ARTUS - Data sheet

General information

Product name	ARTUS Passive Exoskeleton
Version status	2.1
Description	Finger Exoskeleton
Certification	PPE cat. I
Creation revision	1.0

The device is designed to be worn on the fingers (AF variant) and/or the thumb (AT variant). It is recommended to be worn on top of a protective glove (Figure 1). It is designed to provide preventive support for activities that can cause injury or overuse of the hands and fingers. It protects against hyperextension of the finger joints, light crushing and impacts, and superficial cuts or abrasions caused by contact with rough surfaces.

Figure 1. Thumb and index configuration of the ARTUS exoskeleton.
Right: With assembly gloves. Left: Without gloves **[Not recommended]**

Technical information

Dimensions	Different sizes for optimal fit
Weight	AF: 6 – 15 g AT: 35 – 45 g
Material	
Rigid structure	PA12
DigiSkin	TPU
Digilock	POM (joint body), Stainless steel (core), TPU (cover)
Wrist component (AT only)	Silicon (band), Neodymium alloy (magnets), TPU (Wrist link), PA12 (Wrist connector)
Joints pre-flexion (AF only)	7°

Environmental

Application areas	Applicable indoors and outdoors
Temperature Application	-10°C ... +45°C
Humidity	95% humidity without condensation
Permissible contact with surfaces	Admissible with all surfaces for which there are no special regulations for surface damage.

Failure Stress (AF & AT) (November 2024)

Force direction	Thumb (AT)	Finger (AF)
Parallel (Figure 2 A, B)	180 N (~ 18 kg)	140 N (~ 14 kg)
Perpendicular (Figure 2 C, D)	70 N (~ 7 kg)	50 N (~ 5 kg)

Note: The Failure Stress test defines the maximum static force before failure on each exoskeleton for each force direction (see Figure 2).

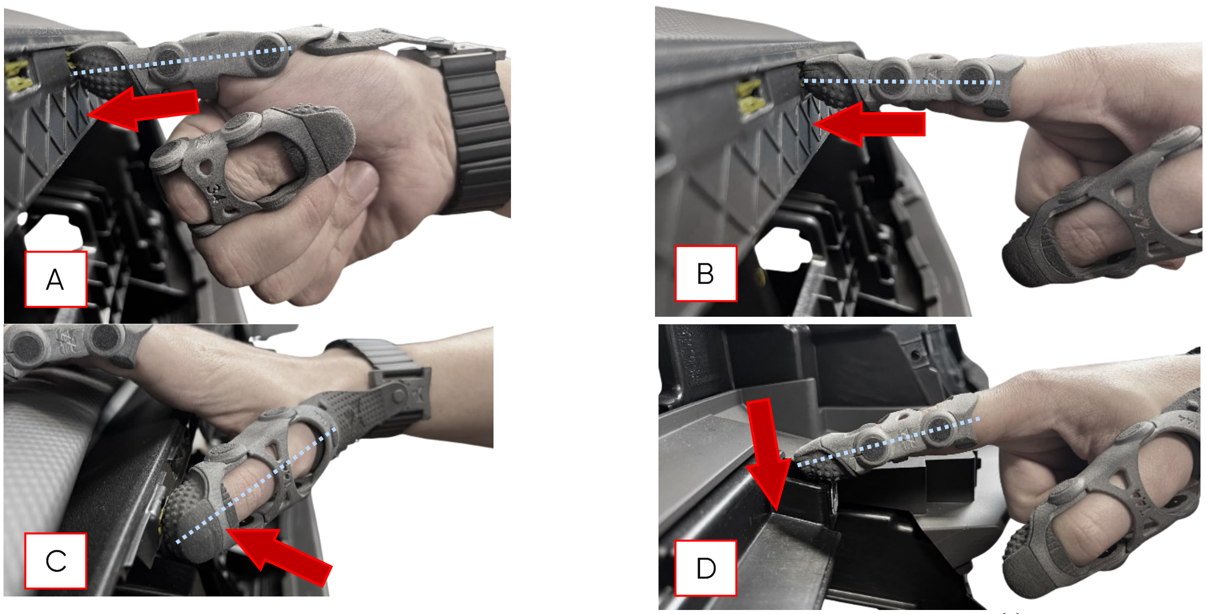

Figure 2. Main force components in ARTUS' typical application configuration: (1) force parallel to the longitudinal axis (Thumb: A, Finger: B), and (2) force perpendicular to such axis (Thumb: C, Finger D).

Fatigue (Thumb, AT) (November 2024)

Force direction	Applied force	Cycles	Lifetime estimation		
			Low frequency 1.000 push/day* (~2 per minute)	High frequency 3.500 push/day* (~7 per minute)	Very high frequency 6.000 push/day* (~12 per minute)
Parallel (Figure 2 A, B)	**140 N (~14 kg)**	500.000	> 1 year	~ 6 months	~ 2 months
Perpendicular (Figure 2 C, D)	**50 N (~5 kg)**	100.000	~ 5 months	~ 2 months	~ 3 weeks

Note: The Fatigue Stress test defines the number of times that we applied the force to a single exoskeleton. This does not constitue a use limit; it is a reference for its tested durability. One cycle consists on progresively loading the exoskeleton to the applied force, and unloading it afterwards.
*Day: the day is calculated as 8 hours of continuous work, exclusive any stops (e.g., breaks).

Fatigue (Finger, AT) (November 2024)

Force direction	Applied force	Cycles	Lifetime estimation		
			Low frequency 1.000 push/day* (~2 per minute)	High frequency 3.500 push/day* (~7 per minute)	Very high frequency 6.000 push/day* (~12 per minute)
Parallel (Figure 2 A, B)	**100 N (~10 kg)**	500.000	> 1 year	~ 6 months	~ 2 months
Perpendicular (Figure 2 C, D)	**30 N (~3 kg)**	100.000	~ 5 months	~ 2 months	~ 3 weeks

Note: The Fatigue Stress test defines the number of times that we applied the force to a single exoskeleton. This does not constitue a use limit; it is a reference for its tested durability. One cycle consists on progresively loading the exoskeleton to the applied force, and unloading it afterwards.
*Day: the day is calculated as 8 hours of continuous work, exclusive any stop (e.g., breaks).