HINGES

CDS® HINGE | CDS® NANO HINGE
CDS® HINGE EXTENSION (KNEE, ELBOW) FOR DYNAMIC REDRESSION
CDS® HINGE 90° PLUS FOR DYNAMIC REDRESSION
CDS® ADAPTER-HINGE 90° PLUS FOR DYNAMIC REDRESSION
CDS® HINGE 90° FOR DYNAMIC REDRESSION
CDS® ADAPTER-HINGE 90° FOR DYNAMIC REDRESSION
CDS® HINGE FLEXION (KNEE, ELBOW) FOR DYNAMIC REDRESSION
CDS® ANKLE FOR DYNAMIC REDRESSION
CDS® HINGE 360° PLUS FOR DYNAMIC REDRESSION
CDS® ADAPTER-HINGE 360° PLUS FOR DYNAMIC REDRESSION
CDS® HINGE SUPINATION / PRONATION FOR DYNAMIC REDRESSION
CDS® WRIST EXTENSION / FLEXION FOR DYNAMIC REDRESSION
CDS® BAMBINI, MALINKI, XS/XS, XXS (NANO) FOR DYNAMIC REDRESSION
CDS® HINGE 360° FOR DYNAMIC REDRESSION
CDS® ADAPTER-HINGE 360° FOR DYNAMIC REDRESSION
CDS® NANO HINGE FOR DYNAMIC REDRESSION
CDS® NANO ADAPTER-HINGE FOR DYNAMIC REDRESSION

FUNCTIONAL HINGES
HYPEX® LITE HINGE (MONOCENTRICAL)
HYPEX® LITE HINGE (POLYCENTRICAL)
ROM NANO HINGE
ROM NANO ADAPTER-HINGE
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1. Introduction

1.1. Foreword

CDS® Hinge / CDS® Nano Hinge
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).

Hypex® Lite Hinge / ROM Nano Hinge
Functional hinges relief and stabilize joints and ligaments after trauma and surgery. They support joints and ligaments in the healing process while maintaining the natural range of motion. Whilst protecting fragile joints and ligaments during rehabilitation, our functional hinges are also designed to allow a guided, step by step return to full physiological mobility.

1.2. Customer information
For your own safety please read through these User Instructions carefully and accurately before using the hinge. 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 hinge. This particularly applies to the safety instructions.

1.3. Mode of operation

CDS® Hinge / CDS® Nano Hinge
The CDS® Hinge / CDS® Nano Hinge functions according to the CDS®-principle and has been designed to treat a movement deficit of the joints. The hinge applies a dynamic low load prolonged stretch to stimulate growth in the contracted tissue.

Hypex® Lite Hinge / ROM Nano Hinge
The Hypex® Lite Hinge / ROM Nano Hinge stabilise and relieve the joints during conservative and post-operative rehabilitation. The continuously variable extension limit to -15° allows for Hypex® Lite Hinge a individual terminal extension.

The ROM Nano Hinge can be adjusted in 10° intervals (from -10° to 100°). Thus a physiological hyperextension is possible.
1.4. Application

The hinges have been designed exclusively for the orthotic treatment for contact with intact skin.

1.5. Scope of delivery

Please check the completeness of the hinge at delivery.

- Hinge
- User Instructions

Additionally at CDS® Hinge / CDS® Nano Hinge

- albrecht GmbH hexagon key

1.6. Declaration of conformity


1.7. Indications

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

Generally, the use is indicated in:

- **CDS® Hinge / CDS® Nano Hinge**
  - 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 cranio-cerebral trauma (CCT)
    - After spinal cord injuries
    - Paralysis (discrete palsy of peripheral origin)
  - 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

- **Hypex® Lite Hinge / ROM Nano Hinge**
  - Collateral ligament injuries
  - ACL and PCL ruptures
User Instructions

• Meniscus injury
• Femur condyle fracture
• Patella fracture
• Tibial plateau fracture
• Condition after meniscus reconstruction
• Condition after microfracturation, Pridie drilling
• Condition after abrasion chondroplasty
• Condition after cartilage transplantation
• Condition after osteotomies (procedures)
• Patella luxation
• Moderate instability of the knee
• Multiligamentous instability
• Genu recurvatum

For all other indications a physician must be consulted.

1.8. Contraindications

CDS® Hinge / CDS® Nano Hinge
• Bony obstruction, osteoporosis thrombophlebitis

Hypex® Lite Hinge / ROM Nano Hinge
• Massive circulatory disorder
• Massive varikosis

The hinge is intended exclusively for contact with intact skin.

1.9. Safety Instructions

The optimal effect of the CDS® Hinge / CDS® Nano Hinge / Hypex®, Lite Hinge / ROM Nano Hinge is only achieved when used correctly.

• The hinge must only be used in the intact, complete and mechanically undamaged condition. 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 hinge leads to a reduction of the therapeutic effect of the hinge and may lead to injury.

• The hinge 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 hinge 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.

1.10. Warranty

We assume the warranty for the hinge for a period of 3 months. The CDS® Hinge / CDS® Nano Hinge / Hypex® Lite Hinge / ROM Nano Hinge 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 hinge 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. Adjusting the spring tension at CDS® Hinge / CDS® Nano Hinge

2.1. Activate the spring tension

1. Set the switch to “on” to activate the spring tension.
2. Bring the hinge in extension or flexion against the desired effective direction of the spring force, until you feel a slight resistance that you have to overcome in order to activate the spring tension.

2.2. Deactivate the spring tension

1. Set the switch to “off” to deactivate the spring tension.
2. Bring the hinge in extension or flexion against the desired effective direction of the spring force.

By activating or deactivating the spring tension, the strength of the spring tension is not changed.
2.3. 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 to towards -.

If two hinges are used, the spring tension must be the same for both hinges.

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

**The spring tension may be adjusted only in consultation with the treating physican.**
2.4. Change the spring tension

The spring tension can be adjusted according to the treatment progress.

1. 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 to towards -.

If two hinges are used, the spring tension must be the same for both hinges.

The spring tension may be adjusted only in consultation with the treating physician.
3. CDS® Hinge Extension (knee, elbow)
   CDS® Hinge 90° plus
   CDS® Adapter-Hinge 90° plus
   CDS® Hinge 90°
   CDS® Adapter-Hinge 90°

3.1. Adjust the hinge

3.1.1. Adjustment of the limitation

The limitation restricts the range of motion.

Make sure that the spring tension is deactivated.

1. Set the switch to “off” to deactivate the spring tension.
2. Bring the hinge in extension or flexion against the desired effective direction of the spring force.
3. Turn the stop screw with the supplied tool from the CDS®-housing.

Before screwing it into one of the three bores, bring the hinge into maximum extension or flexion to the desired effective direction of the spring force. This will prevent the stopper screw from hitting the moving linkage when screwed in, which could damage the CDS®-housing.

The limitation can be adjusted to the treatment progress with increasing mobility of the patient.
3.1.2. Fine adjustment for
CDS® Hinge Extension (knee, elbow)
CDS® Hinge 90° plus
CDS® Adapter-Hinge 90° plus

Fine adjustment gives you the option of infinitely variable extension. Make sure that the spring tension is deactivated.

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

3.1.3. Inserting the stop wedge

1. Before inserting the stop wedge, the spring tension must be activated. Insert the stop wedge in the desired position.

2. Fix it with the supplied screw.
4. CDS® Hinge Flexion (knee, elbow)
   
   CDS® Ankle
   CDS® Hinge 360° plus
   CDS® Adapter-Hinge 360° plus

The redress area of the CDS®-housing is 90°.

With the CDS® 360° Hinge, the position of this redress area can be freely selected by means of an adjustable hinge support. As a result, the CDS® 360° Hinge can be used as an extension as well as flexion hinge. The treatment of extreme deficits is also made possible, for example.

The CDS® Hinge Flexion (knee, elbow) and the CDS® Hinge Wrist Flexion are pre-assembled at the factory for flexion treatment. The CDS® Hinge Wrist Extension is factory pre-assembled for extension treatment. The redressions area of these hinge can also be adapted or changed.
4.1. Adjust the hinge

4.1.1. Adjusting the position of the redression and limitation range

1. Remove the two screws.
2. You can adjust the position of the redression range in 15° steps. Use a goniometer to determine the desired position and adjust the hinge accordingly.
3. Insert the screws again and tighten them.
4.1.2. Setting the limitation

The limitation restricts the range of motion.

Before setting the limitation, you must deactivate the spring tension.

1. Set the switch to “off” to deactivate the spring tension.
2. Bring the hinge in extension or flexion against the desired effective direction of the spring force.

3. Turn the stop screw with the supplied tool from the CDS®-housing.

Before screwing it into one of the three bores, bring the hinge into maximum extension or flexion to the desired effective direction of the spring force. This will prevent the stop screw from hitting the moving linkage when screwed in, which could damage the CDS®-housing.

The limitation can be adjusted to the treatment progress with increasing mobility of the patient.
4.1.3. Fine adjustment for CDS® Hinge

With the CDS® Hinge you have the option of finely adjusting the limitation (stop) continuously.

Make sure that the spring tension is deactivated.

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

4.1.4. Inserting the stop wedge

1. Before inserting the stop wedge, the spring tension must be activated. Insert the stop wedge in the desired position.

2. Fix it with the supplied screw.
5. CDS® Hinge Supination/Pronation
   CDS® Wrist Extension/Flexion
   CDS® Bambini, Malinki, XS/XS, XXS (Nano)
   CDS® Hinge 360°
   CDS® Adapter-Hinge 360°
   CDS® Nano Hinge
   CDS® Nano Adapter-Hinge

The redression area of the CDS®-housing is 90°.

With the CDS® Hinge | CDS® Nano Hinge, the position of this redression area can be freely selected by means of an adjustable hinge support. As a result, the CDS® Hinge | CDS® Nano Hinge can be used as an extension as well as flexion hinge. The treatment of extreme deficits is also made possible, for example.
5.1. Adjust the hinge

5.1.1. Adjusting the position of the redression and limitation range for
- CDS® Hinge Supination/Pronation
- CDS® Wrist Extension/Flexion
- CDS® Hinge 360°
- CDS® Adapter-Hinge 360°

1. Remove the two screws.

2. You can adjust the position of the redression range in 15° steps. Use a goniometer to determine the desired position and adjust the hinge accordingly.

3. Insert the screws again and tighten them.
5.1.2. Adjusting the position of the redression and limitation range for
CDS® Bambini, Malinki, XS/XS, XXS (Nano)
CDS® Nano Hinge
CDS® Nano Adapter-Hinge

1. Loosen the central screw with the enclosed tool until the thigh rod can be lifted completely by the toothing.

2. You can adjust the position of the redression range in 10° steps. Use a goniometer to determine the desired position and adjust the hinge accordingly. Due to the change in the redression range, the extension or flexion stop can be adjusted in 10° increments. The hinge settings must be made identical on both sides.

3. Re-place the thigh bar and tighten the central screw again.
User Instructions

5.1.3. Setting the limitations for
  CDS® Hinge Supination/Pronation
  CDS® Wrist Extension/Flexion
  CDS® Hinge 360°
  CDS® Adapter-Hinge 360°

The limitation restricts the range of motion.

Make sure that the spring tension is deactivated.

1. Set the switch to “off” to deactivate the spring tension.
2. Bring the hinge in extension or flexion against the desired effective direction
   of the spring force.
3. Turn the stop screw with the supplied tool from the CDS®-housing.

Before screwing it into one of the three bores, bring the hinge into maximum
extension or flexion to the desired effective direction of the spring force. This
will prevent the stop screw from hitting the moving linkage when screwed in,
which could damage the CDS®-housing.

The limitation can be adjusted to the treatment progress with increasing mobility
of the patient.
5.1.4. Inserting the stop wedge

1. Before inserting the stop wedge, the spring tension must be activated. Insert the stop wedge in the desired position.
2. Fix it with the supplied screw.
6. Setting the hinge for Hypex® Lite

Extension and flexion can be limited in 15° steps by appropriate positioning of the stop pins.

In order to set the Extension/ Flexion limitation and the immobilisation the following steps must be executed.

6.1. Opening of the hinge cover

1. Open the hinge cover.

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### 6. Setting the hinge for Hypex® Lite

Extension and flexion can be limited in 15° steps by appropriate positioning of the stop pins.

In order to set the Extension/ Flexion limitation and the immobilisation the following steps must be executed.

6.1. Opening of the hinge cover

1. Open the hinge cover.
6.2. Setting the extension limitation

1. In order to set the extension limitation, bring the brace into flexion.

   1. Monocentrical hinge
   1. Polyclentrical hinge

2. Place the stop pin into the desired position.

   2. Monocentrical hinge
   2. Polyclentrical hinge
6.3. Setting the fine adjustment

1. Additionally, the extension limitation can be adjusted infinitely using the fine adjustment from 45° via 0° to -15°.

6.4. Setting the flexion limitation

1. In order to set the flexion limitation, bring the brace into extension.
2 Place the stop pin into the desired position.

6.5. Immobilisation

1 Immobilisation can be set in 15° steps by appropriate positioning of a stop pin in the stop area. Additionally, the set immobilisation can be infinitely adjusted from 45° via 0° to -15° using the fine adjustment.
6.6. Unlimited flexion

1. For unlimited flexion put one stop pin into the position $\infty$.

2. Make sure that both stop pins are placed in the pinholes and that there is always at least one stop pin positioned in the pinholes of the extension stops.

The hinge cover must always be closed after any adjustment in order to secure the stop pins.
7. Setting the hinge for ROM Nano Hinge / ROM Nano adapter hinge

Extension and flexion can be limited in 10° steps by appropriate positioning of the stop pins.

In order to set the Extension/ Flexion limitation and the immobilisation the following steps must be executed.

7.1. Remove the hinge cover

1. Rotate the hinge cover 90°.
2. Remove the cover from the hinge.
7.2. Setting the extension limitation

1. In order to set the extension limitation, bring the brace into flexion.
2. Place the stop into the desired position.

7.3. Setting the flexion limitation

1. In order to set the flexion limitation, bring the brace into extension.
2. Place the stop into the desired position.
7.4. Immobilisation

In order to immobilize the brace, first set the extension limitation. Move the hinge rod against the extension limitation and position the flexion stop adjacent to the hinge rod.

7.5. Reattach the hinge cover

1. Make sure that both stops are placed in the holes.
2. Reattach the cover and rotate it 90° until the locking position. The hinge cover must always be closed after any adjustment in order to secure the stops.
8. 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.

8.1. Care

- The product as delivered is not sterile and is not suitable for sterilization.
- Do not use harsh or abrasive cleaners.
- Not machine washable.
- The CDS® Hinge / CDS® Nano Hinge / Hypex® Lite Hinge / ROM Nano Hinge can be dried in the open air.
- 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.
9. Technical data

<table>
<thead>
<tr>
<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hinge material</td>
<td>aluminium / steel</td>
</tr>
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</table>

10. Transfer of the hinge

The CDS® Hinge / CDS® Nano Hinge / HypeX® Lite Hinge / ROM Nano Hinge 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 hinge checked by an authorized specialist dealer for safe and proper operation.

11. Disposal

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