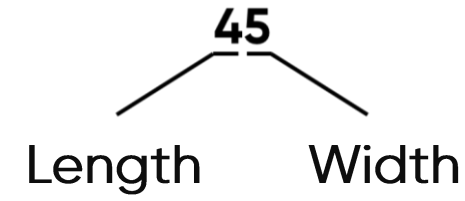
ARTUS – Sizing Guide

The size of the PPE is defined by two numbers (Figure 4), the first is the length and the second is the width of the PPE. This information is embossed on the exoskeleton itself.
The user can determine their size manually, using the "Finding your size" instructions below, or semi-automatically using the online Virtual Onboarding Tool via www.digity.de [from Q2 2025] [Recommended].



Finding your size [manually]

The size of the PPE consists of a length and a width/thickness. The length and width options are consistent across combinations, i.e., the length of the AF34 is the same as the length of AF32. This does not hold true between the finger variant (AF) and the thumb variant (AT).

Given the independence between length and width value within each exoskeleton variant, the size for each dimension can be found in a three-step process. It must be noted that the fine fit of the exoskeleton is a mostly subjective perception that depends on the user, the application, and in some cases the environmental conditions (e.g., temperature).

Preparation

To start, decide which exoskeleton variant is appropriate for the finger you want to use: use the AF Set for index and/or middle, and the AT Set for the thumb.

Recommendation 1: After testing each device, put it back in the catalog, to avoid creating chaos from mixing all of them.
Recommendation 2: Check out our Virtual Onboarding Tool: our online tool that will take over and ease this tedious process, empowering you to just focus on how each device feels.

[Step 1] Finding your approximate width

Note: If you are using the thumb (AT), the wrist link and band do not need to be attached in this step.

The objective is to find a width that fits your finger widely: not an ideal fit, but a loose one. To do that, find the first exoskeleton that fits around your finger without much force, from the next sequence:

21 → 22 → 33 → 44 → 55 → 66 → 67

Then, use one more width value (second number) for [Step 2].

Example

Anna tries **AT21** but she cannot fit it on her thumb. She could fit **AT22**, but it is so tight that she could not flex the finger. Then, she tries **AT33**, which fits comfortably. Anna then chooses the width four [**AT3**(3 + 1 = 4)] to continue with Step 2.

[Step 2] Finding your best fitting length

The objective is to find the best fitting length. To do that, test all the exoskeletons in the width value found in [Step 1] from shortest to longest. The exoskeletons will likely feel too wide; this is intended, and it is to avoid friction/pressure due to non-fitting widths.

Put the exoskeleton on the finger until your fingertip touches the inner wall of the exoskeleton tip (DigiSkin). Then, check if the joints align with your finger joints. You can perform some flexion-extensions to feel if the joints are aligned: they are if the exoskeleton does not move up and down while doing the movements, and it does not crash into your finger segments creating pressing points.

See Figure 1 to focus on the three **length** key fitting points: (1) the reach to the tip, (2) the alignment of the joints, and that (1) and (2) are fulfilled while the exoskeleton looks parallel to your finger segments.

If two or more lengths feel right, choose the shorter one; this will ensure the best tip reach, ensuring the sensitivity is maintained.

Once you find the best length (first number) fitting device, memorize it and move to [Step 3].

Example (continuation)

Anna finds the following exoskeletons having a width four: AT24, AT34, AT44, AT54.
The AT24 looks good, but when flexing the finger, the exoskeleton tilts forwards, creating a pressure point just on top of the thumb knuckle (Figure 5A). She feels a good fit with AT34 and AT44. The AT54 joints do not align with hers.
Therefore, among the good fits, Anna choses AT34 to maximize fingertip reach.

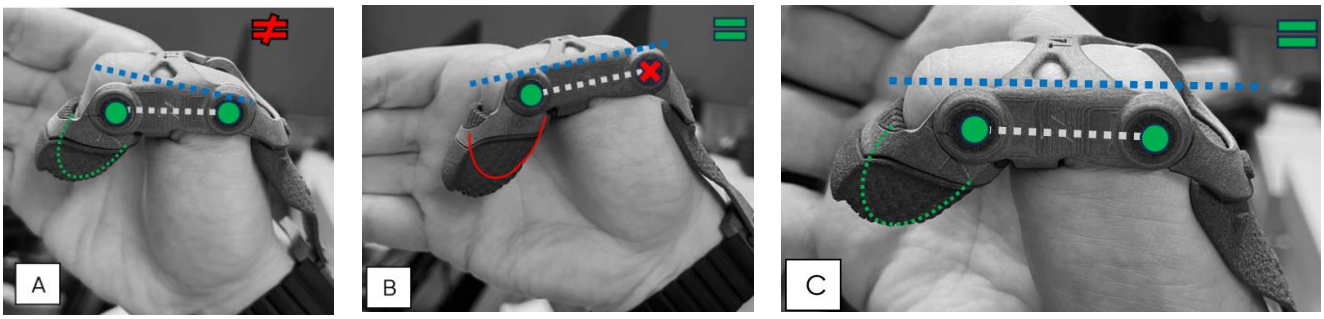


Figure 1. Key fitting points for the length. The (1) tip reach is represented by an arc (dotted green = good reach; solid red = no reach); the (2) joint alignment is represented by a green circle on the joint (good alignment) or a red cross (misalignment); the (3) parallelism between exoskeleton (straight, gray dotted line connecting the device joints) and finger segments (upper blue dotted line following finger segment) is represented by a green equal (parallel) or red non-equal sign (non-parallel).
A: Good tip reach and alignment, but non-parallel segments. ARTUS is likely too short.
B: Poor tip reach and alignment, and good parallel segments. ARTUS is likely too long.
C: Good tip reach and alignment, and good parallel segments. Best fitting ARTUS.

[Step 3] Finding your best fitting width

Once your ideal length is determined, you can fine tune your width selection to have a perfect feeling. To do so, take an exoskeleton with the length found in Step 2, and the following widths (if available): the width of Step 1 (W), W+1, and lastly W-1.

If you can fit them, test all three devices before making your decision. Note that your subjective feeling prevails at this point.

Among the three exoskeletons, choose the device that creates the most uniform pressure along your finger. No pressure **points** or friction **points** should be felt. The movement should feel natural, and the sensitivity should be present.

If any pressure or pain point is present, consider (1) returning to [Step 2] if it is because the exoskeleton moves up and down during flexion-extension, or (2) test thicker exoskeletons if the pressure is uncomfortable.

Example (final)
Anna has her three final candidates: AT33, AT34 and AT35.
After testing all three, she finds the two smaller ones the best fitting ones. She feels that she would love an AT33.5 and asks Digity for custom-made devices...
In the meantime, Anna chooses AT34 as she remembers that her fingers tend to swell during the long hours at her assembly line.

[Adjustments] Boosting thumb dynamic tip reach: The wrist adjustment

For AT devices (thumb), the exoskeleton is connected via the wrist link to a wrist attachment point (see Figure 2). This connector is asymmetric, which enables the wrist band to control the distance from the wrist to the exoskeleton itself by rotating the wrist band around that attachment point.
This adjustment can be used to (1) improve the wrist mobility (longer setting), (2) increase the pulling that the wrist link makes to the exoskeleton towards the wrist to ensure tip reach during flexion movements (shorter setting), and/or (3) adjust the position of the wrist band itself on the wrist (shorter/longer setting).

Figure 2. The asymmetric wrist connector allows tuning the distance wrist-exoskeleton. It is useful to boost tip reach, wrist mobility, and comfort.