CDS® Knee Brace Extension

User Instructions

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1. Introduction

1.1. Foreword
Dynamic spring-loaded orthoses can be used to treat joint contractures caused by both neurological and orthopaedic conditions. The shortening of the tissue surrounding the joint decreases the range of motion affecting the patient’s everyday life. Therefore, our CDS® concept aims to increase the range of motion without pain by applying a constant, appropriate low load prolonged stretch (LLPS).

1.2. Customer information
For your own safety please read through these User Instructions carefully and accurately before using the brace. The instructions, notes and procedures must be read and understood thoroughly in order to benefit from the correct operation and use of the device. If anything in the User Instructions is not clear, or any instructions, operating procedures or safety information is not fully understandable, please contact the appropriate specialist retailer or albrecht GmbH directly, before you use the brace. This particularly applies to the safety instructions.

1.3. Mode of operation
The CDS® Knee Brace Extension functions according to the CDS®-principle and has been designed to treat an extension deficit of the knee. The brace applies a dynamic low load prolonged stretch to stimulate growth in the contracted tissue. The adjustable redression range protects the tissue from painful overstretching and allows for individual extension until -15°.

1.4. Application
The brace has been designed exclusively for the orthotic treatment of the knee joint and for contact with intact skin.

1.5. Scope of delivery
The CDS® Knee Brace Extension is delivered to you ready to use in the size requested, with User Instructions and labeling on the product. Please check the completeness of the brace at delivery.
- Brace with padding and straps
- albrecht GmbH hexagon key
- User Instructions
- Strap padding set (Not necessary for sizes S/S, XS/XS, XXS, Junior, Bambini and Malinki)

1.6. Declaration of conformity
1.7. Features

• Therapy in extension
• Individual adjustment of the spring tension
• Spring tension can be switched on and off without tools and without varying the set spring tension
• Optimized shell- and strapsystem
• High wearing comfort thanks to air-permeable, light aluminium shell element

CDS® Knee Brace Extension
L/L, L/M, M/L, S/S:

• Infinitely variable adjustment of the redress range between -15° bis +30°.

CDS® Knee Brace Extension
XS/XS, XXS, Bambini and Malinki:

• Adjustment of the redress range in 10° steps

1.8. Indications

The physician will prescribe the type of treatment to apply based on his or her diagnostic findings.

Generally, the use is indicated in:

• Joint contractures:
  – After surgery
  – After conservative treatment of capsular ligament injuries
  – Before and after joint replacement
  – In arthrosis and chronic polyarthritis
  – After burns
  – After strokes
  – After spinal cord injuries
  – Paralysis (discrete palsy of peripheral origin)
  – After cranio-cerebral trauma (CCT)

• To prevent new contractures after arthrolysis
• Rupture of a muscle fibre of quadriceps femoris
• Patella tendon rupture
• Extension deficit from weakness of quadriceps
• Conservative and postoperative indications, where active extension of the knee is contraindicated.

For all other indications a physician must be consulted.
1.9. Contraindications

- Bony obstruction, osteoporosis, thrombophlebitis

The brace is intended exclusively for contact with intact skin.

1.10. Safety Instructions

The optimal effect of the brace is only achieved when used correctly.

- The brace must only be used in the intact, complete and mechanically undamaged condition and with complete and intact cushioning and walers. This must be verified by the user before each usage.

- Opening or removing one or more belts, as well as excessive loosening of the waler when using the brace leads to a reduction of the therapeutic effect of the brace and may lead to injury.

- The brace must not be worn over open wounds.

- The skin should be free of oils, grease, gels or other debris, to prevent reactions with the skin or the structure of the material.

- The orthosis should fit firmly but not too tight, so as not to restrict the blood circulation and adversely affect nerve and lymph vessels. Excessive compression is therefore to be avoided.

- Combination with other products is currently not provided for or is to be agreed with the manufacturer in writing.

- The brace is not intended for single use, but is intended for multiple use by a single person.

- The product as delivered is not sterile.

- Contact your physician immediately in the event of an allergic reaction.

- Please note that cushioned sections can heat up under direct sunlight. Protect the orthosis from direct sunlight if necessary.

- Currently there is no test for flammability. Exercise caution when using the orthosis in the direct vicinity of open flames such as lighters and cigarettes.

- The mechanical functions must only be adjusted using the supplied tools in order to avoid injuries and damage of the hinge.

- When adjusting the hinge rods to the shape of the extremity by using an orthopaedic bending iron, you must not bend the rods in the area of the hinge housing or the hinge cover as this could lead to damage or break of the hinge.
1.11. Warranty

We assume the warranty for the brace for a period of 3 months. The brace is a medical rehabilitation device and must not be used for any purpose other than the intended, as described in the User Instructions. Changes to the brace or other applications require the written consent of the albrecht GmbH.

If this is not obtained, the manufacturer may not honor the guarantee. If you are using a single hinge or other components, these should be used as intended. If changes or modifications (e.g. additional mounting holes) are made to the individual parts or components, the manufacturer’s warranty no longer applies. The removal of or damage to the QM seal will also void the warranty.
2. Adjustment by the orthopaedic technician

2.1. Fitting to the patient

- Our CDS® braces are constructed to be adjustable.
- The position of the shell components can be changed and they can be shaped.
- The hinge rods can be adapted to the shape of the extremity by using an orthopaedic bending iron.
- The strap lengths can be adjusted to different girths and shortened if necessary.

2.1.1. Adjusting the brace to the leg shape by using an orthopaedic “bending iron”

The brace is anatomically contoured. However, if a different shape is required, the hinge rods can be adjusted to the shape of the patient’s leg with the aid of an orthopaedic bending iron. Loosen the screws on the shell components and either move or remove them. Then adjust the hinge rods to the shape of the extremity.

When adjusting the hinge rods to the shape of the extremity by using an orthopaedic bending iron, you must not bend the rods in the area of the hinge housing or the hinge cover as this could lead to damage or break of the hinge.
2.1.2. Setting the shell components

The shell components are moveable.

1. Loosen the screws on the shell components with the supplied tool without unscrewing them completely.
2. Move the shell components into the desired position.
3. Tighten the screws again.

Please note that, because of its construction, the lower leg shell in sizes S/S, XS/XS, XXS and children’s sizes consists of one shell component.

The shell components can be adjusted to the shape of the extremity.
2.2. Setting the hinge

2.2.1. Adjusting the position of the redression and limitation range for CDS® Knee Braces Extension XS/XXS, XXS, Bambini and Malinki

The CDS® Knee Braces Extension XS/XXS, XXS, Bambini and Malinki are constructed on the basis of the 360° Nano hinge. In the 360° Nano hinge, the position of the spring housing is adjustable on relation to the thigh rod. The position of the redression and limitation range can be thereby altered and adjusted to the patient. The position of the stops depends on the position of the redression and limitation range.

1. Remove the pad.
2. Loosen the central screw with the supplied tool until you can remove the thigh rod completely from the gearing.
3. You can adjust the position of the redression range in 10° steps. By adjusting the position of the redression range, you can set flexion and extension limitation. Use a gonimometer to determine the desired position and adjust the hinge accordingly.
4. Place the the thigh rod on the gearing and tighten the central screw.
5. Insert the pad again.

All steps must be executed identically with both hinges.
2.2.2. Setting the limitation for CDS® Knee Braces Extension
L/L, L/M, M/L, S/S and Junior

The limitation restricts the range of motion.

All steps must be executed identically with both hinges.

Extension and the redression range are limited by the stop screw. In a second step, the set value can be reduced up to a maximum of 15°, enabling infinitely variable adjustment of the redression range.

1. Before setting the limitation, you must deactivate the spring tension. Turn the switches on both hinges to “off”.

2. Bring the brace into flexion.

3. On the side of the CDS® housing are three holes that are marked with the degrees 0, 15 and 30. In the hole marked with 0 is the stop screw. Then turn the stop screw with the supplied tool from the CDS® housing.

Before screwing it into one of the three holes, bring the brace into flexion, so that the holes are freely accessible. Position the stop screw in the desired position and tighten the screw.

The limitation can be adjusted to the treatment progress with increasing mobility of the patient.

Please be aware that the brace must only be used with the stop screw positioned and tightened in one of the holes, otherwise the hinge will be damaged.
2.2.3. Fine adjustment for CDS® Knee Braces Extension
L/L, L/M, M/L, S/S and Junior

Fine adjustment gives you the option of infinitely variable extension limitation.

1. Set the fine adjustment to a value between 0 and -15. The setting reduces the limitation already set by the stop screw.

2. All steps must be executed identically with both hinges.
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2.2.4. Inserting the stop wedge for CDS® Knee Braces Extension L/L, L/M, M/L, S/S and Junior

1. Flexion can be limited with the stop wedge. All steps must be executed identically with both hinges.

2. Before adjusting the flexion limitation you must activate the spring tension. Turn the switches on both hinges to “on”.

3. Bring the brace into flexion until you feel a slight resistance that you have to overcome in order to activate the spring tension.

4. On the side opposite of the three holes are five positions marked with the degrees 0, 15, 30, 45 and 60. Insert the stop wedge in the desired position.

5. Fix the stop wedge with the supplied screw.
2.3. Attaching of the brace by the orthopaedic technician

2.3.1. Deactivate the spring tension

Before attaching the brace you must deactivate the spring tension.

1. Turn the switches on both hinges to “off”.

2. Bring the brace as far into flexion as the patient is allowed to move. Now, the activation mechanism of the hinge is set to this the position and the patient can reactivate the spring tension in this position.

3. To facilitate attaching of the brace on the patient, adjust the length of all brace straps to their maximum length without unthreading them. Now loosen the posterior straps on the thigh and lower leg by opening the clips. For XS/XS, XXS, Bambini and Malinki, you must open and close the straps in order to attach and remove the brace.
2.3.2. Attach the brace to the leg

1. The patient bends the leg to an angle of about 30° to 45°. Now attach the brace to the patient’s leg from in front.

2. Ensure that the pivots of the brace hinges match the physiological pivots of the knee.

It is possible to adjust the thigh rods to the shape of the patient’s leg by using an orthopaedic bending iron.

Ensure that the hinges are as parallel to one another as possible to ensure proper function of the brace.
2.3.3. Adjust strap lengths as necessary

Adjust the straps to the desired length and shorten them if necessary on the strap end containing the doublesided hook end.

1. First fasten the upper calf strap.
2. Then fasten the upper shin strap.
3. Fasten the upper posterior thigh strap next to the knee.
4. Fasten the anterior thigh strap further from the knee.
5. Fasten the posterior thigh strap next to the knee.
6. Fasten the anterior thigh strap next to the knee.
User Instructions

7 Fasten the lower calf strap.
8 Fasten the lower shin strap.

If necessary, the additional strap padding supplied with the product can be attached under the straps.

2.3.4. Final adjustment

After fastening the individual straps, check that the straps are the correct length and that the brace is in the correct position, and correct if necessary. Ensure that the straps are not too tight so as not to interfere with the circulation.

The shell elements are anatomically contoured. You can also shape the shell elements with the hand to the leg contour directly on the patient.
2.3.5. Activate the spring tension

1. To activate the spring tension, turn the switches on both hinges to “on”.
2. Bring the brace into flexion until you feel a slight resistance that you have to overcome in order to activate the spring tension.

The intensity of the spring tension is not altered by activation or deactivation of the spring tension.
2.3.6. Setting the spring tension to the intensity needed by the patient

1. The spring tension setting is displayed on the CDS® housing by a scale from 0 to 15. The ranges above 15 and below 0 are marked in red. To prevent damage to the CDS® hinge, the red range in the CDS® hinge window must be avoided.

2. Insert the tool as far as it will go into the side hole on the hinge. By turning clockwise or towards + the spring tension is increased and it is decreased by turning anticlockwise or towards -.

The intensity of the spring tension must be equal in both hinges.

The intensity of the spring tension is not altered by activation or deactivation of the spring tension.

The spring tension may be adjusted only in consultation with the treating physician.
The **CDS® hinge** is used for the sizes **L/L, L/M, M/L, S/S** and **Junior**.

The **CDS® Nano hinge** is used for the **XS/XS, XXS, Bambini** and **Malinki**.
2.3.7. Changing the spring tension

1. The spring tension can be adjusted according to the treatment progress.
2. Insert the tool as far as it will go into the side hole on the hinge. By turning clockwise or towards + the spring tension is increased and it is decreased by turning anticlockwise or towards -.

The intensity of the spring tension must be equal in both hinges.

The spring tension may be adjusted only in consultation with the treating physician.
3. Handling by the patient

3.1. Removing the brace

Before removing the brace you must deactivate the spring tension.

1. To do so, turn the switches on both hinges to “off”.
2. Bring the brace into flexion.
To remove the brace, only open the clips and do not unthread the straps.

For XS/XS, XXS, Bambini and Malinki, you must open and close the straps in order to attach and remove the brace.

Take off the brace.
3.2. Putting on the brace

1. Place the brace on your leg from above.
2. Close the clips in the stated order. For XS/XS, XXS, Bambini and Malinki, you must open and close the straps in order to attach and remove the brace.
3. First fasten the upper calf strap.
4. Fasten the upper posterior thigh strap next.
5. Fasten the posterior thigh strap next to the knee.
6. Fasten the lower calf strap.
7. To activate the spring tension, turn the switches on both hinges to “on”.
8. Bring the brace into flexion until you feel a slight resistance that you have to overcome in order to activate the spring tension.

We wish you a successful course of treatment and are available for further questions.
4. Cleaning, maintenance and disinfection

The orthosis is designed to be maintenance-free. To ensure proper operation over the period of treatment the orthosis should be cleaned regularly (at least every 3 months) or as required, according to the following instructions.

4.1. Care

- The product as delivered is not sterile and is not suitable for sterilization.
- Do not use harsh or abrasive cleaners.
- All fabrics can be washed by hand at 30°C using water and a mild detergent and/or disinfectant.
- Not machine washable.
- The CDS® Knee Brace Extension can be dried in the open air.
- In the case of more severe soiling, a replacement set of textile parts is available.
- Wipe down surfaces with a cloth soaked with disinfectant.
- Wet completely, and do not wipe off.
- Spray inaccessible surfaces.
- When spraying ensure complete wetting.
- A mild alcohol-based disinfectant is recommended.

Ask your physician or pharmacist when selecting a disinfectant, and follow the instructions given by the disinfectant manufacturer. The Robert Koch list of approved disinfectants can be found at www.rki.de.
5. Technical data

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<thead>
<tr>
<th>Name</th>
<th>Material</th>
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<tbody>
<tr>
<td>Weight</td>
<td>1048g</td>
</tr>
<tr>
<td>Padding material</td>
<td>PU foam with PA hook and loop velour</td>
</tr>
<tr>
<td>Strap material</td>
<td>PA strap with PA hook and loop velour</td>
</tr>
<tr>
<td>Brace material</td>
<td>aluminium</td>
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6. Size chart and article numbers

<table>
<thead>
<tr>
<th>Name</th>
<th>Length of thigh shell</th>
<th>Length of lower leg shell</th>
<th>Circumference of thigh</th>
<th>Circumference of lower leg</th>
<th>Art.-No. left</th>
<th>Art.-No. right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee Extension L/L</td>
<td>23 - 25,5 cm</td>
<td>26,5 - 29 cm</td>
<td>36 - 66 cm</td>
<td>32 - 47 cm</td>
<td>901LL-L</td>
<td>901LL-R</td>
</tr>
<tr>
<td>Knee Extension L/M</td>
<td>23 - 25,5 cm</td>
<td>26,5 - 29 cm</td>
<td>33 - 43 cm</td>
<td>24 - 35 cm</td>
<td>901LM-L</td>
<td>901LM-R</td>
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<tr>
<td>Knee Extension M/L</td>
<td>18,5 - 21 cm</td>
<td>20,5 - 23,5 cm</td>
<td>36 - 66 cm</td>
<td>32 - 47 cm</td>
<td>901ML-L</td>
<td>901ML-R</td>
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<tr>
<td>Knee Extension S/S</td>
<td>17,5 - 20 cm</td>
<td>21,5 - 25 cm</td>
<td>30 - 40 cm</td>
<td>22 - 32 cm</td>
<td>901SS-L</td>
<td>901SS-R</td>
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<tr>
<td>Knee Extension XS/XS</td>
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<td>15 - 18 cm</td>
<td>22 - 32 cm</td>
<td>20 - 25 cm</td>
<td>901XSXS-L</td>
<td>901XSXS-R</td>
</tr>
<tr>
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<td>15 - 18 cm</td>
<td>18 - 22 cm</td>
<td>17 - 20 cm</td>
<td>901XXS-L</td>
<td>901XXS-R</td>
</tr>
<tr>
<td>Knee Extension Junior Blue</td>
<td>17,5 - 20 cm</td>
<td>21,5 - 25 cm</td>
<td>30 - 40 cm</td>
<td>22 - 32 cm</td>
<td>901SS-Bl</td>
<td>901SS-BR</td>
</tr>
<tr>
<td>Knee Extension Junior Orange</td>
<td>17,5 - 20 cm</td>
<td>21,5 - 25 cm</td>
<td>30 - 40 cm</td>
<td>22 - 32 cm</td>
<td>901SS-OL</td>
<td>901SS-OR</td>
</tr>
<tr>
<td>Knee Extension Junior Pink</td>
<td>17,5 - 20 cm</td>
<td>21,5 - 25 cm</td>
<td>30 - 40 cm</td>
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</tr>
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<td>30 - 40 cm</td>
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<td>20 - 25 cm</td>
<td>901XSXS-Bl</td>
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<tr>
<td>Knee Extension Bambini Orange</td>
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<td>15 - 18 cm</td>
<td>22 - 32 cm</td>
<td>20 - 25 cm</td>
<td>901XSXS-OL</td>
<td>901XSXS-OR</td>
</tr>
<tr>
<td>Knee Extension Bambini Pink</td>
<td>14 - 16 cm</td>
<td>15 - 18 cm</td>
<td>22 - 32 cm</td>
<td>20 - 25 cm</td>
<td>901XSXS-PL</td>
<td>901XSXS-PR</td>
</tr>
<tr>
<td>Knee Extension Bambini Green</td>
<td>14 - 16 cm</td>
<td>15 - 18 cm</td>
<td>22 - 32 cm</td>
<td>20 - 25 cm</td>
<td>901XSXS-GL</td>
<td>901XSXS-GR</td>
</tr>
<tr>
<td>Knee Extension Malinki Blue</td>
<td>14 - 16 cm</td>
<td>15 - 18 cm</td>
<td>18 - 22 cm</td>
<td>17 - 20 cm</td>
<td>901XXS-Bl</td>
<td>901XXS-BL</td>
</tr>
<tr>
<td>Knee Extension Malinki Orange</td>
<td>14 - 16 cm</td>
<td>15 - 18 cm</td>
<td>18 - 22 cm</td>
<td>17 - 20 cm</td>
<td>901XXS-OL</td>
<td>901XXS-OL</td>
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<tr>
<td>Knee Extension Malinki Pink</td>
<td>14 - 16 cm</td>
<td>15 - 18 cm</td>
<td>18 - 22 cm</td>
<td>17 - 20 cm</td>
<td>901XXS-PL</td>
<td>901XXS-PL</td>
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<tr>
<td>Knee Extension Malinki Green</td>
<td>14 - 16 cm</td>
<td>15 - 18 cm</td>
<td>18 - 22 cm</td>
<td>17 - 20 cm</td>
<td>901XXS-GL</td>
<td>901XXS-GL</td>
</tr>
</tbody>
</table>
7. Transfer of the brace

The brace is not intended for single use, but rather is intended for multiple use by a single person. We do not recommend transfer to other users. Should this be desired however, please ensure to pass on the care and cleaning instructions and have the brace checked by an authorized specialist dealer for safe and proper operation.

8. Disposal

The brace contains recyclable materials without toxic or other harmful substances or other environmentally hazardous substances. Provided it is not contaminated with infectious germs, the brace can be deposited in the normal waste disposal. To be sure, consult your specialist orthopaedics dealer.