi \cdot G \cdot l \cdot g \frac{\text{kN}}{8000 \cdot h} \leq F_{\text{perm}} \]

The tensile force can be calculated approx. using the following formula:

- \( F \) = Tensile force in the rope
- \( G \) = Total load of net weight of rope plus weight of cable trolleys and cables
- \( l \) = Span width of rope
- \( h \) = Sag of rope
- \( g \) = Gravitational acceleration = 9.81
- \( \Phi \) = Net load factor = 1.1 - 1.2 to DIN 15018, section 4.1.4.1
- Consideration is recommended.

Determination of Rope Load and Selection of Required Rope

The required rope can be determined with the help of the following diagrams. The diagrams were issued with \( \Phi = 1.2 \) and \( \Phi = 4 \).

Calculation Example

Given:
- Total load \( G = 145 \text{ kg} \)
- Span width \( l = 100 \text{ m} \)
- Rope sag \( h_{\text{perm}} = 2 \text{ m} = 2\% \)

Calculated values:
- Diagram program 0210: not suitable
- Diagram program 0215: suitable

From diagram program 0215:
- existing rope load: \( F = 10.5 \text{ kN} \)
- required rope: 020303-10
Your Applications - our Solutions!

Festoon systems by 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.

<table>
<thead>
<tr>
<th>Cable reels</th>
<th>Festoon systems</th>
<th>Conductor rails</th>
<th>Non-insulated conductor rails</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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.</td>
<td>Whether they're enclosed conductor rails or expandable single-pole systems, the proven conductor rails by Conductix-Wampfler reliably move people and material.</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Energy guiding chains</th>
<th>Slip ring assemblies</th>
<th>Inductive Power Transfer IPT®</th>
<th>Reels, retractors and balancers</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>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!</td>
<td>The no-contact system for transferring energy and data. For all tasks that depend on high speeds and absolute resistance to wear.</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Jib boom</th>
<th>Conveyor systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete with tool transporters, reels, or an entire media supply system - here, safety and flexibility are key to the completion of difficult tasks.</td>
<td>Whether manual, semiautomatic or with Power &amp; Free – flexibility is achieved with full customization concerning layout and location.</td>
</tr>
</tbody>
</table>