Operating instruction

Do*Nova*® PowerLash

Do*Nova*® lashing chain with ratchet load binder

Imprint

Doleco USA
290 Pratt Street
Meriden, CT 06450

Phone: +1 203-440-1940
Internet: www.doleco-usa.com
E-Mail: sales@doleco-usa.com

Manufacturer's declaration

Doleco USA hereby declares (supported by ISO 9001 certification) that the product described in this instruction manual (incl. hardware, assembly, design, testing, etc.) complies with the relevant essential health and safety requirements of the relevant European Standard EN 12195-2 and -3 and has been manufactured in accordance with this standard.

Table of contents

1 Foreword

1.1 About these instructions

These operating instructions are part of the scope of delivery.

Always keep the operating instructions ready to hand.

Read the operating instructions carefully before first use and observe the information when using the product.

Observe the safety instructions in the operating manual to avoid personal injury and damage to property.

1.2 Symbols

Personal injury warning

This safety warning symbol and the associated signal word indicate important information for avoiding hazards that can lead to injuries or even death. The meaning of this signal word is explained in more detail below.

DANGER!	Extremely dangerous situation. Non-observance of the safety instruction will result in death or serious injury.
WARNING!	Dangerous situation. Non-observance of the safety instruction may result in death or serious injury.
CAUTION!	Dangerous situation. Non-observance of the safety instructions may result in minor injuries.

Warnings of property or environmental damage

This symbol indicates important instructions to avoid damage to the product or other objects as well as the surroundings (environment).

Other information

This symbol indicates other helpful information. This information is additionally marked with a frame.

1.3 Limitation of liability

Doleco USA assumes no liability for damages caused by:

- Non-observance of these operating instructions
- Non-intended use
- Use of the product by untrained personnel
- Use of non-approved accessories / fitting parts
- Unauthorized modifications

1.4 Special regulations and guidelines

For safe handling of the product, special reference is made to the following applicable regulations and technical rules:

- FMCSA Regulations – Part 393
- WSTDA T 1 – Synthetic web tie downs
- WSTDA T 4 – Synthetic webbing used for tie downs
- WSTDA T-6 – Load binders used with chain tie downs
- ASME B30
- EN 12195-1 – Load restraining on road vehicles - Safety - Part 1: Calculation of securing forces
- EN 12195-2 – Load restraint assemblies on road vehicles - Safety - Part 2: Web lashing made from man-made fibers
- EN 12195-3 – Load restraint assemblies on road vehicles - Safety - Part 3: Lashing chains
- EN 1677-2 – Components for slings - Safety - Part 2: Forged steel lifting hooks with latch
- VDI 2700 ff. – load securing on road vehicles
- Daimler loading guidelines – Load securing 9.5

If necessary, additional special regulations must be observed, e. g. for the transport of hazardous goods.

The Do*Nova*®-PowerLash lashing chains are a new type of lashing equipment. Until now, no special standards and guidelines for this have been published. The Do*Nova*®-PowerLash system is manufactured according to EN 12195-2 and -3. In addition, the breaking forces of the lashing chain are based on EN 818 and PAS 1061.

2 Safety instructions

2.1 Intended use

The product is used to secure loads for transport and may:

- only be used by authorized and instructed persons.
- only be used in compliance with the valid regulations.

It is forbidden:

- to use the product for lifting loads.
- to modify it.
- to repair it by non-specialized personnel.
- to lengthen it by knotting it with other lashing devices.

The Do*Nova*® PowerLash is a professional product intended for commercial use.

2.2 General safety instructions

The general use of lashings and tensioning elements involves the following hazards for the user:

- Fall due to loss of balance especially when handling heavy load securing equipment.
- Injuries due to crushing and shearing when tensioning the lashing equipment.
- Hazards due to the use of unsuitable lashing combinations.

For safe handling of the product, the following general instructions must be observed:

- Observe maximum tensile force! The product must never be loaded beyond the working load limit (WLL)/lashing capacity (LC).
- If components with different strengths are used, only the strength of the weakest component may be considered.
- No mechanical aids (e.g. tubes or rods) may be placed on the lever to increase the standard hand force (S_{HF})
- The product must not be used when it is ready to be discarded. (Observe discard criteria on page 13 observe).

- The product must not be used if the label is missing or illegible. Damage to the labeling can be avoided by keeping the labels away from the edges of the load and from the load.
- The product may only be suspended in the fitting parts or body parts provided for this purpose.
- The product must not be used for lifting.
- Never hook fittings between the layers of a chain link.
- Observe temperature ranges (see chapter 3.2).
- In general, avoid contact with chemicals (see chapter 3.2).
- During cutting, grinding or welding work, the products must be protected against flying sparks.
- For loads with rough surfaces, the product may only be used if the endangered areas are protected.
- Edge protectors must be used for sharp-edged loads (see chapter 5.1-).
- If the product is used with protective hoses, then care must be taken that the product is not damaged under these protective hoses.
- Do not use the product when it is knotted.
- Do not use product if twisted. Straighten the twisted chains before loading. A maximum twist of 180° per 0.5 m chain length is permissible.
- Do not place any loads on the product.
- Do not drive over the product.
- Lashing hooks must not be loaded on their tip unless it is a hook for that specific purpose. Lashing hooks should have a safety device to prevent accidental unhooking.
- Tensioning and connecting elements must not be subjected to bending stress. To avoid bending stress, tensioning and connecting elements must not rest on edges.
- Regularly re-tension the lashing equipment. Vibrations, shock loads and settling processes can cause the applied pretensioning force to decrease. This also applies if the secured load is not moved.
- Due to different properties (e. g. change in length under load), all lashing strands used to lash a load must have the same properties. The lashing strands can also consist of combined lashing equipment.
- Regularly maintain the tensioning element (oil or grease moving parts).

- Do not turn the spindles of the ratchet load binder against the stops of the unscrewing lock.
- Work gloves must always be worn when working with lashing equipment. Due to the mechanically moving components, there is a risk of crushing and injury!
- Before opening the lashing equipment, check whether the stability of the load is ensured even without lashing means on the loading area and does not endanger the unloading persons by falling or tipping over. If this is not the case, or if there are doubts about this, the load must be secured before the lashing equipment is opened (e.g. with slinging equipment). The lashing equipment may only be removed after it has been ensured that there are no hazards.

3 Product description

NOTICE! Woven webbing material is colored. Direct contact with surfaces can transfer color pigments from the belt material to the surface of the load. If necessary, use suitable intermediate layers to avoid possible discoloration or marks.

3.1 Product labeling

Every Do*Nova*®-PowerLash lashing chain is equipped with a PES tape sleeve with Velcro fastener, which contains the identification and test labels. The information provided on these labels complies with the requirements of EN 12195 and includes:

- Manufacturer
- Type
- Material: Dyneema
- Lashing capacity (LC) in daN
- Nominal length L in m
- Applicable standard

The pre-tension force S_{TF} is always indicated on the tensioning element, as this value depends on the tensioning element.

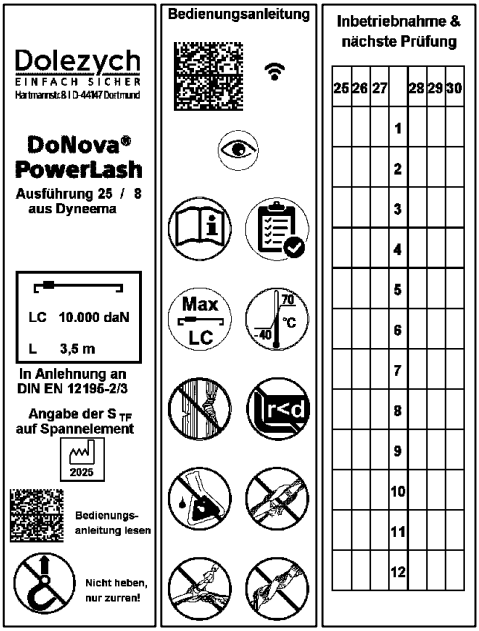


Figure 1: Identification-and test labels

Older versions of the Do*Nova*® Powerlash lashing chain may still have the metal identification and test tags that are standard for steel lashing chains. The information contained on these tags is identical to that on the labels.

The symbols of the markings attached to the product have the following meaning:

	Perform a visual inspection before use
	Read operating instructions
	Inspection according to checklist
	LC = Lashing Capacity = permissible tensile force Never exceed the tensile force!
	Observe specified operating temperatures
	Do not use if cuts or knots are present
	Observe "sharp edges" rule
	Caution in case of chemical contamination Consult manufacturer
	Do not use broken chain links
	Never insert hooks between the layers of webbing
	Do not twist chain
	Do not use for lifting! Use only for lashing!

3.2 Product characteristics

The following data refer primarily to test series carried out with the pure fiber. However, the data are transferable to the Do*Nova*® chain.

Temperature range:	- 40 °C to + 70 °C
Water absorption:	none
Resistance to salt water:	very good
UV stability:	very good
Acid resistance:	very good
Alkali resistance:	very good
Gasoline oil resistance:	very good

3.3 Application-specific product selection

The following points, among others, must be considered when selecting the lashing chain according to the application:

- Required working load limit (WLL)
- Required lashing capacity (LC)
- Type of use
- Type of cargo to be secured

The correct choice of lashing material is determined on the one hand by the type, size, shape and weight of the load and on the other hand by the transport environment and the intended type of use (see EN 12195).

The number of lashing chains required should be calculated in accordance with EN 12195-1 or VDI 2700 sheet 2. Alternatively, our "Doleco Simple Method© Direct Lashing" or FMCSA regulations part 393 can be used.

4 Testing and maintenance

4.1 Initial commissioning

Before using the product for the first time, make sure that:

- the identification and dimensions of the product correspond to the specifications.
- the marking and working load limit (WLL) applied to the lashing equipment correspond to the information in the certificate.

If one of these criteria is not met, the product must not be used.

4.2 Before each use

Before any further commissioning of the product, it must be ensured that:

- the marking on the product is present and legible.
- the product has no damage or defects.
- the product is not ready for discard (see page 13).
- only fittings and spare parts approved by Doleco for the Do*Nova*® PowerLash are used.

If one of these criteria is not met, the product must not be used.

4.3 Regular testing

The product is a lashing device. It therefore must be inspected at intervals of no longer than one year. The inspection must be carried out by a competent person and the inspection must be documented accordingly.

If defects are found in the product that affect the safety, the product must be immediately withdrawn from further use.

4.4 Doleco repair service

If the product has defects, it may be possible to repair it by the Doleco repair service. This helps to save costs.

Never execute repairs to the product yourself! Improper repairs can lead to failure of the product.

4.5 Discard maturity

The product must not be further used when discard maturity has been reached. Discard maturity is reached as soon as one of the following points is fulfilled:

- One or more cut layers of the chain link on the inside (Fig. 1) or outside (Fig. 2)

Fig. 1: Cut webbing layer inside.

Fig. 2: Cut webbing layer outside.

- Scuff marks or abrasion on the surface (Fig. 3)

Fig. 3: Abrasion on the surface of the chain link

- Cuts in a chain link (longitudinal or transverse cuts) that account for more than 10% of the chain link thickness (Fig. 4)

Fig. 4: cut in the chain link

- Torn sewing (Fig. 5

Fig. 5: Torn sewing on chain link

- Deformations or changes in the tissue due to heat exposure (Fig. 6)

Fig. 6: Tissue damage due to heat exposure

- Missing or illegible marking
- Deformations, cracks, fractures or other damage to fitting parts
- Widening of a hook by more than 5 % of the nominal size
- Functional impairment of the hook safety device
- Excessive corrosion and illegible component markings

5 Application instructions

5.1 Protection from sharp edges

NOTICE! Sharp edges can damage the product and lead to failure!
A sharp edge is present if the edge radius r of the load is smaller than the value listed in the following Table 1.

Table 1: Minimum edge radii to avoid damage due to a sharp edge

Do*Nova*®	Minimum edge radius
12/6	6 mm
25/6	6 mm
25/8	6 mm
25/10	9.5 mm
30/8	10.5 mm
30/10	10.5 mm

To protect the product from sharp edges, DoPremium edge protection sleeves made of Dyneema® or edge protectors must be used!

5.2 Applying the lashing chain

For safe use of the Do*Nova*® PowerLash, the following action steps (based on VDI 2700 sheet 3.1) must be carried out.

Securing the load with the Do*Nova*® PowerLash

1. Open the tensioning element up to the stop. If a ratchet load binder is used as the tensioning element, ensure that the spindles are turned out evenly!
2. Apply the lashing chain to the load. Hang the connecting elements securely in the lashing points/attachment points.
3. Execute a rough shortening by hanging the lashing chain in the shortening hooks. Make sure that the chain is hooked in as tightly as possible! Make sure that the chain is correctly hooked into the shortening elements.

CAUTION!

Risk of injury due to failure of the lashing equipment!

When shortening the textile chain, the lashing system is only as strong as the weakest element used.

- ➢ To calculate the LC of the lashing system, always use the LC of the weakest element.
- ➢ Only use approved shorteners (e.g. shackles).

NOTICE! To avoid damage to the textile chain, only fittings approved by Doleco USA may be hooked into the chain links!
In the case of shortening hooks, care must be taken to ensure that the hook base is not damaged (e.g. grooves or burrs). Such damage can cut or otherwise damage the textile chain.

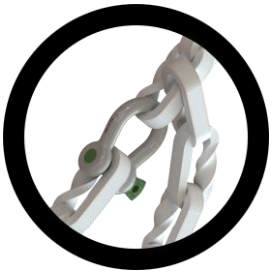
The DoRa ratchet load binder and the associated shortening hooks are approved for use with the Do*Nova*® PowerLash.

Shortening the Do*Nova*® PowerLash

When shortening the Do*Nova*® PowerLash, the following points must be observed:

There must be at least three free chain links between two fittings.

Unloaded chain links must not be squeezed.



Hooks and fittings must not be hooked between the layers of the chain links.

4. Tension the lashing chain by using the tensioning element. Position the tensioning element so that it does not touch edges when in use. When lashing directly, the lashing strand should be pre-tensioned with normal manual force S_{HF} so that the chain no longer sags.
5. Secure the tensioning element. (Observe the separate instructions for the tensioning element used).

Securing the tensioning device with the safety chain

Once the lashing chain is correctly tensioned, the ratchet load binder is secured with the safety chain to prevent unintentional release. The following steps must be carried out to secure the ratchet load binder:

1. Wind the safety chain around the tensioning lever against the direction of rotation.
   (2 – 3 turns)
2. Then feed the safety chain through the opposite coupling link or hook.
3. Finally, hook the safety chain with the tensioning hook into a suitable chain link of the safety chain.

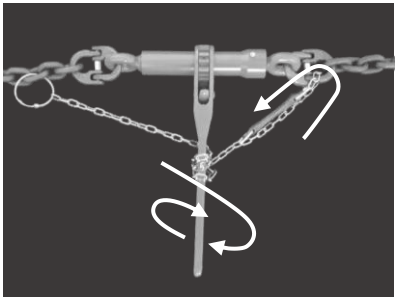


Fig. 7: How to use the safety chain

Release the load securing

1. Unscrew the tensioning element.
2. Solve the rough shortening.
3. Remove the connecting elements from the lashing points.
4. Store the lashing chain safely. In the case of ratchet load binders, the threaded rods should be screwed back in completely to protect the threads from damage.

6 Storage and care

6.1 Storage

Inspect product before storage for damage that may have occurred during use.

Do not store damaged products.

Store product:

- in a clean, dry and well-ventilated environment and
- away from heat sources.

During storage, ensure that the safety of the product is not impaired by environmental influence (e.g. chemicals).

6.2 Cleaning

Clean the product only with clear water and mild detergent.

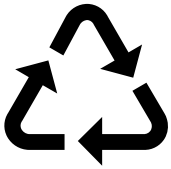
Do not use any chemical additives.

If the product has become wet from cleaning or use, hang the product in the air to dry.

Do not artificially accelerate the drying of the product (e.g. by heating).

6.3 Disposal Note

After reaching discard maturity, the Do*Nova*® PowerLash must be disposed properly and in accordance with the locally applicable legal requirements.

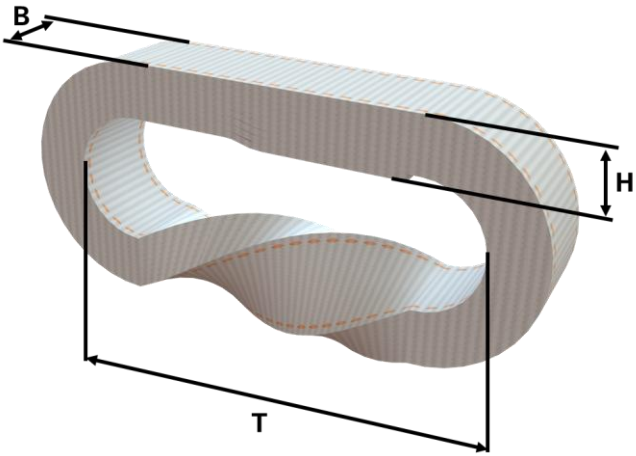


7 Modular System

For optimum use of the Do*Nova*® PowerLash, the Doleco modular system can be used, whereby various Doleco tensioning elements and fittings (e.g. end hooks, coupling links, shackles) can be combined with each other. In addition, further accessory components (e.g. bags and edge protection hoses) are available.

All components have been tested and approved for use with the Do*Nova*®-PowerLash lashing chain. The use of these components guarantees the safe use of the product and a long service life of the Do*Nova*®-PowerLash.

7.1 Do*Nova*® dimensions



For Do*Nova*®	LC [daN]	T [mm]	H [mm]	B [mm]
25 / 8	10.000	100	12,5	25
25 / 10	12.500	100	15,5	25
30 / 8	16.000	125	16,3	30
30 / 10	20.000	143	19,4	30

8 Type overview Do*Nova*®-PowerLash (standard)

The following table shows the Do*Nova*® types in comparison to a steel lashing chain. It shows which chain size from which grade can be substituted with the Do*Nova*® PowerLash. This table does not cover the complete market and does not include every system / design. Only the weights of the pure meter goods are listed (without tensioning element and fittings), whereby the weight per meter for the steel chains can vary depending on the manufacturer.

Size-Grade	LC [daN]	Weight [kg/m]	Do*Nova*®	LC [daN]	Weight [kg/m]
6-8	2,200 daN	0.80			
6-10	3,000 daN	0.85			
6-12	3,600 daN	0.98			
8-8	4,000 daN	1.40			
8-10	5,000 daN	1.50			
8-12	6,000 daN	1.66	25 / 8	10,000 daN	0.61
10-8	6,300 daN	2.20			
10-10	8,000 daN	2.40			
13-8	10,000 daN	3.80			
10-12	10,000 daN	2.62			
-	-	-	25 / 10	12,500 daN	0.79
13-10	13,000 daN	4.00			
13-12	16,000 daN	4.25	30 / 8	16,000 daN	0.91
16-8	16,000 daN	5.70			
16-10	20,000 daN	6.00	30 / 10	20,000 daN	1.09

9 Type examination certificate

TRANSLATION

(1) Type Examination Certificate

(2) No. of the Type Examination Certificate: **ZP/B144/17**

(3) Product: **Textile lashing chain**
Type: PowerLash with Dyneema

(4) Manufacturer: **Dolezych GmbH & Co. KG**

(5) Address: **Hartmannstraße 8, 44147 Dortmund, Germany**

(6) The design of this product and any acceptable variation thereto are specified in the schedule to this type examination certificate.

(7) The certification body of DEKRA EXAM GmbH certifies that this product comply with the fundamental requirements of the standard listed under item 8 below. The examination and test results in the test and assessment report PB 17-141.

(8) The requirements of the standard are assured by compliance with

DIN EN 12195-2:2001 **DIN EN 12195-3:2001**

(9) This Type Examination Certificate relates only to the design, examination and tests of the specified product in accordance to the standard list. Further requirements of the Directive apply to the manufacturing process and supply of this personal protective equipment. These are not covered by this certificate.

(10) This Type Test Certificate is valid until 2022-05-23.

DEKRA EXAM GmbH
Bochum, 2017-05-24

signed: Mühlenbruch
Certification body

signed: Stickdorn
Special services unit

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

Certification body

Special services unit

DEKRA EXAM GmbH, Dinnendahlstrasse 9, 44809 Bochum, Germany
telephone +49.234.3696-105, fax +49.234.3696-110, zs-exam@dekra.com