	<b>INSTRUCTIONS FOR USE</b>	<b>Actualización: 1</b> <b>Fecha: Octubre 2018</b> <b>Página: 1/2</b>
<b>CABLE LAID GROMMETS</b>		

The following information may not be complete for any specified need. The correct use of lifting equipment may be subject to the regulatory requirements of each country and / or sector in which the activity is carried out. For safe and responsible use, be sure to meet the standards that apply in each situation.

### Identification

- Keep a record and the corresponding certificate of all slings in use.
- The cable laid grommet must have the correct marking.

### Check before use

- Make sure that the characteristics of the cable laid grommet are appropriate for the intended use (WLL, maximum angles, etc ...).
- In case of doubt, the weight of the load should be estimated by excess.
- Examine the cable-laid grommet visually to detect any anomaly before lifting. If any anomaly is observed, the sling will be removed from use to be revised in depth and to decide if it is serious or not.

### Use

- Never contact or pick up grommet at the red marked core butt position (and tuck position). This mark must always be in the free intermediate zone between support points.
- Use grommets always as a set and only in a direct line, as a choke or as a basket.
- Never connect cable laid slings and / or cable laid grommets with different lay directions.
- Cable laid slings and / or cable laid grommets shouldn't cross during operation.
- Angles, temperatures and working conditions should be taken into account according to the main international specifications: IMCA M 179, ASME B30.9 and EN 13414-2 / 3.

Guidance on the use of cable laid slings and grommets IMCA M 179 contemplates the application of a reduction coefficient on the WLL calculated according to the European standard EN 13414-3, as a function of the bending factor  $E_B$ . This reduction in the maximum working load limit of the grommet is based on the D/d ratio:

$$E_B = 1 - \frac{0.5}{\sqrt{\frac{D}{d}}}$$

*d: the cable laid rope diameter*

*D: the minimum diameter over which the grommet end or body when doubled is bent*


Although this reduction of the WLL of the cable laid grommet is not contemplated in the European standard EN 13414-3, it is highly recommended to take this factor into account. In this way, the definitive WLL for the cable laid grommet would be obtained by applying this coefficient to the nominal value:

$$WLL_{definitive} = WLL_{EN\ 13414-3} \cdot E_B$$

Thus:

- D/d = 1 :  $E_B = 0,5$  ; and would imply a 50% reduction in the maximum workload.
- D/d = 2 :  $E_B = 0,65$  ; and would imply a 35% reduction in the maximum workload.
- D/d = 5 :  $E_B = 0,78$  ; and would imply a 22% reduction in the maximum workload.

Under no circumstances should the sling body contact any surface where the radius is less than 0.5·d (or what is the same, the ratio D/d should not be less than 1).

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## Inspections

Slings and grommets should be inspected by a competent person on each occasion before use.

Competent person: designated person, suitably trained, qualified by knowledge and practical experience, and in possession of the necessary instructions to enable the required calculation of WLL and examination to be carried out.

A thorough periodic examination of the grommet should be carried out at least every 12 months, although it may be necessary to shorten the time according to the work performed by the sling and the severity of the conditions of service. Maintain records of inspections.

Depending on the sector in which the activity takes place, the minimum review period should be every 6 months.

The inspection or complete examination is carried out to identify possible damages or deterioration that affect the aptitude for use.

## Discard criteria

IMCA M179/PM20 and ASME B30.9 provide a guideline for the inspection, examination and discard of cable laid. Cable laid grommets must be removed from service and sent to an independent competent person for detailed examination if any of the following deficiencies exist:

- Marked: non existent or illegible.
- Broken wires distributed randomly: 20 or more broken wires visible per lay in any length of the grommet formed by a body of six cords around a core (section 9.2.9.4 ASME B30.9).
- Broken wires concentrated: 3 or more adjacent wires in the same cord.
- Loss of metal: wear or scraping of one third of the original diameter of the external wires.
- Distortion: kinking, crushing, birdcaging or other damage that distorts the rope structure. Check for wires or strands that are pushed out of their original position in the rope. A very common cause of damage is the kink caused by pulling through a loop or even by using in basket hitch around an object too small for the sling or grommet body (low D/d). The presence of a kink will make the sling or grommet unbalanced and reduce the strength.
- Heat damage: any metallic discolouration, fused wires or loss of internal lubricant caused by exposure to heat.
- Bent or broken end fittings.
- Corrosion: severe corrosion of the rope or end attachments which has caused pitting or binding of wires. Light surface rust does not substantially affect the sling or grommet strength.