



INSTRUCTION MANUAL HAPO FRONT

V09.25

HAPO FRONT

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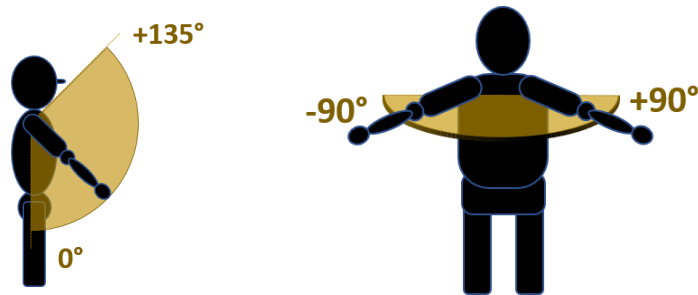
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I. General Introduction

Le HAPO FRONT is a lightweight, intuitive-to-use physical assistance device designed to provide relief to the upper limbs, shoulders and elbows; It's particularly suitable for work requiring arm assistance at height for a vertical range of 0° to 135 °and a horizontal range of -90° to +90° (See figure below).



This document is the instruction manual for the HAPO FRONT. It contains all the information to be observed from the reception of the HAPO FRONT until its end of life. Please read the entire manual before installing the HAPO FRONT for the first time. This manual should be kept nearby for the entire life of the product.

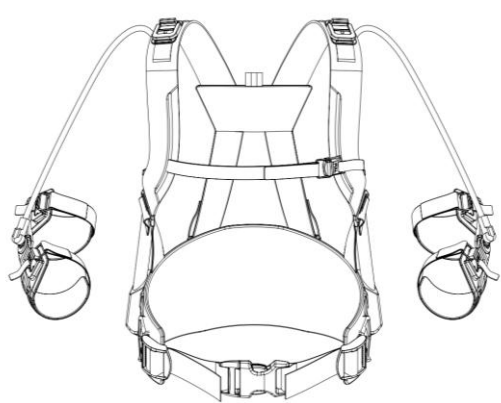


Figure 1

I.1 History of changes

Date	Review	Description
08/06/2021	A	Creation
10/01/2022	B	Modification telescopic tube
28/03/2023	C	Hapo ms becomes Hapo FRONT
16/10/2023	D – V10.23	Template update
16/01/2025	V.01.25	Spare parts, warranty period and general updates
29/04/2025	V.04.25	Recycling version
12/06/2025	V.06.2025	Update of textile cleaning and care part
23/09/2025	V.09.25	Update of springs kit names

HAPO FRONT

Table 1 History of changes

I.2 Abbreviations and definitions

	Definition
PPE	Personal protective equipment
Liability	No external energy storage or supply

Table 2 Abbreviations and definitions

I.3 Identification

The HAPO FRONT traceability label is glued to the belt frame. To access it, it is necessary to remove the textile part of the belt.

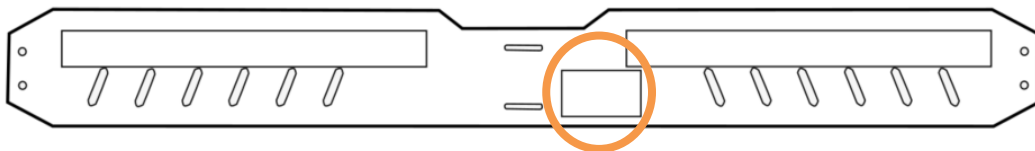


Figure 2



Figure 3

N°	Signification
1	Name of the company
2	Company's logo
3	Company Address
4	Name of the device
5	Type of product
6	Serial Number
7	Year of Manufacture
8	HAPO FRONT Logo
9	Ce marking

Table 3 Label identification

HAPO FRONT

I.4 Manufacturer

- ErgoSanté Technologie
- 28 ZA de Labahou 30140 Anduze – France
- +33 8 05 69 06 91 (coût d'un appel local)
- contact@ergosante.fr



ErgoSanté is certified ISO 9001:2015 - Quality management systems

or

- Hapo USA Corporation
- PO Box 31, Danville
KY 40423 – United States
- contact@hapo.us



I.5 Pictogram Convention

	General danger
	General Obligation
	General prohibition
	Cardiac simulators and implanted defibrillators prohibited

Table 4 Reminder of the meaning of the pictograms

II. General Description

II.1 Description of the product

The upper limb support system consists of the following components.

- **Shoulder straps (8):** They allow the HAPO FRONT to be placed on the shoulders. They consist of two adjustable straps (6/7) that meet on a textile part (8). At the end of this textile part, two loops accommodate the belt straps (7)
- **Belt:** It allows the force of the springs to be transferred to the hips. It consists of a thermoformed frame (2) topped by a textile part (1). Straps connect to the shoulder straps (6/7). A flap (3) is present on the back of the belt.

HAPO FRONT

- **Interface (11):** It provides support for the arms. It consists of two flexible frames (one front and one back). A ball and socket joint between the spring and the interface allows the elbow to remain free
Removable textile pads are positioned on the frames to ensure the comfort of the user's arm. In addition, straps are used to tighten the frame on the user's arms.
- **Spring rods (10):** They recover and return some of the weight from the user's arms. The rods are connected at two points, one end is attached to the belt and the other end to the interface. The springs can be adjusted to different positions: in height by means of the telescopic tube (5) and around the hips by means of the positioning notches on the belt frame (2).
- Two types of springs are available:

Spring stiffener STANDARD	Assistance up to 4 Kg
Spring stiffener HARD	Assistance up to 6 Kg

Table 5: Spring support

II.2 Components

➤ General Scheme



Figure 4

N°	Name of the components
1	Textile Belt
2	Belt frame
3	Flap
4	Trochanter support
5	Telescopic Tube
6	Adjustable back strap
7	Adjustable belt strap
8	Textile braces
9	Chest strap
10	Spring rod
11	Interfaces
12	Ball joint and safety cable

Table 6 Components of the exoskeleton

HAPO FRONT

➤ Scheme of the belt



Figure 5

N°	Name of the component
1	Textile Belt
2	Belt frame
3	Flap
4	Trochanter support
5	Telescopic tube
13	Positioning puller
14	Tube Button

Table 7 Components of the belt

II.3 Technical specifications

Dimensions	
Length	41cm
Width	26cm
Height	105cm
Weight	
1,3 Kg	
Noise Emissions	
O dB	

Table 8 Dimensions of the HAPO FRONT

Duration of use	HAPO wearing time FRONT
5 years	Maximum 8 hours / day

Table 9 Duration of use of the HAPO FRONT

* This useful life is based on the product being used in accordance with its intended purpose and maintenance instructions (replacement of worn parts, etc.).

III. Compliance and safety

III.1 Type of staff

User	Personnel using the exoskeleton
Specialized staff	Staff with in-depth knowledge of certain tasks with the product

HAPO FRONT

Table 10 Type of staff



It is important to respect the **type of staff** for the different tasks, otherwise it may lead to hazards.

III.2 Proper use

The HAPO FRONT is intended for use by **one adult user only**, between the ages of 18 and 64. The user must have been instructed by specialist personnel before being allowed to use the product. The product should only be used as a working tool for professional purposes.

It is intended for contact with intact skin only. The use of the HAPO FRONT does not exempt the user from respecting the NF X35-109 standard, concerning the manual handling of loads.

➤ Operating principle

Dual interfaces located on the user's forearms and arms allow both elbow and shoulder forces to be recovered. These forces are then transmitted to the springs via a ball-and-socket joint, which also ensures the correct positioning of the interfaces and limits the amount of space required. The springs operate in flexion and have a progressive force profile. They are designed so that the optimum support zone is at mid-height. They are mounted on a height adjustment system and slide around the hips to fit a wide range of body shapes. The sliding adjustment system is mounted on a semi-rigid belt that ensures the correct transfer of forces to the hips (vertical and lateral forces) and to the pelvic floor (forward forces) via a comfortable interface.

➤ Use and storage environment



It is recommended that the exoskeleton be used in an open and uncluttered area to avoid shocks that could damage the product and to limit the risk of snags.

Storage temperature range	-10°C to 50°C – Dry environment
Operating temperature range	-10°C to 40°C
Not allows	Explosive environment, chemical splashes or exposure to abrasive elements

Table 41 Normal environmental conditions of use

➤ Covered Morphologies

N°	Name	Covered area (in cm)
1	Shoulder - Hip length	39 – 57
2	Hip circumference	66 – 150
3	Arm Circumference	20 – 40
4	Forearm circumference	18 – 36

Table 52 Morphologies covered by the HAPO FRONT

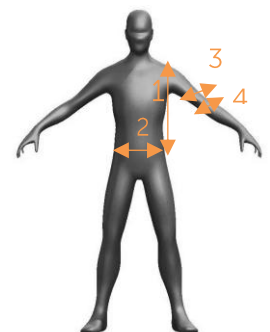


Figure 6

HAPO FRONT

III.3 Use cases

- Maintain postures and manipulations with or without load
- Arm assistance at a height of 0° to 135° and in a horizontal range of 180° to reduce drudgery and improve working conditions.
- Repetitive handling of objects



Figure 7



Figure 8



Figure 9



Figure 10

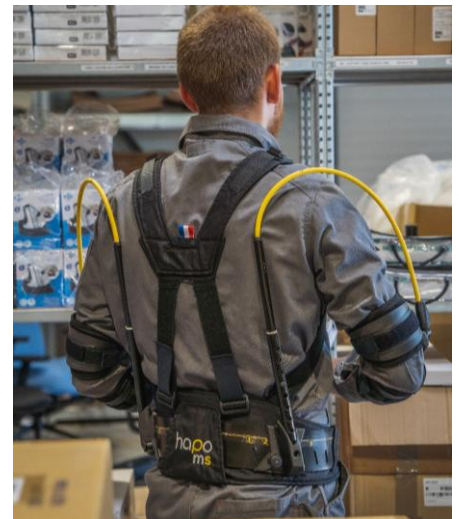


Figure 11

HAPO FRONT

III.4 Precautions for use

- Do not use the HAPO FRONT without ensuring that all attachments are securely closed and properly fitted into their designated areas.
- Remove the exoskeleton if you notice skin irritations/itchiness.
- It is prohibited to manually bend the arms of the HAPO FRONT.
- Do not use the exoskeleton if the springs are damaged (Refer to V.5 Page 47).
- It is recommended to inspect the exoskeleton after an impact (Refer to V.5 Page 47).
- Do not hold the HAPO FRONT near a source of heat.
- Do not use the HAPO FRONT directly on the skin.
- Do not suspend yourself with the HAPO FRONT.
- Clean the HAPO FRONT from any foreign matter (liquid or solid) after use.
- The HAPO FRONT should only be used by trained individuals.
- The assistance level of the HAPO FRONT should be the same for both arms.
- It is recommended to use the HAPO FRONT in a clear and uncluttered area to avoid any risk of entanglement with elements in the work environment.
- It is recommended to remove the HAPO FRONT if the user experiences any pain related to the product.
- It is recommended to transport the HAPO FRONT in a suitable protective case.
- It is prohibited to use the HAPO FRONT in situations that pose a risk of falling (e.g., climbing a ladder).
- It is prohibited to use the HAPO FRONT while handling sharp and cutting tools without prior approval from a safety officer.
- It is prohibited to make modifications to the HAPO FRONT without written authorization from the manufacturer.

Furthermore:

- The use of the HAPO FRONT does not exempt the wearer from using personal protective equipment (PPE).
- The use of the HAPO FRONT must comply with the prevailing standards in the country.



Any use not listed in the instructions as intended use is not permitted.

III.5 Contraindications

Do not use the product if you have a pacemaker, pacemakers or implanted defibrillators. Users wearing these devices should keep sufficient distance from the magnets. The recommended distance is 80-100mm. It is necessary to warn users before they approach the magnets.



Do not use HAPO FRONT if you are pregnant.



If you have back, shoulder, arm and/or elbow conditions, medical advice is required before using the HAPO FRONT.

III.6 Residual risks



HAPO FRONT

Residual risks remain despite the fact that safety has been integrated into the design of the product and additional preventive measures have been taken.

- Using the HAPO FRONT with a pacemaker.
- Incorrect engagement of magnetic fasteners (Fidlocks).
 - - Risk of catching or hitting fixed or moving objects.
- Risk of spring breakage from misuse or impact
- Alteration of HAPO FRONT during storage.
- Wrong settings of the HAPO FRONT.
- Danger due to obstruction in case of evacuation.

III.7 Incidents

➤ Breakage of one or more springs

- Remove the product and do not use it again
- Contact your branch or distributor

➤ Environmental Shocks

- Remove the product.
- Case for springs: Check that the color of the spring cover is uniform. If you see a different color it means that the spring is weakened. In this case, the HAPO FRONT should no longer be used. The spring part number KITFRONT008 or KITFRONT009 must be replaced.
- Cases for plastic parts: Check that there are no visible cracks in these parts. If there are, do not use the HAPO FRONT again until you contact your distributor or agency.

If in doubt about any of the parts, contact your branch or distributor.



During all risk events, remove the HAPO FRONT.

IV. Operating procedure

IV.1 Unpacking

- Check the external appearance of the box before the opening. If damage is found before opening, take a photo of the package. Open the box, check that the delivery is complete:

Quantity	Designation
1	HAPO FRONT
1	Synthetic user manual
1	Hanger

Table 13 Verification delivery

- If damage is confirmed on opening, contact your branch or distributor.
- Activate your guarantee by going to the following link <https://ergosante.fr/declaration-de-garantie/>

IV.2 Setting up

➤ Assembly and adjustment steps before fitting:

HAPO FRONT

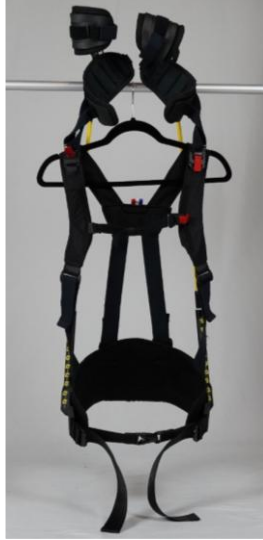


Figure 12

Step 1 : Open all the fasteners below

- Belt



Figure 13



Figure 14



Figure 15

- Chest strap



Figure 16

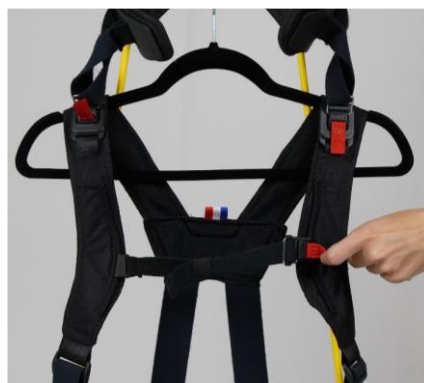


Figure 17

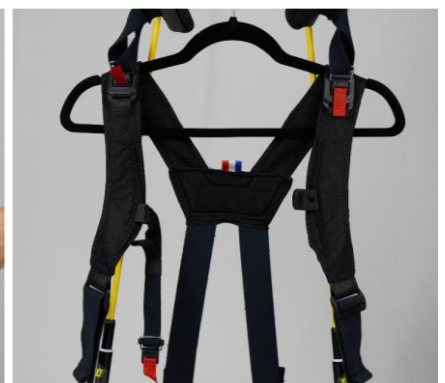


Figure 18

- Interfaces

HAPO FRONT



Figure 19



Figure 20



Figure 21

➤ Fitting the belt

STEP 1: Put on the HAPO FRONT from above by putting on the shoulder straps like a backpack.



Figure 22

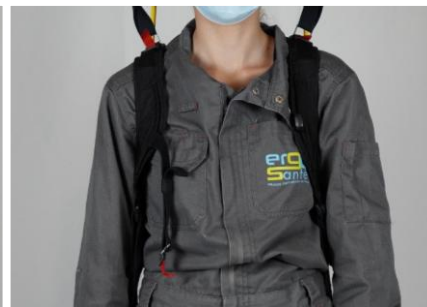


Figure 23



Be careful not to let the springs pass in front of you.

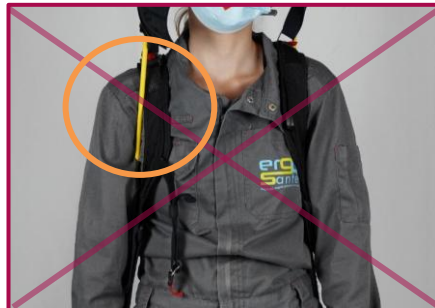


Figure 24



Be careful not to twist the straps



Figure 25

HAPO FRONT

STEP 2: Position the belt at hip level, bringing the back of the belt in contact with your back.



Figure 26



Figure 27



Figure 28

STEP 3: Loosen the strap if necessary and clip on the belt.



Figure 29



Figure 30



Figure 31



Be careful not to twist the waist strap.



Figure 32

STEP 4: Tighten the strap by pulling on both sides of the belt. It is recommended to position the ventral attachment in the center.

HAPO FRONT



Figure 33



Figure 34



Be careful not to position the belt too high.



Figure 35

STEP 5: Stow the straps on each side in the storage elastics.

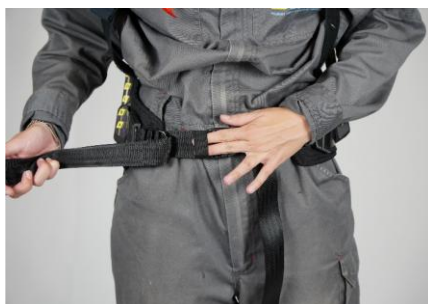


Figure 36

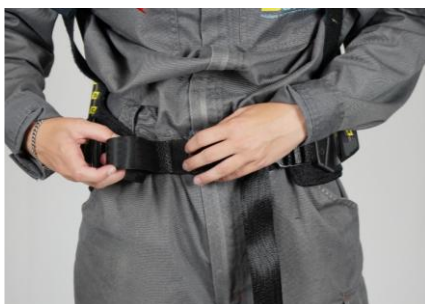


Figure 37



Figure 38

HAPO FRONT

➤ Setting up the interfaces

STEP 1: Detach the interfaces from the straps.



Figure 39



Figure 40



Be careful not to let go of the red strap

STEP 2: Passing the arm over the interface, the elbow must be located between the two frames so as to allow freedom of movement. The ball joint must be positioned outwards.



Figure 41



Figure 42

STEP 3: Attach the arm strap to the magnetic clamp.



Be careful not to release the strap until you hear the "click".



Figure 43

HAPO FRONT

STEP 4: Attach the forearm strap to the magnetic fastener. Ensure that it is securely attached.



Figure 44



Figure 45

STEP 5: Tighten the forearm strap until the interface is snug against the forearm. Once the correct setting has been found, attach the self-gripping strap to itself.



Figure 46



Figure 47



Figure 48



Be careful not to overtighten so as not to cut off the blood flow. (This is only necessary for the first installation)

STEP 6: Tighten the arm strap until the interface is snug against the arm. Once the correct setting has been found, attach the self-gripping strap to itself.



Figure 49



Figure 50



Be careful not to overtighten so as not to cut off the blood flow.

HAPO FRONT

STEP 7: Repeat for the second interface.



Figure 51



Figure 52



Be careful not to twist the straps of the interfaces.



Figure 53

➤ Installation of the ramps

STEP 1: Loosen the chest strap if necessary and hang it on its base.



Figure 54



Figure 55



Be careful not to twist the chest strap.



Figure 56

HAPO FRONT

STEP 2: Adjust the length of the chest strap to your body. Make sure that the strap is not too tight, so that you can put your hand flat under the strap.



Figure 57



Figure 58

STEP 3: Adjust the height of the chest strap by sliding the piping up or down. Ensure that the strap is comfortably adjusted by positioning it over the pectoral/chest area.



Figure 59



Figure 60

STEP 4: Stow the excess webbing



Figure 61

HAPO FRONT

STEP 5: Detach the hook and loop fasteners from the belt. Then adjust the length, so that you can easily put your hand under the strap.



Figure 62



Figure 63

STEP 6: Reattach the hook and loop fasteners to itself.



Figure 64

NOTE: For the small bodies, the straps may be too long. It is advisable to attach them by folding them over so that the loop brakes the strap.



Figure 65



Figure 66



Figure 67

HAPO FRONT

IV.3 Adjustments



The following adjustments should be made before the first use.

➤ Shoulder strap adjustments

STEP 1: Detach the hook and loop fasteners from the velvet straps on the back



Figure 68



Figure 69

STEP 2: Position the back straps so that you have the base to attach the interfaces at the shoulders.



Be careful not to position the straps too close to the armpits (discomfort, rubbing)

STEP 3: Attach the hook and loop fasteners to the velour strap.



Figure 71



Figure 72

HAPO FRONT

➤ Choice of spring rate

The HAPO FRONT has been designed to allow the user to adapt the spring rate to the task at hand. Thus, you can choose between two types of assistance:

STANDARD springs	Assistance until 4 kg
HARD springs	Assistance until 6 kg

The springs chosen should not force the user to lower the arms.

➤ Dismantling the springs

To carry out the following steps, it is not necessary to remove the belt rods.

STEP 1: Press the button on the telescopic tube



Figure 73



Figure 74



Figure 75

STEP 2: Turn the telescopic tube and pull



Figure 76



Figure 77

STEP 3: Pull the telescopic tube until the end is free.



Figure 78

HAPO FRONT

STEP 4: [Lifting the pivot pin.](#)



Figure 79



Figure 80

STEP 5: [Remove the pivot pin to disassemble the interface and the spring.](#)



Figure 81



Figure 82

STEP 6: [Remove the interface.](#)



Figure 83

HAPO FRONT

➤ Reassembly of the springs



Pay attention to the orientation and side of the spring.



Figure 84



Figure 85

STEP 1: Press the button on the telescopic tube



Figure 86



Figure 87

STEP 2: Insert the telescopic tube into the tube



Figure 88

STEP 3: Adjust the telescopic tube to the correct position.



Figure 89



Be sure to check that the button is engaged.

HAPO FRONT



Figure 90

ETAPE 4: Attach the safety cord.



Figure 91



Figure 92

ETAPE 5: Assemble the ball joint.



Figure 93

ETAPE 6: Insert and lock the pivot pin.



Figure 94



Figure 95

➤ Spring position

In order to adapt to different body shapes, it is possible to change the position of the springs on the belt.

HAPO FRONT

STEP 1: Pull the positioning pull tab.



Figure 96



Figure 97

STEP 2: Slide the trochanter support along the belt to the desired position, while holding the positioning puller. Position the trochanter support to alleviate any poor support of the telescopic tube or springs on the back or shoulder.



Figure 98



Figure 99

STEP 3: Loosen the positioning pull tab and ensure that the workpiece does not move.



Figure 100



Figure 101

STEP 4: Do the same for the opposite spring.

HAPO FRONT

➤ Spring Height

For an adequate position of the springs adjustment, we recommend to put them on the side of the shoulder :



Figure 102

STEP 1: Press the button on the telescopic tube



Figure 104



Figure 105

STEP 2: Slide the tube to the desired position and release the telescopic button. Make sure that it is locked in place and that the telescopic tube will not move.



Figure 106



Figure 107

HAPO FRONT

STEP 3: Do the same for the second spring by positioning on the same letter.



Figure 108



Figure 109

IV.4 Removal



In this step, the interfaces should be removed first.

➤ Remove interfaces

STEP 1: Undo the magnetic forearm attachment by pulling on the red strap.



Figure 110



Figure 111

STEP 2 : Undo the magnetic forearm attachment by pulling on the red strap.

HAPO FRONT



Figure 112



Figure 113



Be careful to hold the red strap when transferring to the shoulder.

STEP 3: Engage the interface's magnetic clamp on the shoulder cradle.



Figure 114



Figure 115



Be sure to hear the click before releasing the strap

STEP 4: Repeat the operation for the second interface.



Figure 116

➤ Remove the shoulder straps and belt

STEP 1: Undo the chest strap by pulling on the red strap.

HAPO FRONT



Figure 117



Figure 118

STEP 2: Undo the clip on the waist belt.



Figure 119



Figure 120

STEP 3: Remove the arms from the straps one after the other



Figure 121



Figure 122

ETAPE 4: Place the exoskeleton on its hanger and store it in a suitable place (see IV.6 Storage).



Figure 123

IV.5 Interchangeability of HAPO UP and HAPO FRONT

The belt and straps of HAPO UP and HAPO FRONT are compatible: the UP module and FRONT module are interchangeable. Refer to the installation video of HAPO UP to learn the procedure.

HAPO FRONT

IV.6 Shipping

These instructions ensure that transport, handling and storage operations are carried out safely, indicating the mass and the different elements. The HAPO FRONT must be transported in the exoskeleton shipping carton (26x26x100 cm). The mass of a HAPO FRONT in a box is +/- 3,7 Kg. A Transport bag is available as an accessory.

IV.7 Storage

A hanger is provided for storing the HAPO FRONT. Storage should be indoors and dry. Do not leave the product in a damp place with wide temperature variations.



Improper storage could damage the spring rods, leading to premature failure. Improper storage could weaken the non-textile parts, leading to wear and tear.

V. Maintenance

V.1 Cleaning and maintenance

The textile parts of the HAPO FRONT are hand and machine washable. It is necessary to follow the disassembly method for cleaning (see V.2 page 31). **Only the textile parts** can withstand machine washing. The warranty excludes any deterioration of the HAPO FRONT due to misuse.

Machine washable at 140°F, low spin (600 rpm)
Hand washing allowed
Do not use bleaching agent
Do not iron
Cleaning agent with solvent prohibited
Tumble dry at 40°C

Table 14: Cleaning and maintenance

HAPO FRONT

V.2 Disassembly before cleaning

In order to easily dismantle your HAPO FRONT, it is recommended to be on a large, flat, clear surface.



Figure 124

➤ Remove the textile pads

STEP 1 : Pull the textile pads from the interface to release them from the hook and loop fastener.



Figure 125



Figure 126



Figure 127

STEP 2: Check that there are 4 textile pads.



Figure 128

HAPO FRONT

➤ Remove straps from interfaces

STEP 1: Loosen the hook and loop fastener to remove the magnetic fastener.



Figure 129



Figure 130

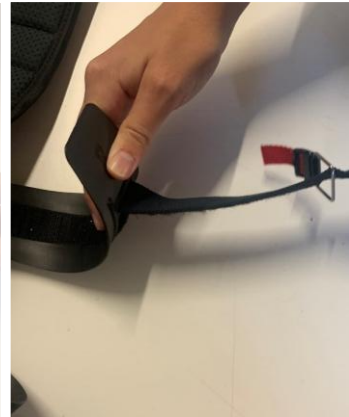


Figure 131

STEP 2: Hang the self-gripping clip on its base.



Figure 132

STEP 3: Pull on the elastic velvet strap until it is completely removed.



Figure 133



Figure 134



Figure 135

STEP 4: Repeat these operations for the other 3 interfaces.

HAPO FRONT

- Remove the belt and shoulder straps from the ABS plate.

STEP 1: Undo the magnetic fasteners at the shoulders.



Figure 136

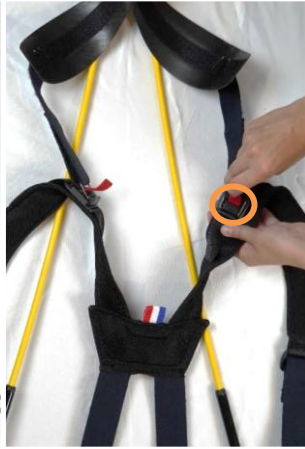


Figure 137

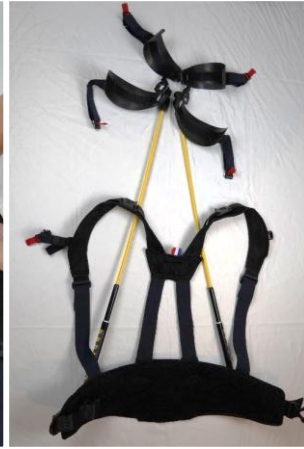


Figure 138

STEP 2: Open the flap.



Figure 139



Figure 140



Figure 141

STEP 3: Loosen the self-gripping straps in the center of the frame.



Figure 142

STEP 4 : Remove the frame by pulling on one side of the textile belt.

HAPO FRONT



Figure 143



Figure 144

➤ Remove the shoulder straps from the belt

The shoulder straps and waistband can be detached if you only want to wash one of the two parts.

STEP 1: Undo the hook and loop fasteners of the strap from the shoulder straps.

STEP 2: Remove the strap from the loop. It is recommended to hang the hook and loop fastener on itself



Figure 148



Figure 149



Figure 150

STEP 3: Repeat the previous steps for the straps on the belt.



Figure 151



Figure 152



Figure 153

➤ Remove the waist strap

HAPO FRONT

STEP 1: Pass the waist strap through the loop.

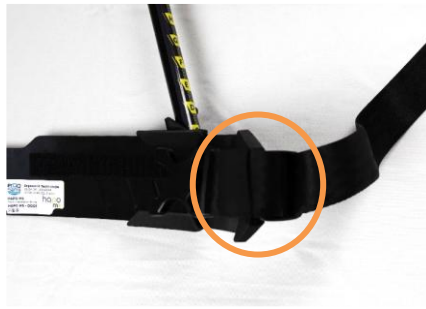


Figure 154



Figure 155

STEP 2: Remove the strap.



Figure 156



Figure 157

HAPO FRONT

➤ Piping

The magnetic clip can be removed from the piping.

STEP 1: Push the plastic part to the top of the piping.



Figure 158



Figure 159

STEP 2: Remove and store it so that it does not get lost.



Figure 160

V.3 Reassembly after cleaning

➤ Replace the straps on the interfaces

STEP 1: Insert the elastic velvet strap into the slot.



Figure 161



Figure 162

HAPO FRONT

STEP 2: Pull until the end.



Figure 163

STEP 3: Pass the elastic strap through the loop of the magnetic clamp.



Figure 164

STEP 4: Repeat these operations for the other 3 interfaces.

HAPO FRONT

- Refit the textile pads on the interfaces

STEP 1: Position the front textile pad at the edge of the front frame. Let the fabric hang slightly over the edge (about 1cm).



Figure 165



Figure 166

STEP 2: Press the textile pad into the hook and loop fastener.



Figure 167

STEP 3: Position the rear textile pad at the edge of the rear frame. Let the fabric hang slightly over the edge (about 1cm).



Figure 168



Figure 169

HAPO FRONT

STEP 4: Press the textile pad into the hook and loop fastener



Figure 170



Figure 171

STEP 5: Repeat the process for the second pair of textile pads.



Figure 172

➤ Fitting the shoulder straps to the belt

STEP 1: Pass the elastic velvet strap of the shoulder straps through the belt loop.



Figure 173



Figure 174



Figure 175



Pay attention to the orientation of the strap. The lighter side is the one in contact with the user.

STEP 2: Hang the hook and loop fastener on the velvet of the strap.

HAPO FRONT



Figure 176



Figure 187

STEP 3: Repeat the process for the other shoulder strap.



Figure 178

STEP 4: Pass the elastic velvet strap of the belt through the loop on the shoulder straps.



Figure 179



Figure 180



Figure 181



Pay attention to the orientation of the strap.

STEP 5: Hang the hook and loop fastener on the velvet of the strap.

HAPO FRONT



Figure 182



Figure 183



Figure 184

STEP 6: Repeat the process for the other belt strap.



Figure 185

➤ Reassembly of the piping

STEP 1: Insert the open end of the magnetic clip at the end where the textile is thinner.



Figure 186



Figure 187

HAPO FRONT

STEP 2: Slide the ends of the chest strap to the desired position.



Figure 188

➤ Replace the frame on the textile belt

STEP 1: Pass the self-gripping straps through the slots.

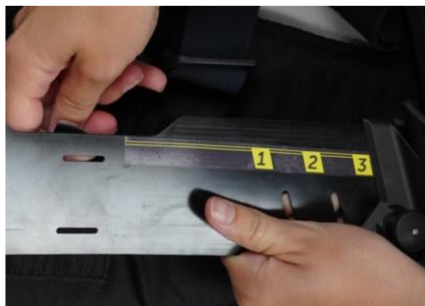


Figure 189

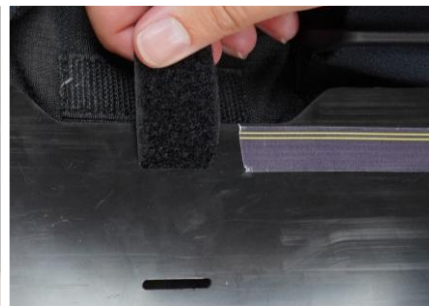


Figure 190



Pay attention to the orientation of the frame, the opening must be upwards.

STEP 2: Hang the straps together.



Figure 191



Figure 192

HAPO FRONT

STEP 3: Turn the frame over and position the hook and loop fasteners correctly. Press along the belt so that the fasteners are securely attached to each other.



Figure 193



Figure 194

STEP 4: Close the flap by hooking the hook and loop fasteners together.

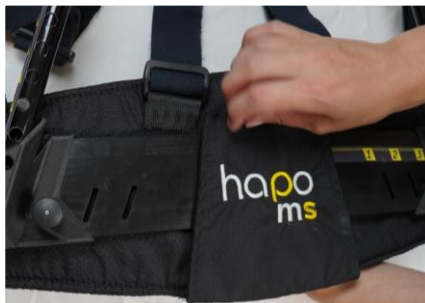


Figure 195



Figure 196

STEP 5: Attach the shoulder straps to the interfaces using the magnetic clips.



Figure 197



Figure 198



Figure 199

STEP 6: Pass the strap through the loop, making sure that the curved part of the clip is facing outwards.



Figure 200



Figure 201

HAPO FRONT

STEP 7: Pass the strap through the second slot of the loop.



Figure 202



Figure 203

V.4 Cleaning of plastic parts



The plastic parts can be cleaned with a little water and pH neutral soap. However, it is important to quickly wipe off the wet areas of the product.

Be careful never to let water dry on the plastic parts of the exoskeleton.

➤ Belt and spring disassembly

STEP 1: Pull the positioning pull tab.



Figure 204



Figure 205

STEP 2: Slide the trochanter support to the center of the frame.

HAPO FRONT



Figure 206



Figure 207

STEP 3: Remove the trochanter support at the cleft.



Figure 208

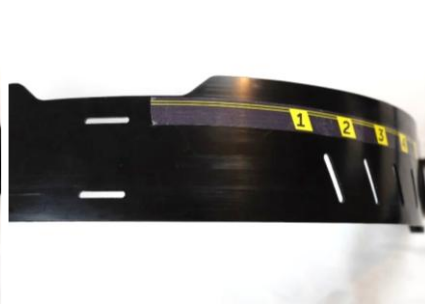


Figure 209

➤ Belt and spring reassembly

STEP 1: Pull the positioning pull tab



Figure 210

STEP 2: Position the trochanter support in the center of the frame at the level of the cleft



Figure 211

HAPO FRONT

STEP 3: Slide the trochanter support to the correct setting and ensure that it is locked in place



Figure 212



Be careful not to reverse the direction of the trochanter supports, the springs should be slightly inclined towards the back.



Figure 213

V.5 General Maintenance

➤ Daily inspections

The daily inspection aims to check the condition of the product.

- The inspection can be carried out by the user or by specialized personnel.
- Magnetic fasteners (Fidlock): Magnetic fasteners must be clean and must not have any metal waste on their surface.
- Belly clip: check the visual condition and the correct engagement of the belly closure
- Textile elements: Textiles must be free of tears, excessive fraying that may affect the integrity of the product.
- Joints: Check the visual condition and function of the joints of the interfaces (10) and the ball-and-socket unit between the spring (10) and the interface (11).
- Spring rods: Before each use, perform a visual check of the springs. Three layers of protective covers are available to assess the condition: Black woven sheath - Yellow/blue sheath - Red sheath

STANDARD coil springs	Woven sheath black - yellow - red
HARD coil springs	Woven sheath black - blue - red

Table15

HAPO FRONT



If you see the red sheath, stop using the HAPO FRONT immediately and replace the spring assembly. Reference: KITFRONT008, or KITFRONT009.

➤ General maintenance plan (1 year)

It is possible that the product may be subjected to heavy stress. In this case, reduce the maintenance intervals according to the expected stresses.

The manufacturer strongly recommends checking the function and wear of the product at least once a year.

Checks of screw elements:

- - Check the tightening torque with a torque spanner, depending on the size of the bolts:
 - M4 = 0.6 Nm
 - M5 = 0.6 Nm
- The use of medium thread locker (ref: LOCTITE® 243) is mandatory for belt bolts that have been removed. The arrow indicates where the thread locker should be applied.

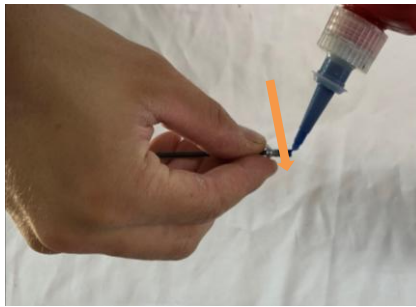


Figure 214

Checking the ball joint and safety cord

STEP 1: Lift the pivot pin retainer.



Figure 215

STEP 2: Disassemble the ball joint and clean it with a damp cloth if necessary.



Figure 216

HAPO FRONT

STEP 3: Check that the safety cord is securely attached. Check the tightening of the safety screw with a torque spanner to a torque of 0.6N.m.

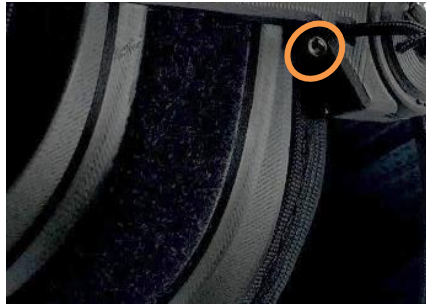


Figure 218



Figure 219

STEP 4: Check the attachment by applying a 3kg pull on the interface safety cord. The cord must not come loose.



Figure 220

STEP 5: Reassemble the safety cord and assembly ball joint. Close the pivot pin.



Figure 221



Figure 222

Verification of morphological adjustment mechanism

- Telescopic tubes
 - Carry out the operation on the removed product.

STEP 1: Press the button on the telescopic tube



Figure 223

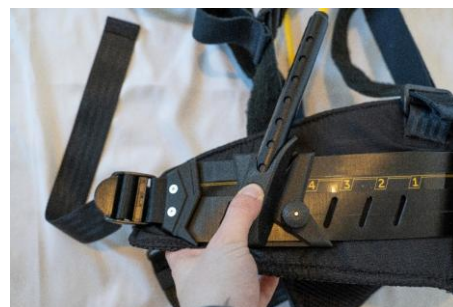


Figure 224

HAPO FRONT

STEP 2: Test for proper indexing at all possible adjustment positions, by positioning the indexing knob on each of the slots. Make sure that it is locked in place and that the telescopic tube will not move.



Figure 225

STEP 3: Repeat steps 1 and 2 for the opposite mechanism.

STEP 4: Replace assemblies if necessary: Pair of mats, Pair of HARD springs (KITF005) or Pair of STANDARD springs (KITFRONT006).

- **Trochanter support**
 - Carry out the operation with the product removed.
 - Remove the textile belt beforehand (Cf V.2)

STEP 1: Pull the positioning pull tab



Figure 226

STEP 2: Test the correct indexing on the 5 possible adjustment positions, by positioning the trochanter support on each of them and releasing the positioning puller.



Figure 227

STEP 3: Check that the trochanter can no longer move.

STEP 4: Repeat steps 1, 2 and 3 for the opposite trochanter support.

STEP 5: If necessary, replace the assemblies: Belt frame + belly strap pair

HAPO FRONT

V.6 Spare and wear parts

Types	Reference	Parts	Hapo
Textiles	KITUF003	HAPO UP FRONT SHOULDER AND CHEST STRAP KIT	Hapo UP / Front
	KITUF001	HAPO FRONT and HAPO UP BELT KIT	Hapo UP / Front
	KITFR001	HAPO FRONT textile pads kit	Hapo Front
	KITFR002	HAPO FRONT INTERFACE STRAPS Kit	Hapo Front
	KITUF004	HAPO UP FRONT CHEST STRAP KIT	Hapo UP / Front
	KITFR012	ELITEPRO HANDLES: COMFORT KIT for HAPO FRONT	Hapo Front
Springs	KITFR005	KIT HARD SPRINGS HAPO FRONT	Hapo Front
	KITFR006	STANDARD SPRINGS KIT HAPO FRONT	Hapo Front
	KITUP004	Hapo Up module kit	Hapo UP / Front
Accessories	KITFR009	Sternum buckle kit	Hapo UP / Front
	KITUF006	Red buckle kit	Hapo UP / Front
	KITFR004	HAPO FRONT INTERFACE ARMATURE KIT	Hapo Front
	KITFR007	HAPO FRONT arm protection kit	Hapo Front
	KITFR008	HAPO FRONT spring protection kit	Hapo Front
	KITFR012	ELITEPRO HANDLES: COMFORT KIT for HAPO FRONT	Hapo Front
	HDTH2	HAPO carrying case	Hapo Front

Table 16 Hapo FRONT spare parts and accessories

VI. Warranty

The HAPO FRONT is guaranteed for 2 years from the date of the warranty declaration.

Following the purchase of your HAPO FRONT, please go to the following address and fill in the form:

<https://www.hapo.eu/en/content/63-warranty-statement>

VII. Recycling

To protect the planet and limit waste production, ErgoSanté offers to recover and recycle your exoskeletons at the end of their life. Each part is carefully sorted by material, then deposited in the appropriate skips or crushed in-house to encourage reuse.

VIII. Disposal

Disposal of the equipment must comply with your country's sorting requirements.

IX. Legal information

The HAPO FRONT is CE marked in accordance with Directive 2006/42/EC for sales in Europe. The legal requirements are subject to the national legislation of the country of use.

X. Liability

The manufacturer is only responsible if the product is used in accordance with the descriptions and instructions in this document. The manufacturer is not liable for any damage resulting from non-compliance with this document.

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