

# laevo

EN

## V2.4 - V2.5

wearable back support for  
repetitive bending and  
bended posture

### Instructions for use

2018-03-12

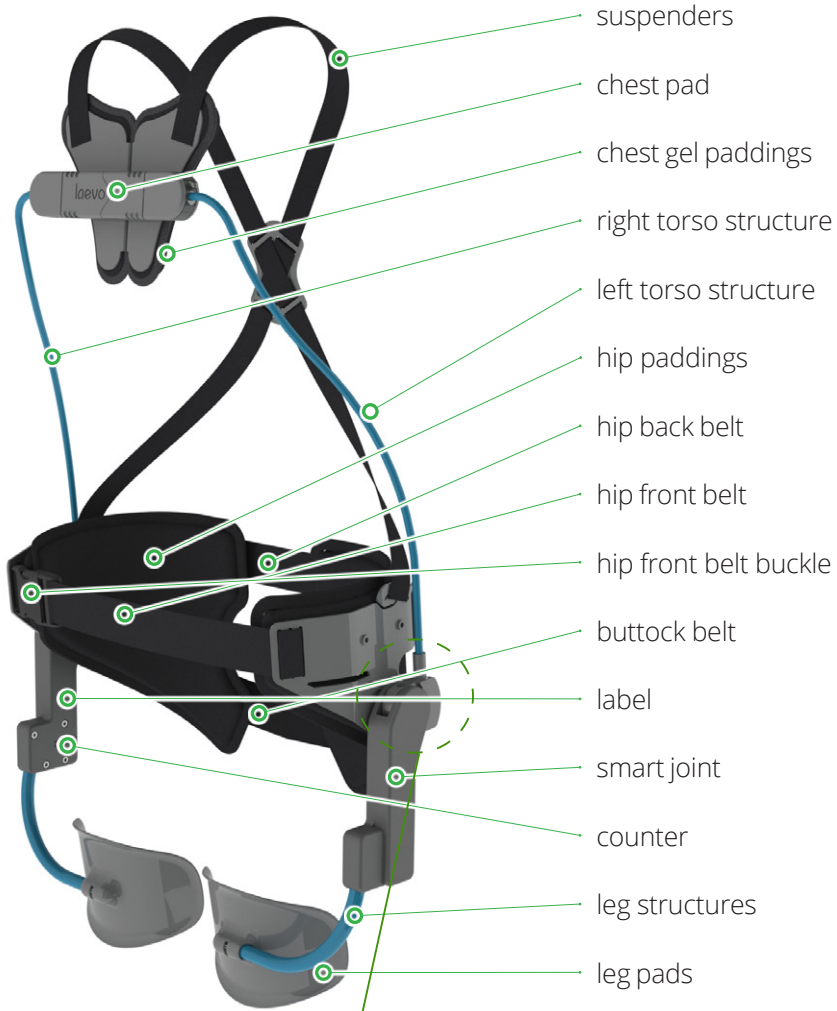


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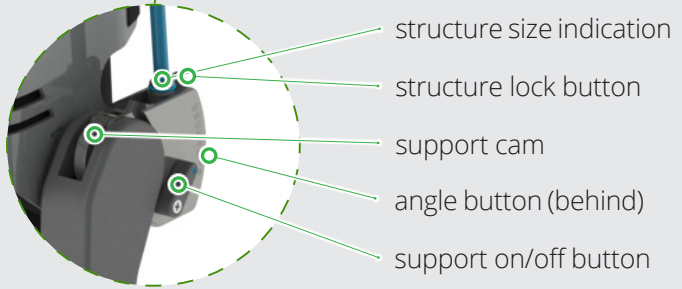


# Overview Figure

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V2.5



# Foreword

Thank you for choosing Laevo.

This document gives instructions for use, safety, fitting and maintenance of the Laevo.

- ▶ **Read carefully before use.**
- ▶ **Keep for future reference.**
- ▶ **Follow the safety instructions.**
- ▶ **Instruct the user in proper and safe use of the product.**

If you have questions, call Laevo or your supplier. Laevo's contact information is on the last page.

## Variants

All instructions on white, not gray, are for V2.45 and later (V2.46, etc).

All instructions on white and on gray are for V2.50 and later (V2.54, etc).

- ▶ Note this gray background and black label. It indicates instructions only for V2.5 Laevos.

The illustrations are general examples; your product can be different from the illustrations.

## Explanation of warning symbols

- ▲ **DANGER!** Indicates potential life-threatening or disabling injury.
- ▲ **WARNING!** Indicates potential serious injury.
- ▲ **CAUTION:** indicates potential minor injury.
- ⓘ **NOTICE:** indicates potential product damage.
- ⓘ **TIP:** Information and tips to make it even easier to use the Laevo.  
Get more tips at [www.laevo.nl](http://www.laevo.nl).

# Application

The Laevo is a wearable device which supports bent-forward work and repetitive lifting. The Laevo decreases the forces in the lower back when bending.

## Indication for use

The Laevo is intended to prevent, treat or alleviate low back pain. The Laevo must be used in accordance with its indications.

- ▶ Use it when you want to prevent or have back pain.
- ▶ If you are not sure about correct use, contact Laevo.

## Contra-indications

Do not use if you have:

- a pacemaker,
- breast implants,
- removal of the axillary lymph nodes.

Consult a physician prior to using the Laevo, if any of the following occurred before or during use:

- inguinal hernia,
- hernia,
- knee injury,
- hip prosthesis,
- knee prosthesis,
- hyperextended knee,
- recent surgery,
- skin diseases/injury,
- inflammation,
- scars,
- skin reddening.

# Application

## Work posture, tasks and activities

The Laevo will support the lower back during:

- Bending forward, holding this posture and returning upright,
- Lifting.

### ⚠ CAUTION: Lifting heavier loads than permitted by law

#### *Risk on injury of arms and other body parts*

- ▶ Do not use the Laevo to lift heavier loads than permitted.
- ▶ Do not use the Laevo to replace lifting aids for heavy loads.

The Laevo allows or partly supports:

- Kneeling,
- Squatting,
- Stretching outwards and upwards,
- Twisting,
- Walking.

### 🕒 TIP: Turn the support off before:

- Walking up and down stairs,
- Sitting,
- Driving low-speed, professional, indoor vehicles, such as a forklift.

### ⚠ WARNING! Unintended activities

#### *Risk on unsafe situations*

- ▶ Do not run, climb, work on heights or drive any vehicle outside.
- ▶ Use the Laevo only professionally (for work).

# Safety Instructions

**⚠ WARNING! Failure of the device while bending**  
*Risk of sudden loss of support. If this occurs, your hands or head can suddenly move (a few centimeters)*

- ▶ Do not use the device where sudden hand or head movements could lead to injury to you or somebody else.

**⚠ WARNING! Discomfort or pain during use**  
*Risk of increased discomfort or pain*

- ▶ Stop using the product.
- ▶ When the pain is gone, build up the frequency and duration of the usage again.
- ▶ Do not wear the Laevo directly on exposed skin.

**ⓘ NOTICE: Improper use and changes**  
*Change in or loss of functionality as well as damage to the product*

- ▶ Use this product with care and only for its intended purpose.
- ▶ Do not make any changes to the product parts.

**⚠ WARNING! Use of damaged product**  
*Loss of functionality, including sudden loss of support*

- ▶ Do not use a damaged product.
- ▶ Do not use flammable substances (e.g. matches, lighters, candles) near the Laevo. The Laevo is not flame retardant.
- ▶ Keep the Laevo dry.
- ▶ Keep moving parts free of any fluids.
- ▶ Keep moving parts free from sand, dust and debris.

**⚠ WARNING! Pushing buttons while bending**  
*Risk of sudden loss of support*

- ▶ Take caution not to accidentally pressing buttons. For example by bumping.
- ▶ Do not press buttons on the Laevo while another is using it.

# Safety Instructions

## ⚠ DANGER! Laevo worn during CPR or defibrillator use

### *Reduced efficiency of CPR or defibrillator*

- ▶ Expose chest before CPR: Pull apart the two halves of the chest pad. Release the front belt buckle. Push the halves outwards.

## ⚠ WARNING! Use of out-of-date parts

### *Risk on sudden loss of support*

- ▶ Check that the counter on the smart joint reads less than 250000. When the counter reads more than 250000, stop using the Laevo. Replace the product or have it refurbished.
- ▶ Check the date on the torso structures. If the usage of the torso structures exceeds 3 years, stop using the Laevo. Contact the supplier or replace parts.

## ⚠ WARNING! Clothes and tools stuck in or trapped under device

### *Risk on injury*

- ▶ Wear appropriate clothing. Do not wear clothing or accessories with loose ends, such as necklaces or scarfs.
- ▶ Do not wear hard objects in your clothing or pockets.
- ▶ If your clothing becomes ensnared in the smart joint, bend forward to open the smart joint and remove the clothing.

## ⚠ WARNING! Fingers near smart joint while bending

### *Misuse can lead to cutting or crushing injury*

- ▶ Do not place your fingers near the smart joint while bending.
- ▶ Do not allow fingers from others near the Laevo during use (except setup). Keep the Laevo away from children and pets.

## ⚠ WARNING! Something/someone pulls chest pad

### *Risk on hit by chest pad*

- ▶ Avoid situations where (aggressive) people can grab the Laevo.
- ▶ Do not wear the Laevo without suspenders.
- ▶ Option: wear clothing over the Laevo.



# Installation

## ⓘ INFORMATION

- ▶ Read these steps while using the figures from the Quick-Guide. Figure numbers are indicated as QG-1, QG-2, QG-3, etc.
- ▶ Assembling the Laevo does not require any tools.

## QG-1: Preparation

- ▶ Check if the delivery is complete. See list of parts in QG-1.





## QG-2: Label check and torso structures selection

In case of **made-to-measure Laevo**:

- ▶ Check the label to verify the Laevo is for you.
- ▶ Do not wear a custom Laevo that is not for you.
- ▶ Do not use custom torso structures that are not for you.

In case of **standard sizes**:

- ▶ Select the torso structure or Laevo size from the table below.

Size		From [cm]	To [cm]	V2.5 Ring Color	
Custom	-	any	any	-	-
Extra Small	xs	156	164	purple	
Small	s	164	172	yellow	
Medium	m	172	180	orange	
Large	l	180	188	blue	
Extra Large	xl	188	196	green	

**Table: body length to structure indication - MALE**

ⓘ **CAUTION!** This table is purely indicative. Body shape is not proportional to body length or weight.

- ⓘ **TIP:** Custom torso structures and Laevos are available for users that cannot fit a standard size.
- ⓘ **TIP:** Quick-Guide step 14 and 15 explain how and when to switch to larger or smaller size.

# Installation

## QG-3: Attach the torso structures to the chest pad

- ▶ Use the torso structure with indicator "L" for the left side of the body.
- ▶ Push the button on the left side of the chest pad.
- ▶ Move the structure in the hole to a comfortable width setting. There are 3 width settings.
- ▶ Release the button.
- ▶ Repeat for the right side.

ⓘ NOTICE: Make sure left and right have the same width setting.

## QG-4: Attach the torso structures to the smart joint

- ▶ Push the 'structure lock button' of the left smart joint.
- ▶ Move the left torso structure in the hole to a comfortable height setting.
- ▶ Rotate the indents towards the button to make sure the parts can lock.
- ▶ Release the button.
- ▶ Repeat for right side.

ⓘ NOTICE: Make sure left and right have the same height setting.

## ⚠ WARNING! Bending with unlocked parts

*Risk on sudden loss of support*

- ▶ Pull lightly on all structure ends to make sure all ends are locked.

## QG-5: Attach the suspenders to the chest pad and hip belt

- ▶ Make sure the Laevo logo faces outward and the buckles are below the crossing.
- ▶ Make sure the suspenders do not twist.

# Fitting

## ⓘ INFORMATION

- ▶ Read these steps while using the figures from the Quick-Guide. Figure numbers are indicated as QG-1, QG-2, QG-3, etc.
- ▶ The Laevo can be adjusted in many ways to improve the fit.

### **QG-6: Before fitting / first use**

- ▶ Adjust the suspenders to the longest size.
- ▶ Set the angle of the smart joint to the maximum setting.

### **QG-7: The Laevo is ready to put on**

### **QG-8: Open the chest pad and the hip belt front buckle**

### **QG-9: Put on the Laevo**

- ▶ Put the Laevo on like a coat.
- ▶ Close the chest pad.
- ▶ Close the hip belt front buckle.

### **QG-10: Adjust the suspenders**

ⓘ TIP: A helping hand is welcome at this step.

- ▶ Adjust the suspender length with the sliding clamps so the pivot point of the smart joint is at your hip joint height.
- ▶ Adjust the height of the crossing to your comfort.

### **QG-11: Tension the belts**

- ▶ Tension the front belt and back belt until:
  - the Laevo is close around the body,
  - the leg pads are in front of the thighs.

## QG-12: Align the smart joints with the hip

- ▶ Place the pivot point of the smart joint as close as possible to the pivot point of your hip joint, by adjusting the front and back belts.

ⓘ **TIP:** The extension of the thigh bone (greater trochanter) is in line with the pivot point of the hip-joint.

- ▶ Rotate your foot with the heel on the ground.
- ▶ Place your thumb on the brim of the hip.
- ▶ Feel the bone through the skin with your fingers.
- ▶ Check the alignment of pivot points of the hip joint and the smart joint.

## QG-13: Remove excess strap

- ▶ Roll up any excess strap.
- ▶ Fold it into the elastic loop at the end of the belt.

## QG-14: Adjust width or change structures

- ▶ Adjust the 3-step width setting of the torso structures for comfort.
- ▶ Change to a bigger structure size if the structure irritates the torso during normal use.
- ▶ Change to a smaller structure size if structure irritates the arms during normal use.

## QG-15: Adjust height or change structures

- ▶ Adjust the 3-step height setting of the torso structures for comfort.
- ▶ Change to a larger size if the chest pad irritates the belly.
- ▶ Change to a smaller size if the chest pad irritates the neck or the armpit while bending.

## QG-16: Set smart joint angle

- ▶ Make sure the support is on, using the 'support on/off buttons'.
- ▶ Decrease the initial angle using the 'angle button' on the back of the smart joint to a point where the chest pad pushes lightly against the chest when standing in a natural, straight position.

ⓘ **NOTICE:** Make sure the initial angles are set to equal values left and right.

# First use

## QG-17: First movements with the Laevo

The first time you use the Laevo, gently make the following movements:

- ▶ Bend forward from the hip, hands towards the toes.
- ▶ Bend your knees.
- ▶ Bend forward at an angle and stretch outwards.

These movements should be comfortable and easy. If not:

- ▶ Make sure the Laevo fits the 'checks' below.
- ▶ Repeat the fitting process.
- ▶ Contact your supplier.

# Checks

## ⓘ INFORMATION

- ▶ Perform these checks while using the figures from the Quick-Guide. Figure numbers are indicated as QG-A, QG-B, etc.

### **QG-A: Leg pad position**

### **QG-B: Pressure while standing straight**

While standing straight, pressure of the chest pad on the chest should be limited. It is okay for the chest pad to come loose from the body.

- ▶ If necessary, adjust the angle of the torso structures (QG-16).

### **QG-C: Structure body shape fit**

The torso structures follow the contours of the body and the arm should be free to move.

- ▶ If necessary, adjust the width of the torso structures (QG-14).

### **QG-D: Chest pad hits the neck**

While you are bending forward, the chest pad can slide. This is normal.

## ⓘ NOTICE: Chest pad hits the throat

### *Unusable product or risk on discomfort*

- ▶ Tighten the back lower hip belt.
- ▶ Adjust the smart joints towards the back of the body (QG-12).
- ▶ Bend with more hip rotation and less spine or neck bending.
- ▶ Adjust the length of the torso structures or select shorter torso structures (QG-16).

# Daily use

V2.5

EN

## QG-I: Turn the support on or off

Use the 'support on/off buttons' on the smart joints.

- ▶ Rotate up to turn the support off.
- ▶ Rotate down to turn the support on.

ⓘ NOTICE: Make sure both smart joints are in the same state before use.

ⓘ NOTICE: Use the button only when you stand upright.

ⓘ NOTICE: Use this button lightly.

## QG-II: Use environment

The Laevo is for indoor use.

ⓘ NOTICE: The Laevo may not be used or stored in direct sunlight.

ⓘ NOTICE: The Laevo may not be used in a setting where the ambient temperature is lower than 0 °C or higher than 40 °C.

## QG-III: Gradually increase use

Gradually increase first use of the Laevo: from 1 hour a day, to 2 hours a day, to 4 hours a day, to 6 hours a day, onwards to the maximum time of 8 hours a day.

## QG-IV: Storage

- ▶ Store in a dry place.

ⓘ TIP: Store hanging.

- ▶ Close the chest pad.
- ▶ Store on a hat rack or in a clothes locker.

# Maintenance

ⓘ **INFORMATION:** Maintenance by (non-skilled) end user.

- ▶ Contact your supplier for other maintenance.

## Removing and replacing chest gel paddings

The gel paddings on the chest pad are attached with Velcro.

- ▶ Pull hard to remove.
- ▶ Replace with new paddings.

## Removing and replacing hip paddings

The paddings on the hip are attached with push buttons.

- ▶ Pull hard to remove.
- ▶ Replace with new paddings.

## Cleaning

To clean the Laevo:

- ▶ Use a moist cloth, lukewarm/hot water and a mild cleaning product (no cleaning products that contain solvents).
- ▶ Make sure no water gets into the moving parts. Never immerse the Laevo in water.
- ▶ Do not use any solvents, bleach, polisher or detergent.

## Maintenance

- ▶ Regularly check:
  - the counters on the smart joint,
  - for visible damage,
  - whether all parts are still securely attached without play,
  - functioning of the adjustments and buttons,
  - if the smart joint is greased.

## Repair and disposal

- ▶ Please contact your supplier.



# Legal information

## Liability

Laevo B.V. can not be held liable for:

- Personal injury or damage to property as a result of a user or third party not following the recommendations and warnings contained in this manual,
- Damage due to changes and/or alterations to the original product; wear and damage caused by the user due to improper use; damage due to use of non-original replacement parts.

## Warranty

The Laevo Business Warranty covers the product. This can be found at [www.laevo.nl/legal/](http://www.laevo.nl/legal/). Contact Laevo or your supplier to obtain a printed version.

## CE

This product meets the requirements of the European Directive 93/42/EEC for medical devices. This product has been classified as a class I device according to the classification criteria outlined in Annex IX of the directive.

The manufacturer therefore drew up the declaration of conformity on its own responsibility in accordance with Annex VII of the directive.



# Specifications

## Technical Product Specifications

	V2.4	V2.5
Product name:	Laevo V2.4	Laevo V2.5
Product numbers:	V2.45 and higher	V2.54 and higher
Weight:	2.5 kg	2.8 kg
Serial number:	See label (on smart joint)	
Certification:	CE - Medical Device Class I	
Expected lifetime	250.000 bends or 3 years	
Materials used:	<ul style="list-style-type: none"> <li>• Supporting structure: Powder coated steel, aluminium</li> <li>• Chest pad: Exgel (Oeko-Text Standard 100)</li> <li>• Hip pad inside: Synthetic mesh fabric</li> <li>• Hip pad filling: Compripol 120kg/m2</li> <li>• Hip pad outside: Synthetic fabric</li> <li>• Leg pad: Polypropylene</li> </ul>	
<b>Table: Laevo V2.4 and V2.5 specifications (assembled)</b>		

	V2.4 torso structures	V2.5 torso structures
Product name:		Laevo V2.5 torso structures
Product numbers:		V2.54 and higher
Serial number:		See top end
Expiry date:	See top end	See top end
<b>Table: Laevo torso structures</b>		

	Zone 1	Zone 2	Zone 3	Combi
Maximum torque:	40 Nm	40 Nm	30 Nm	30 Nm
Typical support area:	0-19	20-59	59-90	all
<b>Table: Laevo support cams (specs for assembled Laevo)</b>				

# Contact

## Manufacturer



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