

NAO Thumb / finger repair

This document is a step by step procedure to follow in order to replace a broken thumb / finger part.

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1. Turn the robot off

Put the robot in a safe position by setting it in a crouching position.



Press the chest button for 3 seconds until the robot says “GNUK GNUK”.



Wait for all LEDs to turn off.

Shutdown is completed when all the LEDs are off.



If the battery charger is connected to the robot:

- Unplug the battery charger from the wall socket.
- Unplug the charger cable from the robot's back.



2. Remove the finger / thumb

Remove the finger / thumb from the hand by holding the soft palm tightly and pulling the finger / thumb to remove it from its housing.



PH0 screwdriver

Open the finger / thumb by removing :

- the four KA 18x6 screws (finger)
- the three KA 18x6 screws (thumb)

3. Replace the finger / thumb parts

Identify the female finger tip frame and the male finger tip frame.

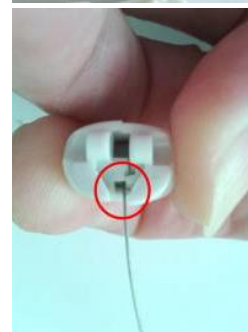
Position the finger cable end in the female finger tip frame.

Clip the male finger tip frame to the female finger tip frame.

Make sure the finger cable is correctly placed in its housing.

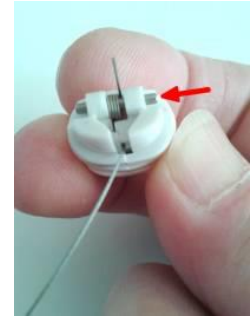
Torque screwdriver (PH0)

Tighten the KA 18x6 screw on the male finger tip frame.



Take the finger spring and position it between the two finger tip frames, making sure the ends of the spring are placed above, as shown in the picture.

Insert the finger spring axle in the finger frames to maintain the spring.



Place the female finger middle frame on the spring axle, making sure the end of the spring and the finger cable remain inside the frame.

Clip the male finger middle frame to the female finger middle frame, making sure the finger cable is correctly placed.

Torque screwdriver (PH0)

Tighten the KA 18×6 screw on the male finger middle frame.



Repeat the steps from 8 to 10 for the second finger middle frames.



Take the finger spring and position it between the two finger middle frames, making sure the ends are placed above, as shown in the picture.

Insert the spring axle in the finger frames to maintain the spring.

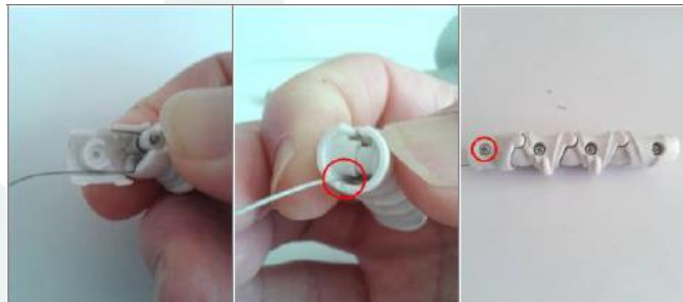


Place the female finger base frame on the spring axle, making sure the end of the spring and the finger cable remain inside the frame.

Clip the male finger base frame to the female finger base frame, making sure the finger cable is correctly placed in its housing.

Torque screwdriver (PH0)

Tighten the KA 18×6 screw on the male finger base frame.



Make sure the finger is functional.

Pull the finger cable and make sure the thumb bends.

Release the finger cable and make sure the finger unfolds correctly.



4. Install the finger / thumb in the hand

Identify the locating pin in the soft palm.

Insert the finger in its housing, following the locating pin.

Push the finger as far as it can go, in the soft palm.



Press the chest button once to turn the robot on in order to check the NAO is able to open and close the fingers correctly.

