

ORTHO
SYSTEMS

2000
2026
Years in motion



Excellence in Neuro-Orthopedics

Your Patient – Our Contribution

Catalogue
Excerpt

Orthotics 14.0
Valid from July 2026

Functional Overview HKAFO Hip Joints

Motion-limiting hip joints for HKAFOs are indicated for use in patients with lesions at levels L3 to L5, or for other conditions that necessitate hip stabilization. Here, we distinguish between three variants: 1D, 2D, and 3D. 1D joints permit motion in flexion/extension only; 2D joints add a pelvic rotation component for increased step length; 3D hip joints include abduction. Modos hip joints use a pre-selected push-button system for unlocking. The Fokus system is unlocked for sitting via a lever, which can be mounted at the front or the back. Stabilization of the pelvis is achieved via a pelvic band, which we can custom fabricate to your specifications (order suffix "AG").

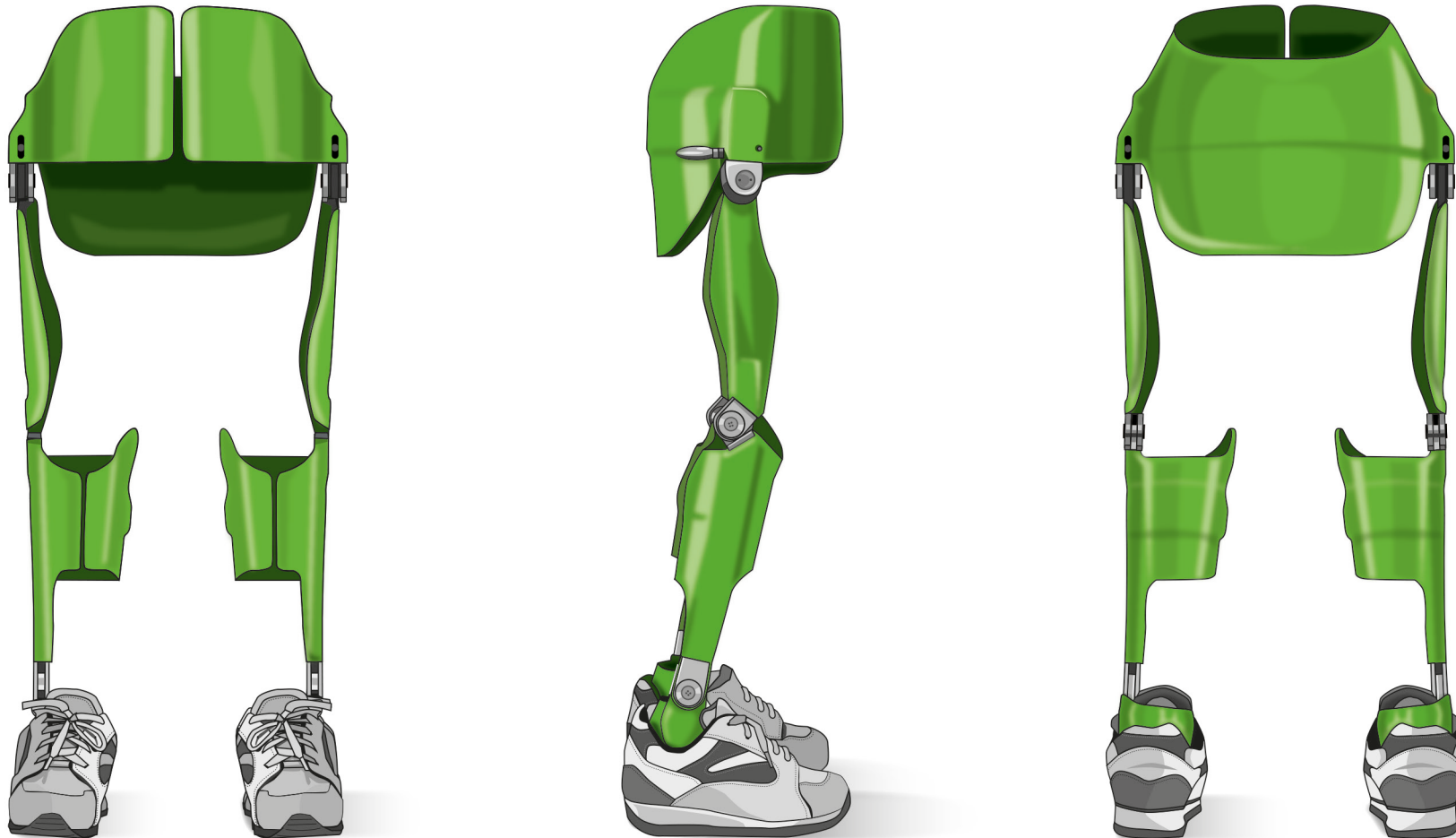


Orthosis	Partially Restricted	Locking Mechanism	1D		2D		3D		
			Extension	Flexion	Step Length	+ Pelvic Rotation	Abduction	and Adduction	
									Modos-3-D Pages 164-165
									Modos-2-D Pages 166-167
									Modos-1-D Pages 168-169
									Fokus-3-D Pages 170-171
									Fokus-2-D Pages 172-173
									Fokus-1-D Pages 174-175

An HKAFO without mobility in the ankle joint restricts the wearer's freedom in several important aspects. Stance stability is affected, as slight forward and backward movements of the trunk are transmitted directly through the orthosis to the ground. Absence of movement in the ankle during walking results in a shortened step length, increasing energy expenditure, and thereby reducing endurance.

HKAFO

Example: A patient with a lesion in the lower lumbar area (L3/L4/L5) resulting in flaccid paralysis is fitted with an HKAFO. The orthotic components of this device have been minimized to the essentials required for function, following the principle “as little as possible, as much as necessary.” The front of the pelvic section is trimmed higher to extend over the lower two ribs and encloses the ASIS at the bottom. The back is cut out proximally, enabling the user to execute a hyperlordosis movement, thus aligning their center of gravity (shoulder in line with the hip). The lower part of the pelvic section is left long over the buttocks to provide the critical contact point in adherence to the 3-point pressure system. To facilitate donning, thigh cuffs are omitted. Fully enclosing, circular cuffs for the calf and foot sections, along with adapted orthotic shoes, ensure a secure hold of the leg.

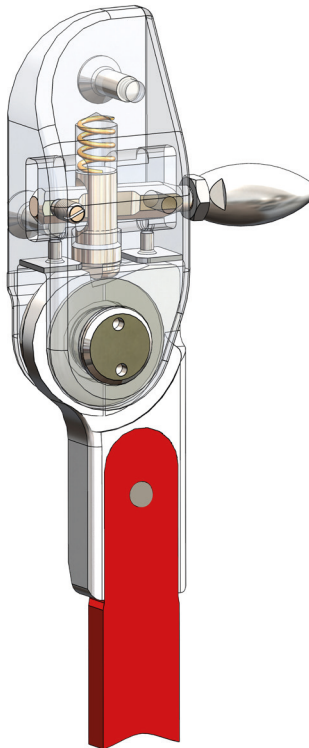


Achieving optimal function from the HKAFO requires precise, individual customization. Depending on the strength of the quadriceps musculature, HKAFOs are supplied with either locked or free-motion posterior offset knee joints. If extensive alignment adjustments are required, they can easily be carried out using angle-adjustable knee joints, such as our Klassik-Konso/Konso-0/5 or Varo-PS, in combination with Shuttle angle-adjustable ankle joints.

HKAFO Hip Joints in Comparison



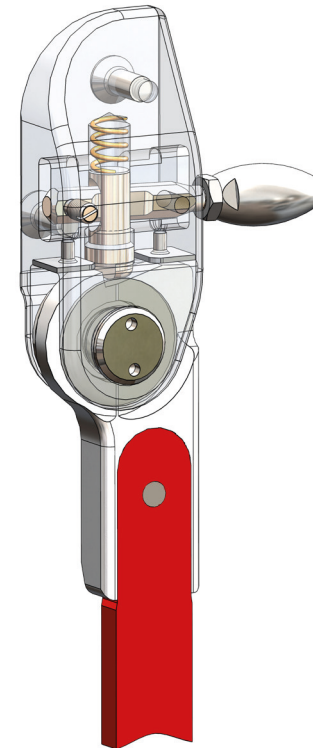
The specific nature of a disorder and the intended use of the orthosis are decisive factors when determining the appropriate movement limitations for our Fokus hip joints. The highest priority is ensuring patients retain as much mobility and range of motion as possible. Pelvic rotation (3D, 2D) plays the most important role in achieving an energy-efficient gait. Allowing free abduction (3D) can enhance security and versatility in standing, walking, and sitting. We distinguish between two locking mechanisms: lever and pre-select. The Fokus system is unlocked using a lever, which automatically locks when the hip is extended. The Modos system, with its pre-selected push buttons, allows the user to choose between unlocked and locked positions. When the locking mode is activated, the joint automatically engages as soon as the hip is extended.



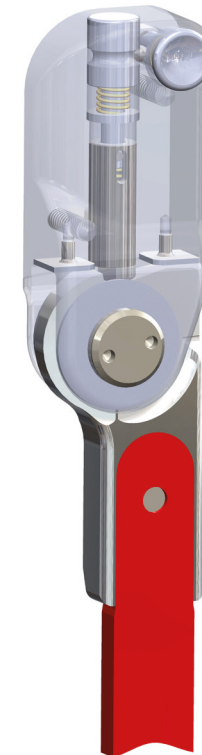
Fokus-3D



Modos-3D



Fokus-2D



Modos-2D

Locking Mechanism
Unlocked (maintained)
Adduction
Abduction
Internal / External Rotation
Flexion when locked
Flexion when unlocked
Extension

Lever
 no
 blocked
 free
 free to 12° (24° total)
 12° stop (can be increased)
 free to 130°
 up to 6°

► more on pages 170 - 171

Pre-Select
 Push button (unlocked)
 blocked
 free
 free to 12° (24° total)
 12° stop (can be increased)
 free to 130°
 up to 6°

► more on page 164 - 165

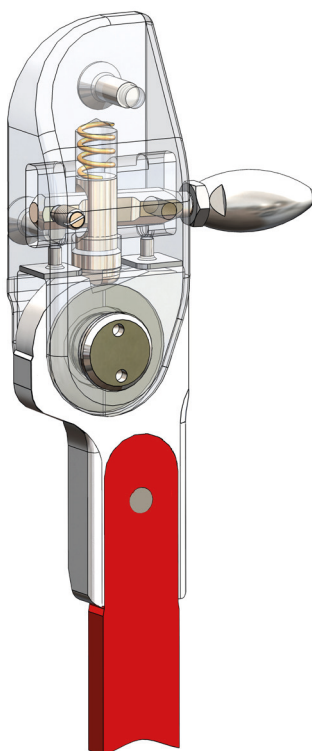
Lever
 no
 blocked
 blocked
 free to 12° (24° total)
 12° stop (can be increased)
 free to 130°
 up to 6°

► more on page 172 - 173

Pre-Select
 Push button (unlocked)
 blocked
 blocked
 free to 12° (24° total)
 12° stop (can be increased)
 free to 130°
 up to 6°

► more on page 166 - 167

Hip joints that only permit movement in flexion and extension (1D) are used in cases of restricted mobility, postoperatively, or in orthoses involving only one hip, among others. If no flexion stop is required, the free Liber joint can be used.

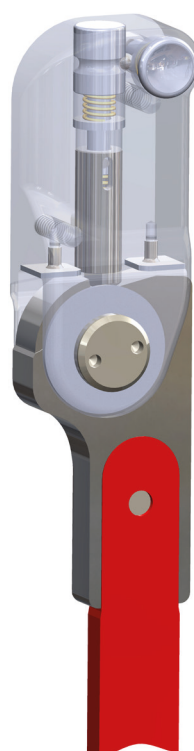


Fokus-1D

Locking Mechanism
Unlocked (maintained)
Adduction
Abduction
Internal / External Rotation
Flexion when locked
Flexion when unlocked
Extension

Lever
 no
 blocked
 blocked
 blocked
 12° stop (can be increased)
 free to 90° (can be increased)
 up to 6°

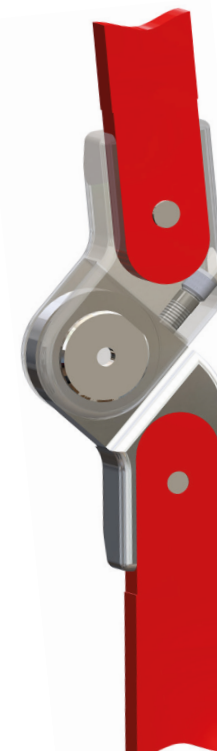
► more on page 174 - 175



Modos-1D

Pre-Select
 Push button (unlocked)
 blocked
 blocked
 blocked
 12° stop (can be increased)
 free to 90° (can be increased)
 up to 6°

► more on page 168 - 169



Liber

no
 no
 blocked
 blocked
 blocked
 no
 always, up to 140°
 up to 0°

► more on page 88 - 89

Functional Overview RGO Hip Joints

Reciprocating hip joints are generally indicated for use in patients with lesions at levels TH-5 to L-3, or for other conditions requiring reciprocal joint guidance. Here we distinguish between two different variants: one or two dimensional (1-D or 2-D). Conventional 1-D joints provide movement in flexion /extension, while 2-D hip joints add a pelvic rotation component for improved, smoother walking. Safety lock uses a pre-select mechanism which prevents unwanted opening of the joint. Stabilization and motion transmission take place via a rocker bar mechanism, which we can custom fabricate according to your specifications (model "AG").

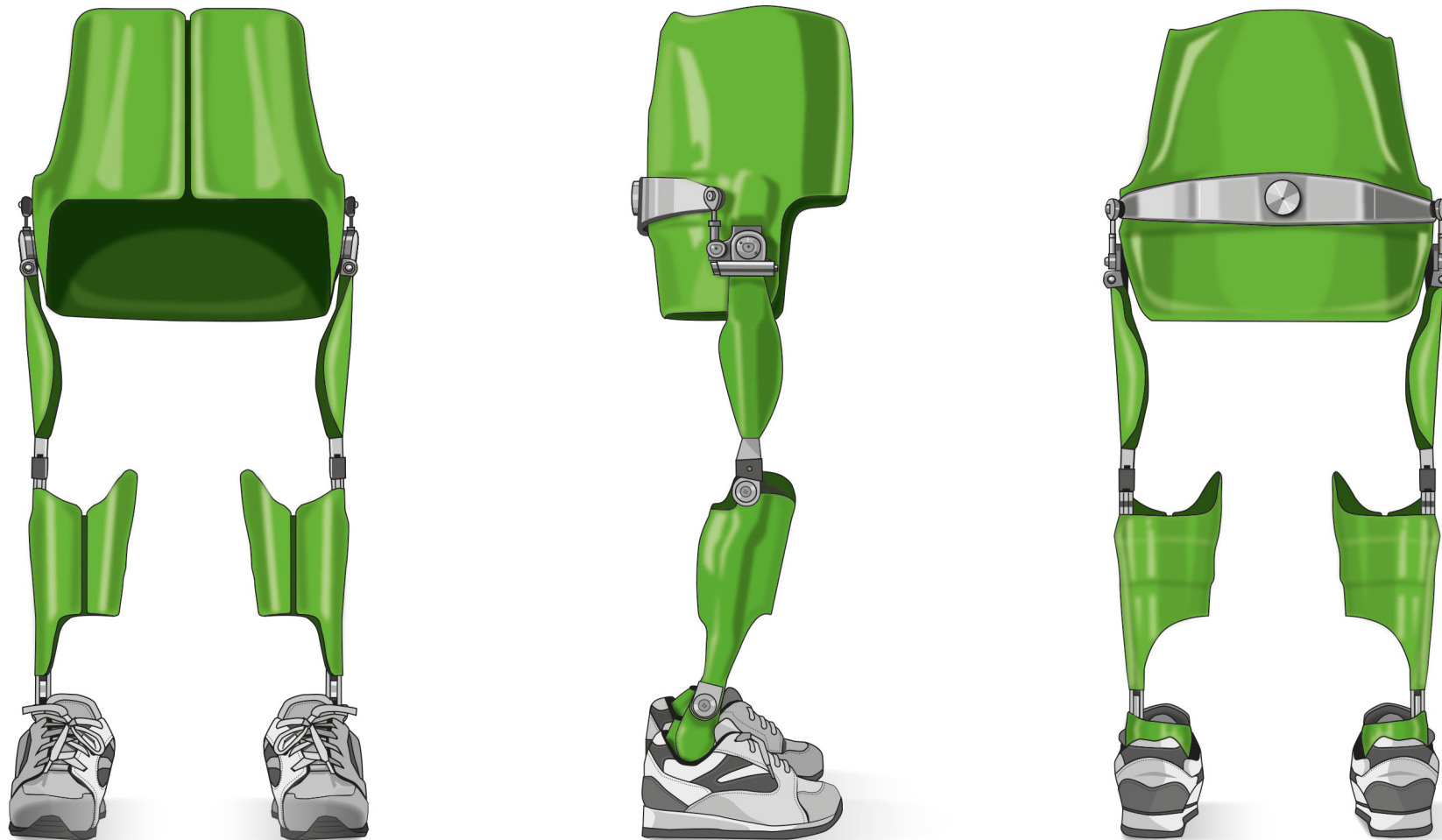


Orthosis	Locked	Locking Mechanism	1D		2D		Ab / Adduction	No Grinding Necessary	
			Extension	Flexion	Step Length	+ Pelvic Rotation			
									Buran-2-D Pages 186 - 187
									Revo-2-D Pages 188 - 189
									Revo-1-D Pages 190 - 191

An RGO without mobility in the ankle joint restricts the wearer's freedom in several important aspects. Stance stability is affected, as slight forward and backward movements of the trunk are transmitted directly through the orthosis to the ground. Absence of movement in the ankle during walking results in a shortened step length, increasing energy expenditure, and thereby reducing endurance.

RGO

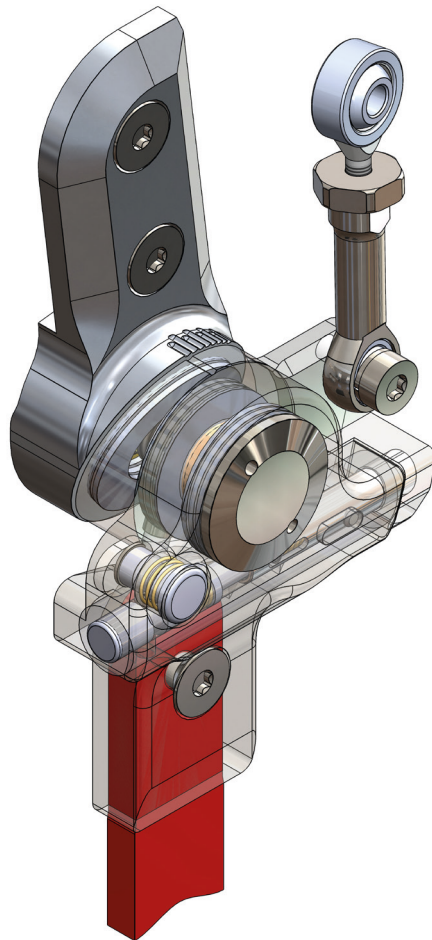
Example: A patient with a lesion in the thoracic to upper lumbar regions resulting in flaccid paralysis is fitted with an RGO. The orthotic components of this device have been minimized to the essentials required for function, following the principle “as little as possible, as much as necessary”. This includes a high trunk section to address spinal issues (scoliosis/kyphosis) and stabilize the rib cage. The lower portion of the trunk extends over the buttocks to supply the critical contact point in adherence to the 3-point pressure system, as well as providing a lateral edge to assist in free sitting. To facilitate donning, thigh cuffs are omitted. Fully enclosing, circular cuffs for the calf and foot sections, along with adapted orthotic shoes, ensure a secure hold of the leg.



Achieving optimal function from the RGO requires precise, individual customization of all three joint segments: hip, knee, and ankle. Extensive alignment adjustments can easily be carried out using the Buran 2D hip joint and Klassik-Konso, Konso-0/5, or Varo-PS knee joints in combination with Shuttle ankle joints. All of these allow for angle adjustment.

Reciprocating 2D Hip Joints in Comparison

Pelvic rotation plays a key role in achieving an energy-efficient gait in humans. It reduces energy expenditure by facilitating efficient transfer of kinetic energy. Greater step length requires increased pelvic rotation; however, maximum step length is not always the deciding factor in joint selection. In some cases, a slimmer profile orthotic design may be preferable, for example for wheelchair use. To accommodate these differing requirements, we offer two distinct joint options, compared below.



Buran-2D

For patients **25 to 85 kg**

Joint thickness **37,5 mm**

Adjustable connectors

Separate sitting and walking axes

Maximal pelvic rotation

► More on pages 186 - 187

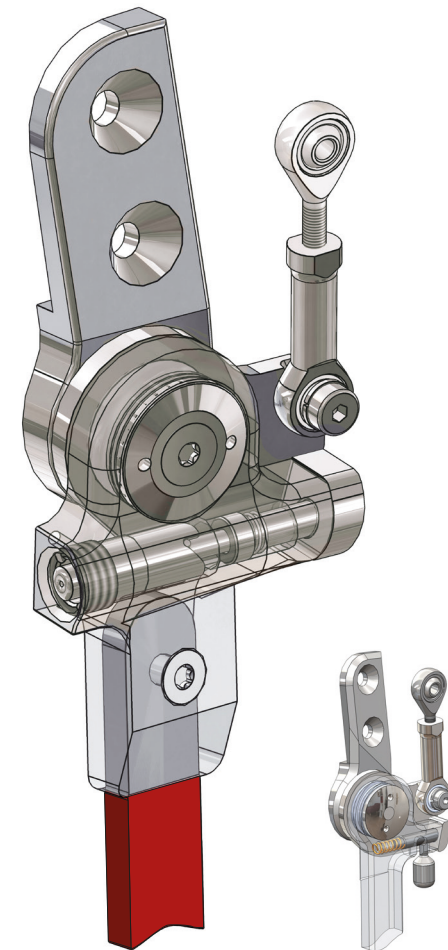
Revo-2D

For patients **10 to 85 kg**

Joint thickness **32 mm**

Standard pelvic rotation

► More on pages 188 - 189



RGO Custom Fabricated Pelvic Connection

The rocker bar mechanism is essential for the stability of the pelvic section and maintaining alignment of the joints. For customers who prefer not to bend the high-strength aluminum themselves, we offer this custom service (use order suffix "-AG").



Your outline should be taken over top of any trunk padding.

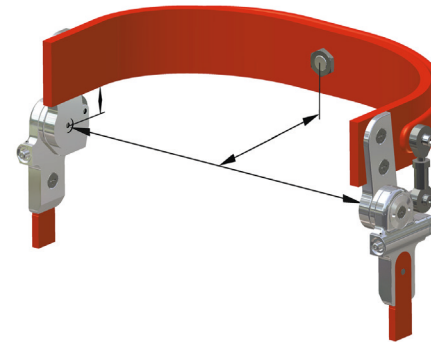
We strive for exact duplication of your measurements within a +/- 2 mm tolerance.

Please indicate the right and left sides of the outline.

As seen from the patient's perspective.

The outline is taken 2.5 cm above the hip joint placement.

The distal edge of the pelvic band sits here.



Please inform us if any hip contractures are present.

We can adjust the pelvic band accordingly.

The pelvic band is delivered parallel and without holes.

You still have the possibility to make adjustments to the hip joint positioning.

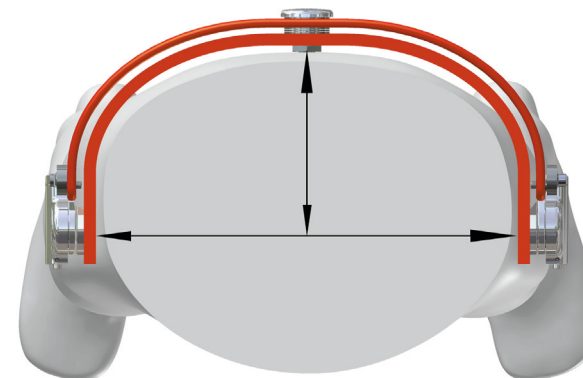
Your custom order is shipped within 5 workdays.

If wished, the hip joints can be sent in advance of the pelvic band.

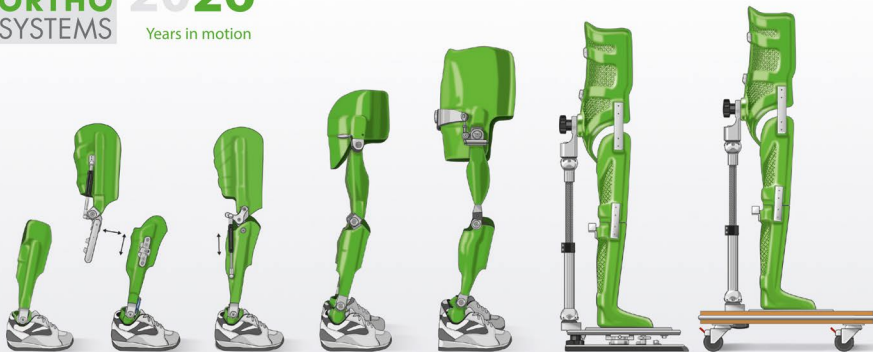
The pelvic connection must be additionally reinforced

during the lamination process, for example with carbon fiber tubing.

We are happy to assist you with advice on this matter.



Rocker Bar Mechanism for **Buran** and **Revo** Hip Joints
Custom Bent



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