

Paexo product information: exoskeleton for comfortable overhead work

June 2018



Quality for life

What is Paexo?

- The novel Paexo exoskeleton relieves strain on the shoulder joints and upper arms during activities with the arms raised, for example when performing overhead assembly work.
- Paexo is worn close to the worker's body, similar to a backpack. The weight of the raised arms is transferred to the hips by the exoskeleton's arm shells with the help of mechanical cable pull technology, providing noticeable relief for the muscles and joints in the shoulder region.
- Paexo thereby reduces critical physical strain while working. The long-term effect of preventive relief could reduce the risk of work-related musculoskeletal disorders in the shoulder region.

Who can use Paexo?

- The new exoskeleton is designed for use in industrial applications, for example by automobile manufacturers, in airplane hangars and shipyards, trade enterprises or logistics companies.
- Paexo supports people who carry out physically demanding tasks on a daily basis, from production workers to craftspersons. The exoskeleton is intended in particular for applications where other technical devices cannot be used.
- The age of the user is not important; indeed young people in particular benefit from preventing work-related musculoskeletal disorders from developing in the first place.

What are the benefits?

- Paexo improves comfort during overhead work by reducing strain on the muscles and joints in the shoulder region.
- Paexo improves quality by reducing inaccuracies during work, caused for example by fatigue or constrained postures.
- Paexo adds value by reducing unnecessary and process-specific movements (bending, turning, stretching).

- Paexo boosts employee motivation and loyalty to the company and makes the company more attractive to qualified personnel.

Overview of technical specifications

- At 1.9 kg, Paexo is the most lightweight exoskeleton for overhead work.
- Paexo can be individually adapted to the user. The level of support is variable and adjustable.
- Fully ergonomic freedom of movement is supported by the biomechanically oriented design.
- No power supply needed (passive exoskeleton).
- Paexo is easy to put on and take off.
- It can be worn for more than eight hours a day.

How was Paexo developed?

- Paexo was developed based on Ottobock's nearly 100 years of expertise in the fields of biomechanics, orthopaedic technology and product ergonomics.
- Paexo originated in the ORTAS¹ research project, in which among others, Volkswagen AG in Wolfsburg and the Institute for Biomechanics and Orthopaedics at the German Sport University Cologne were involved.
- In that project, the acting biomechanical forces and stresses were determined through the scientific analysis of overhead workstations by the German Sport University Cologne.
- The close cooperation with Volkswagen led to insights in production, work ergonomics and occupational health and safety.
- The needs and expectations of users were effectively determined during on-site observation and tests in cooperation with Volkswagen production workers, with the objective of investigating the early acceptance and functionality of various prototypes.

¹ www.technik-zum-menschen-bringen.de/projekte/ortas