

Instruction for NRX® Strap Hybrid Thumb

The NRX® Strap and NRX® Strap Neptune are both ideal for thumb applications as they can provide a combination of proprioception, compression and stability. This instruction provides you with additional ways to customize individual thumb supports with thermoplastic reinforcements and NRX® Heat Tapes.



NRX[®] Strap Hybrid Thumb

Material

Main body:

- NRX[®] Strap Neptune 30 mm or NRX[®] Strap 30 mm.

Reinforcements:

- NRX[®] Thermoplastic kit for Heat Tape, EU490080

For applications where a loop surface is needed for hook attachment:

- NRX[®] Loop Heat Tape 50 mm, EU490090

For applications linking two materials together or to restrict elasticity or if hook reception is not needed:

- NRX[®] Heat Tape 22 mm, EU490001

- Hook parts

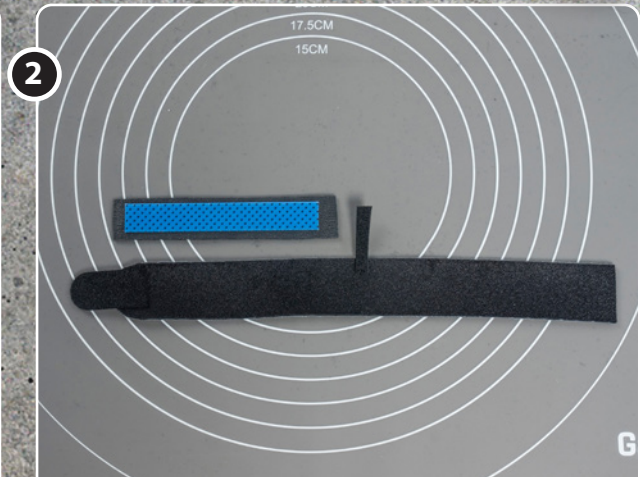


Individual stabilization CMC- & MP-joint

The thermoplastic reinforcement provides support and stability to the CMC- & MP-joint in combination with the flexibility of the NRX[®] strap. Extending the thermoplastic over the strap provides a longer lever-arm and higher support level. We recommend using NRX[®] Strap Neptune as the start of the construction as it makes application easier for the patient, as the thumb support can slide on and off.



1 Attach a hook part in the end and close it around the MP-joint. If you want more immobilization of the MP-joint, attach it higher up. Then determine the length of the thermoplastic reinforcement by attaching a small hook strip on the side.



2 Position the strap with the loop side up. Cut a thermoplastic strip from the hook attachment to the strip marking. Use a Loop Heat Tape to cover the thermoplastic, make sure that you have 5 mm extra on the start/end and 2 mm on the sides.



3

Position the thermoplastic and Loop Heat Tape on the construction. Make sure that the Heat Tape covers the hook. Remove the positioning strip before lamination.



4

Cover the lamination parts with baking paper and apply the iron. The iron should be set on medium heat, two dots. Start heating 20 seconds and then check the result. Repeat for another 20 seconds and check that the thermoplastic is elastic, if not repeat another 10 seconds.



5

When ready, start by pressing the two ends and hold for 10 seconds. Then press the complete lamination to ensure that the edge has bonded. Test that the material is stretchable before the application.



6

Attach the hook around the MP-joint with a bit of compression. Stretch the strap slightly on order for it to conform well. Attach the end strap around the wrist and let the thermoplastic cool down and stabilize.

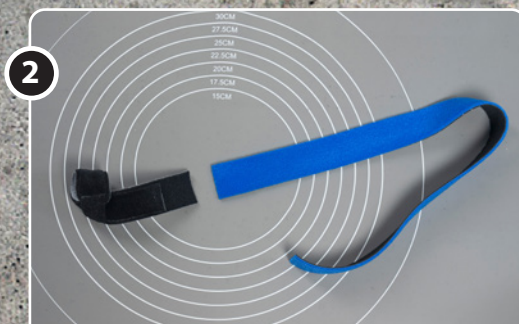
Linking NRX® Strap Neptune and NRX® Strap

Linking two materials together provides the advantage of having a textile lining over the thermoplastic reinforced thumb part, making application easier. The friction material has a higher elasticity and will enhance proprioception and dynamic support over the thenar eminence. This provides a unique balance between mechanical stability and proprioceptive feedback.



1

Decide the position where to link the other material, mark the position with a hook strip. Then cut the edge straight with a sharp pair of scissors.

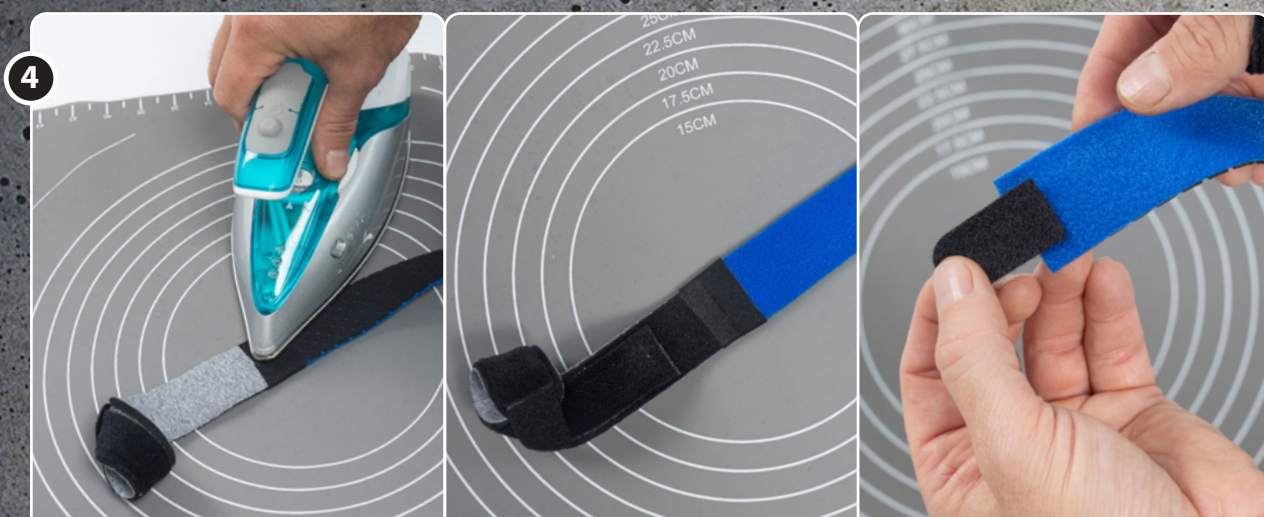


2

Make sure that the cut line of both materials is straight. Position them onto the silicone mat with the loop surface up and move them as close as possible together.



3 Cut a 6-7 cm long 22 mm NRX® Heat Tape and cover the joint. Before affixing it, check that the joint does not have a gap. Apply the tip of the iron over the joint, holding for about 5 seconds. Let the tape cool to stabilize for 30 seconds and then turn the construction.



4 Fold one side first and affix with the iron, then fold the other side to seal. Apply the tip of the iron and hold for 5-10 seconds. The joint should now cool down for at least 1-2 minutes before loading. Then apply a hook part to the end.



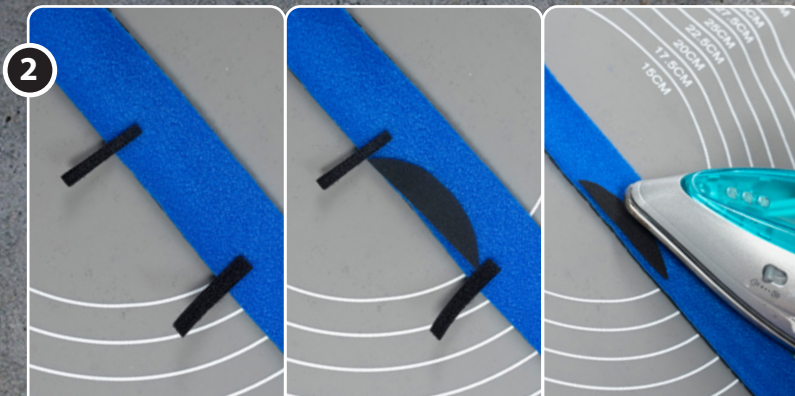
5 Apply the thumb part by sliding it onto the thumb. Stretch the strap and apply it over the thumb, making sure that it covers the thenar eminence. Aim for attaching the strap with the hook on the ulnar side. If necessary, adjust the length of the strap.

Individual thenar eminence support

The thenar eminence has a crucial function for stability of the thumb. The NRX® Heat Tape reduce the elasticity of the strap and this provides more support when the thenar eminence is active.



1 Let the patient try the construction first to determine that the strap length is working well. Mark the area that should be reinforced. The recommendation is to start between the index finger and thumb and end before or over the CMC-joint.



2 Remove the construction and lay the strap flat with the hook markers in place. Cut reinforcement from the 22 mm NRX® Heat Tape. A half-moon shape works well as the start and finish is thinner, allowing a seamless overlap between the elasticity in the material and the tape. Remove the hook strips before applying the iron. Use the tip of the iron and heat 5-10 seconds. Check that the edges have sealed.



3 Let the tape cool for 1-2 minutes. If stretched when warm it will curve up which can make application more difficult.



4 Once the tape is cool, apply it as before and check that the reinforcement is over the right position. Test the function with the patient.

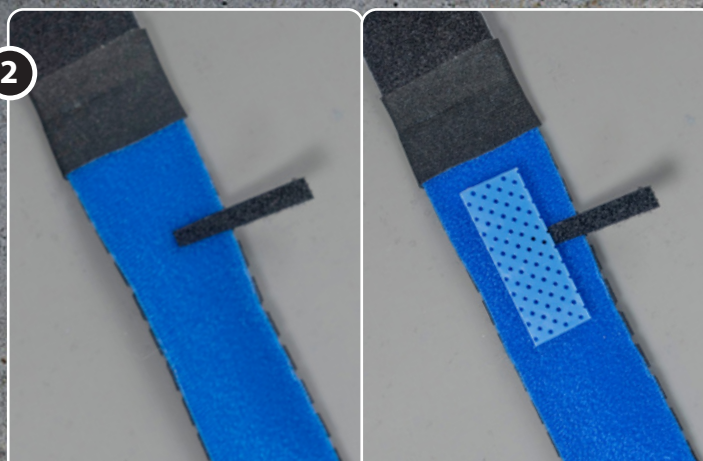
Using the same technique but adding a smaller thermoplastic strip under the tape can enhance the stability even further, creating a dynamic bi-valve system.

Individual ulnar support

Ulnar support can be essential for thumb stability. Here we show how to affix individual ulnar support that can enhance the function and provide more individual support.



1 Position a hook strip over the ulnar side. Make sure that the patient has tested the strap length, and that construction works functionally on the patient before.



2 Position the strap flat on the baking mat. Cut a thermoplastic strip that overlaps at least 20 mm on each side of the center of the hook strip. The total length of the thermoplastic strip should be at least 40 mm. You have two choices for the cover material:
 -If no hook application is needed over the ulnar support, use the 22 mm NRX® Heat Tape. -If you need to apply hook over the ulnar side, use the NRX® Loop Heat Tape.
 Cut the material with 2-3 mm overlap on the sides and 5 mm in both ends.



3 Position the heat tape and thermoplastic together, position it over the mark and remove the hook strip. Cover the material with baking paper and apply the iron. Depending on which cover tape you have used you might need 15-30 seconds for



the heating. Once the tape and thermoplastic has laminated onto the strap, test that the thermoplastic stretches, then press both ends with your thumbs and hold for 5 seconds.

4



Apply the construction, making sure that the ulnar support ends up correctly. We do not recommend attaching the hook directly onto the lamination as it might delaminate. It is better

to pass the lamination and attach the hook to the other side. Let the lamination cool for 2-3 minutes before removing.

5



Once the thermoplastic has set, you can remove it. The polymers will continue to set for the next 24 hours, making it more stable. You can curve the thermoplastic more if needed by hand. The advantage with having the ulnar support on the NRX® Strap with friction on the inside, is that the patient will

know exactly how much tension to apply. It also grips in place making the rest of the application easier. The hook application can enhance support even further if applied directly onto the thermoplastic. We recommend evaluating this with your patient.

Care instruction

The laminated material can be machine washed in 40 degrees C after the hook parts have been removed.



NRX® Heat Tape & Loop Heat Tape

The NRX® heat tapes are two heat-activated tapes that can be used to bond two materials together without stitching, but can also be used on the NRX® Strap for reinforcements to stabilize or restrict elasticity. They are easily applied by using a regular iron and a baking paper covering the tape. The recommended temperature for activation of the adhesive is 120–140 degrees Celsius and the setting time about 10 seconds. That might have to be adjusted depending on the surface of the material and the composition.

There are two qualities available;

- NRX® Heat Tape and
- NRX® Loop Heat Tape



NRX® Thermoplastic Kit for Heat Tape

The thermoplastic kit is made from 1,6 mm micro perforated thermoplastic that has been specially modified to work together with the NRX® Heat Tape products.

The thermoplastic can be laminated on the NRX® Strap, ARX® Strap or SRX® Strap together with the NRX® Heat Tape products, by using an iron.

The kit consists of strips that are 15 mm wide and 200 mm long, that can be used to reinforce thumb parts and other areas. The mini sheets are 140 mm x 200 mm and can be used to cut custom designs that can be laminated under the NRX® Heat Tape products.

