Catenary tools
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</table>
Catenary tools

Pulling tools

CHAPTER 1
Chain lever hoist ratchet type "Pull-Lift"

Lightweight tool able to lift, pull, fix, grip. Handy and safe, it can work under all angles and in all positions, even upside down.

- Hot forged steel hooks, break proof. In case of overloading, they do not break but open slowly, to prevent any damage.
- Link chain-hook designed to avoid jamming.
- Disk brake ensuring instantaneous braking.
- Safety factor : 5
- Standard chain length : 1.5 m

Link chain type

**TIR 001 - 002 - 003**

Roller chain type

**TIR 004 - 005 – 006**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Pulling capacity (daN)</th>
<th>Chain length (m)</th>
<th>Maximum effort on lever (daN)</th>
<th>Dimensions (mm)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TIR 001 / TIR 004</strong></td>
<td>750</td>
<td>1.7</td>
<td>38.7</td>
<td>511 x 142 x 310</td>
<td>8.2 / 8.7</td>
</tr>
<tr>
<td><strong>TIR 002 / TIR 005</strong></td>
<td>1 500</td>
<td>1.8</td>
<td>31.6</td>
<td>530 x 171 x 376</td>
<td>16.3 / 17.0</td>
</tr>
<tr>
<td><strong>TIR 003 / TIR 006</strong></td>
<td>3 000</td>
<td>1.8</td>
<td>40.7</td>
<td>674 x 179 x 403</td>
<td>19.6 / 22.2</td>
</tr>
</tbody>
</table>
Pulling Tools

Pulling devices

Chain lever hoist, "Bravo" type

- Wide opening hooks with safety patches.
- Minimum maintenance.
- Safety factor : 5
- Automatic brake ensuring instantaneous braking
- Can be supplied with various chain lengths, to be specified when ordering.

Standard model
**TIR 007- 008 – 009 - 010**

- Body and lever of treated steel.
- Winch chain positioning when disengaged
- Standard chain length 1.50 m.

<table>
<thead>
<tr>
<th>References</th>
<th>Pulling capacity (daN)</th>
<th>Maximum effort on lever (daN)</th>
<th>Mass (kg)</th>
<th>Nr of strands</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TIR 007</strong></td>
<td>750</td>
<td>20</td>
<td>7</td>
<td>1</td>
<td>139 84 153 290 23 37 303</td>
</tr>
<tr>
<td><strong>TIR 008</strong></td>
<td>1 500</td>
<td>22</td>
<td>11</td>
<td>1</td>
<td>174 108 160 410 30 45 365</td>
</tr>
<tr>
<td><strong>TIR 009</strong></td>
<td>3 000</td>
<td>40</td>
<td>20</td>
<td>1</td>
<td>200 115 185 410 38 55 485</td>
</tr>
<tr>
<td><strong>TIR 010</strong></td>
<td>6 000</td>
<td>32</td>
<td>30</td>
<td>2</td>
<td>200 115 230 410 40 65 600</td>
</tr>
</tbody>
</table>
Pulling Tools

Cable lever hoist, winch type

Lightweight ratchet type winch, for lifting and positioning operation. Can be used in any position according to requirement (See Dispositions A, B et C)

Safety factor : 5

LUG ALL

TIR 011 – TIR 012

Descriptions :
- A high-flexibility cable, wraps entirely around the drum : Nothing trails on the floor !
- A light stainless alloy frame, shielding all parts.
- Rings are lubricated, and require no maintenance.
- When overloaded, the manoeuvre arm only bends, preserving all other parts.
- Eye-hook enabling the cable to be reeved on 2 strands.

<table>
<thead>
<tr>
<th>Capacity (daN)</th>
<th>Cable Lg (m)</th>
<th>Ø (mm)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIR 011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On 1 strand</td>
<td>On 2 strands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>-</td>
<td>3</td>
<td>5,6</td>
</tr>
<tr>
<td>250</td>
<td>500</td>
<td>4</td>
<td>7,6</td>
</tr>
<tr>
<td>TIR 012</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>1000</td>
<td>3,1</td>
<td>5,6</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9,1</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Other capacities possible upon request

LEV-TIR

TIR 013 - 014

<table>
<thead>
<tr>
<th>Reference</th>
<th>TIR 013</th>
<th>TIR 014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max load (daN)</td>
<td>500</td>
<td>800</td>
</tr>
<tr>
<td>Lifting stroke (m)</td>
<td>9,00</td>
<td>6,00</td>
</tr>
<tr>
<td>Max load (daN)</td>
<td>1 000</td>
<td>1 600</td>
</tr>
<tr>
<td>Lifting stroke (m)</td>
<td>4,50</td>
<td>3,00</td>
</tr>
<tr>
<td>Cable Ø (mm)</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Mass (kg)</td>
<td>6,10</td>
<td>6,20</td>
</tr>
</tbody>
</table>
Pulling Tools

Cable lever hoist types with unlimited cable length

A must for operations calling for long pulling span such as catenary breaks, tension take-up of tensioning devices.

- Nominal capacity increased through pulley blocks (TIR 024–025-026).
- Unlimited cable length.
- Smooth continuous operation in all positions.
- Permanent load control with millimetric accuracy.
- Reversal of pulling direction through single change of lever from one control point to the other.
- Provided with an anchorage point to accommodate various attachments such as hooks, slings, etc.
- Pulling system consisting of cylindrical and parallel jaws with evenly distributed gripping force, thus reducing cable wear.
- Telescopic lever.
- Hoist nominal capacity tested at 150 % and delivered with test certificate showing serial number.
- Safety device to prevent overloading.
- Reduced maintenance by simple cleaning and periodical lubrication.

Cable lever hoist with unlimited cable length

TIR 021 – 022 - 023

To lift, pull, lower loads over long distances.
Overload controlled by shearing pin at 125% of the nominal capacity.
Supplied with special cable with steel core, fitted with one hook at one end.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Lifting capacity (daN)</th>
<th>Pulling capacity (daN)</th>
<th>Dimensions (mm)</th>
<th>Diameter of cable (mm)</th>
<th>Mass without cable (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIR 021</td>
<td>800</td>
<td>1 200</td>
<td>520 x 130 x 300</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>TIR 022</td>
<td>1 600</td>
<td>2 500</td>
<td>650 x 150 x 320</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>TIR 023</td>
<td>3 200</td>
<td>5 000</td>
<td>700 x 150 x 320</td>
<td>16</td>
<td>25</td>
</tr>
</tbody>
</table>
Pulling Tools

Cable lever hoist with unlimited cable length

Safety factor : 5

Jaws are self-clamping in proportion to the load applied

Supplied with cable 20 m long.

TIRFOR TU
Standard series

**TIR 015 – 016 - 017**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Pulling capacity (daN)</th>
<th>Dimensions (mm)</th>
<th>Diameter of cable (mm)</th>
<th>Mass without cable (kg)</th>
<th>Breaking load (daN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIR 015</td>
<td>800</td>
<td>527 x 265 x 108</td>
<td>8</td>
<td>8.4</td>
<td>4 000</td>
</tr>
<tr>
<td>TIR 016</td>
<td>1 600</td>
<td>660 x 330 x 140</td>
<td>11.5</td>
<td>18</td>
<td>8 000</td>
</tr>
<tr>
<td>TIR 017</td>
<td>3 200</td>
<td>676 x 330 x 156</td>
<td>16</td>
<td>27</td>
<td>16 000</td>
</tr>
</tbody>
</table>

TIRFOR T500
Lightweight series

**TIR 018 – 019 - 020**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Pulling capacity (daN)</th>
<th>Dimensions (mm)</th>
<th>Diameter of Cable (mm)</th>
<th>Mass without cable (kg)</th>
<th>Breaking load (daN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIR 018</td>
<td>800</td>
<td>420 x 250 x 99</td>
<td>8.3</td>
<td>6.6</td>
<td>4 000</td>
</tr>
<tr>
<td>TIR 019</td>
<td>1 600</td>
<td>530 x 315 x 127</td>
<td>11.5</td>
<td>13.5</td>
<td>8 000</td>
</tr>
<tr>
<td>TIR 020</td>
<td>3 200</td>
<td>631 x 357 x 148</td>
<td>16.5</td>
<td>24.0</td>
<td>16 000</td>
</tr>
</tbody>
</table>
Pulleys

During electrification or maintenance works it is often necessary to use TIR 001 to TIR 018 pulling tools together with MEL 001 to MEL 016 slings and with pulleys.

Increased pulling tool capacity can be obtained by using different combinations of slings and pulleys.

We can offer 3 models of pulley particularly suitable to the works concerned.

**Steel single pulley**

Pulley for pulling works

*TIR 024*

Pulley diameter : 200 mm
Length : 274 mm
Mass : 3.8 kg

**Compensation pulley**

*TIR 025*

Pulley diameter : 200 mm
Length : 404 mm
Mass : 5.3 kg

**Steel double pulley**

for compensation and pulling work

*TIR 026*

Pulley diameter : 200 mm
Length : 514 mm
Mass : 7.2 kg
Conductor wire unrolling pulleys

Lifting single pulley, "Tirfor" type

*TIR 027*

Opening by 90° pivoting of the hook

- Safety factor: 4
- Opening by swinging the hook a quarter turn
- Structure in forged steel
- Self-lubricated bearing, no greasing necessary
- Alloy steel hook with safety latch
- Galvanized coating

<table>
<thead>
<tr>
<th>Reference</th>
<th>Pulling capacity (daN)</th>
<th>Cable Diameter (mm)</th>
<th>Mass (kg)</th>
<th>Dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIR 027-1</td>
<td>1 600</td>
<td>8.3</td>
<td>8.76</td>
<td>285 455 90 43 185 160</td>
</tr>
<tr>
<td>TIR 027-2</td>
<td>3 200</td>
<td>11.5</td>
<td>12.1</td>
<td>370 540 95 50 270 225</td>
</tr>
<tr>
<td>TIR 027-3</td>
<td>6 400</td>
<td>16.3</td>
<td>26.5</td>
<td>450 740 140 56 370 315</td>
</tr>
</tbody>
</table>

Lifting single pulley for diameter $\leq 22$ mm cables

"SNCF" type

*TIR 040*

Pulley diameter: 150 mm
Length: 270 mm
Mass: 2.6 kg

Composition:
1. Fixed flange
2. Mobile flange
3. Pulley
4. Pulley axle
5. Bushing
6. Hook-spacer assembly
7. Rectangular ring
Grippers

Hinge lever grippers that automatically converts pulling force into gripping force.

Quick and easy setting up.
Various models can be offered depending on conducting wire material.
The parallel jaws ensure perfect gripping and do not damage the conducting wire.

For steel, copper or bronze cable or wire.

Cable gripper type
TIR 028 - 029 - 030

The TIR 029 model has grooved jaws to obtain good gripping and safe pulling of the conducting wires

<table>
<thead>
<tr>
<th>Reference</th>
<th>Loading capacity (daN)</th>
<th>Conducting wire diameter (mm)</th>
<th>Coupling eye (mm)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIR 028</td>
<td>2 000</td>
<td>5 to 15</td>
<td>31 x 44</td>
<td>1.6</td>
</tr>
<tr>
<td>TIR 029</td>
<td>3 000</td>
<td>8 to 20</td>
<td>31 x 44</td>
<td>2.9</td>
</tr>
<tr>
<td>TIR 030</td>
<td>5 000</td>
<td>18 to 32</td>
<td>66 x 93</td>
<td>9.5</td>
</tr>
</tbody>
</table>

Wedge type
TIR 031 – 032 - 033

The cable is gripped by a pair of grooved jaws operated by a self-locking wedge.

- Made of forged steel.
- No risk of wrong assembly.
- Immediate adjustment at the required height.
- No cable deterioration.
- Safe operation
- Delivered without shackle (optional)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Diameter of cable (mm)</th>
<th>Pulling capacity (daN)</th>
<th>Mass without shackle (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIR 031</td>
<td>5 - 10</td>
<td>1 000</td>
<td>1.2</td>
</tr>
<tr>
<td>TIR 032</td>
<td>10.5 – 14</td>
<td>2 000</td>
<td>2.6</td>
</tr>
<tr>
<td>TIR 033</td>
<td>15 – 21</td>
<td>3 000</td>
<td>5.4</td>
</tr>
</tbody>
</table>
Pulling Tools

Self-gripping jaw type

Maximum loading capacity: 3 000 daN.

**TIR 034**

- The clamping block feature 3 grooved sides to suit different wire diameters from 6 to 16 mm
- Used with MEL 045 shackle (Optional, supplied on request)

Mass: 3.4 kg

<table>
<thead>
<tr>
<th>Dimension of the groove (mm)</th>
<th>Section (mm²)</th>
<th>Metal</th>
<th>Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 6 to 10</td>
<td>35.1</td>
<td>Bz</td>
<td>7.7</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>Galvanised steel</td>
<td>9.0</td>
</tr>
<tr>
<td>Ø 10 to 12</td>
<td>65.3</td>
<td>Bz</td>
<td>10.5</td>
</tr>
<tr>
<td></td>
<td>69.3</td>
<td>Al-Steel</td>
<td>10.65</td>
</tr>
<tr>
<td></td>
<td>56</td>
<td>Galvanised steel</td>
<td>10.8</td>
</tr>
<tr>
<td></td>
<td>72</td>
<td>Galvanised steel</td>
<td>11.0</td>
</tr>
<tr>
<td></td>
<td>104 wire</td>
<td>Cu</td>
<td>11.5</td>
</tr>
<tr>
<td></td>
<td>73</td>
<td>Stainless steel</td>
<td>11.6</td>
</tr>
<tr>
<td></td>
<td>107 wire</td>
<td>Cu</td>
<td>h(1) ≤ 11</td>
</tr>
<tr>
<td>Ø 12 to 16</td>
<td>107 wire</td>
<td>Copper</td>
<td>h(1) &gt; 11</td>
</tr>
<tr>
<td></td>
<td>93.3</td>
<td>Al-Ac</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>143 wire</td>
<td>Cu</td>
<td>13.5</td>
</tr>
<tr>
<td></td>
<td>116.2</td>
<td>Bz</td>
<td>14.0</td>
</tr>
<tr>
<td></td>
<td>105</td>
<td>Galvanised steel</td>
<td>15.0</td>
</tr>
<tr>
<td></td>
<td>150 wire</td>
<td>Cu</td>
<td>14.5</td>
</tr>
<tr>
<td></td>
<td>145.8</td>
<td>Cu</td>
<td>15.7</td>
</tr>
</tbody>
</table>

(1) dimension h = remaining wire thickness

Example of utilisation of **TIR 034** with a **TIR 006** Pull-Lift hoist.
Grippers

**TIR 037**  Type U.P.K.

**TIR 038**  : Cables with diameter 18.3 to 20.4 mm
**TIR 039**  : Cables with diameter 24.6 to 26.9 mm

Other dimensions possible (on request)

- For aluminium and aluminium-steel, aluminium alloy and aluminium-steel cables

<table>
<thead>
<tr>
<th>Diameter of cable mm</th>
<th>Maximum working load kN</th>
<th>Total mass Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.0 - 10.7</td>
<td>60</td>
<td>3.3</td>
</tr>
<tr>
<td>10.8 - 12.5</td>
<td>60</td>
<td>3.8</td>
</tr>
<tr>
<td>12.6 - 14.3</td>
<td>60</td>
<td>3.8</td>
</tr>
<tr>
<td>14.4 - 16.1</td>
<td>60</td>
<td>3.8</td>
</tr>
<tr>
<td>16.2 - 18.2</td>
<td>60</td>
<td>3.7</td>
</tr>
<tr>
<td>18.3 - 20.4</td>
<td>60</td>
<td>3.6</td>
</tr>
<tr>
<td>20.5 - 22.5</td>
<td>60</td>
<td>3.6</td>
</tr>
<tr>
<td>22.6 - 24.4</td>
<td>60</td>
<td>3.6</td>
</tr>
<tr>
<td>24.5 - 26.9</td>
<td>100</td>
<td>6.0</td>
</tr>
<tr>
<td>27.0 - 29.4</td>
<td>100</td>
<td>9.0</td>
</tr>
<tr>
<td>29.5 - 32.0</td>
<td>100</td>
<td>5.8</td>
</tr>
<tr>
<td>30.1 - 32.0</td>
<td>130</td>
<td>9.4</td>
</tr>
<tr>
<td>32.1 - 34.0</td>
<td>130</td>
<td>9.3</td>
</tr>
<tr>
<td>34.1 - 36.2</td>
<td>130</td>
<td>9.2</td>
</tr>
<tr>
<td>36.3 - 38.5</td>
<td>130</td>
<td>9.1</td>
</tr>
<tr>
<td>38.6 - 40.5</td>
<td>150</td>
<td>16.0</td>
</tr>
<tr>
<td>40.6 - 43.0</td>
<td>150</td>
<td>15.9</td>
</tr>
<tr>
<td>43.1 - 45.5</td>
<td>150</td>
<td>15.8</td>
</tr>
<tr>
<td>45.6 - 48.0</td>
<td>150</td>
<td>15.2</td>
</tr>
<tr>
<td>48.1 - 52.0</td>
<td>150</td>
<td>15.7</td>
</tr>
</tbody>
</table>

- For copper, bronze or steel cables

<table>
<thead>
<tr>
<th>Diameter of cable mm</th>
<th>Maximum working load kN</th>
<th>Total mass Kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.0 - 10.7</td>
<td>60</td>
<td>4.2</td>
</tr>
<tr>
<td>10.8 - 12.5</td>
<td>60</td>
<td>4.2</td>
</tr>
<tr>
<td>12.6 - 14.3</td>
<td>60</td>
<td>4.1</td>
</tr>
<tr>
<td>14.4 - 16.1</td>
<td>60</td>
<td>4.1</td>
</tr>
<tr>
<td>16.2 - 18.2</td>
<td>60</td>
<td>4.1</td>
</tr>
<tr>
<td>18.3 - 20.4</td>
<td>100</td>
<td>6.5</td>
</tr>
<tr>
<td>20.5 - 22.5</td>
<td>100</td>
<td>6.5</td>
</tr>
<tr>
<td>22.6 - 24.5</td>
<td>130</td>
<td>10.4</td>
</tr>
<tr>
<td>24.6 - 26.9</td>
<td>130</td>
<td>10.3</td>
</tr>
<tr>
<td>27.0 - 29.4</td>
<td>130</td>
<td>10.2</td>
</tr>
</tbody>
</table>
Slings and shackles
**Synthetic slings**

Composed of 100% polyester high toughness continuous fibre, in parallel arrangement and kept in an abrasion proof treated sheath.

- Lightweight
- Flexible
- Grease, oil, cold and moisture resistant.

Safety factor 1:7

**Synthetic tubular endless sling**

*MEL 001 to 005*

<table>
<thead>
<tr>
<th>Type</th>
<th>1,0</th>
<th>0,8</th>
<th>2,0</th>
<th>1,4</th>
<th>1,0</th>
<th>0,7</th>
<th>0,5</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEL 001</td>
<td>Violet</td>
<td>1000</td>
<td>800</td>
<td>2000</td>
<td>1400</td>
<td>1000</td>
<td>700</td>
</tr>
<tr>
<td>MEL 002</td>
<td>Green</td>
<td>2000</td>
<td>1600</td>
<td>4000</td>
<td>2800</td>
<td>2000</td>
<td>1400</td>
</tr>
<tr>
<td>MEL 003</td>
<td>Yellow</td>
<td>3000</td>
<td>2400</td>
<td>6000</td>
<td>4200</td>
<td>3000</td>
<td>2100</td>
</tr>
<tr>
<td>MEL 004</td>
<td>Grey</td>
<td>4000</td>
<td>3200</td>
<td>8000</td>
<td>5600</td>
<td>4000</td>
<td>2800</td>
</tr>
<tr>
<td>MEL 005</td>
<td>Red</td>
<td>5000</td>
<td>4000</td>
<td>10000</td>
<td>7000</td>
<td>5000</td>
<td>3500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>1,4</th>
<th>1,12</th>
<th>1,0</th>
<th>0,8</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEL 001</td>
<td>Violet</td>
<td>1400</td>
<td>1120</td>
<td>1000</td>
</tr>
<tr>
<td>MEL 002</td>
<td>Green</td>
<td>2800</td>
<td>2240</td>
<td>2000</td>
</tr>
<tr>
<td>MEL 003</td>
<td>Yellow</td>
<td>4200</td>
<td>3360</td>
<td>3000</td>
</tr>
<tr>
<td>MEL 004</td>
<td>Grey</td>
<td>5600</td>
<td>4480</td>
<td>4000</td>
</tr>
<tr>
<td>MEL 005</td>
<td>Red</td>
<td>7000</td>
<td>5600</td>
<td>5000</td>
</tr>
</tbody>
</table>
Slings and Shackles

Steel super flexible wire slings
Flat braid type with six hawsers

The super flexible wire ropes are of a very convenient handling. They do not twist and perfectly fit the outline of the loads.

Safety factor : 6

Single sling
*MEL 006 to 013*

<table>
<thead>
<tr>
<th>Reference</th>
<th>Working Load on 1 strand (daN)</th>
<th>6 hawsers A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>Approx. width (mm)</th>
<th>Approx. thickness (mm)</th>
<th>L (m)</th>
<th>Mass (kg)</th>
<th>Mass per additional m (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEL 006</td>
<td>500</td>
<td>3.60</td>
<td>140</td>
<td>90</td>
<td>15</td>
<td>10</td>
<td>2</td>
<td>1.0</td>
<td>0.34</td>
</tr>
<tr>
<td>MEL 007</td>
<td>1 000</td>
<td>4.50</td>
<td>150</td>
<td>100</td>
<td>17</td>
<td>12</td>
<td>2</td>
<td>1.6</td>
<td>0.45</td>
</tr>
<tr>
<td>MEL 008</td>
<td>1 800</td>
<td>6.00</td>
<td>200</td>
<td>130</td>
<td>25</td>
<td>15</td>
<td>2</td>
<td>3.6</td>
<td>0.81</td>
</tr>
<tr>
<td>MEL 009</td>
<td>2 400</td>
<td>7.50</td>
<td>220</td>
<td>160</td>
<td>30</td>
<td>20</td>
<td>3</td>
<td>7.5</td>
<td>1.26</td>
</tr>
<tr>
<td>MEL 010</td>
<td>3 600</td>
<td>9.00</td>
<td>250</td>
<td>175</td>
<td>35</td>
<td>23</td>
<td>3</td>
<td>12.0</td>
<td>1.80</td>
</tr>
<tr>
<td>MEL 011</td>
<td>4 800</td>
<td>10.50</td>
<td>300</td>
<td>185</td>
<td>40</td>
<td>27</td>
<td>4</td>
<td>17.0</td>
<td>2.50</td>
</tr>
<tr>
<td>MEL 012</td>
<td>6 700</td>
<td>13.00</td>
<td>320</td>
<td>200</td>
<td>50</td>
<td>32</td>
<td>4</td>
<td>26.0</td>
<td>3.50</td>
</tr>
<tr>
<td>MEL 013</td>
<td>9 100</td>
<td>15.00</td>
<td>450</td>
<td>200</td>
<td>60</td>
<td>40</td>
<td>5</td>
<td>42.0</td>
<td>4.70</td>
</tr>
</tbody>
</table>
Steel slings

Slings to be used in priority in sets of pulleys to make pulley blocks. Supplied with strength and identification plates.

Safety factor : 6

Composition : Steel and fibre core.

Sling with bare eyes

**MEL 014 to MEL 027**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Working load on 1 strand</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>Strand</th>
<th>Minimum breaking load of sling (daN)</th>
<th>L (m)</th>
<th>Mass (kg)</th>
<th>Mass per additional m (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEL 014</strong></td>
<td>500</td>
<td>7.5</td>
<td>75</td>
<td>150</td>
<td>6 x 19</td>
<td>3 100</td>
<td>1</td>
<td>0.33</td>
<td>0.21</td>
</tr>
<tr>
<td><strong>MEL 015</strong></td>
<td>750</td>
<td>9.0</td>
<td>90</td>
<td>180</td>
<td>6 x 19</td>
<td>4 500</td>
<td>1</td>
<td>0.53</td>
<td>0.30</td>
</tr>
<tr>
<td><strong>MEL 016</strong></td>
<td>1 000</td>
<td>10.5</td>
<td>100</td>
<td>200</td>
<td>6 x 19</td>
<td>6 100</td>
<td>1</td>
<td>0.75</td>
<td>0.41</td>
</tr>
<tr>
<td><strong>MEL 017</strong></td>
<td>1 500</td>
<td>13</td>
<td>120</td>
<td>250</td>
<td>6 x 36</td>
<td>9 000</td>
<td>2</td>
<td>1.70</td>
<td>0.60</td>
</tr>
<tr>
<td><strong>MEL 018</strong></td>
<td>1 920</td>
<td>15</td>
<td>150</td>
<td>300</td>
<td>6 x 36</td>
<td>11 520</td>
<td>2</td>
<td>2.50</td>
<td>0.78</td>
</tr>
<tr>
<td><strong>MEL 019</strong></td>
<td>2 500</td>
<td>16</td>
<td>170</td>
<td>350</td>
<td>6 x 36</td>
<td>15 000</td>
<td>3</td>
<td>4.50</td>
<td>0.98</td>
</tr>
<tr>
<td><strong>MEL 020</strong></td>
<td>3 240</td>
<td>18.6</td>
<td>200</td>
<td>400</td>
<td>6 x 36</td>
<td>19 440</td>
<td>3</td>
<td>5.80</td>
<td>1.33</td>
</tr>
<tr>
<td><strong>MEL 021</strong></td>
<td>4 350</td>
<td>21.2</td>
<td>220</td>
<td>450</td>
<td>6 x 36</td>
<td>26 100</td>
<td>3</td>
<td>7.50</td>
<td>1.75</td>
</tr>
<tr>
<td><strong>MEL 022</strong></td>
<td>4 875</td>
<td>23.0</td>
<td>250</td>
<td>500</td>
<td>6 x 36</td>
<td>29 250</td>
<td>3</td>
<td>9.40</td>
<td>1.96</td>
</tr>
<tr>
<td><strong>MEL 023</strong></td>
<td>5 850</td>
<td>24.8</td>
<td>250</td>
<td>550</td>
<td>6 x 36</td>
<td>35 100</td>
<td>4</td>
<td>13.50</td>
<td>2.38</td>
</tr>
<tr>
<td><strong>MEL 024</strong></td>
<td>6 750</td>
<td>26.5</td>
<td>300</td>
<td>600</td>
<td>6 x 36</td>
<td>40 500</td>
<td>4</td>
<td>16.40</td>
<td>2.73</td>
</tr>
<tr>
<td><strong>MEL 025</strong></td>
<td>7 700</td>
<td>28.3</td>
<td>300</td>
<td>600</td>
<td>6 x 36</td>
<td>46 200</td>
<td>5</td>
<td>22.00</td>
<td>3.10</td>
</tr>
<tr>
<td><strong>MEL 026</strong></td>
<td>8 800</td>
<td>30.1</td>
<td>350</td>
<td>650</td>
<td>6 x 36</td>
<td>52 800</td>
<td>5</td>
<td>26.90</td>
<td>3.50</td>
</tr>
<tr>
<td><strong>MEL 027</strong></td>
<td>10 000</td>
<td>31.8</td>
<td>350</td>
<td>700</td>
<td>6 x 36</td>
<td>60 000</td>
<td>6</td>
<td>31.70</td>
<td>3.95</td>
</tr>
</tbody>
</table>
Steel slings

Sling with protected eyes

*Minimum inside diameter after test with double load*
Shackle

*MEL 042 to 052*

Complementary tool to slings, grippers and pulling tools.

Galvanised steel.

Slings and Shackles

Pulling stocking

**MEL 053 – MEL 054**

Extra reinforced cable grips especially designed for stretching overhead lines cables. Galvanised steel (Stainless steel on request)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Capacity (mm)</th>
<th>Length M (mm)</th>
<th>Length N (mm)</th>
<th>Breaking load (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEL 053</td>
<td>8 to 17</td>
<td>1 110</td>
<td>180</td>
<td>2 500</td>
</tr>
<tr>
<td>MEL 054</td>
<td>17 to 28</td>
<td>1 350</td>
<td>180</td>
<td>3 500</td>
</tr>
</tbody>
</table>

**MEL 055 – MEL 056**

Extra reinforced double sleeve cable grips designed for the junction between 2 cables. Galvanised steel (Stainless steel on request)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Capacity (mm)</th>
<th>Length M (mm)</th>
<th>Length C (mm)</th>
<th>Breaking load (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEL 055</td>
<td>8 to 17</td>
<td>1 110</td>
<td>300</td>
<td>2 500</td>
</tr>
<tr>
<td>MEL 056</td>
<td>17 to 28</td>
<td>1 350</td>
<td>300</td>
<td>3 500</td>
</tr>
</tbody>
</table>

Links

**MEL 057 to 059**

Avoids the twisting of cables or pulling grips during pulling or unrolling operations.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Break (kg)</th>
<th>Diameter (mm)</th>
<th>Length A (mm)</th>
<th>Width (mm)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEL 057</td>
<td>1900</td>
<td>14</td>
<td>61</td>
<td>6</td>
<td>0.08</td>
</tr>
<tr>
<td>MEL 058</td>
<td>3000</td>
<td>22</td>
<td>88</td>
<td>10</td>
<td>0.23</td>
</tr>
<tr>
<td>MEL 059</td>
<td>4900</td>
<td>34</td>
<td>122</td>
<td>16</td>
<td>0.52</td>
</tr>
</tbody>
</table>
Catenary tools

Drilling Tools

CHAPTER III

GEISMAR
Complete magnetic drilling units

**FOR 001**

- 700 Watts for drilling up to 32 mm.
- Working speed : 440 rpm
- Quick tool changing system without key.
- Lightweight compact machine for maximum handiness.
- Double dovetail guiding.
- Continuous stroke adjusting ensuring a quick and accurate change of tool, without need of drawing the drilling head out of the part.
- High electromagnetic power and safety circuit ensuring a safe work in all positions.
- Integrated lubrication system for a neat cut and an optimal life time of the drill bits.
- Length of the cable : 4 m
- Electric power : 220/230 V AC – 50 Hz
- Magnetic power : 9000 N
  Dimensions of the magnetic stand : 160 x 80 mm
  Total weight : 10 kg

**Delivered with :**
- 1 metal case, 1 lubricant pump, 1 tightening girth, 1 hook for cuttings, 1 key chuck, 1 adaptator with thread, 2 centring pins, 1 set of keys.

**Optionally :**

| FOR 003   | Carbide drills with quick coupling, useful length 35 mm, diameter 12 to 32 mm |
| FOR 011   | Carbide drills with quick threaded coupling, useful length 35 mm, diameter 12 to 32 mm |

When ordering, please specify the diameter of drills

Power supply : see **DIV 014 – DIV 0015** Power Packs, Chapter 6 “HYD”
Complete magnetic drilling units

FOR 002

- 1460 Watts for drilling up to 65 mm.
- Quick tool changing system without key.
- Lightweight compact machine for maximum handiness.
- Two-speed gearbox for optimal speed.
  Slow position: 125/255 rpm
  Fast position: 250/510 rpm
- Double dovetail guiding
- Continuous stroke adjustment ensuring a quick and accurate change of tool, without need of with drawing the drilling head out of the part.
- High electromagnetic power and safety circuit ensuring a safe work in all positions.
- Integrated lubrication system for a neat cut and an optimal lifetime of the drill bits.
- Length of the cable: 4 m
- Electric power: 220/230 V AC – 50 Hz
- Magnetic power: 12000 N
  Dimensions of the magnetic stand: 184 x 92 mm
  Total weight: 19.8 kg

Delivered with:
- 1 metal case, 1 lubricant pump, 1 tightening girth, 1 hook for cuttings, 1 key chuck, 1 adaptator with thread,
- 2 centring pins, 1 set of keys.

Optionally:

FOR 005 Carbide drills with quick coupling, useful length 35 mm, diameter 18 to 65 mm

FOR 014 Carbide drills with quick threaded coupling, useful length 35 mm, diameter 18 to 65 mm

When ordering, please specify the diameter of drills

Power supply: see DIV 014 – DIV 0015 Power Packs, Chapter 6 “HYD”
Catenary tools

Cable cutters

CHAPTER IV
Cable cutters

We offer a variety of cable cutters ranging from hand-operated to heavy duty hydraulic cutting heads. 
Not for use on LIVE CABLES or on cables under mechanical tension.

Hand operated cable cutter

**COC 001**

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Max cutting capacity</th>
<th>Length</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single or multiconductor copper and aluminium cables</td>
<td>32 mm Ø</td>
<td>250 mm</td>
<td>0.6 kg</td>
</tr>
</tbody>
</table>

**COC 002**

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Max cutting capacity</th>
<th>Length</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single or multiconductor copper and aluminium cables</td>
<td>400 mm² or 52 mm Ø</td>
<td>280 mm</td>
<td>0.8 kg</td>
</tr>
</tbody>
</table>
## Ratchet type cable cutters

<table>
<thead>
<tr>
<th>Reference</th>
<th>Cable type</th>
<th>Max cutting capacity</th>
<th>Length</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>COC 003</td>
<td>Copper, aluminium alloy,</td>
<td>480 mm² or 30 mm Ø</td>
<td>740 mm</td>
<td>5.2 kg</td>
</tr>
<tr>
<td>COC 004</td>
<td>aluminium-steel cables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COC 004</td>
<td>Twisted wire</td>
<td>19 mm Ø</td>
<td>96 mm</td>
<td>6 kg</td>
</tr>
<tr>
<td>COC 004</td>
<td>HR steel rope</td>
<td>16 mm Ø</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Two-hand operated cable cutter

**COC 014**

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Max cutting capacity</th>
<th>Length (mm)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Two hands&quot; model</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminium and copper cables</td>
<td>240 mm² or Ø 32 mm</td>
<td>600</td>
<td>1.7</td>
</tr>
<tr>
<td>Aluminium alloy cables</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cable cutters

Hand operated hydraulic cable cutters

COC 005 – COC 006 – COC 007

COC 005

Max opening: Ø 25
Force: 50 kN
Mass: 2.9 kg
Length: 365 mm

<table>
<thead>
<tr>
<th>MAXIMUM CUTTING CAPACITY</th>
<th>Steel leads cables</th>
<th>Wire cables</th>
<th>Round bars</th>
<th>Insulated cables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 x 17 leads</td>
<td>Copper</td>
<td>Copper</td>
<td>Ø 25 mm</td>
</tr>
<tr>
<td></td>
<td>6 x 19 leads</td>
<td>Aluminium</td>
<td>Al / steel</td>
<td>Ø 25 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ø 22 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ø 16 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ø 20 mm</td>
</tr>
</tbody>
</table>

COC 006

Max opening: Ø 50
Force: 60 kN
Mass: 3.800 kg
Length: 460 mm

Max cutting capacity:
- Copper leads cables: 240 mm²
- Aluminium leads cables: 3x150+70 mm²
- Round annealed copper: Ø 16 mm
- Round annealed aluminium: Ø 22 mm
- Telephone cables: Ø 45 mm

COC 007

Max opening: Ø 85
Force: 55 kN
Mass: 12 kg
Length: 810 mm

Max cutting capacity:
- Aluminium or copper core cables: Ø 85 mm
- Insulated aluminium cables: 3 x 240 mm²
- Single conductor insulated cables: 630 mm²
- Copper cables: 630 mm²
**Cable cutters**

**Cable cutter hydraulic head**

**COC 008 – 009**

To be used with hydraulic power packs *HYD*—see Chapter "Hydraulic pumps"

<table>
<thead>
<tr>
<th><strong>COC 008-1</strong></th>
<th><strong>COC 008-2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utilisation:</strong></td>
<td><strong>Copper, aluminium, steel cables</strong></td>
</tr>
<tr>
<td>Max cutting capacity</td>
<td>25 mm</td>
</tr>
<tr>
<td>Cutting strength</td>
<td>55 kN</td>
</tr>
<tr>
<td>Dimensions :</td>
<td>215 x 52 x 90 mm</td>
</tr>
<tr>
<td>Mass :</td>
<td>2.40 kg</td>
</tr>
<tr>
<td></td>
<td>40 mm</td>
</tr>
<tr>
<td></td>
<td>88 kN</td>
</tr>
<tr>
<td></td>
<td>285 x 85 x 105 mm</td>
</tr>
<tr>
<td></td>
<td>4.30 kg</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th><strong>COC 009-1</strong></th>
<th><strong>COC 009-2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utilisation:</strong></td>
<td><strong>Copper and aluminium cable</strong></td>
</tr>
<tr>
<td>Max cutting capacity</td>
<td>55 mm</td>
</tr>
<tr>
<td>Cutting strength</td>
<td>43 kN</td>
</tr>
<tr>
<td>Dimensions :</td>
<td>300 x 55 x 110 mm</td>
</tr>
<tr>
<td>Mass :</td>
<td>3.00 kg</td>
</tr>
<tr>
<td></td>
<td>85 mm</td>
</tr>
<tr>
<td></td>
<td>55 kN</td>
</tr>
<tr>
<td></td>
<td>385 x 75 x 170 mm</td>
</tr>
<tr>
<td></td>
<td>6.2 kg</td>
</tr>
</tbody>
</table>
# Cable cutters

## Mechanical cable cutters

### COC 010 to 013

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>COC 010</th>
<th>COC 011</th>
<th>COC 012</th>
<th>COC 013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild steel wire cables</td>
<td>7</td>
<td>9</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Hard steel wire cables</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Stainless steel cables</td>
<td>4</td>
<td>6</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Extra hard steel cables and strands</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Electrical wire with steel core (Al and Cu)</td>
<td>7</td>
<td>9</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Copper or aluminium bars</td>
<td>5</td>
<td>9</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Iron bars</td>
<td>4</td>
<td>7</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Annealed spring steel wires</td>
<td>2.5</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

### COC 013
Length: 630 mm  
Mass: 2.3 kg

### COC 012
Length: 500 mm  
Mass: 1.5 kg

### COC 011
Length: 325 mm  
Mass: 0.7 kg

### COC 010
Length: 190 mm  
Mass: 0.3 kg
Catenary tools

Crimping tools

CHAPTER V
Crimping Tools

Mechanical hand press tools

For steel cables

SER 001 – SER 002

<table>
<thead>
<tr>
<th>Reference</th>
<th>Length (mm)</th>
<th>Cuts and presses (mm)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SER 001</td>
<td>380</td>
<td>2 to 3.5</td>
<td>0.9</td>
</tr>
<tr>
<td>SER 002</td>
<td>650</td>
<td>2 to 5</td>
<td>2.5</td>
</tr>
</tbody>
</table>

SER 001

SER 002

CUTS

PRESSES
Hand operated hydraulic tool for hexagonal crimping of connectors, terminals and sleeves.

**SER 003**

Two-speed pump, rotating head 180 °
Can be used in all positions
Automatic activation at 750 bar
Possible decompression at any moment

Utilisation :
- Crimping with 130 kN "C" head
- Copper conductor up to 300 mm²
- Overhead bare conductors up to 228 mm²

Mass : 5.8 kg
Dimensions LxL : 642 x 135 mm

**Crimping dies :**
Section from 6 to 300 mm²
- For tubular copper lugs
- For splicing or anchor bare sleeves
- For pre-rounding

---

Hand-operated hydraulic crimping tool

**SER 004**

For crimping of copper terminals and tubular sleeves on copper cables

Force : 50 kN
Stroke : 13 mm
Mass : 2.35 kg
Length : 365 mm
Rotating head : 180°

**Crimping dies :** sections from 6 to 150 mm²
- For tubular copper compression lugs
- For tubular copper compression lugs
- For pre-rounding
Crimping Tools

Hydraulic head for hydraulic press - 22 kN, fork type

**SER 005**

To be used with: Electro-hydraulic power-packs *HYD 001 - HYD 002 - HYD 003*
Hydraulic pumps *HYD 004 - HYD 005*

Die for hexagonal crimping

Die for oval crimping
Catenary tools

Hydraulic power packs

CHAPTER

VI
Hydraulic power packs

Electro-hydraulic Group – Mains supply - HYD 001

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>700 bar</td>
</tr>
<tr>
<td>Flow</td>
<td>0.80 l/min</td>
</tr>
<tr>
<td>Oil tank</td>
<td>2 litres</td>
</tr>
<tr>
<td>Engine</td>
<td>750 W</td>
</tr>
<tr>
<td>Sound level</td>
<td>&lt; 80 dBA</td>
</tr>
<tr>
<td>Net weight</td>
<td>17 kg</td>
</tr>
<tr>
<td>Weight in case</td>
<td>27 kg</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Unit: 380 x 200 x 420 mm</td>
</tr>
<tr>
<td></td>
<td>Unit in case: 630 x 370 x 450 mm</td>
</tr>
</tbody>
</table>

Composition:
- 220 V electrical hydraulic group
- 2 switches remote control with 3 m long cable
- 160 mA additional fuse in plastic bag
- Uninsulated High pressure flexible hose, 3 m long, equipped with quick coupling:
  - 1 90°-male coupling
  - 1 female coupling with safety locking
- 0.5 litres bottle of insulating oil
- Plug for remote control
- Mains operated cable

Technical Data:
- Designed for an intensive work (Example: crimping of 6 terminal lugs of 185 mm² per minute)
- Motor 750 W single-phase 220V 50 Hz with condenser of starting (permitting the starting off under load)
- Automatic stop of engine at 700 bar
- Safety valve against overpressure risks
- Thermal circuit breaker to protect against electric motor overcharge
- Emergency control for manual return of piston
- Protection level: IP 55 according to NF EN 60529 – in conformity with 89/336/CE standards

Details:
- Plug for remote control
- Mains operated cable
- 160 mA fuse on controlled part
- Emergency control for manual return of piston, hold pressure function:
  - 1st: Advance
  - 2nd: Return

Can be used with all cable cutters, crimping tools, etc. of our catalogue
(See chapters COC, SER, MAI and SPE)
Hydraulic power packs

Electro-hydraulic power pack - HYD 003

with rechargeable battery

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>700 bar</td>
</tr>
<tr>
<td>Flow</td>
<td>0.57 to 0.34 l/min depending on</td>
</tr>
<tr>
<td></td>
<td>pressure</td>
</tr>
<tr>
<td>Battery</td>
<td>Ni/cd 24 V – 3 A/h</td>
</tr>
<tr>
<td>Mass</td>
<td>9.5 kg</td>
</tr>
<tr>
<td>Dimensions</td>
<td>340 x 160 x 290 mm</td>
</tr>
</tbody>
</table>

Composition:
- A light, ergonomic self-operating hydraulic group equipped with female quick coupling
- A Ni-Cd 28.8 V removable and rechargeable battery, life ± 1000 charges.
- 1 Battery charger with power load indicator, 50 min fast charger, safety through limitation of charge time.
- 2 switches remote control (Advance/Return) with hold pressure function, with 3 m long cable
- 1 flexible high-pressure hose, non-insulated, 3 m long, fitted with couplers
  - 1 90°-male coupler connected on the group,
  - 1 female coupler with safety locking
- 1 adaptor for selecting the heads: crimping head, cutting heads, etc.
- One 0.5L oil bottle
- A carrying case for the group and the accessories.
- A shoulder strap.

Technical data:
- 250 W engine equipped with a heat protection stopping the engine in case of overheating.
- Automatic stop of engine at 700 bar – Overload valve.
- Protection level: IP 54 according to NF EN 60529 + Conformity to 89/336/CE directives.
- Very light (9.5 kg) ergonomic and quiet group.
- Hermetic tank allowing work in all positions.
- Safety mechanism for manual return of the piston.

Can be used with any homologated cable cutter or crimping tool.

(See chapters COC and SER of Catalogue)

Foot-operated hydraulic pumps
Hydraulic power packs

Equipped with high pressure 3 metres long hose and half-valve B type for the connection of:

- Hydraulic crimping heads
- Hydraulic cable-cutting heads
- Hydraulic bolt-cutting heads
- Hydraulic device for removing contact wires irregularities

**Foot-operated hydraulic pump - HYD 004**

- 2-speed pump, can be operated in any position
- Automatic release at 750 bars
- Pressure release can be achieved at any time

**Cable types**:

Crimping with 10 to 40 t cylinders:
- Copper conductors up to 1000 mm² section
- Overhead bare conductors up to 228 mm²
- Overhead insulated cables up to 150 mm²

Dimensions: 775 x 280 x 160 mm
Mass: 13 kg

**Hand-operated hydraulic pump - HYD 005**

- 1-speed pump, can be operated in any position
- Automatic release at 750 bars
- Pressure release can be achieved at any time

**Cat.**

Crimping with 13 t cylinders:
- Copper conductors up to 630 mm² section
- Overhead bare conductors up to 228 mm²
- Overhead insulated cables up to 150 mm²

Dimensions: 630 x 140 x 50 mm
Mass with 3 m long hose: 6.50 kg
Catenary tools

Unrollers and straps

CHAPTER VII
Unrollers and Straps

Unrollers for cable and contact wire reels

*DES 001 a 005*

For use in workshops or on site. Allows unrolling with the minimum of effort or strain on the cable.

Can be dismantled for ease of handling or for transporting on road vehicles.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Max load</th>
<th>Ø of reel</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>DES 001</td>
<td>0.8 ton</td>
<td>600 to 1050 mm</td>
<td>One piece frame with built-in ramp fitted with 2 reels Ø 70 mm, 575 mm long, 1 front reel locking handle</td>
</tr>
<tr>
<td>DES 002</td>
<td>1.2 tons</td>
<td>600 to 1200 mm</td>
<td>One piece frame with built-in ramp fitted with 2 reels Ø 70 mm, 770 mm long, 1 front reel locking handle</td>
</tr>
<tr>
<td>DES 003</td>
<td>1.5 tons</td>
<td>750 to 1400 mm</td>
<td>One piece frame with retractable ramp fitted with: 2 reels Ø 89 mm, 875 mm long (1 fixed front / 1 mobile rear reel) 2 guide rolls - 1 front reel locking handle</td>
</tr>
<tr>
<td>DES 004</td>
<td>2.5 tons</td>
<td>750 to 1650 mm</td>
<td>Two-piece frame, connected by 2 square tubes, each piece fitted with 1 retractable ramp - 2 reels Ø 89 mm, 235 mm long (1 fixed front and 1 mobile rear reel) - 1 guide roll - 1 front reel locking handle</td>
</tr>
<tr>
<td>DES 005</td>
<td>5 to 7 tons</td>
<td>750 to 2200 mm</td>
<td>Two-piece frame, connected by 2 square tubes, each piece fitted with 1 retractable ramp - 2 reinforced reels Ø 89 mm, 235 mm long (1 fixed front and 1 mobile rear reel) - 1 guide roll - 1 front reel locking handle</td>
</tr>
</tbody>
</table>
Unrollers and Straps

Unrollers - Specifications

DES 001  DES 002  DES 003  DES 004

DES 005

Type 5 a 7 t.

DES 005
Straps for reel handling

**DES 006 to DES 011**

**Advantages**:

Maximum working load for minimum width.

Lightweight and flexible to protect the cable from damage.

Factory anti-abrasion treatment.

About 10% elongation factor under nominal load.

**Composition**:

Made of special polyamide texture with weft particularly designed for lifting applications.

Inside core composed of load bearing threads absorbing 80% of the load.

Outside surface threads is protected preserving weft load bearing threads from breakage or wear.

Safety factor: 8

<table>
<thead>
<tr>
<th>References</th>
<th>Working load on 1 strand (daN)</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>Width C (mm)</th>
<th>Length L (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>With 2 ordinary fasteners</td>
<td>With one ordinary fastener and one sliding fastener</td>
<td>DES 006</td>
<td>DES 007</td>
<td>2500</td>
<td>50</td>
</tr>
<tr>
<td>DES 008</td>
<td>DES 009</td>
<td>4200</td>
<td>70</td>
<td>116</td>
<td>125</td>
</tr>
<tr>
<td>DES 010</td>
<td>DES 011</td>
<td>5000</td>
<td>80</td>
<td>133</td>
<td>150</td>
</tr>
</tbody>
</table>

For any other length and working load, please consult us.

Detail of sliding fastener
Catenary tools

Measuring Tools

CHAPTER

VIII
Measuring Tools

Glass fibre gauge for measuring contact wire height and stagger

**MES 001**

Standard measured heights: 4.4 m to 6.4 m
(Other heights available. Details on request)

Made from glass fibre/resin composite section to minimise weight and give good weather resistance. Optional rollers are available for movement along the track.

**Use:**

To take a measurement the gauge is placed on its shoes by the user and the moveable portion raised to the contact wire. Nylon blocks ensure this operation is carried out with the minimum of effort.

Stagger is read on each side of the graduated rule.

Height is read on the black graduation scale on the mast.

Measurement 25 kV: Catenary without electrical power

Total mass: 14 to 17 kg

1. Both sides graduated rule, for stagger measurement.
2. Rectangular sliding part.
3. Wire attachment of stainless steel or kevlar fibre.
4. Handle.
5. Chain to secure the gauge to a catenary mast, when not in use.
6. Direct reading of height.
7. Shoe (with rollers model MES 002)
8. Aluminium stiffeners.
10. Rope guiding pulley.
11. Gauge graduation for height measurement.
12. String line for sliding part.
13. Tensioning device for gauge adjustment.

**Alternative:**

**MES 002 – Glass fibre gauge with rollers**

Rollers are used only for displacement of the device. In transport position, the operator inclines the unit so that the rollers are in contact with the rail head. Then he pushes or pulls as required along the rail head.
Measuring Tools

Mechanical and optical measuring instrument for contact wire height and stagger

**MES 003**

- Quick and accurate determination of the contact wire **lateral position** and **elevation**.
- Measurement can be carried out with **live line systems**.
- Equipped with **night measuring device** an optionally with a **Laser**
- The optical instrument is supplied in an aluminium carrying case.

**Composition**:

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A measuring staff</strong></td>
<td>Robust light metal section provided with a centimetre graduation for measurement of the lateral position</td>
</tr>
<tr>
<td><strong>A measuring jib</strong></td>
<td>Drawn aluminium section provided with a stop, with millimetre graduation for elevation measurement</td>
</tr>
<tr>
<td><strong>Optical instrument</strong></td>
<td>Cast light metal case housing 2 mirrors, a set of lenses and a plane parallel glass plate.</td>
</tr>
<tr>
<td><strong>Option</strong></td>
<td>The instrument can be additionally equipped with a <strong>Laser</strong>, as a sighting aid.</td>
</tr>
</tbody>
</table>

**Lateral measurement**:  
- Lateral deviation: ± 50 cm  
- Scale value: 1 mm = 1 cm  
- Accuracy: ± 1 cm

**Height measurement**:  
- Range: 3.8 to 6.5 m  
- Scale value: 1 mm = 1 cm  
- Accuracy: ± 3 cm

**Auxiliary unit Laser**:  
- Performance: 1mW 660 nm  
- Class: 2

* For track gauge 1435 mm – Other ranges upon request

**Dimensions**:

- Optical instrument*: 315 x 42 x 67 mm  
- Guide rail: 1700 mm

**Mass**:

- Optical instrument: 3.8 kg  
- Measuring staff & jib: 3.7 kg

* MES 003 equipped with optional Laser
Digital display load indicators with direct reading

These load indicators operate on the principle of strain gauges and employ advanced technology in electronic miniaturisation. These instruments are of a great precision, robust and easily portable. They can be used for lifting as well as for pulling operations.

Compact, lightweight, robust and reliable, they are particularly stable in time and can be used from -10°C to +50°C. They are waterproof and dustproof.

**MES 004 – 005 - 006**

Safety factor : 5  
Measuring precision : 0.3 %

*Option* : Shackles for Load indicators  : See Chapter "Slings and Shackles" : **MEL 045 / 49/ 052**

<table>
<thead>
<tr>
<th>References</th>
<th>Nominal load (t)</th>
<th>Mass (kg)</th>
<th>Overall dimensions (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MES 004</td>
<td>2.5</td>
<td>1.5</td>
<td>214 x 83 x 56</td>
</tr>
<tr>
<td>MES 005</td>
<td>5</td>
<td>1.9</td>
<td>234 x 90 x 56</td>
</tr>
<tr>
<td>MES 006</td>
<td>12.5</td>
<td>3.8</td>
<td>310 x 110 x 58</td>
</tr>
</tbody>
</table>

Please consult us for other capacities.
Tensionmeter for cables

*MES 007*

**Field of application**:
Instrument designed to measure the tension of a cable already *in situ* without dismantling it.

The tensionmeter is placed directly on the cable and the tension value read directly on a liquid crystal display.

**Example**: Anchoring cables, Catenary cables and wires.

**Use**:
When the tensionmeter is fixed on the cable, the handle is used to deviate the cable according to a definite angle. The force applied will influence the measuring cell and determine the cable tension. The resulting signal can be displayed in a choice of units: kN, lbs or tons.

10 different types of cable can be calibrated.

- **Maximum capacity**: 20 tons
- **Overload factor**: 100 %
- **Display precision**: 2 to 6 % of the max capacity (according to the type of cable)
- **Cable diameter**: 6 to 38 mm
- **Temperature of use**: -20° to + 60°
- **Material**: Corrosion resistant, aluminium flat keys
- **Protection class**: IP 65 according to IEC 529
- **Feeding**: 9 V standard batteries
- **Dimensions**: 760 x 400 x 170 mm
- **Net weight**: 6.2 kg
Measuring Tools

Contact wire thickness measuring device

- Stainless steel.
- Polished sides.
- Accuracy ± 3/100.
- 1 graduation = \( \frac{1}{10} \) of a mm on wire diameter.
- supplied in a case.

For contact wire 7 to 12.7 mm diameter

*MES 008*

For contact wire 8 to 14. mm diameter

*MES 009*

For any other measurement please consult us.

Thermometer for catenary suspension wire

*MES 010*

- Graduated from −15° to +70°C
- To be fixed on the catenary wire.
- Not subject to deterioration from weather or electric current.
Infrared Thermometer

**MES 014**

This infrared Thermometer is the ideal tool for fast measurement surface temperatures of the objects under electric tension or at high temperature.

**Technical Data**
- Compact case surrounded with a shock-absorbing holster.
- Activation by pressure on the green button.
- **Bright Laser beam** provides easy targeting at a distance of 4 m.
- Even in the dark, the display is easy to read with its backlit screen.
- The time of measurement is reduced allowing to show temperatures in **less than one second**.
- Recording of the temperatures.
- Alkaline batteries provide 4000 typical measurements.
- Batteries life : 12 hours with Laser and backlight activated.
- Automatic sleep mode after 7 seconds extends battery life.

- **Display in °C or in °F**
- **Laser sight**
- Blocking of the display

**Measurement specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range</strong></td>
<td>-18 °C to 275°C (0 to 527°F)</td>
</tr>
<tr>
<td><strong>Time of response</strong></td>
<td>&lt; 1 second</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>0.2°C</td>
</tr>
<tr>
<td><strong>Repeatability</strong></td>
<td>+/- 2% of reading or 2°C whichever is greater</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>for targets between :</td>
</tr>
<tr>
<td>(value for an ambient</td>
<td>-18 and -1°C (0 to 30°F)</td>
</tr>
<tr>
<td>temperature of operation:</td>
<td>± 3°C (± 5°F)</td>
</tr>
<tr>
<td></td>
<td>-1 and 275°C (30 to 527°F)</td>
</tr>
<tr>
<td></td>
<td>at the maximum : ± 2% or ± 2°C (± 3.5°F)</td>
</tr>
<tr>
<td><strong>Optical resolution</strong></td>
<td>8:1 Distance to Spot Size Ratio</td>
</tr>
<tr>
<td><strong>Emissivity</strong></td>
<td>fixed at 0.95</td>
</tr>
<tr>
<td><strong>Distance to the</strong></td>
<td>Minimum 200 mm</td>
</tr>
<tr>
<td><strong>target</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>184 x 45 x 38 mm</td>
</tr>
<tr>
<td><strong>Mass</strong></td>
<td>0.3 kg</td>
</tr>
</tbody>
</table>
Measuring Tools

Ultrasonic measuring instrument for overhead line height and stagger

MES 011

The system measures the elapsed time between transmission of a signal and reception of an echo from a target, and translates this time into a distance measurement through its onboard processor.

Characteristics:
- Robust stainless steel fixture
- Accuracy
- Rapid removal from track
- Does not require daylight to operate
- Capable of storing measurement
- Stores time and date
- External temperature facility
- Download to PC
- No need to enter track gauge.

Specifications:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stagger accuracy</td>
<td>Typically ± 10 mm / (0.4&quot;)</td>
</tr>
<tr>
<td>Height accuracy</td>
<td>Typically ± 10 mm / (0.4&quot;)</td>
</tr>
<tr>
<td>Temperature operating range</td>
<td>-10°C to +40°C</td>
</tr>
<tr>
<td>Height range</td>
<td>Min 4 m – Max 7 m</td>
</tr>
<tr>
<td>Memory storage capacity</td>
<td>200 measurement locations</td>
</tr>
<tr>
<td>Charge battery life</td>
<td>8 hours (average use)</td>
</tr>
<tr>
<td>Mass</td>
<td>7 kg (16 lbs)</td>
</tr>
</tbody>
</table>

Transportation position

Extended position

Option: Carrying case with rollers
Megohmmeter

MES 012

Insulation digital tester for testing of switchgear, motors, generators and cables, up to 5000 V DC.

Characteristics

- Test voltage of 250 V, 500 V, 1000 V, 2500 V, 5000 V
- Warning voltage function alerts the user that the line voltage is present and gives the voltage reading up to 600 V AC or DC.
- Capable of testing in 50 V increments between 250 V and 1000 V and 100 V increments between 1000 V and 5000 V.
- Guard system eliminates the effect of surface leakage current on high resistance measurements.
- Large digital/analog LCD shows detailed measurement data.
- Cable or insulation capacitance.
- Ramp function (0-5000 V DC) for breaking down testing.
- Measures 0 to 1 Tera-Ohm.
- Timer 1 to 99 minutes.
- Polarization index and dielectric absorption calculated automatically.
- 99 memory locations store all measurements parameters.
- Including software of measurement and optical interface cable.
- Test leads, alligator clips, interface cable, soft carrying case with water-proof bottom, instruction manual.

All the entries are protected CAT III 600V

Measurement specifications

<table>
<thead>
<tr>
<th>Test Voltage (DC)</th>
<th>Range</th>
<th>Accuracy (± reading)</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 V</td>
<td>200 kΩ to 5 GΩ</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>5 GΩ to 50 GΩ</td>
<td>5%</td>
</tr>
<tr>
<td>500 V</td>
<td>200 kΩ to 10 GΩ</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>10 GΩ to 100 GΩ</td>
<td>20%</td>
</tr>
<tr>
<td>1000 V</td>
<td>200 kΩ to 20 GΩ</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>20 GΩ to 200 GΩ</td>
<td>20%</td>
</tr>
<tr>
<td>2500 V</td>
<td>200 kΩ to 50 GΩ</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>50 GΩ to 500 GΩ</td>
<td>20%</td>
</tr>
<tr>
<td>5000 V</td>
<td>200 kΩ to 100 GΩ</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>100 GΩ to 1 TΩ</td>
<td>20%</td>
</tr>
</tbody>
</table>

Short circuit current : > 1 mA and < 2 mA
Bar graph range : 0 to 1 TΩ
Insulation test voltage accuracy : 0% to + 10% at 1mA load current
Induced AC mains current rejection : 2 mA maximum
Charging rate for capacitive load : 5 seconds per µF

Leakage current : 1 nA to 2 mA ± (5% + 2 nA)
Capacitance measurements : 0.01µF to 15.00 µF ± (15% rdg + 0.03µF)
Live circuit indicator : 30 V to 600 V AC/DC 50/60 Hz ± (5% + 2 V)

Timer increment ;indicated to within 1 second : 1 to 99 minutes. settable in 1 minute
Ramp : 0 to 100% of selected test voltage. or until breakdown.

Operating Temperature : -20°C to 50°C
Storage Temperature : -20°C to 65°C
Relative humidity : 80% to 31°C – 50% to 50°C
Dust / Water resistance : IP40
Batteries : 12 V, lead acid, rechargeable
Size : 330 x 242 x 170 mm
Weight : 4 kg (with battery)
Measuring Tools

Recording Palmer for contact wire

MES 015

Composed of:

- **Outdoor Micrometer**
  - **Reading**: 0.001 mm (0.00005 inch)
  - **Measuring range**: 0 to 25 mm
  - **Socket**: 8 mm diameter
  - **Functions**:
    - On/Off
    - Floating Zero
    - Conversion millimetres/inches
    - Data download Opto RS 232
    - Memorisation of max./min.values
    - Memorisation of the displayed value
    - Function PRESET +/- (presetting of measure value)
    - Adjustment of measuring force by advanced ratchet 5-10 N
    - Supplied in wooden case

- **Recorder** for download of data with liaison cable
  - **Mobile data input**
  - **Storage up to 999 measured values**
  - **Not need to program**
  - **4-key control**
    - Data download to Windows programs with software
  - **Compatible with any Opto RS 232 interface**
    - Dimensions: 120 x 60 x 25 mm
Climbing Tools

CHAPTER IX
Wooden ladder trolley

**ASC 001**

Length when closed : 3.980 m (*)
Length when extended : 6.005 m (*)

(*) : Other dimensions on request

**Constitution :**

**Trolley ASC 002 :**

- Frame : composed of 2 aluminium half-frames with 2 gauge bars.
  The half-frames are available in 2 versions:
  - Bolted version
  - Welded version,
- Wheels : Aluminium or nylon with 2 conical rollers
- Braking : 2 screw-nut devices with wooden shoes acting on 2 wheels diagonally opposed.
- 4 pivoting carrying handles

**Ladder ASC 003 :**

- Double ladder with telescopic parts, operated by means of ropes and pulleys.
- Material : Unpainted wood protected by transparent lacquer.

*Model shown: Ladder trolley ASC 001 fitted with a pair of Strapkors model ASC 004.*

The ladder trolley ASC 001 can be fitted with "Strapkor" working supports
(option upon request - See description next page)
Climbing Tools

Detachable working supports for ladder trolley **ASC 001**

**Strapkor**

**ASC 004**

**Technical characteristics :**

- Frame structure in light aluminium alloy and stainless steel screws.
- Quick and easy to install in position.
- Tool box incorporated.
- Non-slip and hinged floor.
- Maximum safe load : 165 kg

**Utilisation :**

In accordance with new IEC standards.

---

<table>
<thead>
<tr>
<th>Dimensions of the Strapkors</th>
<th>in working position:</th>
<th>in transport position:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>880 mm</td>
<td>880 mm</td>
</tr>
<tr>
<td>Depth</td>
<td>760 mm</td>
<td>240 mm</td>
</tr>
<tr>
<td>Height</td>
<td>1020 mm</td>
<td>1500 mm</td>
</tr>
</tbody>
</table>
Climbers
Substitution tool for ladder suitable for all operations on catenary masts or in the vicinity.

Climbers for H-profile steel masts

Face climbing type
ASC 005
Treated special steel.
Adjustable from 5 to 20 mm depending on mast thickness.
Fatigue eliminated due to a good rest for the feet.
Mass : 4.6 kg

Face climbing type with rubber padded grips
ASC 006
Same type as ASC 005 but equipped with rubber padded grips to protect the mast.
Mass : 4.8 kg
(Extra rubber pads : on request)

Side climbing type
ASC 007
Treated special steel.
Adjustable from 5 to 20 mm depending on mast thickness.
Mass : 4.8 kg

Side climbing type with rubber padded grips
ASC 008
Same type as ASC 007 but equipped with rubber padded grips to protect the mast.
(Extra rubber pads : on request)
Mass : 3.7 kg
Climbing Tools

Climbers for truncated, hexagonal and cylindrical masts: Steel, concrete, wood.

Fixed cylindrical type for any mast
ASC 009

All steel construction.

Part of rod rubber coated.

Rubber stop to prevent any damage to paints, galvanised parts as well as injuries on wooden of concrete masts.

Opening: 18 cm
Mass: 3.8 kg

Please apply to us for any other diameter.

Adjustable cylindrical type for any mast
ASC 010 to 016

Specially designed for any masts of different diameters at various heights, without any sliding even on wet or icy surface.

Manually adjustable when climbing depending on mast conicity.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Minimum Ø at 1 m from top (cm)</th>
<th>Maximum Ø at foot (cm)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASC 010</td>
<td>8</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>ASC 011</td>
<td>9</td>
<td>22</td>
<td>5.5</td>
</tr>
<tr>
<td>ASC 012</td>
<td>12</td>
<td>25</td>
<td>5.9</td>
</tr>
<tr>
<td>ASC 013</td>
<td>14</td>
<td>30</td>
<td>6.5</td>
</tr>
<tr>
<td>ASC 014</td>
<td>18</td>
<td>38</td>
<td>6.7</td>
</tr>
<tr>
<td>ASC 015</td>
<td>25</td>
<td>43</td>
<td>6.9</td>
</tr>
<tr>
<td>ASC 016</td>
<td>30</td>
<td>55</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Please specify the diameter with your order.
Safety equipment
Safety Equipment

Electronic voltage detector acoustic and optical signal

25000 V / 50 Hz equipment

SEC 001

- Housing including in-built electronic circuit with buzzer.
- Power supply: by batteries
- Electrical perturbations fields free.
- Detecting on contact only.
- In-built test device: luminous signal indicating automatic all along operation.
- Live conductor signalled by a powerful acoustic (>60 dbA) and red LED.
- Supplied with: contact piece in "V", carrying box, rag with silicon; link tip with insulated stick SEC 024 (Please see options)

Options:

Telescopic stick SEC 024

Length folded 1.45 m / extended 5 m
- Intermediate positions: lengths 2.65 m / 3.85 m
- 4 yellow epoxy reinforced fibre-glass insulating sections, diameters 28, 33, 37 and 43 mm. Each section is fixed in position by a black plastic, spring-mounted button.
- "H" type end-fitting (hexagonal with 12 mm/flats).
- Mass: 1.9 kg
- Option: stick bag for transport

Stick bag for SEC 024

Wall supports for SEC 024
- Plastic, delivered with wood screws
- Top: Ø 28-36 mm – Bottom: Ø 58 mm max.
Safety Equipment

Electronic voltage detector acoustic and optical signal

600 to 2000 V D.C. equipment

SEC 002

- Bipolar detector of DC voltages comprising a box with a removable electrode and a flexible cable of length 4 m or 8 m terminated with an earth clamp (other lengths available on request)
- Range of 600 to 2000 V DC with no regulation required by the operator
- Device test (including flexible lead) coupled to the start up button.
- Visual indication of correct functioning of device by 4 green LEDs.
- Presence of DC voltage indicated by audible alarm and 4 red LEDs.
- Supplied with a yellow insulated extension tube (lgth 230 mm) with hand guard allowing use with an insulated stick (option)
- Supplied with hook contact-piece for cables
- 1 Battery 9 V 6LF22

Option:

Insulated stick SEC 025

- Length dismounted: 1.50 m / connected 4.50 m
- Utilizable under rain
- Made up of 3 elements
- 1 basis element, made of polyester tube, Ø 36 mm total length 1,50 m
- 2 insulating elements made of foam filled epoxy tubes, Ø 32 mm, length 1.5 or 2 m, equipped with sheds Ø 72 mm
- Assembly by a totally insulating connector, R type.

2000 to 4000 V D.C. equipment

SEC 022

- Identical to above equipment, but for DC voltages 2000 to 4000 V DC.
- Option : Insulated stick model SEC 025
Safety Equipment

Safety harnesses

Back, front and side anchorage, with pivoting belt

**SEC 003**

3 sizes: Small, medium, large

3 anchorage points:
- Back anchorage: lanyard with energy absorber, rope grab.
- Front anchorage: rope grab, rescue.
- Side anchorage: positioning lanyard.

Belt with large comfort pad which facilitates making a rotation of 90°
Self adjusting elasticated shoulder straps for greater comfort.
Large adaptable seat strap easy to adjust.
Aluminium quick-adjusting buckles
Double safety automatic belt buckle in aluminium with double adjustment.
Stainless steel back and side rings
Polyamide webbing width 44 mm

Static strength: > 1500 daN
Stainless steel fittings, rings for accessories.

Net mass: 1.800 kg

*(Supplied without screwgate snap hook model SEC 010)*

---

Back, front and side anchorage, with pivoting belt

**SEC 004**

3 sizes: Small, medium, large

Same model as above, with automatic quick release buckles for shoulder and thigh straps.

Static strength: > 1500 daN
Stainless steel fittings, rings for accessories.

Net mass: 1.756 kg

*(Supplied without screwgate snap hook model SEC 010)*
Safety Equipment

Work positioning lanyards

**SEC 005**

Length 1 m – 1.5 m – 2 m (to be specified with order)
equipped with snaphooks models **SEC 010** and **SEC 012**

Ø 12 mm polyamide rope
Static strength: > 2 200 daN
Net mass: 0.818 kg

**SEC 006**

Length 2 m – 3 m – 4 m (to be specified with order)
Work positioning lanyard equipped with a jaw type
Length adjuster in stainless steel and double safety snaphook

Static strength: > 1500 daN
Net mass: 1.30 to 1.60 kg

**SEC 007**

Retractable webbing lanyard incorporating an energy dissipating element.
Plastic protective shell.

Supplied with 2 x **SEC 010** snaphooks.
length 1.5 or 2.5 m (please specify)

Static strength: > 1500 daN
Maximum safe load: 136 kg
Net mass: 1.195 to 1.5 kg
Anti-fall lanyard equipped with energy absorber

Progressive textile tearing principle acting as a shock absorber in case of fall.
Lightweight, compact, versatile, smooth energy absorption at the time of fall.
Static strength: > 1500 daN
Small size: 300 x 45 x 30 mm
Transparent protective sleeve enables checking of the device

SEC 008

Equipped with 2 x SEC 010 snaphooks
Length 1.5 m or 2 m
Mass: 0.600 or 0.650 kg

SEC 009

Equipped with 1 x SEC 010 and 1 x SEC 012 snaphook.
Length 1.5 m or 2 m
Mass: 0.884 or 0.930 kg
Safety Equipment

Fastening systems

Locking screw snap hook

SEC 010
Screw gate galvanised steel snap hook

Breaking strength: > 2200 DaN
Mass : 0.172 kg.
Opening: 18 mm.

Automatic locking snap hook

SEC 011
Aluminium snap hook

Breaking strength: > 2200 DaN
Mass : 0.132 kg.
Opening: 30 mm.

Automatic locking safety hook

SEC 012
Aluminium safety hook

Breaking strength: > 2200 DaN
Mass : 0.456 kg
Opening: 63 mm.
Leather tool-bags

2 mm thick leather, equipped with reinforced edges keeps the tool bag open for easy use.

<table>
<thead>
<tr>
<th>Double pocket</th>
<th>Standard</th>
<th>Large model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SEC 013</strong></td>
<td><strong>SEC 014</strong></td>
<td><strong>SEC 015</strong></td>
</tr>
<tr>
<td>Dimensions: 270 x 250 x 160 mm</td>
<td>Dimensions: 330 x 230 x 100 mm</td>
<td>Dimensions: 370 x 230 x 100 mm</td>
</tr>
<tr>
<td>Net mass: 0.836 kg</td>
<td>Net mass: 0.566 kg</td>
<td>Net mass: 0.808 kg</td>
</tr>
</tbody>
</table>

Protective helmet

**SEC 016**

- Head measurement adjustable from 53 to 63 cm.
- Various adjustments for correct fitting:
  - Size adjustment: 2 mm.
  - Height of bearing:
    - Front: 2 positions
    - Neck: 3 positions.
  - Centring: 3 positions locking.
- Safety chin strap.

Mass: ≈ 0.370 kg
Safety Equipment

Warning devices
Single and dual tone

Portable warning device, single tone model AVS-1

**SEC 017**

Powerful and portable.

- Acoustic capacity: 108 to 110 dB A at 5 m (16 ft)
- Acoustic: G 3rd octave (387 Hz).
- Mass in working order: 14 kg (31 lbs)
- Air pressure vessel with pressure gauge and safety valve scaled at 8 bar (114 psi).
  - Capacity: 7 litres
  - Maximum working pressure: 6 bar (85 psi)
- Foot pump, air flow: 0.5 litres per stroke.

Wheel-barrow mounted warning device, dual tone model AVS-2

**SEC 018**

Very powerful and wheel-barrow mounted.

- Acoustic capacity: 115 dB A at 5 meters (15 ft)
- Acoustic:
  - G 3rd octave (387 Hz).
  - E 3rd octave (307 Hz).
  - Alternately operated.
- Mass in working order: 26 kg (57 lbs)
- Air pressure vessel with pressure gauge and safety valve scaled at 8 bar (114 psi)
  - Capacity: 9.9 litres
  - Maximum working pressure: 0.5 to 8 bar (114 psi).
- Foot pump, air flow: 0.640 litres per stroke.

Optional:
- Attachment for movement on rail for dual tone warning devi
Catenary tools

Rail bonding connections

CHAPTER

XI
Rail bonding connection

This equipment connects the dead catenary to the rails and protects the personnel in case the line should be accidentally made alive while work is in process.

25 kV Equipment

**COX 001**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Description</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Insulated rod head for contact wire</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Telescopic synthetic insulated rod COX 003 adjustable length 2.15 to 5.60 m</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>50 mm² stranded copper cable, silicone sheathed, length 10 m (*) with lug</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>50 mm² stranded copper cable, silicone sheathed, length 2 m</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Screw-earth clamp on rail</td>
<td>4.4</td>
</tr>
</tbody>
</table>

**Option :**

Extension for telescopic rod, length 2 m

(*) : Other length on request

Approx total mass : 19 kg

Detail of rod head for contact wire
### Rail bonding connections

**1500/3000 V Equipment**

**COX 002**

<table>
<thead>
<tr>
<th>Qty</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Approx total mass: ≈ 18 kg

**Option**:
- Extension for telescopic rod, length 2 m
- (*): Other length upon request

Detail of rod head for contact wire
Rail bonding connections

Earthing rail sticks
25000 V or 1500/3000 V equipment

COX 003

- Specially designed sticks to connect catenaries to the rail.
- In accordance with the SNCF Technical Specifications VZC 21400/300098 of Jan.1990

Suitable with above equipments (non exhaustive list):
- Rail bonding connection COX 001 (25 kV)
- Rail bonding connection COX 002 (1,5/3 kV)
- Equipotential connection COX 004 (25 kV)
- Equipotential connection COX 005 (1,5/3 kV)

Description :
- Three elements telescoping sticks
- Lower and upper elements made of epoxy resin of red colour.
- Middle element made of epoxy resin of white colour.
- Lower element is fitted with a screw terminal for mounting of catenary clamp.
- Elements are interlocked with brass push buttons
- Elastomer heel
- Diameter of lower tube : 45 mm
- Diameter of middle tube : 37,5 mm.
- Diameter of upper tube : 28 mm.

Specifications :
- Multipoint adjustment.
- Length when folded : 2,15 m
- Length when extended: 5,6 m
- Weight : 3,7 kg

Option : Extension for stick COX 003
- End equipped with screw terminal for setting on stick Cox 003.
- Tubular cylindrical element, same red colour as lower element of stick Cox 003
- Diameter of tube : 45 mm
- Length : 2 m
- Weight : 1,8 kg
**Equipotential connection**

Connection designed to connect 2 different electrical elements to the same potential.

**Safety regulations :**

Although the catenary is dead and bonded to the rails, no work should be undertaken until there is no voltage difference between the various parts of the installation due to insulators or disconnector switches etc. This is achieved by providing continuity connections between the various elements (sections).

**Multi-purpose connection**

Designed to connect the various catenary electrical elements:

**25 kV equipment**

**COX 004**

Composition :

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Insulated rod head for contact wire</td>
</tr>
<tr>
<td>(2)</td>
<td><strong>COX 003</strong> telescopic synthetic insulated rod, adjustable length 2.15 to 5.60 m</td>
</tr>
<tr>
<td>(3)</td>
<td>50 mm² stranded copper cable, lgh 3 m (*)</td>
</tr>
</tbody>
</table>

Quantity:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Approx total mass : 10 kg

(*) : Other lengths on request.

Detail of rod head for contact wire

**COX 003** insulated
**Rail bonding connections**

**Equipotential connection**

**Multi purpose connection**

1 500 / 3 000 V Equipment

**COX 005**

Composition:

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Insulated rod head for contact wire</td>
<td>2</td>
</tr>
<tr>
<td>(2) COX 003 telescopic synthetic insulated rod, adjustable length 2.15 to 5.60 m</td>
<td>2</td>
</tr>
<tr>
<td>(3) 95 mm² stranded copper cable</td>
<td>3 m (*)</td>
</tr>
</tbody>
</table>

Approx total mass: 12 kg

(*) : Other length on request.

**Detail of rod head for contact wire**

*COX 003 insulated*
# Rail bonding connections

## Mast-to-rail bonding connection

Equipment designed to connect mast and rail to the same potential.

<table>
<thead>
<tr>
<th>25 kV equipment COX 006</th>
<th>Qty</th>
<th>1500/3000 V equipment COX 007</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Mast contact clamp</td>
<td>1</td>
<td>(1) Mast contact clamp</td>
<td>1</td>
</tr>
<tr>
<td>(2) 50 mm² stranded copper cable, silicone sheathed, length 4.5 m (*) with lug</td>
<td></td>
<td>(2) 95 mm² stranded copper cable, silicone sheathed, length 4.5 m (*) with lug</td>
<td></td>
</tr>
<tr>
<td>(3) Screw-earth clamp on rail</td>
<td>1</td>
<td>(3) Screw-earth clamp on rail</td>
<td>1</td>
</tr>
</tbody>
</table>

Approx total mass : \( \approx 5.9 \) kg

Approx total mass : \( \approx 7.4 \) kg

(*) : Other length on request.

![Diagram of rail bonding connections](image)
Catenary tools

Emergency equipment

CHAPTER

XII
Provisional catenary support

Used subsequently to failures, such as broken or thrown backwards supports due to derailments, or temporarily in case of switch substitution with switch axis modification, track slewing... the provisional supports, thanks to their versatility of application and their quick assembly, prove to be an equipment absolutely necessary and are a must to the railways wishing to minimise failure repercussion on the traffic.

Advantages:
- No speed limitation,
- No particular supervision needed,
- Minimum maintenance,
- Can be used several times as there is no deterioration resulting from handling.

Transport:
- Can be transported on road vehicle,
- Can be manually transported to the site (composed of 3 parts).

Installation:
- No excavation,
- No concrete,
- Quick assembly,
- Can be supplied with several models of structure,
- Installation by means of sets of pulleys and pulling tools
Emergency equipment

Provisional catenary support

25 kV equipment (triangular structure)

| SCS 001 | Antirust painted |
| SCS 002 | Galvanised       |

1 500 / 3 000 V equipment (Square structure)

| SCS 003 |
| SCS 004 |

Presented model:
1 500 / 3 000 V equipment (square structure)

- Square support foot
- Square support middle section
- Square support head
- Strut
- Screw-earth clamp
- Brace
- Three-arm counter buckling stay
- Adjustable fastener on support

Mass: 170 kg to 200 kg according to model.

Mass: 200 kg
Emergency equipment

Accessories for cable hoist with unlimited cable length

Anchoring disc pile

With this hot galvanised steel pole a fixed anchoring point in the ground can be obtained. It is efficient and very useful for:
- Mast bracing
- Installation of emergency masts
- All anchoring points in the ground.

According to ground conditions and tension magnitude, one or several poles will be used.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Mass (kg)</th>
<th>Resistance according to the ground (daN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS 005</td>
<td>3</td>
<td>1 000 to 2 000</td>
</tr>
<tr>
<td>SCS 006</td>
<td>7</td>
<td>2 000 to 4 000</td>
</tr>
<tr>
<td>SCS 007</td>
<td>11</td>
<td>4 000 to 6 000</td>
</tr>
</tbody>
</table>

Pulling cable

- Special flexible galvanised steel cable composed of 6 strands around a central core.
- Cable equipped with an anchor hook at one end, bare at the other end.

<table>
<thead>
<tr>
<th>Diameter of cable (mm)</th>
<th>Breaking load (N)</th>
<th>Mass per m (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.3 mm</td>
<td>4 600 N</td>
<td>0.25</td>
</tr>
<tr>
<td>11.5 mm</td>
<td>9 600 N</td>
<td>0.50</td>
</tr>
<tr>
<td>16.3 mm</td>
<td>19 200 N</td>
<td>0.85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reference</th>
<th>Diameter of cable (mm)</th>
<th>Length of cable (m) *</th>
<th>Type of Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS 008</td>
<td>8.3</td>
<td>Up to 25</td>
<td>Handle type reel</td>
</tr>
<tr>
<td>SCS 009</td>
<td>8.3</td>
<td>26 to 50</td>
<td>Handle type reel</td>
</tr>
<tr>
<td>SCS 010</td>
<td>8.3</td>
<td>76 to 150</td>
<td>Drum type reel</td>
</tr>
<tr>
<td>SCS 011</td>
<td>11.5</td>
<td>Up to 25</td>
<td>Handle type reel</td>
</tr>
<tr>
<td>SCS 012</td>
<td>11.5</td>
<td>26 to 50</td>
<td>Handle type reel</td>
</tr>
<tr>
<td>SCS 013</td>
<td>11.5</td>
<td>51 to 120</td>
<td>Drum type reel</td>
</tr>
<tr>
<td>SCS 014</td>
<td>16.3</td>
<td>Up to 25</td>
<td>Handle type reel</td>
</tr>
<tr>
<td>SCS 015</td>
<td>16.3</td>
<td>26 to 60</td>
<td>Handle type reel</td>
</tr>
<tr>
<td>SCS 016</td>
<td>16.3</td>
<td>51 to 75 m</td>
<td>Drum type reel</td>
</tr>
</tbody>
</table>

* Other lengths on request
Emergency equipment

Accessories for cable hoist with unlimited cable length

Cable reel, hand type

<table>
<thead>
<tr>
<th>Reference</th>
<th>Diameter of cable</th>
<th>Max Length of cable (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS 017</td>
<td>8.3 mm</td>
<td>25 m</td>
</tr>
<tr>
<td>SCS 018</td>
<td>8.3 mm</td>
<td>50 m</td>
</tr>
<tr>
<td></td>
<td>11.5 mm</td>
<td>25 m</td>
</tr>
<tr>
<td>SCS 019</td>
<td>8.3 mm</td>
<td>75 m</td>
</tr>
<tr>
<td></td>
<td>11.5 mm</td>
<td>50 m</td>
</tr>
<tr>
<td></td>
<td>16.3 mm</td>
<td>25 m</td>
</tr>
</tbody>
</table>

(*) : For other length, please consult us.

Cable reel, drum type

<table>
<thead>
<tr>
<th>Reference</th>
<th>Diameter of cable</th>
<th>Max Length of cable (*)</th>
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<tbody>
<tr>
<td>SCS 020</td>
<td>8.3 mm</td>
<td>150 m</td>
</tr>
<tr>
<td></td>
<td>11.5 mm</td>
<td>75 m</td>
</tr>
<tr>
<td></td>
<td>16.3 mm</td>
<td>50 m</td>
</tr>
<tr>
<td>SCS 021</td>
<td>8.3 mm</td>
<td>200 m</td>
</tr>
<tr>
<td></td>
<td>11.5 mm</td>
<td>150 m</td>
</tr>
<tr>
<td></td>
<td>16.3 mm</td>
<td>75 m</td>
</tr>
<tr>
<td>SCS 022</td>
<td>8.3 mm</td>
<td>300 m</td>
</tr>
<tr>
<td></td>
<td>11.5 mm</td>
<td>200 m</td>
</tr>
<tr>
<td></td>
<td>16.3 mm</td>
<td>100 m</td>
</tr>
</tbody>
</table>

Hook with safety catch for hoists

- High tensile forged steel
- Provided with a safety catch
- Painted red

<table>
<thead>
<tr>
<th>Reference</th>
<th>Force (daN)</th>
<th>Mass (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS 023</td>
<td>1 000</td>
<td>0.25</td>
</tr>
<tr>
<td>SCS 024</td>
<td>1 600</td>
<td>0.43</td>
</tr>
<tr>
<td>SCS 025</td>
<td>3 200</td>
<td>0.87</td>
</tr>
</tbody>
</table>
Catenary tools

Special maintenance equipment

CHAPTER

XIII

GEISMAR
Tools for operation on H section masts

Example of utilisation: Replacement of an element of support using MAI 001 jib crane and MAI 002 / MAI 003 provisional bracket

Jib crane

MAI 001

Extension of a pole for installation of a pulling device.
Tools for operation on H section masts

Provisional bracket

**MAI 002**

Tool for use on individual mast equipment for replacement of structures on their constituent parts, such as brackets, insulator, etc.

The difficulty is keeping OHL in position: catenary and contact wire.

The provisional bracket allows this work to be carried out quickly without any damage to the catenary and in full safety.

---

Clamp for provisional bracket on H section masts

**MAI 003**

---

**Note:** This clamp is also used for the **MAI 011** Substitution device for strut insulators.
Tools for operations on tubular structures

- Height adjustment
- Top tube insulator substitution
- Top tube substitution
- Catenary wire staggering adjustment

Open tube, for tubes Ø 38 – 49 mm

**MAI 004**

- To be used with **MAI 005** bracket extension
- Catenary wire stagger adjustment
- Height adjustment (starting from catenary wire)
- Length: 340 mm
- Mass: 2.5 kg

When ordering indicate bracket diameter.

Bracket extension for tube Ø 38 - 49 mm

**MAI 005**

- Can be used alone
- Height adjustment from top tube
- Top tube substitution
- Top tube insulator substitution
- Catenary wire staggering adjustment
- Length: 600 mm
- Mass: 4.5 kg

When ordering indicate bracket diameter.
Tools for operations on tubular structures

Registration arm extension for steady arm in compression

MAI 006

Installed at the end of the registration arm, this tool allows using a pulling device when there is limited clearance between the contact wire and the end of the registration arm.

For tube with maximum inside diameter:
- 16.3 mm
- 25 mm
- 34 mm

Total length: 660.5 mm
Mass: 3.4 kg

* Please consult for any other diameter.

Tensioning clamp for steady arm in tension

MAI 007

- Allows for adjustment or replacement of the steady arm whilst maintaining conductor stagger.
- Installed on the registration arm, it avoids fastening on to the mast which suits the method of work for live OLE on certain railways.

For tube diameter 27 to 49 mm

Mass: 2.5 kg

*: When ordering indicate registration arm diameter.
Section insulator positioning device

**MAI 008**

Hydraulic device with the following advantages:
- Time reduction in positioning the section insulator.
- Avoids irregularities associated with pulling tools such as grippers.
- For use with a 700 bar hydraulic pump

The MAI 008 positioning device is used to take up the tension in contact wire to allow the installation or removal a section insulator. It operates by pulling together the catching clamps of the insulator.

A flow limiting control provides smooth and safe operation of the device during the piston return phase to ensure that wire tension is not re-applied abruptly on to the insulator.
Substitution device for cross-span and strain cable insulators

**MAI 009**

When working on a cross-span or strain cable insulator, the cable of the pulling tool comes near to the pulling axis and thus makes this work toilsome: difficulty of removing the termination fittings bolts, risk of insulator breakage...

The larger is the insulator diameter, the harder is the task.

These problems are resolved by means of the **MAI 009** device.

Distance between supports: 955 mm

*Example of use:*
Operation on a head span or strain cable insulator.
Mass: 16.4 kg

When ordering indicate head span cable and strain sling

---

Contact wire connecting clamp positioning device

**MAI 010**

Facilitates and ensures a perfect positioning of the contact wire connecting clamp.

*Use:*
The clamps (1) ensure the alignment between the two contact wires*.
The grooves are brought into line by the check-screws (2).

*This tool does not replace the pulling tools*

Length: 380 mm
Mass: 3.28 kg

*Method:*
Positioning of the pulling tools.
Setting of **MAI 010** device.
Setting of connecting clamp as soon as the adjustments are made

*When ordering indicate contact wire types.*
**Substitution device for strut insulators**

**MAI 011**

Allows quick and easy replacement of all types of strut insulators, (except the types of insulators incorporated inside the bracket).

This device is to be used together with attachment clamp **MAI 003**.

**Operation:**

- The attachment clamp **MAI 003** is first installed on the device, then both are positioned to the support.
- Set up the device **strictly parallel** to the tubular bracket.
- Correctly tighten the jaws: The whole length must be in close contact with the tube.
- Check the position of the attachment clamp, then tighten it.
- Set the device under load. The **operation must be easy**: An important effort means that the device is not parallel to the tubular bracket.

**Replacement of the insulator:**

- The device being under load, release the axle of the insulator, loosen the stirrups.
- Proceed to exchange of insulators,
- Tighten the stirrups,
- Replace the axle.
Untwisting claw for contact wires

*SPE 001*

An aid to clamp installation for steady arms, connections, droppers... without causing any deformation of the contact wire.

Length : 335 mm
Mass : 0.36 kg

Mechanic device for removing irregularities on contact wires with copper mass

*SPE 002*

Mass : 2.3 kg
Ratchet device for removing irregularities on contact wires

**SPE 003**

For removing irregularities caused by mishandling or shock loadings.

A lever and ratchet system allows removal of the defects without damaging the contact wire.

Mass : 2.3 kg

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Hydraulic device for removing irregularities on contact wires

**SPE 004**

**Characteristics :**

For use with a 700 bar hydraulic power pack or pump

- Force developed by the ram : 4000 daN

**Method of Use**

- Place the removable head on the contact wire
- Place the base of the device on the removable head

Supplied in storage case, dimensions 310 x 280 x 110 mm – Net mass : 3.8 kg
Specific Tools

Mechanical tool for installing and removing clamps:

**SPE 005**

Designed to fix and remove without damage all types of clipped connections on contact wires and messenger cables:

- Clamps for dropper, messenger cables and contact wires (107, 120 and 150 mm²),
- Clamps for registration and steady arm.

**Material:**

Corrosion-proof body (1) and handles (2 and 3) by blue anodised aluminium alloy,
Stainless steel jaws (4) and (5)

**Components:**

- 1 mobile pushing-block (4) operated by rotating the mobile handle (2)
- 1 rotating unit (5) fitted with 2 fixed blocks: one for standard clamp (6), the other one for SNCF "4000" type clamp (7).
- 1 rotating index (8) for locking the rotating unit (5)
- A button (9) allows to select the function: "Fix" - "Remove" or "Neutral".
- 1 guide jaw (10) supporting the tool in the contact wire axis.

**Features:**

- The **SPE 005** tool allows to fix and remove both the standard closed clamps of 45 mm length and the SNCF (French Railways) "4000" type clamps of 70 mm length.
- It requires a limited effort on handle: Up to 500 daN clamping force is obtained on the mobile block with less than 30 daN effort on the handle.
- The clamping blocks are permanently guided along the cable to optimise the tool action.
- Light and compact:
  Dimensions 270 x 240 x 50 mm
  Mass: 2 kg
Multifunction adjustable Cable stripping tool

**SPE 008**

For cables 16 to 58 mm Ø - Section 25 to 630 mm²

Compatible with cables: C332-226, UTE C33-223, NFC 33-223, HN 33S23

Dimensions: 185 x 85 x 110 mm  
Mass: 1.56 kg

3 Functions -

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>External sheath (PE-PVC-PR)</td>
<td>Helicoidal cut, straight and without bur</td>
</tr>
<tr>
<td>Insulating sheath</td>
<td>Helicoidal cut, straight and without bur, at the requested length</td>
</tr>
<tr>
<td>Strippable semi-conductor</td>
<td>Helicoidal incision, straight and without bur, allowing to manually unstick the semiconductor sheath.</td>
</tr>
</tbody>
</table>

**SPE 009**

For Unstrippable semi-conductors, 18 to 40 mm Ø – 25 to 240 mm²

Utilisation: allows to strip off the adhesing unstrippable semi-conductor by removing material up to the required length, realising a bevelled end.  
- adjustable blade penetration 0.4 to 1.4 mm

Dimensions: 160 x 55 x 80 mm  
Mass: 0.60 kg

Remaining length of semi-conductor: L = 30 or 40 mm without adjusting

**SPE 010**

for realization of longitudinal slits, cables 26 to 58 mm Ø – 50 to 630 mm²

- Realisation 1 or more slits on the external sheath of the cable  
- Tightening of the sheath

Dimensions: 280 x 80 x 110 mm – mass: 1.10 kg
Catenary tools

Other equipments

CHAPTER XV
OHL laying

For 1500 V DC to 25 kV AC...

- Motorcars and rolling/unrolling systems
- Road Rail Vehicle

OHL components
& maintenance

- Vehicle for OHL construction and maintenance
- Maintenance Motorized Lorry
**Small tools - protection and maintenance tools**

We can also offer a line of products such as (non-exhaustive list) :

**Miscellaneous small tools** (Insulated or not, up to 1000 V)

- Dynamometric keys, 8 to 330 N/m
- Ohmic controller of connection cables
- Pneumatic impact spanners with metric or non-metric dimensions sockets.
- OHL work padlocks

**Maintenance and cleaning products**

- Protection against pollution of glass or ceramic insulators
- Cleaning products for glass or ceramic insulators
- Lubricating product for slings, winding drums and cables
- Grease for bearings (for tensioning pulleys for example)
- Conductor grease for copper (for connections or copper bars, disconnectors,…)

**Lightning equipment**

- Front lamps and torchs for safety helmets
- Generating sets 2 kVA or 5 kVA
- Worksites floodlights
Nous nous réservons le droit d'apporter toute modification aux caractéristiques du matériel ainsi qu'à sa mise en œuvre, son mode d'entretien et sa liste de pièces détachées.

Nous reservons the right to make any alteration or improvement to the specification, operating and maintenance instructions as well as to the spare parts list.

Die von uns durch technischen Fortschritt bedingten Änderungen und Verbesserungen an der Ausführung, Wartungsart und Ersatzteilliste, werden vorbehalten.