



SoftExo

Instruction manual

Video instructions



Scan me



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VERSION 11/2020



Congratulations!

You have made a good choice with the SoftExo.

HUNIC would like to thank you for the trust you have placed in us.

These instructions are intended to familiarise yourself with the possible applications of our SoftExo.



EN

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Keep the original operating
instructions for future use.

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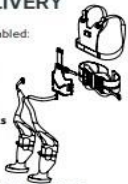
2. IMPORTANT BASIC INFORMATION

Before using this machine, please read this manual carefully to understand its contents.
The SoftExo is a passive lifting and carrying support worn on the human body. Its purpose is to guide and support the user in ergonomic handling. The user's spine is guided during a lifting operation. By bending over or crouching down in the knee bend, elastomers are pretensioned on each leg, which release the energy when the user straightens up. Thus the user experiences a force when straightening up and standing up. The system is free of external energy sources and is based on a spring principle.

2.1. SCOPE OF DELIVERY

The SoftExo consists of assembled:

- shoulder strap
- waist belt
- 2 x knee elements
- 2x elastomere



2.2. IMPORTANT SYMBOLS



Caution



Ban on lifting and carrying excessive loads



Danger from electromagnetic field



Risk of tripping

3. INTENDED USE

The lifting system worn on a healthy human body is intended exclusively for the ergonomic support of the user during lifting, holding and carrying activities.

3.1 TYPE OF USE

The system is worn on the human body. The system is designed to support lifting and carrying activities during manual handling operations. It makes it easier to stand up from a knee bend, to straighten up when bending over and guides the spine into a straight and upright position.

3.2 AREA OF APPLICATION

This machine can be used in the following areas:

- outdoors (without protection from the weather)
 - on roofed areas (without walls)
 - in roofed and closed rooms
 - underground
 - on / under / in water
- Operating temperatures: -10°C to +40°C



Caution

The system is not a substitute for lifting equipment for heavy loads. Only loads which can be lifted by a person without the system may be moved.

Protective equipment

- The system is not personal protective equipment according to 89/686/EEC

- The system must not be used as a fall prevention device or similar.

Medical device

- The system is not a medical device under 93/42/EEC

3.3. REASONABLY FORESEEABLE MISUSE

Incorrect operation

- Unevenly tensioned elastomers
- Too loose fit of the system on the user
- Lifting from a hunchback

4. LIMITS OF THE SYSTEM |

SPATIAL LIMITS

Creating the machine

No specific distances to the product are prescribed.

Working with the system

No specific distances to the product are prescribed.

Setting the machine down

No specific distances to the product are prescribed.

Interfaces

Man - Machine: The system is worn directly over the user's clothing.

Time limits

After approx. 5,000 cycles, the Velcro fasteners exhibit reduced strength. If the adhesive effect is no longer sufficient for safe operation, clean the hook tape and the Velcro fasteners if necessary or send the system to the service department (see chapter 13.2) of HUNIC GmbH.

Service life of wearing parts

The elastomers lose noticeable tension after approx. 1.5 million cycles.

The following also have a negative effect on the service life

- UV radiation
- Ozone for use in e.g. welding areas
- Operating temperatures
- Frequency of stretching over 80% of total stretch
- Frequency of cleaning operations and cleaning temperature and the detergent used

Check the elastomers regularly for mechanical damage and to sufficient restoring force. Inspection intervals: See 13.3 Inspection and maintenance plan.

Environmental limits

Temperature range: minimum/maximum temperatures: -10°C to +40°C
Relative air humidity: 100%
System must be stored in a dry condition.

Material limits

Consumables and supplies: none

Materials used

Polyethylene, polyamide, elastane, polyoxymethylene, Stainless steel (X5CrNi 18-10), magnets, rubber.

5. HAZARDOUS SITUATIONS

Life stages and activities related to the scheme

Transport:

No special dangers are to be expected during transport.



Caution

Magnetic closures can interfere with medical implants. By applying the system, these closures can possibly get closer to the respective danger points.



Caution

During application, tapes may be unevenly tensioned. This can cause a disturbance of balance. Likewise, a short-term disturbance of equilibrium can occur due to the build-up of tension.



Caution

Care must be taken that the closures are not opened under load. Otherwise injuries may occur due to suddenly loosening straps.



Caution

Due to the tension of the ligaments, the person's motor skills may be restricted when making reflex movements.



Caution

The system does not allow lifting and carrying higher loads than the person can lift and carry without the system. Dangers are damage to the person's locomotor system.



Attention

Outsiders can reach into the moving back splint in the hip area and injure themselves.

COMMISSIONING

Ensure that the modules are correctly seated. The system may only be put into operation when the closures have been tightly closed and an accurate fit on the user has been checked. For this purpose, a

knee bend without load must be performed.

5.1 DECOMMISSIONING

The elastomers must always be relaxed first. Otherwise, injuries may occur due to suddenly loosening of the straps.

Loose straps can lead to a tripping hazard. For decommissioning, the instructions under 11.4 Decommissioning must be observed.

5.2 MAINTENANCE (INSPECTION, CLEANING, MAINTENANCE, REPAIR, TROUBLESHOOTING, RECOMMISSIONING)

The elastomers must always be relaxed first. Otherwise, injuries may occur due to suddenly loosening of the straps.

6. LIABILITY

HUNIC GmbH cannot be held liable for the following:

- personal injury or damage to property as a result of failure to observe the recommendations, warnings and instructions in this manual by the user or a third party
- Damage caused by modifications to the original product and/or changes to the original
- wear and tear or damage caused by improper use by the user
- Damage caused by the use of non-original spare parts

6.1. RESPONSIBILITIES OF THE OPERATOR

The products of HUNIC GmbH guarantee safe operation if they are designed, operated and maintained in accordance with the general safety regulations. The operator must ensure that the operating instructions are understood and observed. If you have any questions regarding the operation of the device or the operating instructions, please refer to service.hunic.com or call us!

6.2 RESPONSIBILITIES OF THE MANUFACTURER

See page 14.

7. TECHNICAL DATA

Weight 1.2 Kg.

8. STRUCTURE AND FUNCTION

BACK PART

Straightens the upper body and promotes an upright posture

HIP BELT

Is placed centrally above the hip bone and optimally transfers the forces that occur to the pelvis.

ELASTOMER

The muscles are supported by storing and releasing the positional energy. Adjustment of the strength according to need.

POWERKNEE

Surrounds the knee, absorbs the force of the elastomers and distributes it optimally.

9. STORAGE CONDITIONS

The system must be stored dry. Due to operational soiling, e.g. by human sweat, the product should only be stored in washed condition for a longer period of time. It is recommended to store the system hanging on a coat hanger.

6.2 RESPONSIBILITIES OF THE MANUFACTURER

El fabricante / distribuidor

HUNIC GmbH
Rosenplatz 3/2
72270 Baiersbronn

declara que el siguiente producto

Nombre del producto: SoftExo

Marca: V4

Número de serie: ver placa de identificación

Serie/designación de tipo: SoftExo -V3.4

Descripción: Sistema de apoyo ergonómico para actividades de manipulación

todas las disposiciones pertinentes de la Directiva mencionada y de las demás Directivas aplicadas (en adelante) - incluyendo cualquier enmienda a la misma aplicable en el momento de la declaración.

Se aplicaron las siguientes normas armonizadas:

- EN 1005-1:2001+A1:2008 Seguridad de las máquinas - Rendimiento físico humano - Parte 1: Términos
- EN 13238:2004+A1:2009 Grúas - Manipuladores de mano
- EN 349:1993+A1:2008 Seguridad de las máquinas. Espacios mínimos para evitar el aplastamiento de partes del cuerpo humano
- EN 60204-1:2006 Seguridad de las máquinas - Equipo eléctrico de las máquinas - Parte 1: Requisitos generales (IEC 60204-1:2005 (Modificada))
- EN 613-1:2006+A1:2009 Seguridad de las máquinas - Principios de diseño ergonómico - Parte 1: Términos y directrices generales

Se han aplicado las siguientes normas (o partes/cláusulas) y especificaciones nacionales o internacionales - el nombre y la dirección de la persona autorizada a elaborar el expediente técnico

HUNIC GmbH
Jonas Mast
Rosenplatz 3/2
72270 Baiersbronn



Lugar: Baiersbronn Fecha: 01.10.2020

8. STRUCTURE AND FUNCTION

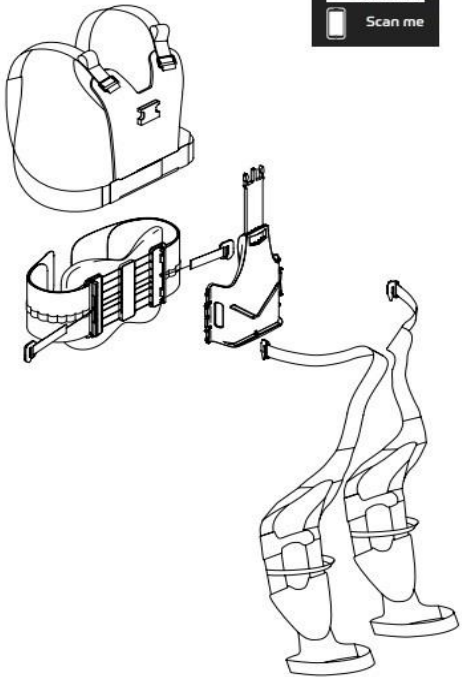


BACK SECTION
Straightens the upper body and promotes an upright posture

WAIST BELT
Is placed centrally above the hip bone and optimally transfers the forces that occur to the pelvis.

ELASTOMER
The muscles are supported by storing and releasing the positional energy. Adjustment of the strength according to need.

POWER KNEE
Surrounds the knee, absorbs the force of the elastomers and distributes it optimally.



10. INITIAL COMMISSIONING

You can find video instructions for setting up the system at: mysoftexo.hunic.com You will find the detailed step-by-step instructions on page 42.

11. OPERATION

11.1. OPERATING MODES

11.1.1. SUPPORT MODE

The elastomers are stretched so far that they lie loosely against the body when standing upright. The user experiences an upright function during bending movements.

11.1.2. FREE WHEEL

The system can be relaxed for secondary activities such as climbing stairs, driving and sitting. By loosening the elastomers on the hip belt and moving it backwards, the tension is released and the support is switched off. Care must be taken to ensure that the tension is only reduced to the extent that comfortable sitting is guaranteed.

11.2. COMMISSIONING

The system is activated by stretching the elastomers so that they lie flat against the buttocks.



Caution

By loosening the elastomers, they can get caught on objects or be drawn into spindle-driven systems.



Caution

Due to the loosening of the elastomers, they no longer lie flat on the user. There is an increased risk of stumbling.

11.2.1. FAMILIARISATION PHASE

As the SoftExo moves your upper body into an upright position, you may feel a slight muscle ache in the first few days. In order to accustom your body to this, we therefore recommend that you gradually increase the use of the system during the first few phases of use: from 2 hours a day, 4 hours a day to up

to 8 hours a day.

If you already have previous physical ailments such as:

- inguinal hernias,
- Hip prostheses,
- Knee prostheses,
- Knee injuries,
- Slipped disc,
- Diseases of the spinal column,
- Hyperextension knee, we advise you to consult a doctor before using SoftExo

As the SoftExo is more supportive and relieving, HUNIC recommends using the system with only slightly pre-stressed elastomers. The wearing time can be successively increased according to personal preference.

11.3 INSPECTION AND MAINTENANCE

Before each use, check that the full range of functions of the machine can be accessed. If the system is deformed, cracked, cut or otherwise damaged, do not use the system.

12. TROUBLESHOOTING

See table: Fault / error message.

12. Troubleshooting

Fault / error message	Possible cause(s)	Solution
Velcro fasteners release under tension	Hook tape dirty	Removing deposits from the hooks works in a similar way to cleaning hairbrushes - a stiff brush or other hook shape is best suited for this. To prevent soiling, make sure that the hook bands are always closed.
	Fleece side frayed	Natural wear and tear. Please contact Service.
	No optimal connection between hook and fleece	Make sure that you hit the respective Velcro surfaces cleanly.
The knee support slips and does not remain above the kneecap	Calf strap not correctly adjusted	Make sure that you attach the calf strap under the calf.
	The elastomer is too tight when standing upright	When standing upright, the elastomer may only be tensioned so that it lies flat. Pre-tensioning is not necessary.
Shoulder bands cut in	Shoulder fins do not fit optimally	Loosen the shoulder fins on the back and move them further out or in. Also the angles can be changed to adapt this ideally to the body.
	Shoulder strap too tight	Tighten the shoulder straps only enough so that they fit loosely and you can easily slide your palm under the straps when standing upright.
Hip belt slides on waistband	Adjust the height of the hip belt	The hip belt should be positioned over the navel as a reference point. This ensures ideal support for the back.
	Hip belt too loose	The hip belt should be tight. The tension can be adjusted slightly with the tension ropes. If the fit is too loose the belt will slip.

12.1. SERVICE ADDRESS

HUNIC GmbH
Rosenplatz 3/2
72270 Baiersbronn

service.hunic.com
service@hunic.de
t +49 7442 60823-75
f +49 7442 60823-40

Please have the serial number, which is located on the back unit of the SoftExo, ready for service requests.

13. MAINTENANCE / REPAIR OF THE SYSTEM

You can clean the system in the washing machine. The preparations for cleaning in the washing machine are described in the instructions on page 52. Wash the system separately with a mild detergent.

13.1 SERVICE ADDRESS

FAQ and further information can also be found on service.hunic.com



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Please have the serial number, which is located on the back unit of the SoftExo, ready for service requests.

In case of a return of the system:

- Close all buckles and Velcro fasteners.
- Ensure that the system is carefully and properly packed.
- Be sure to include a brief description of the fault. You can obtain the form for this on our homepage service.hunic.com or from our service department.

HUNIC reserves the right to carry out during the repair process any changes of a technical nature that have become necessary for the purpose of improving the product and that contribute to its proper functioning.

13.2. INSPECTION AND MAINTENANCE PLAN

See table: Fault / error message.

13.2. Inspection and maintenance plan

Activity	before tightening	weekly	every two years
Mechanical integrity of the system Visual inspection for cuts or cracks	x		
Check the adhesion of the Velcro fasteners	x		
Replace elastomers on leg			x
System wash (as required)		x	

14. DISMANTLING AND DISPOSAL

The following materials are used in this system.

Built-in materials: polyethylene, polyamide, elastane, polyoxymethylene, stainless steel (X5CrNi 18-10), magnets, rubber.

Remove the back rail and hip bar as described in chapter 13.1. Cleaning and feed them in for recycling.

The remaining materials can be disposed of with the household waste.

15. NOTES

1.



2.



3.



4.



5.



Put on

Put on the SoftExo like a backpack. Start with the shoulder straps.

Position hip belt

Position the hip belt at the height of the navel. Close the hip belt over the velcro surfaces on the belly so tightly that it does not slip.

Close the hip belt

While holding the one side of the hip belt, close it with the opposite side of it. Attention the sides of the velcro.

Pull tension cables

Grasp the tension cables with the orange marking and adjust the tension by tightening them.

Position and hang the tension cables

Hang the tension cables in the loops of the hip belt.

PUT ON



Scan me

Video instructions

6.



7.



8.



9.



10.



Finish fixating the hooks

Insert hook into the loops from above.

Close the upper clasp (orange)

Close the orange magnetic clasp above the patella

Close the upper clasp (grey)

Close the grey magnetic clasp below the kneecap

Close the lowest clasp (black)

Close the lowest black magnetic buckle underneath the calf. Adjust the height if necessary

Adjust tension on elastic band

Pull the elastic band taut to prevent the knee from slipping

PUT ON



Video instructions



11.



12.



13.



Pull elastic bands

Reach behind your back and pull the wide grey elastomers until the straps lie flat against your buttocks and are not taut.

Fixate elastic bands

Insert the hooks from above into the loops of the hip belt

Fit shoulder

Tighten the straps at the shoulder so that they fit comfortably.

PUT ON



Video instructions



Adjust back

Position the lower ends closer or apart, according to the width of your back.

Smaller back: closer together
Wider back: wider apart

Belt | Width

Belts can be adjusted by sliding them through the openings in the hip cushion. Bring the ends closer for a shorter belt. Keep the belts separate for a longer belt.

Belt | Pressure

The tension cords allow fitting the hip belt properly. This way they are properly fixed.

Belt | Elastic bands

The elastic bands regulate the amount of support for the legs.

Tighter bands: more support
Loose the bands: less support

Knee

Adjust the height of the lower part of the knee by sliding it up or down.

Smaller leg: shorter height
Bigger leg: higher height

PERSONALIZED ADJUSTMENTS



Video instructions

Scan me

1.



2.



3.



4.



5.



Loose elastic bands

Pull the elastic band's hook out. Let them hanging. This will remove the tension from the legs.

Loose the clasps from the knee

Open all clasps so that the knee can be removed.

Loose the tension cords

Pull the tension cords' hooks out. Let them hanging. This will remove the tension from hip belt.

Open the hip belt

Separate both ends from the belt, opening the velcro.

Undress and hang the system

Loose the shoulder straps and undress the system. Hang it for proper ventilation.

PUT OFF



Scan me

Video instructions



Remove the shoulder
Press the sides of the sliding bar and remove it from the buckle.



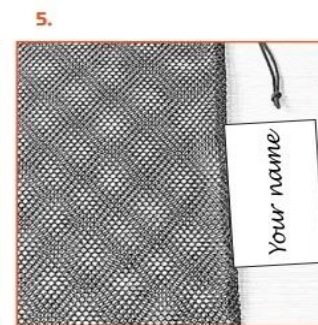
Remove bracket
By pressing both pins together, remove the bracket from the hip cushion.



Hip belt
Slide each belt out of the hip cushion.



Full laundry bag
Place all washable parts in the laundry bag and wash them according to instructions.



Identify laundry bag
We recommend identifying the laundry bag. The white label can be used to identify the owner or number from the system. Use a permanent marker for it.

PREPARATION FOR CLEANING IN THE WASHING MACHINE



Video instructions

1.



2.



3.



Shoulder

Keep shoulder straight.

Hip belt

Improve hip posture.

Posture correction

Support upper body.

MODULAR USE



Video instructions



Scan me

1.



The hook tape is dirty
Removing debris on the hook works similarly to cleaning hairbrushes - a stiff brush or another hook shape is best for this. Watch out ensure that the hook straps are always closed.

2.



Fleece side frayed
Natural wear and tear. Please contact Service.

3.



No optimal connection between hook and fleece
Make sure that you hit the respective Velcro surfaces cleanly.

4.



Calf strap not correctly adjusted
Make sure that you tighten the calf strap below the calf.

5.



The elastomer is in the upright stand too tight
When standing upright, the elastomer may only be tensioned so that it lies flat. Pre-tensioning is not necessary.

MALFUNCTION/ERROR



Video instructions

6.



7.



8.



9.



Shoulder fins do not fit optimally

Loosen the shoulder fins on the back and move further up or in. The angles can also be changed to adapt to the body.

Shoulder strap too tight

Tighten the shoulder straps only enough so that they fit loosely and you can easily slide your palm under the straps when standing upright.

Adjust the height of the hip belt

The hip belt should be positioned over the navel as a reference point. This ensures ideal support for the back.

Hip belt too loose

The hip belt should be tight. The tension can be slightly adjusted with the tensioning ropes. If the fit is too loose, the belt will slip.

MALFUNCTION/ERROR



Video instructions

Scan me