accessories for suspending loads in industrial applications

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The adjustable/removable tensioner (mx2-ind) for suspending loads in industrial applications allows for the holding/suspension of protruding structural elements such as beams, metal structures and any other protruding element found in an industrial/commercial building, as well as using false or suspended ceilings and other hollows in the framework that are accessible and resistant.

The height of the load is adjusted using the mx-HDI loosening spanner by unlocking the tensioner’s lock system. It also has the mx-HDIM loosening spanner for greater ease-of-use; this spanner has an additional straight point for the application of higher de-tensioning loads.

applications:

Suspension of air-conditioning ducts, cable trays for electrical wiring, pipes, gas exhaust ducts, lighting, board signs, signage.

In general, any application that requires the holding and/or suspension of loads.
advantages:

Easy to install with no difficult adjustments of nuts and screws. Does not require the use of tools, and therefore reduces the risk of accidents of materials falling during overhead installation. Reduces installation time by 80%.

Can be handled safely as it is light to carry and easy to install.

Method of Use:

Adjusting the height using mx-HDI / mx-HDIM spanners.
Cables and terminations:

Loop cable:
- Ø cable (mm): 1.5, 2, 2.5
- Available lengths (m): 2, 3, 5

Overturn:
- Ø cable (mm): 1.5, 2, 2.5
- Available lengths (m): 2, 3, 5

See methods of calculation and permissible loads.

Other available lengths on request.
Threaded bolt M6:

<table>
<thead>
<tr>
<th>Ø cable (mm)</th>
<th>1,5</th>
<th>2</th>
<th>2,5</th>
</tr>
</thead>
</table>

Available lengths (m) | 2 | 3 | 5 |

See methods of calculation and permissible loads.

Other available lengths on request.

Available in Spring Hook/ Overturn/ Thread M6 terminations

<table>
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<tr>
<th>Ø cable (mm)</th>
<th>1,5</th>
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See methods of calculation and permissible loads.

Spool

Bushing

Mechanical and electrical spanner
Methods of calculation and permissible loads:

Before installing the mx2-ind tensioner, it is recommended to make a calculation to determine the number of tensioners to be used and the selection of the most suitable cable diameter for each application depending on the layout of the load.

Permitted cable dimensions:
The MaxTensor® mx2-ind tensioner has been designed for use with stranded steel cable with diameters of between 1.5 and 2.5 mm.

We can consider the following load layout cases:

- **Specific load**
- **Evenly distributed load**
- **Effect of suspending load with a cable direction that is not vertical**
Method of calculation for specific load:

\[ C_T = \text{Work load that will be supported by the suspension cable (kg)}. \]

No. of the same suspension cables used.

\[ C_T = \frac{Q_P}{n} \leq C_m \]

\[ Q_P = \text{Specific load to be suspended (kg)}. \]

\[ n = \text{No. of the same suspension cables used}. \]

\[ C_m = \text{Maximum work load of the selected suspension cable (Consult tables)}. \]

The formulas given on this page should only be applied when the layout of the cable to suspend the load is vertical. Otherwise, use the method of calculation of the angle between the cable and the vertical. \( C_T \) will be the value of the minimum load that any additional accessory used with the cable should support, as well as any other building element used as a support. A safety factor of 3:1 or 5:1 is recommended depending on the criteria considered appropriate for each case.
Method of calculation to consider the effect of suspending loads with a non-vertical cable direction:

The previous formulas should only be used when the layout of the cable for suspending the load is vertical. If the cable forms an angle in relation to the vertical, the effect of this angle needs to be taken into account, because it reduces the recommended maximum load and its value depends on this angle.

Why is the recommended maximum load reduced when a load is suspended with a cable in a direction that forms an angle with the vertical?

It is very simple. When a load is suspended in these conditions, the cable is subjected to a composition of forces: the corresponding vertical load + the lateral force component that falls on it:

The combination of these forces increases the tension on the cable. The greater the angle of the cable on the vertical, the greater the lateral component.

We can say that the tension on the cable is the hypotenuse of the triangle formed by the vertical load and the horizontal lateral force. Therefore, the tension load on the cable can be calculated by using the following formula:

\[
\text{Cable load} = \frac{\text{Value of suspended load}}{\cos(\theta)}
\]
Data and maximum load for the suspension cables supplied by MaxTensor:

The recommended vertical maximum load values in accordance with the safety coefficient are shown in the following table.

<table>
<thead>
<tr>
<th>Type of cable</th>
<th>Cm (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Safety Coeff. µ = 5:1</td>
</tr>
<tr>
<td>Ø 1'5 (7*7 threads)</td>
<td>30</td>
</tr>
<tr>
<td>Ø 2 (7*7 threads)</td>
<td>45</td>
</tr>
<tr>
<td>Ø 2'5 (7*7 threads)</td>
<td>60</td>
</tr>
</tbody>
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The recommended maximum load values in accordance with the angle and the safety coefficient are shown in the following table.

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<thead>
<tr>
<th>Type of cable</th>
<th>Cm (kg)</th>
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<tbody>
<tr>
<td></td>
<td>0°</td>
</tr>
<tr>
<td></td>
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</tr>
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General formula:

For specific load:

\[ C_T = \frac{Q_p}{n \cdot \cos \Theta} \leq C_m \]

For evenly distributed load:

\[ C_T = \frac{Q_r \cdot d}{n \cdot R \cdot \cos \Theta} \leq C_m \]
• It is necessary to carry out the inspections required to verify that the structural element used to suspend
the loads can resist the weight of the load to be suspended. The anchoring base varies depending on the
type of construction and the materials used in its construction. It is the customer’s responsibility, and NOT the
responsibility of MAXTENSOR® to assess the resistance of theanchoring base so that the loads transmitted by
the MAXTENSOR® SUSPENSION ACCESSORIES are supported safely, as well as compliance with the current
legal provisions corresponding to each installation.

• Do not exceed the maximum loads recommended by MAXTENSOR®. While MAXTENSOR® provides technical
information and general advice on its SUSPENSION ACCESSORIES, the customer is solely responsible for
selecting the product that is appropriate for each specific application. All recommended load values (C_m) are
for static loads (C_m).

• Ensure that the load is correctly distributed among all the MAXTENSOR® SUSPENSION ACCESSORIES. To do
this, verify that the cables of all the MAXTENSOR® SUSPENSION ACCESSORIES are under load.

• Only use the steel cable supplied in the MAXTENSOR® SUSPENSION ACCESSORY. The recommended values
 correspond with the results of the tests carried out with the cables supplied by MAXTENSOR®. MAXTENSOR®
is not liable if cables other than those supplied by MAXTENSOR® are used.

• Always verify that the self-locking system of the adjustable/removable tensioner (mx2-ind) for suspending
loads is completely interlocked. To do so, it is advised to apply manual tension on the load after its
installation to verify this.

• MAXTENSOR® SUSPENSION ACCESSORIES should not be used as a load lifting system under any
circumstances.

• Do NOT use the adjustable/removable tensioner (mx2-ind) to connect cables together. In this case, the
reduction in the load capacity of the adjustable/removable tensioner (mx2-ind) would be 50%.

• Area of use: The MAXTENSOR® SUSPENSION ACCESSORIES are specially designed for suspending loads inside
buildings and in a dry environment. Consult MAXTENSOR® regarding their installation outdoors or in areas of
high humidity or damp.

• Do not apply lubricants or paint on any MAXTENSOR® SUSPENSION ACCESSORY, as this may impede its
correct operation and/or reduce its load capacity.

• MAXTENSOR® SUSPENSION ACCESSORIES are to be kept clean so that it does not become locked or its
load capacity is not reduced.

• It is recommended to wear safety gloves and glasses when handling and installing MAXTENSOR®
SUSPENSION ACCESSORIES.

• If the end of the cable is blunt, it is recommended to cut the point to make it easier to install in the adjustable/
removable tensioner (mx2-ind). However, ensure that the cable protrudes at least 50 mm in length for
possible adjustments.

• If the user instructions are not followed, the MAXTENSOR® SUSPENSION ACCESSORIES may not work
correctly. MAXTENSOR® SUSPENSION ACCESSORIES comply with the manufacturer’s specifications, and
the latter is not liable for any damage caused to persons or property due to their incorrect use.
the professional’s guarantee: maximum tension, maximum resistance, maximum reliability

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