

STANDPUNKT



More than just
a knee joint!

Discover the next
level of mobility!



Easy. Good.
Movement.

Unitos "G2" & Unitos "Smart"

Unitos System



All Unitos systems are based on a connection between the polycentric knee joint unit and the ankle joint. They are designed to recreate the physiology of connected muscular chains. This connection allows the amputee to carry out an "active dorsal extension" in the swing phase. Since the ankle joint remains stable during the stance phase, allowing for a toe push-off, the user benefits in the stance phase from the advantages of energy return.

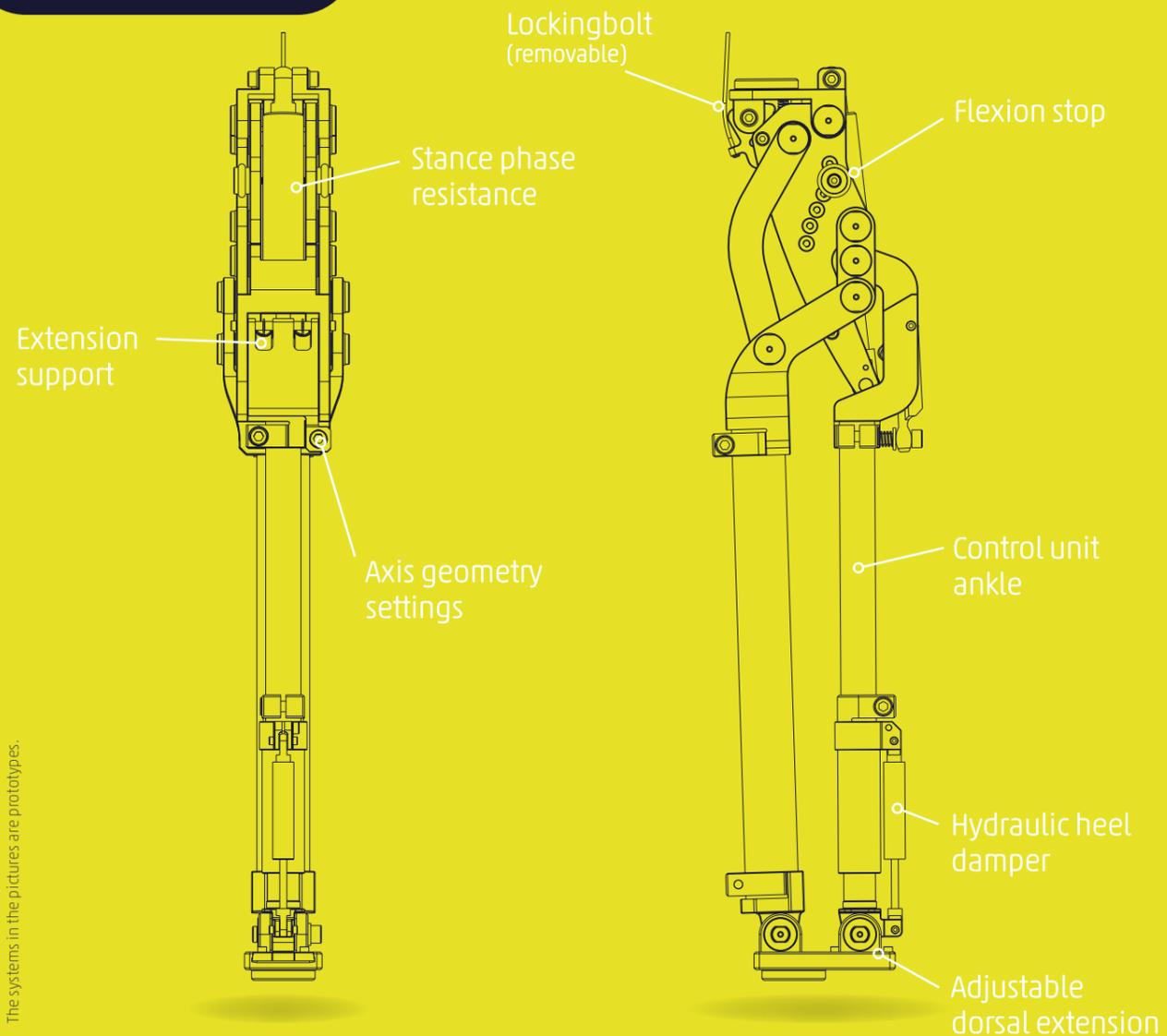
An adjustable inflection limiter can be used to limit the polycentric joint's range of motion.

The inflection limiter acts as tripping protection, preventing the amputee from falling due to an unforeseen bend of the knee. This tripping protection is adjustable in six steps.

Unitos can be adjusted to specific activities.

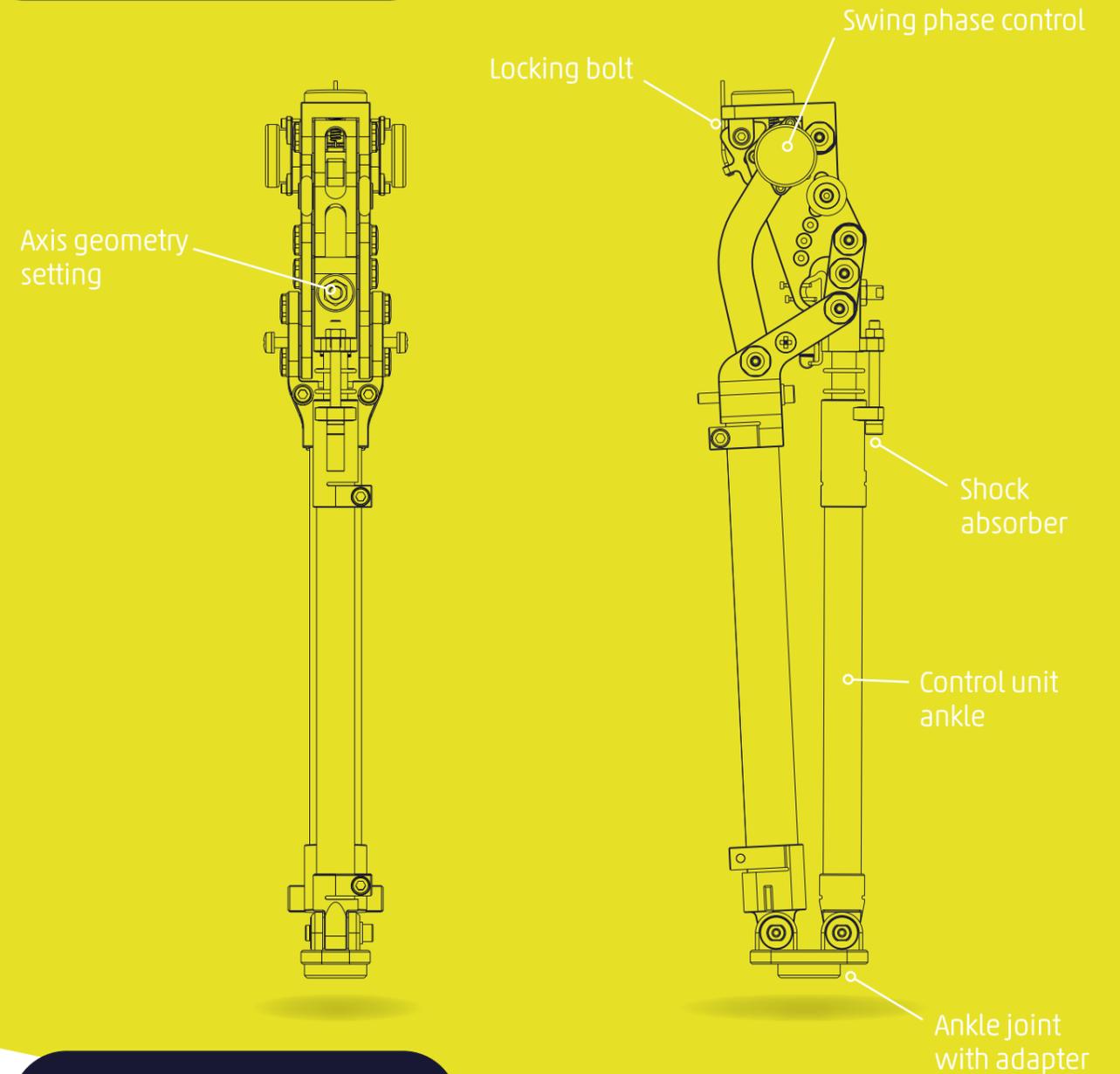
This allows the system to be individually adjusted to the user's activity and converted as necessary. The maximum possible inflection is approx. 60 degrees, corresponding to a natural gait. Furthermore, the axle

Unitos "G2"



The systems in the pictures are prototypes.

Unitos series product description



Unitos "Smart"

geometry of the polycentric joint can be changed and adjusted to the dynamic movements of the user.

There is an additional, monocentric joint above the polycentric joint for movements requiring a deflection angle greater than the inflection stop. Depending on the version, this joint may be fitted with a manual lock that can be unlocked to sit down. Alternatively, this monocentric joint can be fitted with a hydraulic cylinder. The stance phase resistance this creates allows for yielding, going down stairs using alternating legs, and controlled sitting against deflection resistance.

Depending on the version, the ankle joint may be fitted with a shock absorber or adjustable hydraulic unit. This allows for a dampened heel strike and natural rolling motion.

The adapter on the distal end allows all Unitos systems to be combined with commonly available prosthetic feet. There is also a proximal adapter for the socket adaption.

Biomechanics of the Unitos system

Sufficient ground clearance is essential in ensuring the leg can be swung through the user's gait safely while walking. This clearance is achieved by bending the knee while extending the foot dorsally.



One major problem for transfemoral amputees is that the foot is not able to carry out this dorsal extension during the swing phase. Therefore, greater knee deflection is needed to achieve the necessary ground clearance. This is impossible for older patients (especially K1 and K2). Often, they do not have the power to achieve the necessary knee deflection angle.

Even active amputees (K3 and K4) can experience this problem if they walk slowly or take short steps. Frequently, they engage in unnatural and strenuous compensatory movements, such as lifting the hip. In the field of prosthetics, the ideal goal is always to achieve intuitive walking and a natural gait. Due to their age and health status, the gaits of many K1 and K2 amputees tend to worsen. They are only able to achieve a minimum level of knee inflection, even on the contralateral side. In this case, a natural gait will look different than for active, healthy amputees.

The physiological gait as the goal.

The direct, mechanical coupling of the knee and ankle joints in the Unitos system helps create an individual and natural gait for any amputee. Since dorsal extension begins at the same time as knee flexion, ground clearance is greater from the start. This allows the user to take slow, small steps without tripping. The Unitos G2 also allows the user to adjust the amount of dorsal extension.



Stability during the stance phase



Unitos Cover



Dorsal extension during the swing phase

Safety first!

Another advantage of the Unitos system is that it offers secure heel contact with the ground. If the user accidentally puts on the prosthetic when bent, stance phase stabilization remains possible. Torque will then be created upon heel strike, resulting in plantar flexion. Because of the connection to the knee joint, this plantar flexion, in turn, facilitates the extension movement of the polycentric joint.

A hydraulic damper in the monocentric joint of the unit allows for the stance phase resistance to be adjusted to any level. This is important for dampened sitting and climbing stairs. Since knee flexion also involves dorsal extension, the amputee can place their entire foot on the stair, making it easier to transfer to the next step.

The systems in the pictures are prototypes.

Benefits

User advantages of the Unitos system

- System saves energy while walking by making it easier to swing the leg through
- Dynamic walking due to the relative contraction of the leg
- Natural walking without compensatory movements
- Change walking speed and step length while walking
- Go up stairs with alternating legs
- Safe turning movements
- Sit down against deflection resistance
- Individually adjustable to the user
- Good feeling of safety for the user



Our USPs

Unique selling propositions for Unitos prosthetics

- The dorsal extension of the ankle joint reduces the danger of tripping, allowing amputees to easily overcome obstacles.
- The adjustable inflection limit prevents the knee joint from bending too deeply, protecting against falls.
- The infinitely adjustable axle geometry allows the prosthetic to be adapted to different activity levels.
- Dampers in the ankle joint provide a high level of comfort to the amputee and make it easier to roll off the ball of the foot.

dynamic

physiological

simple

intuitive

safe

reliable

energy-saving



Matthias Klopff and Johannes Klopff – CEOs


STANDPUNKT

STANDPUNKT by Klopff GmbH
Bachstraße 8
97297 Waldbüttelbrunn
www.standpunkt.net

CONTACT US:
TEL +49 170 2942559
MAIL info@standpunkt.net

More information and
videos of example
movements are available
at standpunkt.net

