# BIOLIFT EXOSKELETON

## User Guide - EN

Biolift

# TABLE OF CONTENT

# 1 GENERAL INFORMATION

## 1.1 Conventions

This document employs the following conventions:

⚠ WARNING: This symbol is present when a warning alerts you to a potential danger to health or life.

⚠ CAUTION: This symbol is present to prevent a risk of deterioration of the exoskeleton.

❗ REMARK: This symbol is present to provide a general observation or information related to procedures, events or practices that are recommended or essential for a successful experience.

## 1.2 About Biolift Exoskeleton

The Biolift exoskeleton is a passive back support tool that helps relieve strain on the lower back and reduce muscle fatigue for workers while bending or lifting heavy loads to and from the ground. By providing up to 60 lbs of support, the exoskeleton enhances worker comfort, making repetitive and strenuous tasks more manageable.

The Biolift exoskeleton is a wearable equipment that operates without the need for batteries or motors. It uses a system of mechanical components, such as tension springs and supportive frames, to provide continuous lumbar support. The exoskeleton is worn around the waist and thighs, and it works by redirecting the forces of lifting and bending away from the lower back. When a worker bends forward or lifts a heavy object, the exoskeleton activates to provide a counterforce, redistributing the load to stronger parts of the body like the hips and legs. This minimizes the impact on the back and makes strenuous tasks less demanding.

## 1.3 Contact

For more information about this User Manual or general inquiry please contact Biolift Support:

| Mailing address | Coordinates |
|---|---|
| Biolift<br>251-5425 Rue de Bordeaux,<br>Montréal (QC)<br>H2H 2P9, Canada | https://biolift.co/contact/<br>e-mail: support@biolift.co<br>Phone: +1-888-404-9853 |

## 1.4 Training

The Biolift exoskeleton is a passive back support tool. It should only be used by people trained in the use of the device by Biolift. It is not a replacement for the worker's expertise or experience. For individual training or specific requests, please contact Biolift Support (support@biolift.co).

Additional training materials and documents are available on our website at https://biolift.co/support/.

⚠ Only properly trained Users should operate the exoskeleton. Users must follow safety guidelines and warnings.

## 1.5 Intended use

The Biolift exoskeleton is a back support device that helps to reduce lower back strain and muscle fatigue while bending or lifting heavy loads to and from the ground.

⚠ **Lifting:** The exoskeleton does not increase the worker's strength. Do not use the exoskeleton to lift heavier weights than permitted.

❗ It is not a medical device, it does not treat, cure or prevent back injuries.

❗ It is not a full body exoskeleton, it specifically assists the user's back.

❗ It is not intended to extend the duration of time users spend working without breaks.

### 1.5.1 Intended users

Biolift exoskeletons are intended to be used by:

- Users trained to perform daily tasks that meet all criteria of the intended use.
- Only properly trained Users should operate the exoskeleton. Users must follow safety guidelines and warnings.
- The one-size exoskeleton is designed for use on a mature (adult) user population ranging between the approximate maximum and minimum values* below:

| Value | Weight | Height |
|---|---|---|
| Minimum* | 120 lbs (55 kg) | 5' 2" (158 cm) |
| Maximum* | 275 lbs (124 kg) | 6' 8" (203 cm) |

*These values are indicative: If the exoskeleton does not suit you, please contact Biolift support by referring to the contact section.

⚠ Users which do not meet those criteria could cause damage to the exoskeletons leading to failure of the device.

### 1.5.2 Use case scenarios

The back exoskeleton is designed to provide effective support during tasks that involve specific physical demands, such as prolonged bending postures, repetitive lifting movements, or

kneeling. Please note that its effectiveness is optimized for jobs that require working at ground level or near ground level.

⚠ The Biolift exoskeleton should not be used in applications other than those specified in this User Manual.


*Example of Biolift exoskeleton applications*

Application examples include:

- Hardscaping: laying and sawing pavers, laying sod
- Cement work: bent down concrete finishing, demolition
- Tiling: floor tile installation
- Commercial Roofing: installing membrane rolls.
- Rebar workers: tying and placing rebar.
- Shoveling and grading

⚠ **Heights ladders and safety harness:** Exoskeleton should not be worn when climbing ladders or working at heights. Use of the exoskeleton in these situations could cause loss of balance, resulting in serious injury or death. **It is not compatible with fall safety harnesses.**

⚠ **Machinery operation and driving:** Exoskeleton should not be worn when driving or operating tools in confined environments. This could cause impediments to movement that could affect reaction capacity or movement amplitude, resulting in severe injury or even death.

### 1.5.3 Environment

Biolift exoskeleton is designed to withstand temperatures between -20 and +80 degrees Celsius (-4 and +176 degrees Fahrenheit). It can be used in moderate dusty environments and be exposed directly to the sun. It is not recommended to let the exoskeleton dry on heat sources such as radiators or let it in an extreme cold environment. Biolift exoskeleton is compatible with short exposition to wet environments. It should never be submerged into water or left wet or damp.

⚠ **Heat retention:** The exoskeleton can cause heat retention especially when working in hot environments. In such events, take frequent brakes in cool areas and/or take off the exoskeleton.

⚠ Do not use the exoskeleton in proximity to high-voltage lines, radioactive substances, fire, heat sources and biological agents. For recommendations, contact Biolift.

Operating temperature ranges are defined in this User manual. Using the exoskeleton outside this range could result in exoskeleton damage.

## 1.6 Contraindications

The exoskeleton must only be used after reading this User Manual and after receiving the appropriate training. Please contact Biolift support (support@biolift.co) if unsure how to use the device. The Biolift exoskeleton should not be used in applications other than those specified in this manual.

The exoskeleton is not to be used by persons:

- The presence of implanted devices such as but not limited to, cardioverter defibrillators, cardiac pacemakers, coronary stents, insulin pumps, intrathecal drug pumps, artificial hips, artificial knees, spine screws and/or rods, artificial discs and/or breast implants
- with condition of the musculoskeletal system;
- with bone disease;
- with skin diseases/injuries, inflammations; raised scars with swellings;
- with reddening and above-normal temperature in the body areas affected (back, thighs, neck, belly and torso);
- Allergies to latex or to synthetic fibers including nylon, and similar materials
- with pronounced varicose veins, especially with venous insufficiency; lymphatic drainage disorders – also unexplained soft-tissue swelling in parts of the body away from the exoskeleton;
- Cardiovascular diseases
- Pulmonary diseases
- Renal diseases

- with sensory and circulatory disorders in the area of the upper extremities, hips and back (e.g. diabetic neuropathy).
- Congenital or acquired neurological disorders or other disorders causing motor and or sensory limitations or impairment

If you suffer from another medical condition that may be affected by wearing the Biolift exoskeleton, please inform your doctor so that medical advice can be obtained before using the device.

# 2 SAFETY, WARNINGS, CAUTION & REMARKS

## 2.1 Safety

⚠ **Adjustments:** The exoskeleton should be adjusted correctly and specifically for each user following this user manual instructions. Too tight or too loose adjustment could lead to malfunctions or injuries.

⚠ **Comfort and anomalies**: While using the Biolift exoskeleton, users must remain vigilant and constantly check their own comfort and any anomalies in the device. If any uncomfortable sensations (e.g. chaffing, pressure points) or signs of malfunction are experienced, use should be interrupted and the problem reported immediately.

⚠ **Direct skin contact:** The exoskeleton should not be in direct contact with Users skin. Skin irritation may occur with direct or in some cases indirect (over clothing) contact with skin. Do not continue to use the exoskeleton if skin irritation occurs without attempting remediation or addressing the source of the irritation.

⚠ **Lifting:** The exoskeleton does not increase the worker's strength. Do not use the exoskeleton to lift heavier weights than permitted.

⚠ **On/off switch:** Always stand-up when activating or deactivating the mechanism. Deactivating the mechanism under load could cause loss of balance, resulting in serious injury or death.

⚠ **Heat retention:** The exoskeleton can cause heat retention especially when working in hot environments. In such events, take frequent brakes in cool areas and/or take off the exoskeleton.

⚠ **Pinching:** Fingers, extremities or any other part of the body should not be near moving mechanisms when using the exoskeleton. This could result in pinching or more severe injuries.

⚠ **Hazardous parts:** Hazardous parts of the exoskeleton (e.g. sharp edges, rough surfaces, loose ends) can cause chaffing, cuts or more severe injuries. Those parts are defined in this User manual.

⚠ **Heights ladders and safety harness:** Exoskeleton should not be worn when climbing ladders or working at heights. Use of the exoskeleton in these situations could cause loss of balance, resulting in serious injury or death. It is not compatible with fall safety harnesses.

⚠ **Machinery operation and driving:** Exoskeleton should not be worn when driving or operating tools in confined environments. This could cause impediments to movement that could affect reaction capacity or movement amplitude, resulting in severe injury or even death.

⚠ **Medical intervention:** In the event of medical intervention (e.g. cardiac massage, installation of a defibrillator, etc.) on a person wearing the exoskeleton, it will be necessary to disengage the harness buckle located on the victim's torso.

⚠ **Emergencies and evacuation:** In an emergency event, remove the exoskeleton.

⚠ **Environment:** Do not use the exoskeleton in proximity to high-voltage lines, radioactive substances, fire, heat sources and biological agents. For recommendations, contact Biolift. Operating temperature ranges are defined in this User manual. Using the exoskeleton outside this range could result in exoskeleton damage.

## 2.2 Warnings, cautions & remarks

⚠ **Training:** Only properly trained Users should operate the exoskeleton. Users must follow safety guidelines and warnings.

⚠ **Intended use:** The Biolift exoskeleton should not be used in applications other than those specified in this User Manual.

⚠ **Precaution:** Do not spray lubricant on the harness - this could result in skin injuries.

⚠ **Hygiene and maintenance:** Improper cleaning can cause skin irritation, inflammation, and certain forms of eczema and/or infections.

⚠ **Safety equipment:** Personal Protective Equipment (PPE) should be worn when cleaning the exoskeleton. PPE includes goggles and gloves.

⚠ **Environmental restrictions:** Do not use the exoskeleton in proximity to high-voltage lines, radioactive substances, fire, heat sources and biological agents. For recommendations, contact Biolift.
Operating temperature ranges are defined in this User manual. Using the exoskeleton outside this range could result in exoskeleton damage.

⚠ **User eligibility and safety:** Users which do not meet those criteria could cause damage to the exoskeletons leading to failure of the device.

⚠ **Strap adjustment:** Ensure straps are not too tight before adjusting them. Too tight straps or belts could break or cause damage to the exoskeleton.

⚠ **Cleaning:** Improper cleaning can affect exoskeleton functionality.

⚠ **Lubricants guidelines:** Do not use silicone lubricants.

⚠ **Repair instructions:** Do not apply excessive torque on screws when repairing the exoskeleton. Do not use power tools.

⚠ **Storage:** Do not store the exoskeleton on the floor.

⚠ **Storage:** Improper storage may cause exoskeleton damage or increase wear and tear. These conditions may void the warranty.

⚠ **Cleaning preparation:** Remove the harness before proceeding to cleaning.

⚠ **Cleaning:** Improper cleaning can affect exoskeleton functionality.

⚠ **Inspection:** Carefully inspect each part of the exoskeleton to ensure that all visible dirt has been removed. If soiling is noted, repeat the cleaning process.

⚠ **Cleaning instructions:** Dry, soiled fabric and components are more difficult to clean. Do not allow soiled fabric and components to dry prior to cleaning.

⚠ **Cleaning precautions:** Metal brushes or scouring pads must not be used during manual cleaning procedures. These materials will damage the surface of exoskeleton material. Water jet and/or soft material should be used.

⚠ **Cleaning precautions:** Cleaning agents must be completely rinsed from the exoskeleton surfaces to prevent accumulation of detergent residue.

⚠ **Cleaning precautions:** Do not overheat the harness during the washing process.

### 2.2.1 Remarks

❗ **It is not a medical device, it does not treat, cure or prevent back injuries.**

❗ **It is not a full body exoskeleton, it specifically assists the user's back.**

❗ **It is not intended to extend the duration of time users spend working without breaks.**

❗ If you suffer from another medical condition that may be affected by wearing the Biolift exoskeleton, please inform your doctor so that medical advice can be obtained before using the device.

❗ Only read the force value when you are straight - the mechanism will move during the activity and the gauge will not be accurate.

❗ For an easy installation deactivate the exoskeleton before set-up step.

❗ For your comfort, disengage the mechanism before sitting down, walking more than 100 consecutive meters or going up and down stairs.

❗ For an easy installation deactivate the exoskeleton before set-up step.

❗ **If damage or wear is noted that may compromise the function of the exoskeleton, contact your Biolift support for a repair or replacement.**

❗ The exoskeletons are supplied in their designated carrying bag. The bag is not designed to protect the exoskeleton from excessive external impacts and/or if additional tools or equipment are added to the bag.

❗ If it is necessary to send the exoskeleton by post, it will be necessary to protect the device adequately to meet travel conditions.

❗ The instructions contained in this User manual may not be effective for removing all types of radioactive or chemical contamination such as oil, grease, or other types of chemicals that might come in contact with the exoskeleton.

- To accelerate the drying process or to remove bulky soil,  compressed air can be used.
- A water jet can be used to clean the harness. Respect reasonable distance from the fabric in order to avoid any damage.

# 3 DESCRIPTION

## 3.1 Overview

The exoskeleton's main components are shown in the pictures below.





## 3.2 Hazardous components

Although most of the mechanism is covered with plastic covers, few areas in the exoskeleton represent a risk for the user if he does not pay attention. Those hazards have been highlighted below.


**Moving parts:** Those components are moving when the exoskeleton is used. Stay alert when manipulating components in these areas. Strictly avoid putting your hands near this mechanism when the user is moving (even if the exoskeleton is deactivated). Located on the lower portion of the mechanism, there is a group of rotating parts composed of a pulley and pivots (1). Located on the upper portion of the mechanism, sliding rails are below the protective soft fabric (2).

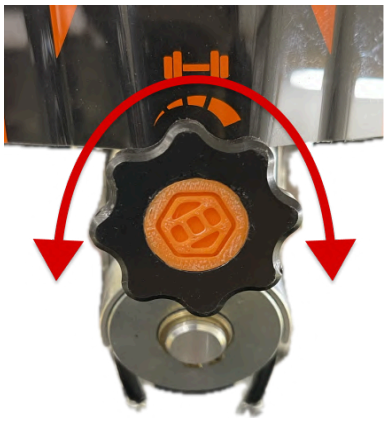
⚠ **Pinching:** Fingers, extremities or any other part of the body should not be near moving mechanisms when using the exoskeleton. This could result in pinching or more severe injuries.

**Sharp edges and points:** The surface of these components can cause cuts or other injuries. Be aware when you are manipulating or using the exoskeleton and avoid touching those surfaces. Parts of the mechanism that are not covered (1) have potential sharp edges and represent a risk of injuries, as well as leg bars (3) and plastic cover edges (4).

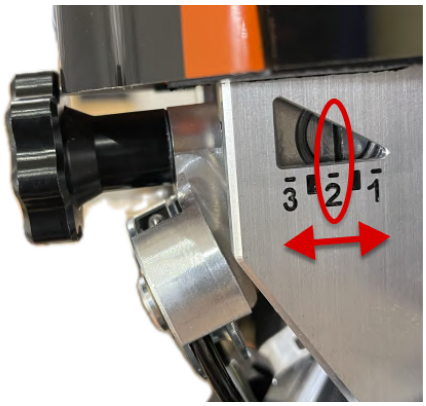
⚠ **Hazardous parts:** Hazardous parts of the exoskeleton (e.g. sharp edges, rough surfaces, loose ends) can cause chaffing, cuts or more severe injuries. Those parts are defined in this User manual.

## 3.2 Support force adjustment

The support force provided by the Biolift exoskeleton can be adjusted using the force knob(1). Refer to the exoskeleton overview section for the force knob location. The force varies from values 1 to 3 corresponding to the lowest support and the strongest support respectively (2). It should be easy to access and turn the knob when you wear the exoskeleton.



(1) Support force adjustment




(2) Force level indication

⚠ **Pinching:** Fingers, extremities or any other part of the body should not be near moving mechanisms when using the exoskeleton. This could result in pinching or more severe injuries.

⚠ **Lifting:** The exoskeleton does not increase the worker's strength. Do not use the exoskeleton to lift heavier weights than permitted.

❗ Only read the force value when you are straight - the mechanism will move during the activity and the gauge will not be accurate.

## 3.3 Engagement angle adjustment

The engagement angle is defined as the angle at which the exoskeleton support will be triggered. This angle can be modified using the offset knob. Refer to the exoskeleton overview section for the offset knob location. Rolling this knob clockwise increases the engagement angle (e.g. the support will be triggered later in the downward movement)(1). Rolling this knob counter-clockwise decreases the engagement angle (e.g. the support will be triggered earlier in the downward movement) (2). The engagement angle varies from A to C, corresponding to the earliest and latest engagement respectively.


(1)


(2)

Early engagement support is recommended for users who perform standing work tasks whereas late engagement support is suitable for workers performing kneeling tasks.

## 3.4 Activation / Deactivation

The on/off switch allows easy walking and sitting down. Refer to the exoskeleton overview section for the on/off button location.

(1) To deactivate the exoskeleton, press the button and slide it to your right. Release the button.

(2) To activate the exoskeleton, press the button and slide it to your left. Release the button.

(1) Deactivation

(2) Activation

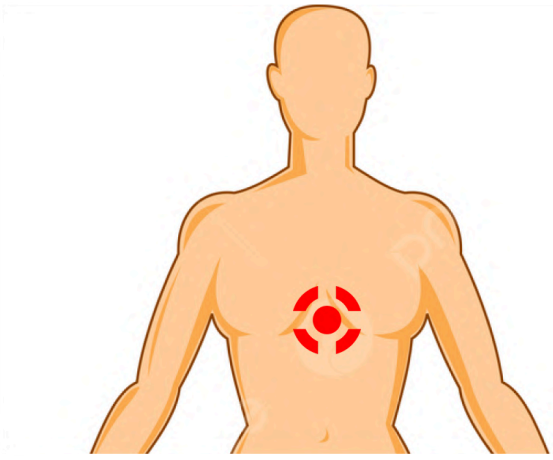
⚠ **On/off switch:** Always stand-up when activating or deactivating the mechanism. Deactivating the mechanism under load could cause loss of balance, resulting in serious injury or death.

❗ For an easy installation deactivate the exoskeleton before set-up step.

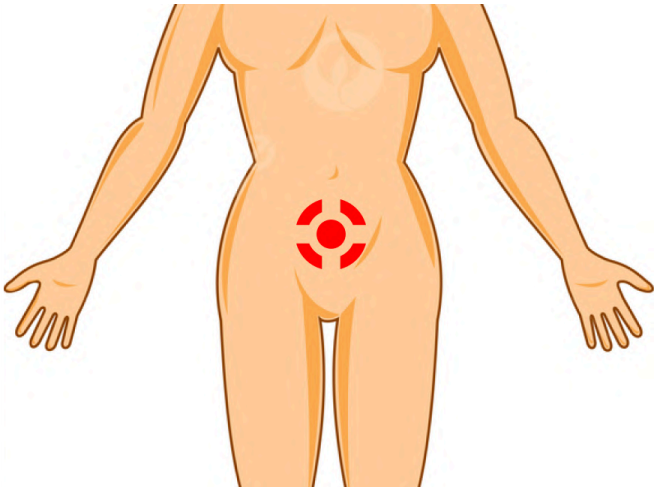
❗ For your comfort, disengage the mechanism before sitting down, walking more than 100 consecutive meters or going up and down stairs.

## 3.5 Harness adjustments

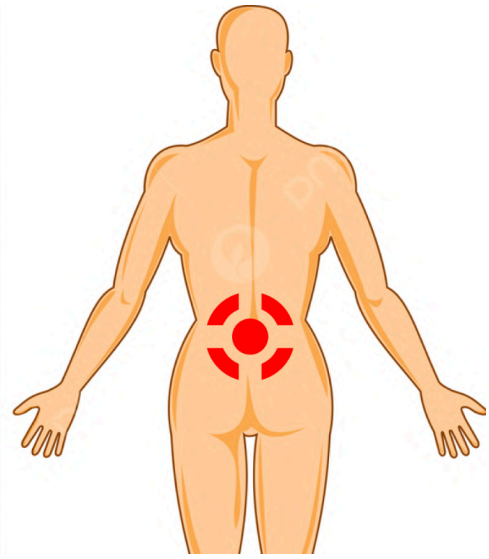
**Shoulder straps:** The shoulder straps adjust the height of the chest belt. Adjust the chest belt so it's below the pectorals.



**Waist straps:** The waist straps adjust the height of the waist belt. Adjust the waist belt so it's on the lower abdomen.



**Back strap:** The back strap adjusts the height of the lumbar plate and cushion. Adjust the strap so that the lumbar plate is positioned on the lower back. It should rest at the top of your buttocks.



**Leg straps:** The leg straps adjust the height of the thigh belts. Adjust the thigh belts so they are on the mid thighs.

**Buttock straps:** The buttock straps retain the lumbar plate from moving when working. Adjust the buttock straps so  they are slightly tight when bending.

⚠ **Adjustments:** The exoskeleton should be adjusted correctly and specifically for each user following this user manual instructions. Too tight or too loose adjustment could lead to malfunctions or injuries.

⚠ Ensure straps are not too tight before adjusting them. Too tight straps or belts could break or cause damage to the exoskeleton.

## 3.6 Exoskeleton set-up

Biolift exoskeleton set-up video is available at https://biolift.co/support/.

**Step 1**

Put on the exoskeleton by the shoulder straps, then lock the chest and waist belts.

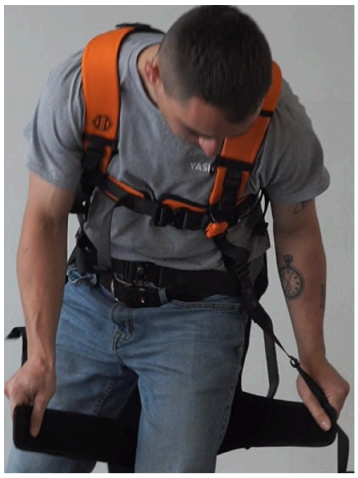


**Step 2**

Deactivate the exoskeleton by turning the switch off. See the on/off switch section of this manual.

**Step 3**

Tighten and overlap the velcro thigh parts of the harness so that the thigh is held firmly. Lock the thigh belt and adjust the associated strap.






**Step 4**

Adjust the height of the lumbar plate by adjusting the back strap. To raise the plate, pull on the floating strap. To lower the plate, press the cam buckle. The lumbar plate should be positioned above the buttocks, in the lower back, so as not to cause discomfort.

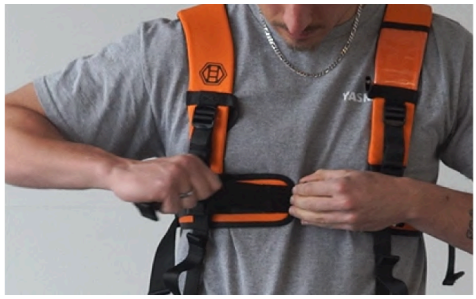

**Step 5**

Adjust leg straps, waist straps and shoulder straps to adjust the harness according to your body shape. Harness should be positioned as per indicated in the overview section of this manual.



**Step 6**

Adjust the chest straps so that the chest belt starts to overlap. Release or tighten the chest belt strap to your convenience. The chest should be well maintained but not too tight.


**Step 7**

Ensure the buttock straps are completely loose before proceeding. Tighten the straps so that when you're fully bent over, the buttock straps are slightly tight.

**Step 8**

Fold and stow strap surplus in the dedicated areas.

**Step 9**

Adjust force support and engagement angle at your convenience. Refer to previous sections to get instructions.


**Step 10**

Activate the exoskeleton by turning the switch on and enjoy the support that the device is providing.


⚠ **Adjustments:** The exoskeleton should be adjusted correctly and specifically for each user following this user manual instructions. Too tight or too loose adjustment could lead to malfunctions or injuries.

⚠ **Comfort and anomalies**: While using the Biolift exoskeleton, users must remain vigilant and constantly check their own comfort and any anomalies in the device. If any uncomfortable sensations (e.g. chaffing, pressure points) or signs of malfunction are experienced, use should be interrupted and the problem reported immediately.

⚠ **Direct skin contact:** The exoskeleton should not be in direct contact with Users skin. Skin irritation may occur with direct or in some cases indirect (over clothing) contact with skin. Do not continue to use the exoskeleton if skin irritation occurs without attempting remediation or addressing the source of the irritation.

For an easy installation deactivate the exoskeleton before set-up step.

## 3.7 Exoskeleton removal and folding

To remove the exoskeleton, position the on/off switch on the off position. Then, unlock the shoulder belt, the chest belt and waist belt. Finally, unlock the thigh belt and separate the velcros surfaces. The harness can now be removed.

The Biolift exoskeleton has a storage feature that allows the exoskeleton to be folded on itself. To set the exoskeleton in folding position, proceed to the following steps:

(1) Ensure that the on/off switch is switched off.
(2) Hold the exoskeleton by the handle and lower the exoskeleton. The leg bars should contact the floor and fold by themselves. Continue the movement facing the cover upward.
(3) Secure the position inserting the rear thigh straps into the associated hooks.
(4) In this position, the exoskeleton can be carried by the handle.

# 4 MAINTENANCE

The exoskeleton and its components are subject to wear and tear and therefore have to be considered as non-durable material. The integrity of the exoskeleton has to be checked before use and if necessary, the exoskeleton must be returned to the manufacturer for repair or disposal.

⚠ **Pinching:** Fingers, extremities or any other part of the body should not be near moving mechanisms when using the exoskeleton. This could result in pinching or more severe injuries.

⚠ **Hazardous parts:** Hazardous parts of the exoskeleton (e.g. sharp edges, rough surfaces, loose ends) can cause chaffing, cuts or more severe injuries. Those parts are defined in this User manual.

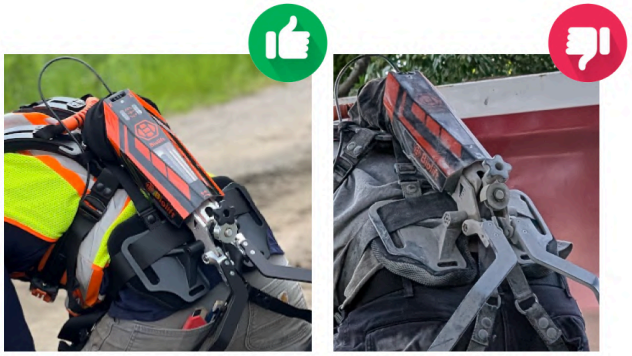
If damage or wear is noted that may compromise the function of the exoskeleton, contact your Biolift support for a repair or replacement

## 4.1 Daily inspection

Before every use, the user has to check his exoskeleton before using it and ensure that the exoskeleton is in good condition.

Inspect for excessive bending or other damages such as excessive wear or deterioration prior to use to ensure that they are in good working order. Bends in the components may affect system functionality. If the components are not in good working condition, the system should not be used and technical support should be contacted.

Exoskeleton should be cleaned before every use. Soil or dirt residues can interfere with the mechanism and affect exoskeleton functionality. See cleaning section for cleaning instructions.



*Examples of a clean (left) and soiled (right) exoskeletons*

⚠ Improper cleaning can affect exoskeleton functionality.

Fabric should not be excessively torn or worn and webbing straps shouldn't be twisted. All snaps should be securely engaged.  Velcro matching parts should be securely positioned and fastened.

*Example of correct (left) and incorrect (right) webbing positioning*

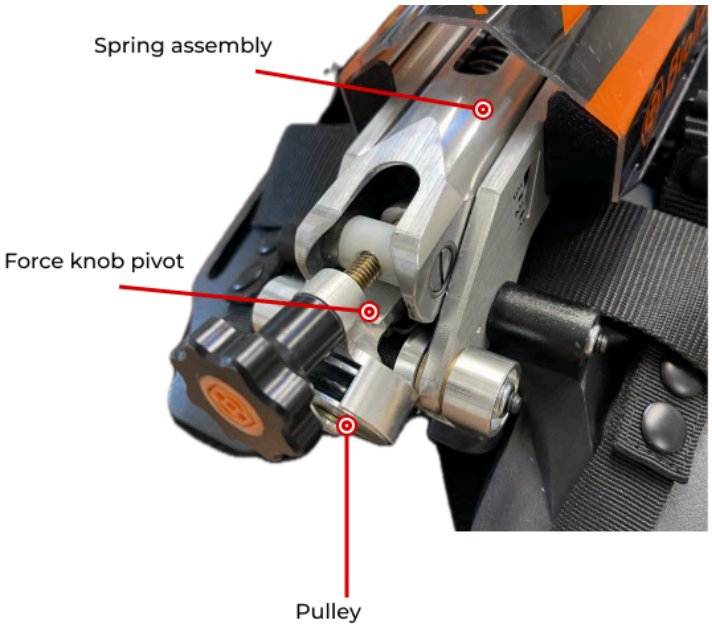
*Example of correct (left) and incorrect (right) positioning of snap buttons*

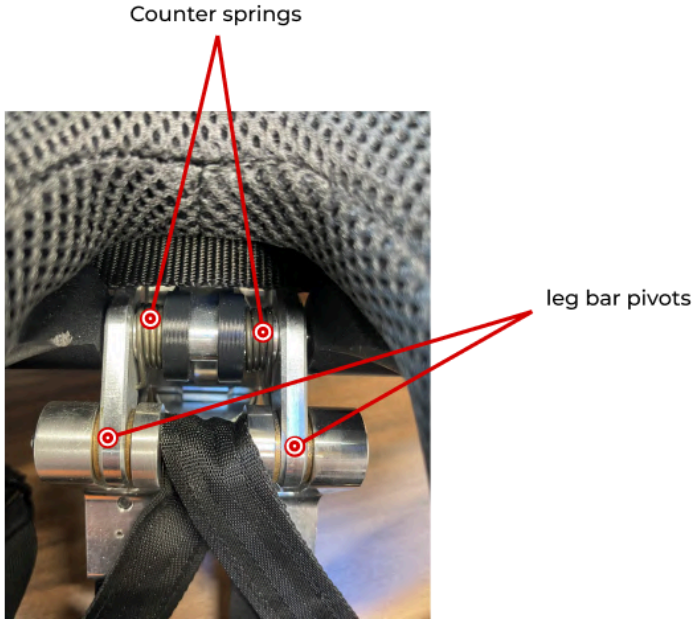
*Example of correct (left) and incorrect (right) button snappings*

⚠ **Comfort and anomalies:** While using the Biolift exoskeleton, users must remain vigilant and constantly check their own comfort and any anomalies in the device. If any uncomfortable sensations (e.g. chaffing, pressure points) or signs of malfunction are experienced, use should be interrupted and the problem reported immediately.

## 4.2 Lubrication

Check the action of moving parts to ensure smooth operation throughout the intended range of motion. For better access, users can fold the exoskeleton prior to proceeding to the lubrication.




There are the main moving parts to lubricate:

(1) Rotational motion of the force knob
(2) Rotational motion of the leg bars
(3) Spring assembly

If squealing noise is observed, the following areas can be lubricated:

(4) Counter springs
(5) Pulley

Those components can be lubricated with a product (e.g. Dri Slide or equivalent dry lubricant) specifically designed for compatibility with outside conditions. Make sure to spray the suggested amount of lubricant on the component, especially in hard to reach spaces. Properly spray in the lubricant for a few seconds afterwards and wipe off.
If the area where the lubricant is applied is dirty, clean the area prior to applying lubricant.

⚠ Do not spray lubricant on the harness - this could result in skin injuries.

⚠ Do not use silicone lubricants.

## 4.3 Repairs

Any repairs must be carried out by; (i) by an authorized service company, (ii) by Biolift directly or (ii) by the customer strictly acting under the instructions and authorization of Biolift;

No repair or disassembly should be performed without Biolift authorization except for harness cleaning that should be performed following the cleaning section of the User manual. If any authorized repair is performed on the exoskeleton, refer to the following table for the tightening torque of the mechanism screws.

| Screw size | Recommended torque |
|---|---|
| #6-32 | 10 in.lbs (1.13 N.m) |
| #8-32 | 20 in.lbs (2.26 N.m) |

⚠ Do not apply excessive torque on screws when repairing the exoskeleton. Do not use power tools.

# 5 STORAGE, TRANSPORTATION & DISPOSAL

It is recommended to use the provided carrying bag to store the exoskeleton. The exoskeleton has to be folded prior to being put into the bag.



Alternatively, the exoskeleton can be hung by the handle or stored on shelves.
Store in a cool, dry, clean place away from direct sunlight. Avoid areas with chemical vapors.

⚠ Do not store the exoskeleton on the floor.

⚠ Improper storage may cause exoskeleton damage or increase wear and tear. These conditions may void the warranty.

A handle is integrated to the exoskeleton and provides a great hold during transportation. The exoskeleton should always be carried by the handle - there is a severe risk of pinching during transportation if your hands are placed somewhere else on the mechanism.

⚠ **Pinching:** Fingers, extremities or any other part of the body should not be near moving mechanisms when using the exoskeleton. This could result in pinching or more severe injuries.

❗ The exoskeletons are supplied in their designated carrying bag. The bag is not designed to protect the exoskeleton from excessive external impacts and/or if additional tools or equipment are added to the bag.

The carrying bag has not been designed to protect the exoskeleton during shipping processes. If the exoskeleton has to be shipped, appropriate shipping box and materials should be used to ensure good protection of the device.

❗ If it is necessary to send the exoskeleton by post, it will be necessary to protect the device adequately to meet travel conditions.

**Disposal:** Materials contained in Biolift exoskeletons can be partially recycled. The materials must be correctly separated and sorted out before they can be recycled. Follow local guidelines and regulations for disposal of the components in trash and/or recycling. Alternatively, old exoskeletons can be returned to Biolift for disposal.

# 6 CLEANING

Biolift exoskeleton should be cleaned on a periodic basis, and as soon as the device is soiled. This can compromise the exoskeleton functionality but also user skin issues due to soil contamination or allergies. Prior to cleaning procedure, remove the harness from the exoskeleton mechanism following those steps:

**Step 1:** Remove the on/off switch assembly by sliding it up from the chest belt.

**Step 2:** Remove the thigh straps from their casing by passing them through the slit.

⚠ Improper cleaning can cause skin irritation, inflammation, and certain forms of eczema and/or infections.

⚠ Remove the harness before proceeding to cleaning.

⚠ Improper cleaning can affect exoskeleton functionality.

⚠ Carefully inspect each part of the exoskeleton to ensure that all visible dirt has been removed. If soiling is noted, repeat the cleaning process.

⚠ Dry, soiled fabric and components are more difficult to clean. Do not allow soiled fabric and components to dry prior to cleaning.

The instructions contained in this User manual may not be effective for removing all types of radioactive or chemical contamination such as oil, grease, or other types of chemicals that might come in contact with the exoskeleton.

## 6.1 Hand washing

**Step 1:** Submerge the harness into water and soak between 5 and 20 minutes. Water temperature should be cold or warm (max 40°C or 105°F).

**Step 2:** Add laundry detergent to the water. Laundry detergent should be compatible with nylon and soft fabrics. Do not bleach.

**Step 3:** Use a soft bristle brush and rub the harness fabric to remove all visible soil. If the water becomes too dirty, repeat steps 1 and 2 until the water is not saturated.

**Step 4:** Empty the contaminated water and rinse the harness with clean tap water. Do not wring.

**Step 5:** Dry the harness flat or hung. Ensure the harness is fully dried before proceeding to the next step.

**Step 6:** Re-attach the harness on the mechanism. Do not wear a wet harness or/and cushion pads.

⚠ Personal Protective Equipment (PPE) should be worn when cleaning the exoskeleton. PPE includes goggles and gloves.

⚠ Metal brushes or scouring pads must not be used during manual cleaning procedures. These materials will damage the surface of exoskeleton material. Water jet and/or soft material should be used.

⚠ Cleaning agents must be completely rinsed from the exoskeleton surfaces to prevent accumulation of detergent residue.

❗ To accelerate the drying process or to remove bulky soil, compressed air can be used.

❗ A water jet can be used to clean the harness. Respect reasonable distance from the fabric in order to avoid any damage.

## 6.2 Machine washing

**Step 1:** Put the harness in the machine and add laundry detergent. Do not add any other clothes or items that could damage the exoskeleton or be damaged. Do not bleach.

**Step 2:** Choose the corresponding cycle with water temperature cold or warm (max 40°C or 105°F).

**Step 3:** At the end of the washing cycle ensure all visible soil has been removed. Do not wring.

**Step 4:** Tumble dry on a normal cycle at low heat. Do not iron or steam. Ensure the harness is fully dried before proceeding to the next step.

**Step 5:** Re-attach the harness on the mechanism. Do not wear a wet harness or/and cushion pads.

⚠ Do not overheat the harness during the washing process.

# 7 WARRANTY

Biolift offers a Limited Warranty. Refer to your purchase terms and conditions for warranty information. If you do not have access to the warranty information, please contact Biolift.