

THE SPLINTING GUIDE

Compiled by Paul VAN LEDE, OT MS



Static hand splints - dynamic hand splints

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STATIC SPLINTS

INTRODUCTION

Since the advent of Low Temperature Thermoplastics (LTP), the indications for splint treatment have broadened significantly, both in terms of diversity and frequency.

The following are some basic principles, which should help the reader make the right choice of splint for a given prescription.

Static hand splints are often used to support normal anatomical hand arches. These are resting splints which are normally fitted **volarly** thereby offering pleasant resting comfort.

Immobilization splints to replace plaster casts are best made **circumferentially**. The advantage of a splint is that it is easier to put on and take off, and is much more pleasant to wear.

Static corrective splints are particularly suitable to assist the growth of shortened tissues (muscles, skin), to make joints move freely again. This type of splints could also be applied circumferentially, in which case frequent adjustments may be needed (serial splints). This is why they are often made **dorsally** (in the case of flexion contractures) and provided with traction straps.

Static splints are also prescribed to stabilize joints. Since functional splints are intended to enhance hand function, they should not interfere with skin sensitivity. The choice is then for **lateral** connection splints with as little material volarly as possible.

Lateral splints, likewise, have good leverage action, and are therefore readily used to overcome strong forces such as in spasticity.

The ideas in this splint book are the fruit of years of experience on the part of the Orfit Industries paramedical team, and have already shown their effectiveness in thousands of patients all over the world.

The book is compiled in such a way that it first gives a description of the objectives and the possible indications. These, of course, are not binding but give a clear picture of what the purpose of the splint is. The book also offers suggestions for suitable splinting materials.

This is followed by an illustration, which, according to experience, shows the most advantageous starting position.

The pattern is drawn on a scale model based on the hand projection. Skin folds should be taken into account when copying the patterns to actual size.

The working technique is described as we like to carry it out at Orfit Industries, although this does not prevent anyone from using their own preferred technique, which is perfectly feasible with any of the Orfit Industries splinting materials.

We wish you a lot of "splinting" fun, and a rapid recovery to all your patients.

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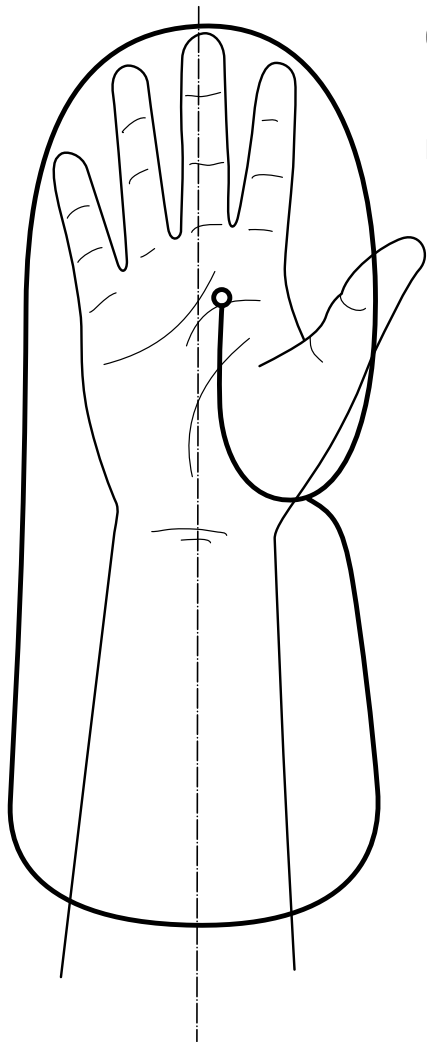
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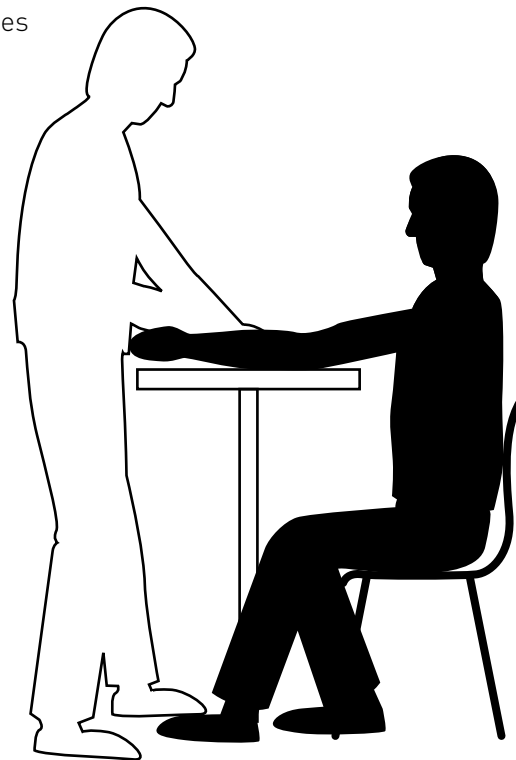
1. HAND RESTING SPLINT



Objective: Positioning or resting of the wrist, hand and fingers

Indications:

- Flaccid palsy
- Tendon injuries
- Burns



Starting position

The following materials are highly recommended for this splint:

1. Orfit® Eco
2. Orfit® Eco Black NS
3. Orfibrace™ NS
4. Orfit® Classic Stiff
5. Tecnofit®
6. Aquafit™ NS
7. Orfit® NS
8. Orfit® Colors NS
9. Orfit® Flex NS
10. Orfit® Ease

Thicknesses:

2.5 mm [3/32"]

3.2 mm [1/8"]

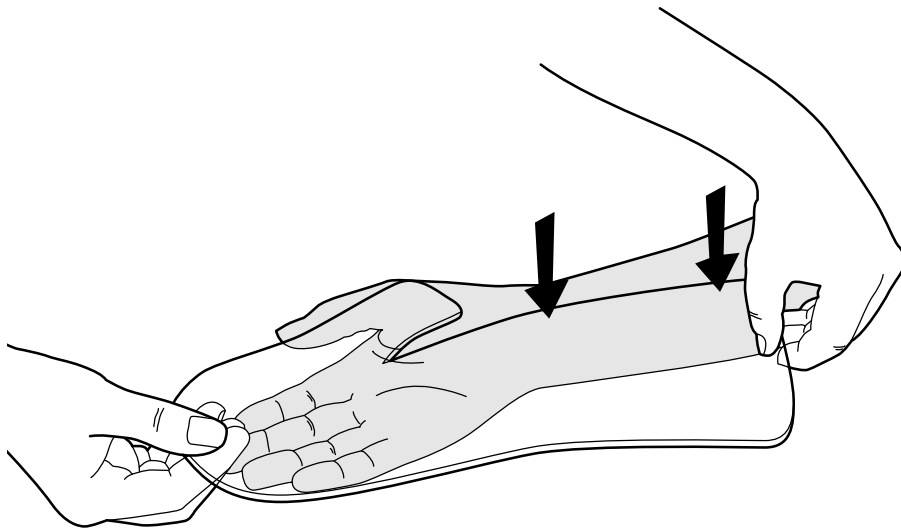
Perforation Styles:

non perforated

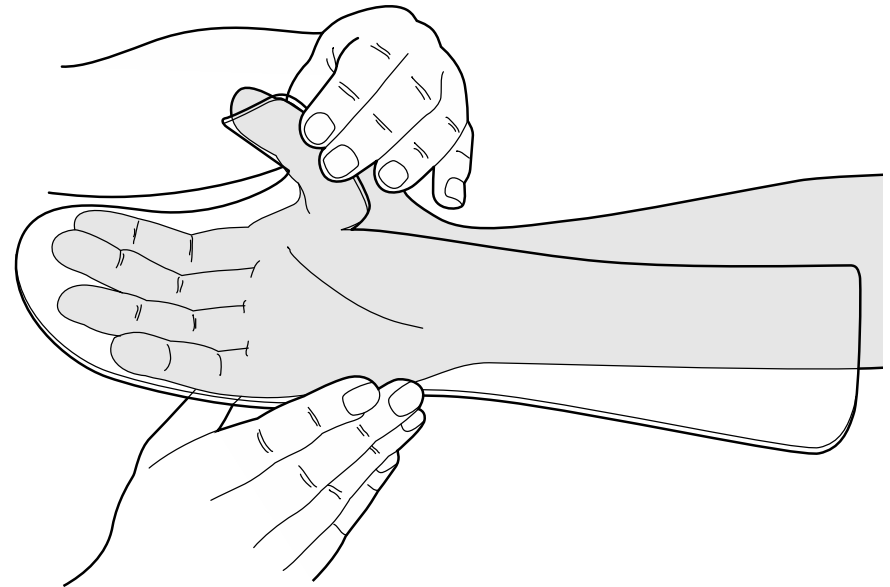
mini perforated

macro perforated

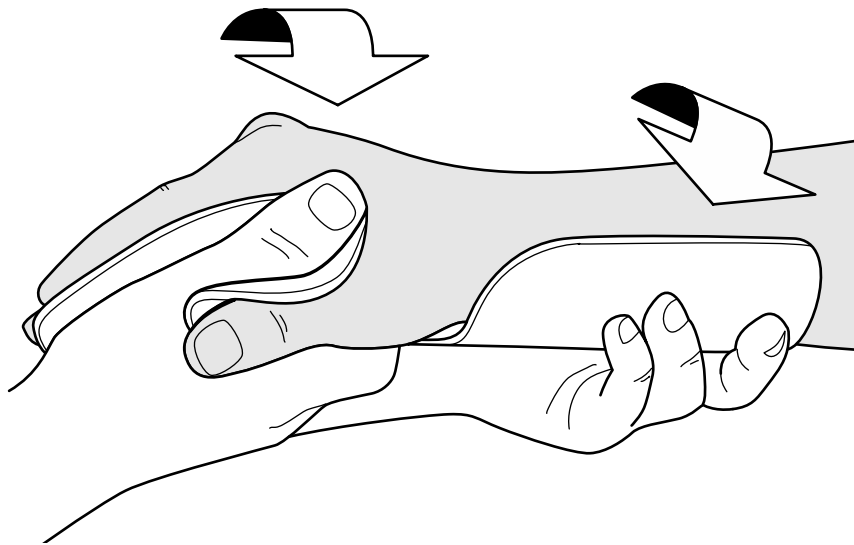
TIP: this splint is available as a pre-cut. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



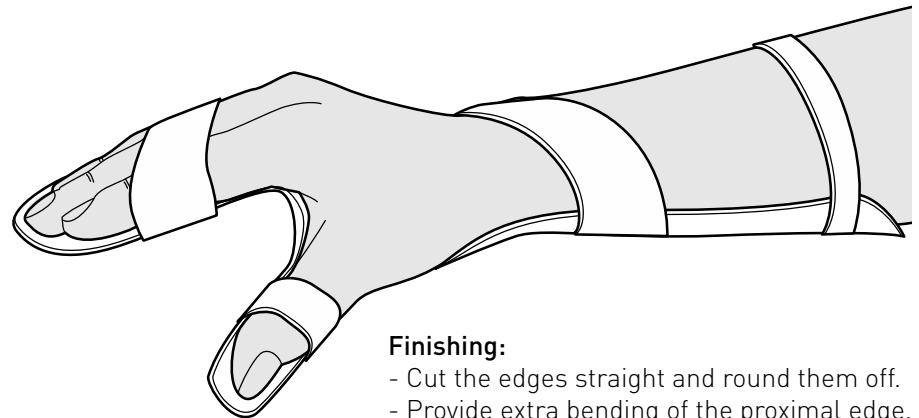
A. Place the pattern on the temporarily supinated forearm. Ensure that the radial edge of the splint lies diagonally.



B. Position the thumb and mould the material around it.



C. Turn the forearm back in pronation before the splint material hardens.



Finishing:

- Cut the edges straight and round them off.
- Provide extra bending of the proximal edge.

Fixation:

- 1 broad strap over the wrist
- 1 broad strap over the PIP joints
- 1 narrow strap around the thumb
- 1 narrow strap at the proximal end

2. CONICAL RESTING SPLINT



Objective: To support the wrist, hand, fingers and hand arches

Indications: Flaccid palsy (brachial plexus, quadriplegia, hemiplegia)



Starting position

The following materials are highly recommended for this splint:

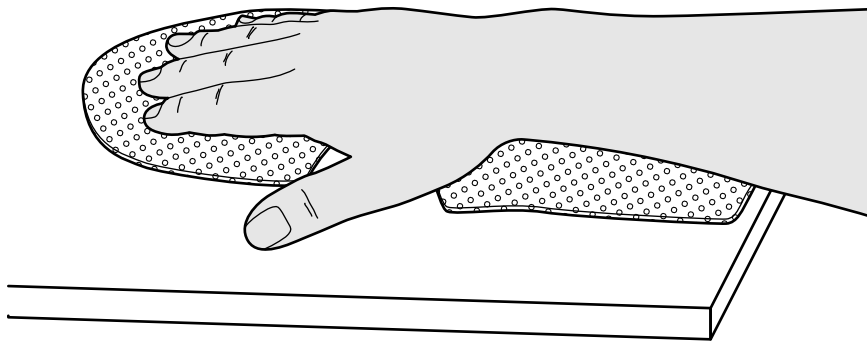
1. Orfit® Eco
2. Orfit® Eco Black NS
3. Orfibrace™ NS
4. Orfit® Classic Stiff
5. Tecnofit®
6. Aquafit™ NS
7. Orfit® NS
8. Orfit® Colors NS
9. Orfit® Flex NS
10. Orfit® Ease

Thicknesses:

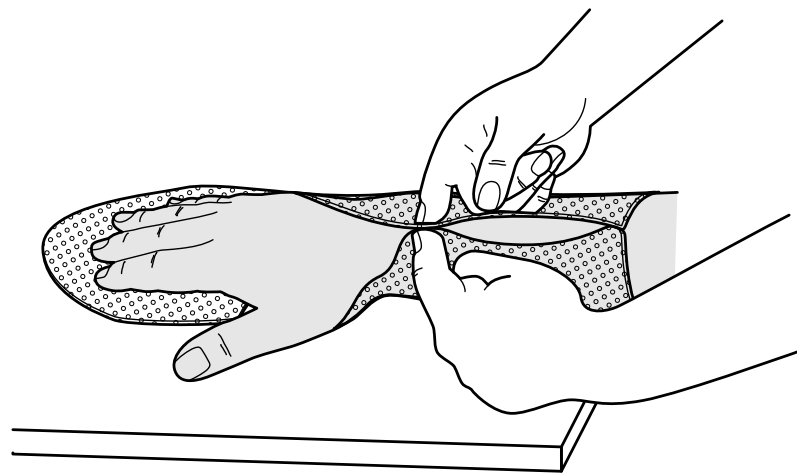
3.2 mm [1/8"]

Perforation Styles:

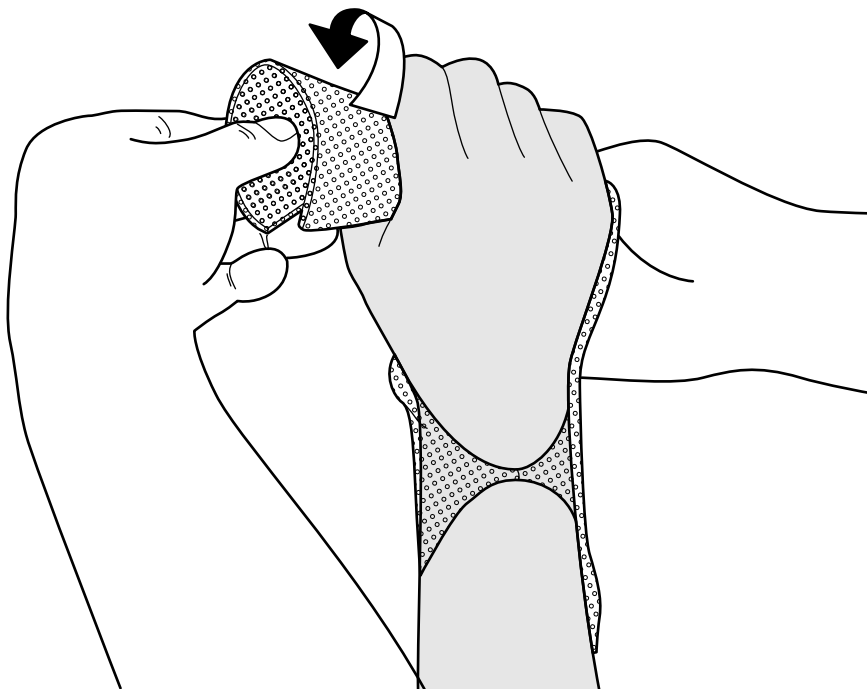
non perforated
mini perforated
macro perforated
maxi perforated



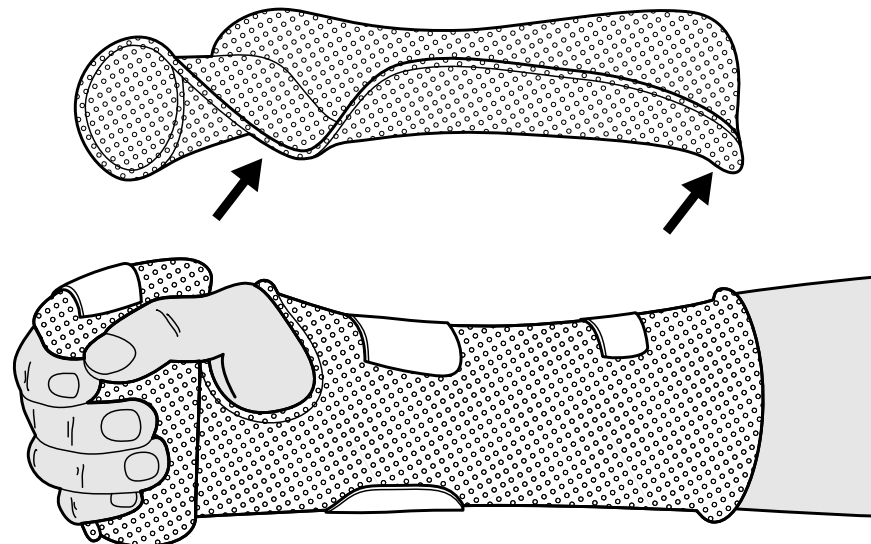
A. Place the hand on top of the pre-heated splint material.



B. Using the fingertips, grasp both edges near the wrist. Pull hard and stick the ends together. Do the same at the proximal end.



C. Wait until the material begins to harden slightly, and mould a cone that lies diagonally and fits snugly in the palm of the hand.



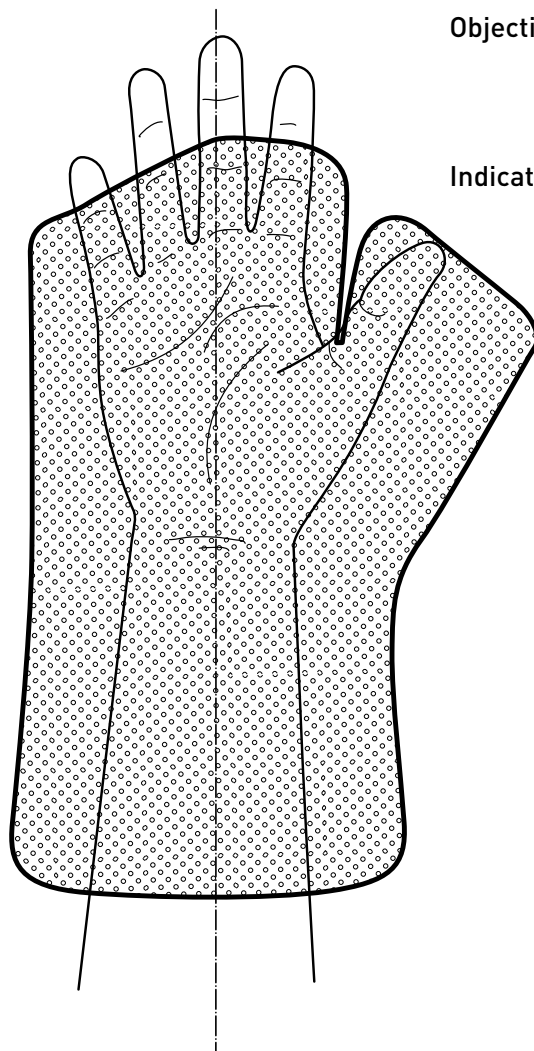
Finishing:

Cut the edges neatly.
Bend the thenar edge and the proximal edge outwards.

Fixation:

- 1 broad strap diagonally across the wrist
- 1 narrow strap at the proximal end
- 1 narrow strap over the fingers

3. RHEUMATOID RESTING SPLINT



Objective: Positioning of the wrist, hand and fingers in a corrected position.
Muscle relaxation and pain relief

Indications: Preventive and corrective treatment of rheumatoid arthritis (RA)



Starting position

The following materials
are highly recommended
for this splint:

1. Orfit® Classic
2. Orfit® NS
3. Aquafit™ NS
4. Orfilight®
5. Orfilight® Black NS
6. Orfilight® Atomic Blue NS
7. Orfit® Colors NS
8. Tecnofit®
9. Orfit® Ease
10. Orfit® Flex NS

Thicknesses:

3.2 mm [1/8"]

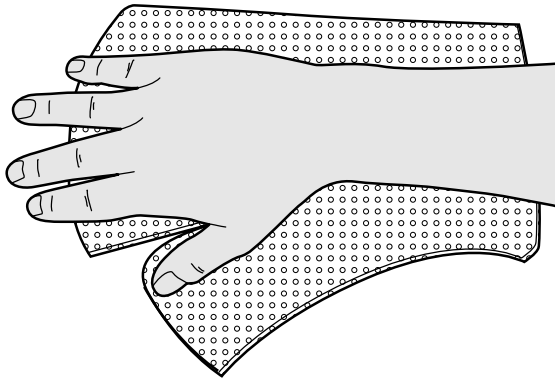
Perforation Styles:

mini perforated

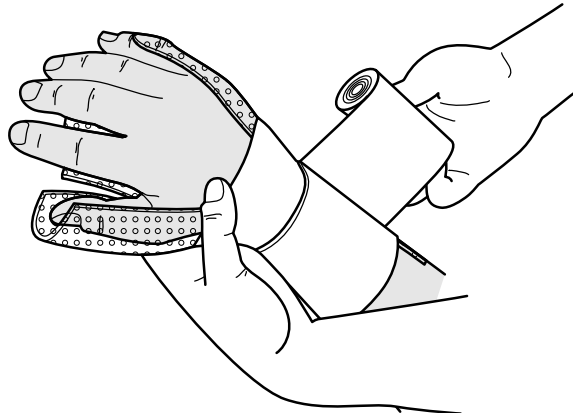
macro perforated

maxi perforated

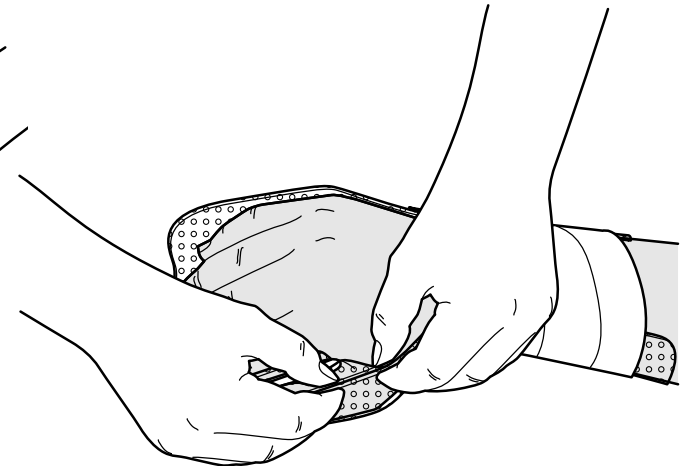
TIP: this splint is available as a pre-cut. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



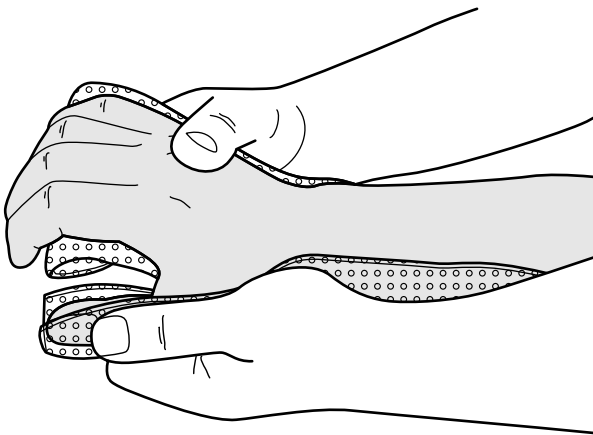
A. Place the patient's hand on top of the pattern.



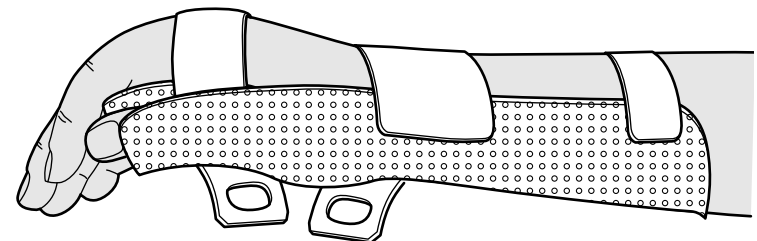
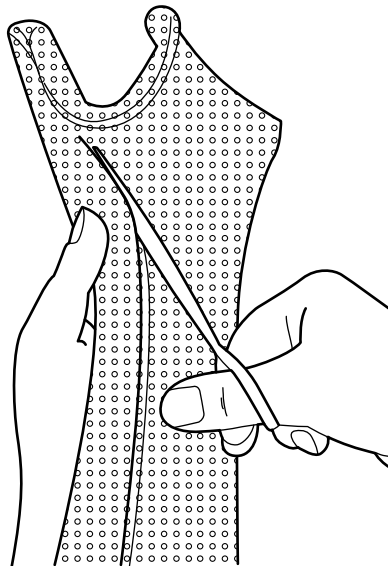
B. Attach the pattern by means of a bandage, [distal to proximal].



C. Pull out the inside edge of the thumb portion in such a way that it can be stuck together with the outer edge of the splint.



D. Position all the joints while the material hardens.



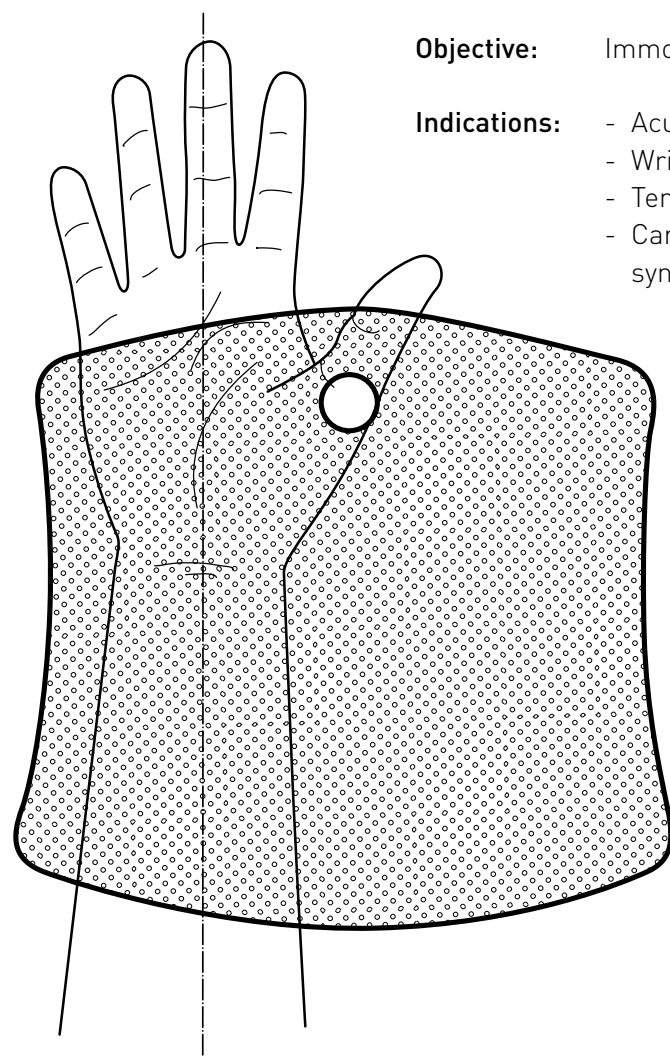
Finishing:

Cut off any surplus material.
Soften the edges or cover with padding.
Turn the proximal and distal edges outwards.

Fixation:

- 1 broad (elastic) strap with an access opening over the wrist
- 1 broad (elastic) padded strap with an access opening over the MCP joints
- 1 narrow (elastic) strap over the proximal phalanges
- 1 narrow (elastic) strap attached to the proximal edge

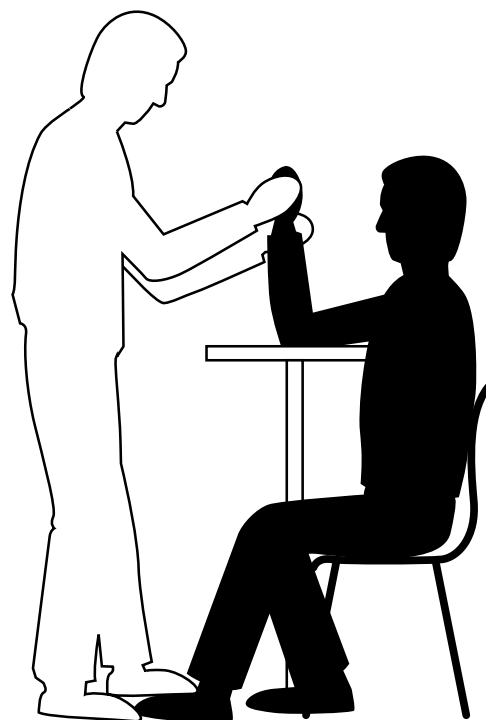
4. WRIST IMMOBILIZATION SPLINT



Objective: Immobilization of the wrist

Indications:

- Acute inflammation of the wrist joint
- Wrist sprains
- Tendinitis
- Carpal tunnel syndrome



Starting position

The following materials are highly recommended for this splint:

1. Orfilight®
2. Orfilight® Black NS
3. Orfilight® Atomic Blue NS
4. Orfit® Classic
5. Orfit® NS
6. Aquafit™ NS
7. Orfit® Colors NS
8. Tecnofit®

Thicknesses:

- 1.6 mm [1/16"]
- 2.0 mm [1/12"]
- 2.4 mm
- 2.7 mm [3/32"]

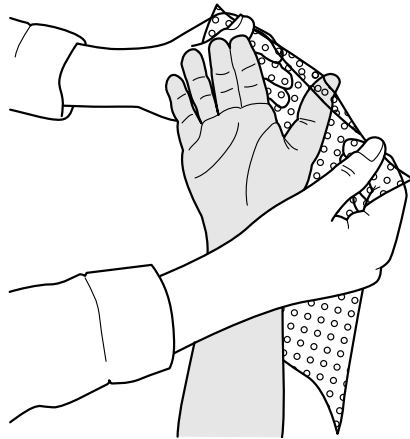
Perforation Styles:

- micro perforated
- micro plus perforated

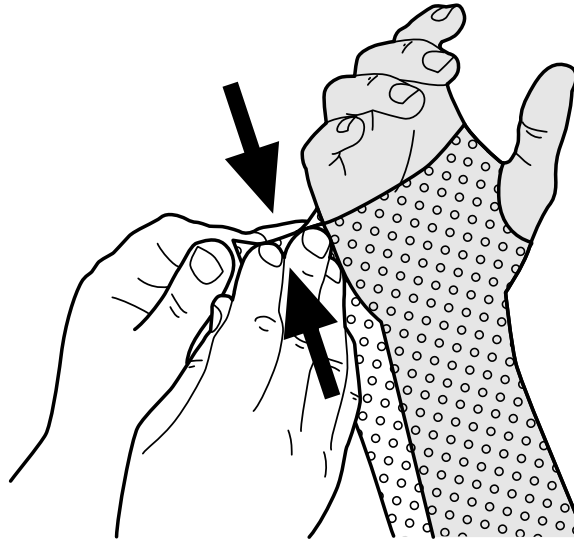
TIP: this splint is available as a pre-cut. Ask your sales contact for more information or e-mail us at welcome@orfit.com.

4.1 With self-adhesive materials

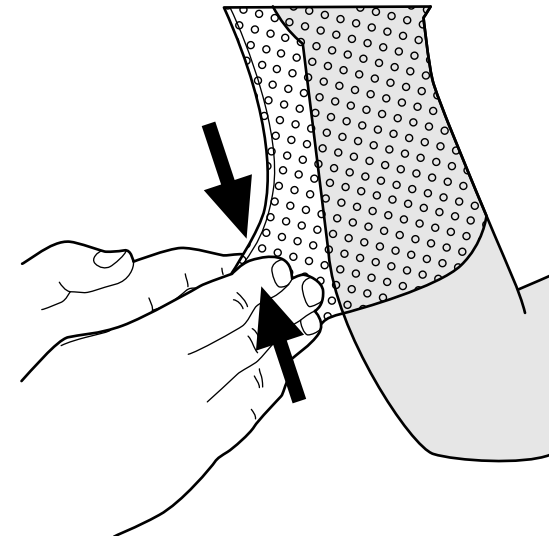
Orfit® Classic, Orfilight®



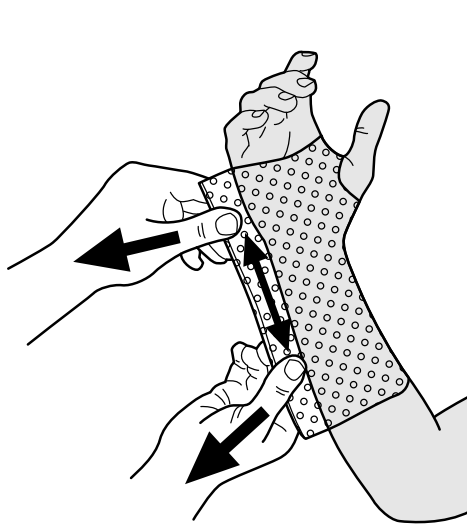
A. Hold the pre-heated pattern by the uppermost corners. Pull the pattern over the thumb all the way down.



B. Without releasing them, bring the corners together (at the level of MCP joint V) and stick them together by applying firm pressure.



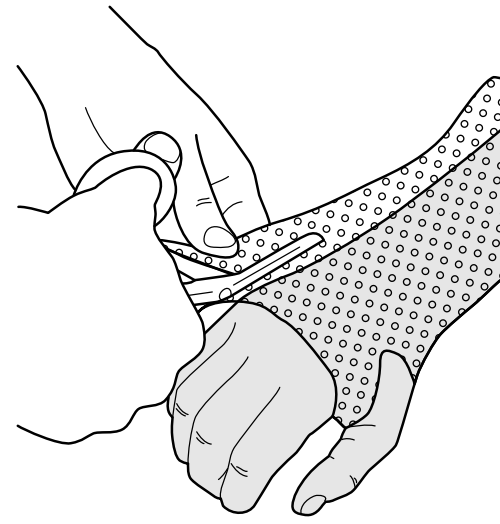
C. Do the same with the bottom corners.



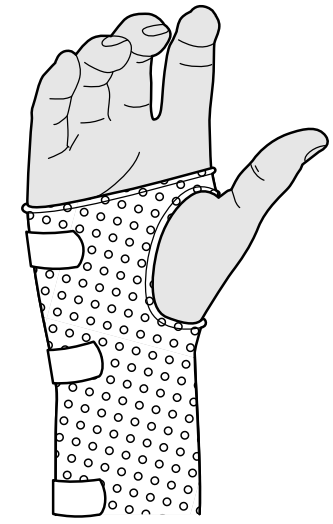
D. Pull out the length and width and stick the edges along their entire length.



E. Adopt the desired position and leave to harden.



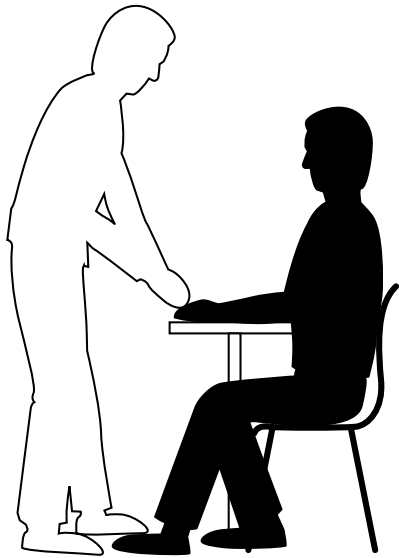
F. When the material is semi-hardened, cut off the edges, wait a while, and tear open the seam when sufficiently hardened.



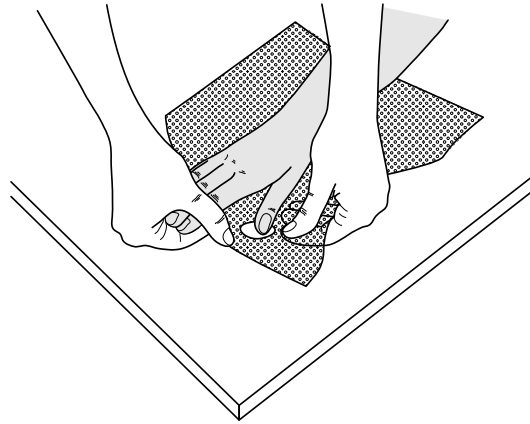
Fixation: 3 short small fixation straps, two at each end and 1 in the middle.

4.2 With slightly or non-sticky materials

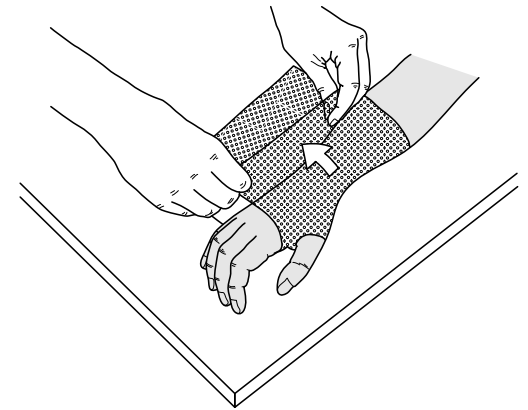
All "non-sticky" (NS) ORFIT Industries products



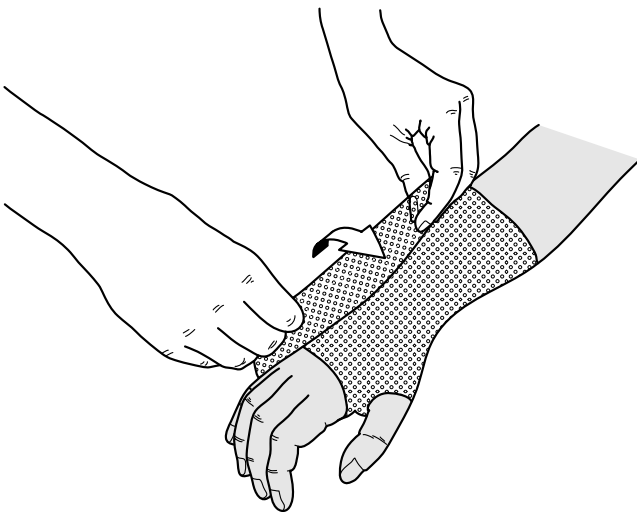
Starting position



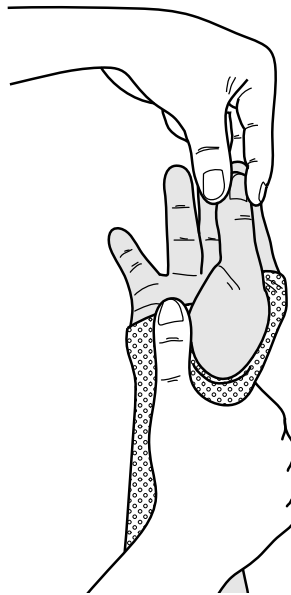
A. Place the pre-heated pattern on the work table, the shortest side from the opening in the direction of the thumb. Ask the patient to stick his/her thumb through the opening.



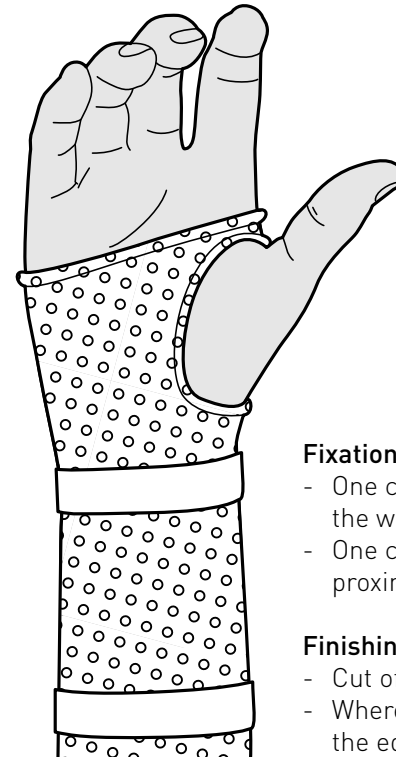
B. Pull the radial portion out and place it dorsally over the hand and forearm.



C. Now pull out the ulnar portion and overlap.



D. Stand in front of the patient, bring his/her hand in an upward position, spread the splint material out fully, and adopt the desired position.



Fixation:

- One circular strap around the wrist.
- One circular strap at the proximal end.

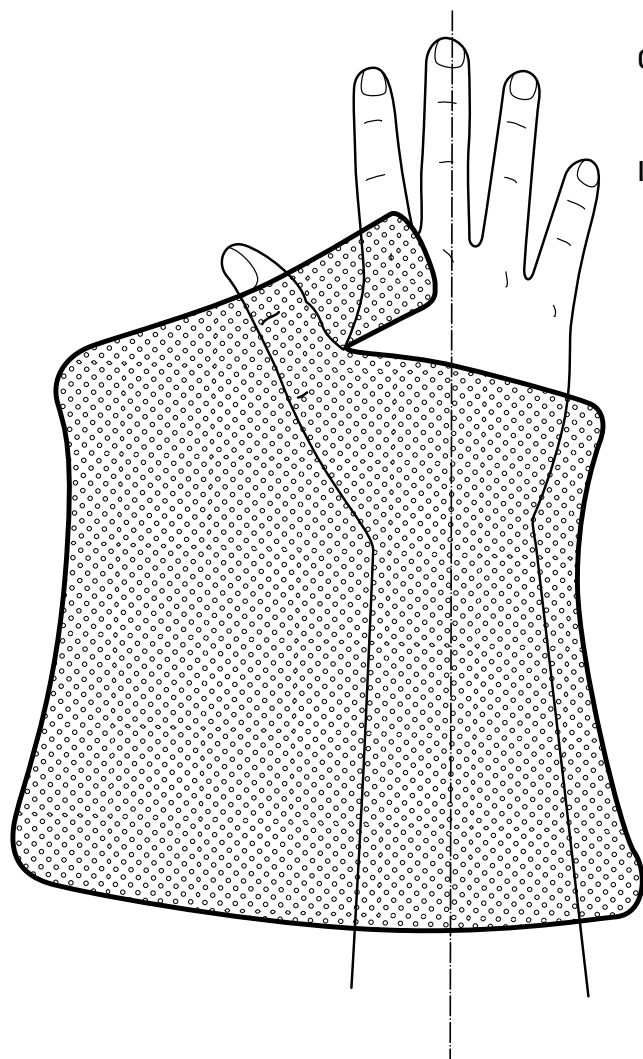
Finishing:

- Cut off any surplus material.
- Where necessary, roll over the edges after re-heating.

Handwriting practice lines consisting of 20 horizontal dotted lines.

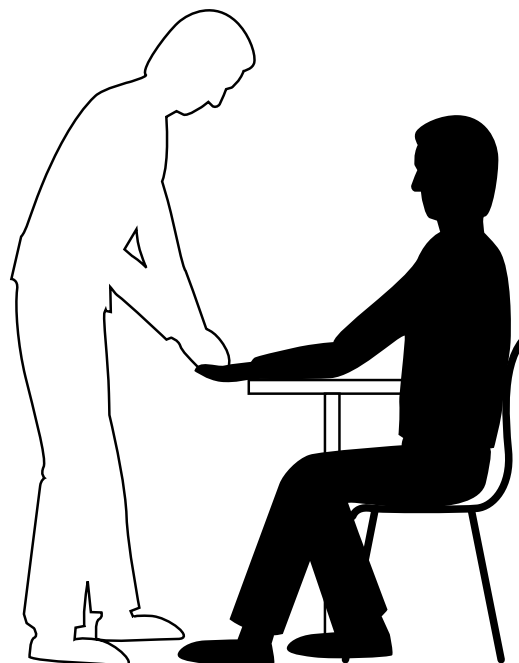
A large empty rectangular box for drawing or free writing.

5. WRIST AND THUMB IMMOBILIZATION SPLINT



Objective: Immobilization of the wrist, basal joint and MCP joint of thumb

Indications: Thumb basal joint arthritis, thumb sprain, de Quervain tenovaginitis, rheumatoid arthritis, follow-up treatment of the scaphoid fracture.



Starting position

The following materials are highly recommended for this splint:

1. Orfilight®
2. Orfilight® Black NS
3. Orfilight® Atomic Blue NS
4. Orfit® Classic
5. Orfit® NS
6. Aquafit™ NS
7. Orfit® Colors NS
8. Tecnofit®

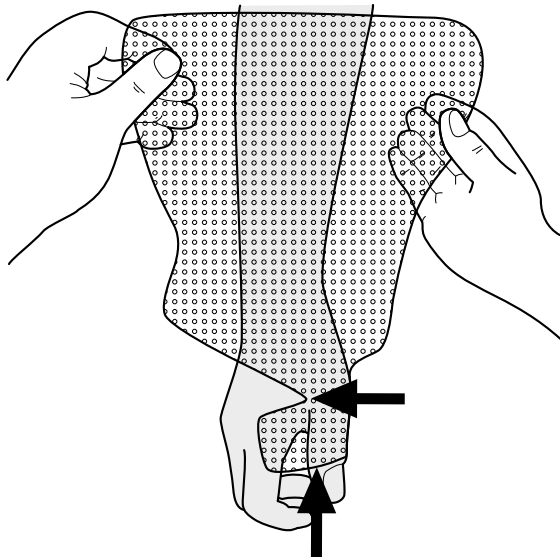
Thicknesses:

- 1.6 mm [1/16"]
- 2.0 mm [1/12"]
- 2.4 mm
- 2.7 mm [3/32"]

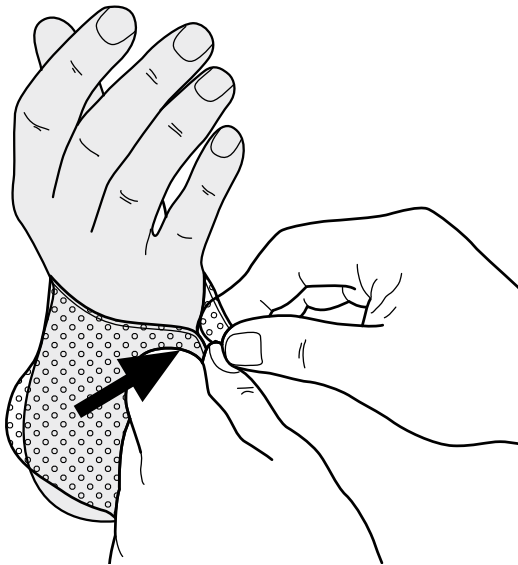
Perforation Styles:

- micro perforated
- micro plus perforated

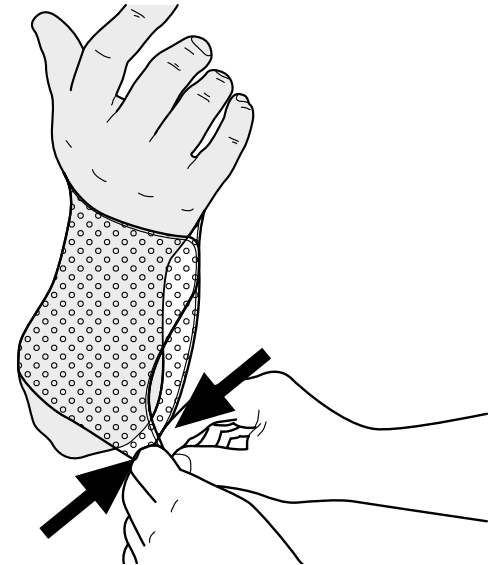
TIP: this splint is available as a pre-cut. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



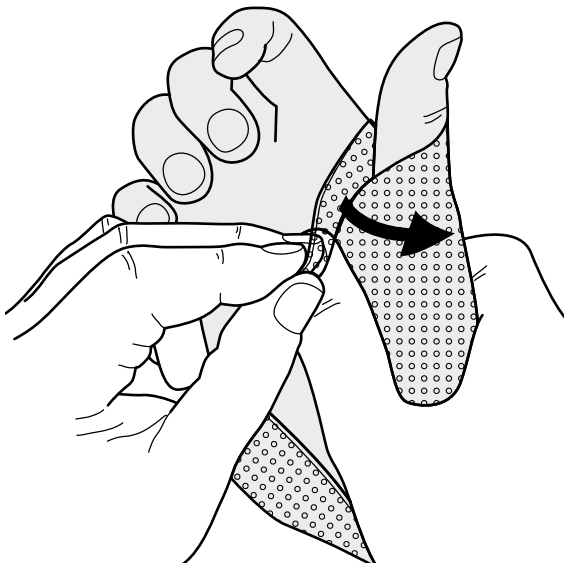
A. Place the pattern on the radial side of the hand, paying attention to the 2 reference points indicated with arrows.



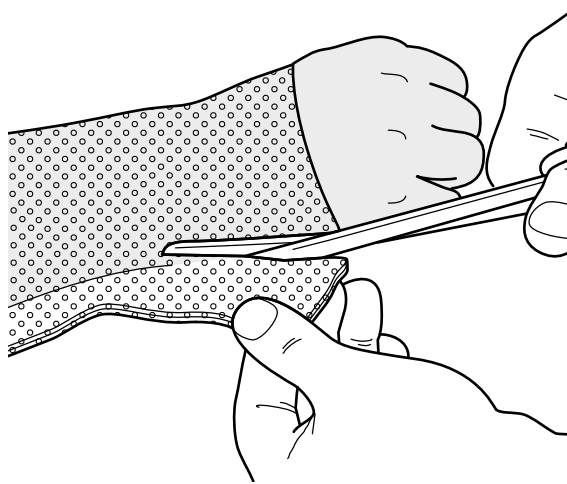
B. Bring the hand in a vertical position, grasp both the uppermost corners of the pattern and stick them together by pressing.



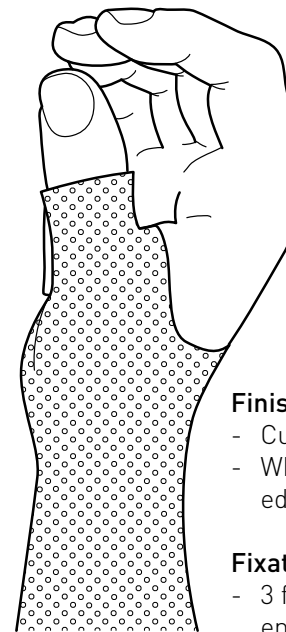
C. Do the same with the bottom corners. Stretch out the length and width and stick the seam along its entire length.



D. Turn the loose piece around the thumb and stick it to the bottom layer by applying pressure.



E. After it has hardened in the desired position, cut off the seam, when fully hard, pull it up.



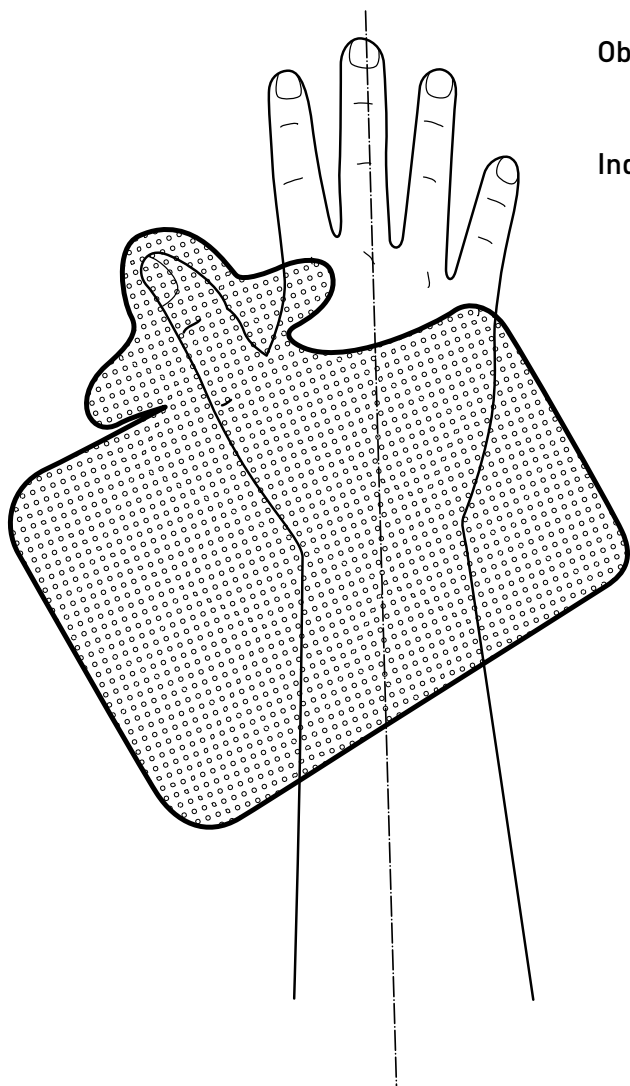
Finishing:

- Cut off any surplus material.
- Where necessary, roll the edges over after re-heating.

Fixation:

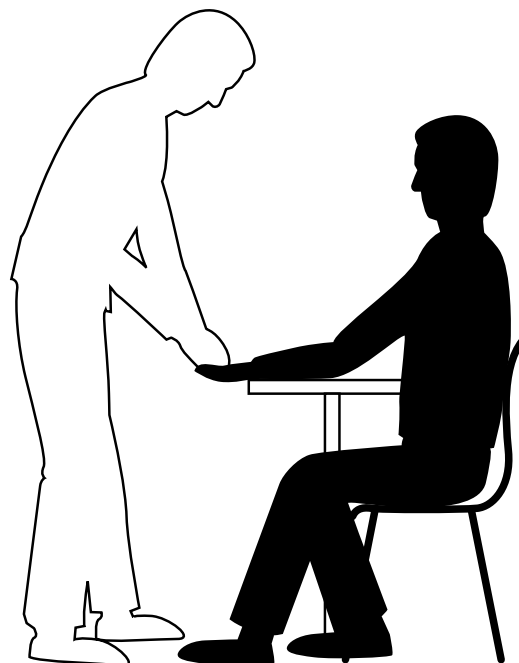
- 3 fixation straps, 2 at each end and 1 in the middle.

6. LONG THUMB SPLINT



Objective: Immobilization of the basal and MCP joint with extension stop for the distal phalanx

Indications: Thumb basal joint arthritis, thumb sprain, tendinitis, arthritis.



Starting position

The following materials are highly recommended for this splint:

1. Orfilight®
2. Orfilight® Black NS
3. Orfilight® Atomic Blue NS
4. Orfit® Classic
5. Orfit® NS
6. Aquafit™ NS
7. Orfit® Colors NS
8. Tecnofit®

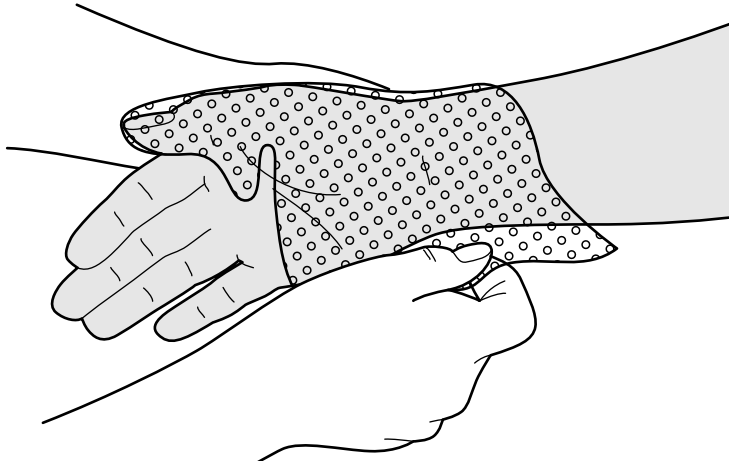
Thicknesses:

- 1.6 mm [1/16"]
- 2.0 mm [1/12"]
- 2.4 mm
- 2.7 mm [3/32"]

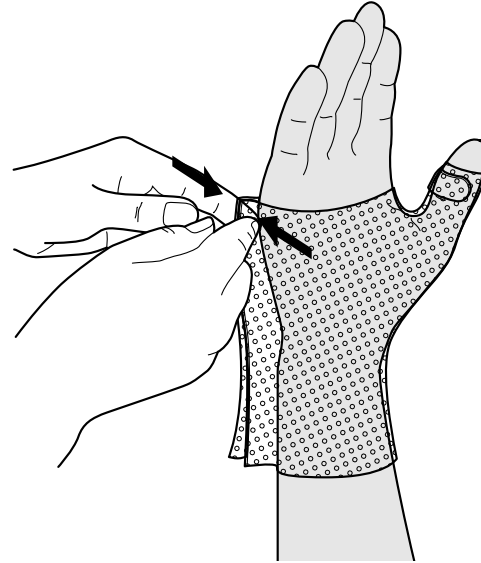
Perforation Styles:

- micro perforated
- micro plus perforated
- maxi perforated

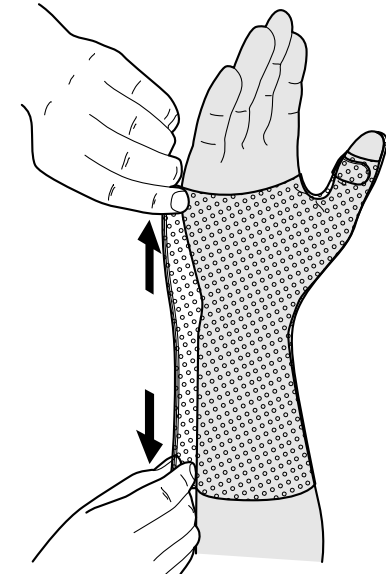
TIP: this splint is available as a pre-cut. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



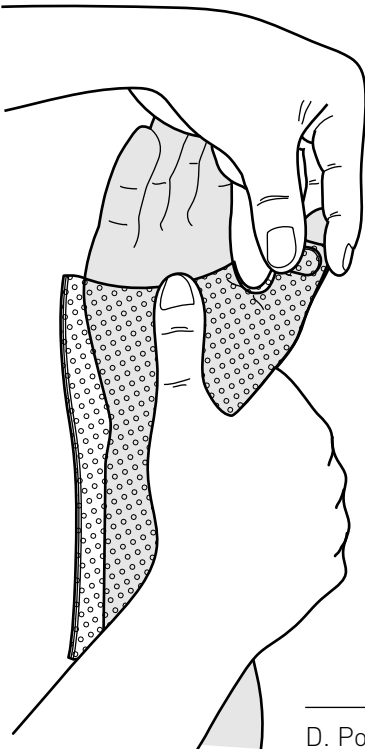
A. Place the pattern over the radial side of the forearm, covering the thumb completely.



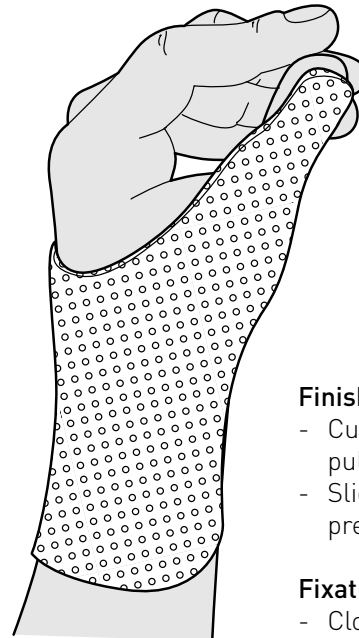
B. Bring the hand in a vertical position, grasp the uppermost corners and stick them together by pressing them together.



C. Do the same with the bottom corners, stretching out the length and width of the pattern.



D. Position and leave to harden.



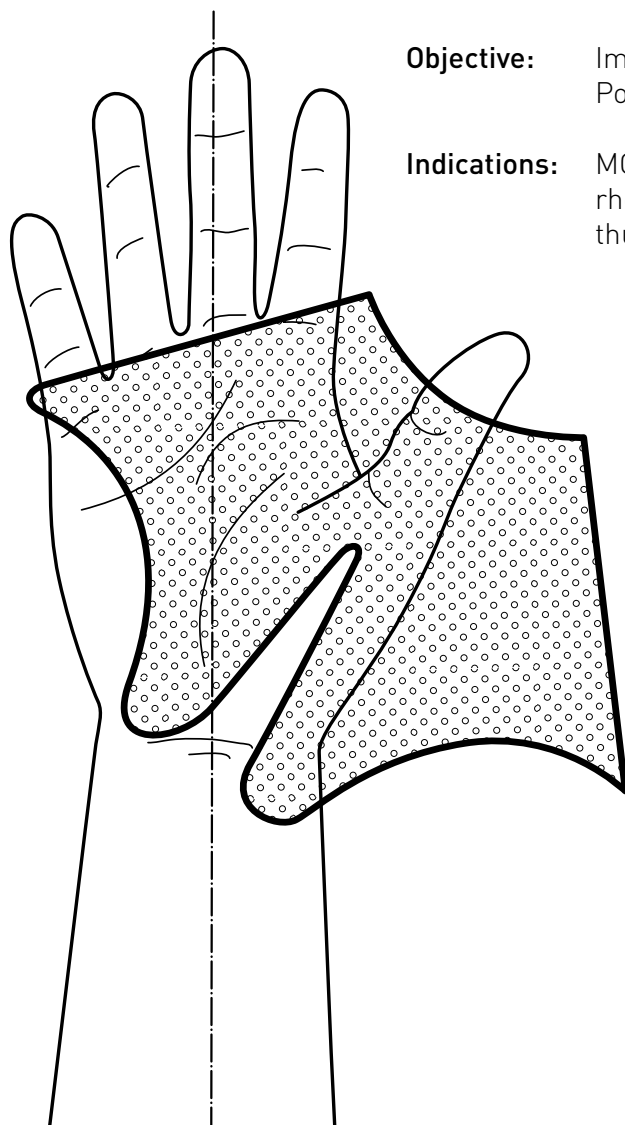
Finishing:

- Cut off any surplus material, leave to harden further, and pull open the seam.
- Slightly warm the edges, bending them so that they do not press against the skin.

Fixation:

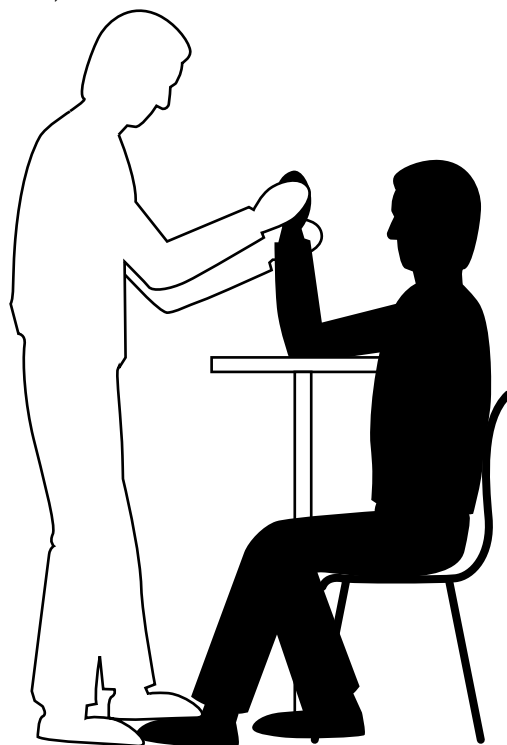
- Close the splint using the 2 short straps at both ends.

7. THUMB STABILIZATION SPLINT



Objective: Immobilization of the thenar shaft.
Positioning of the thumb.

Indications: MCP arthritis, chronic thumb basal joint arthritis, rheumatoid arthritis, thumb sprain



Starting position

The following materials are highly recommended for this splint:

1. Orfit® Classic
2. Orfit® NS
3. Aquafit™ NS
4. Orfilight®
5. Orfilight® Black NS
6. Orfilight® Atomic Blue NS
7. Orfit® Colors NS

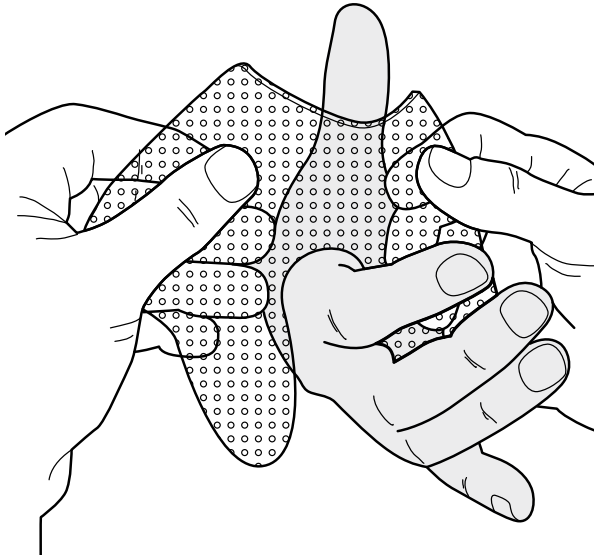
Thicknesses:

- 1.6 mm [1/16"]
- 2.0 mm [1/12"]
- 2.5 mm [3/32"]

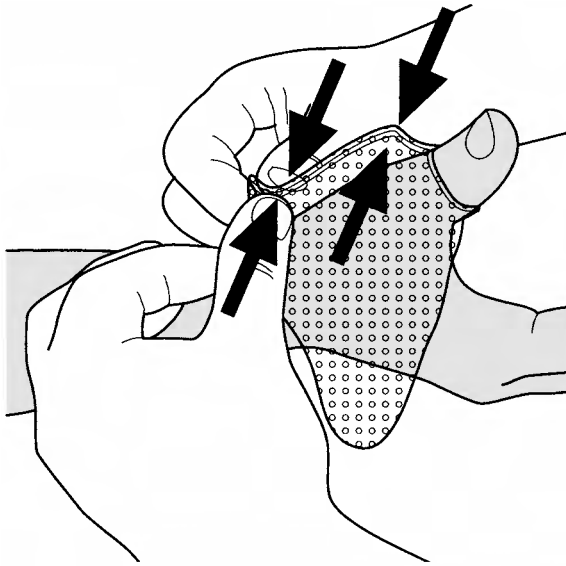
Perforation Styles:

- micro perforated
- micro plus perforated
- maxi perforated

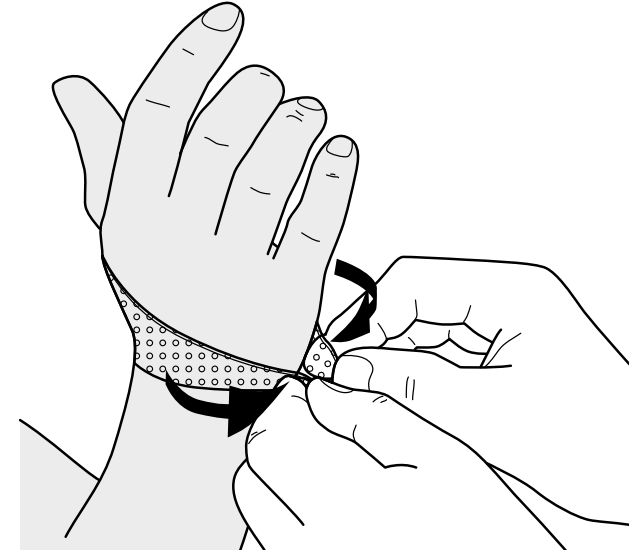
TIP: this splint is available as a pre-cut. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



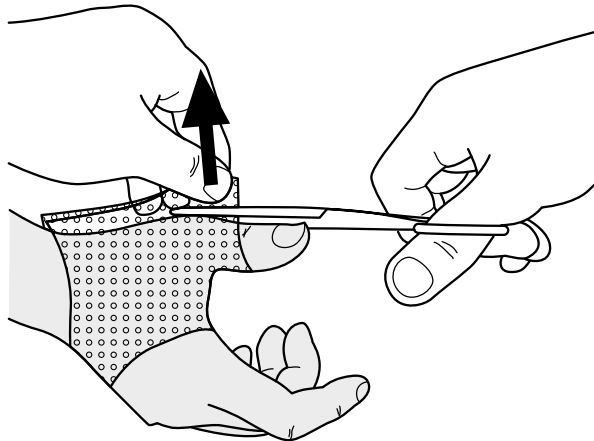
A. Place the pattern across the first web space.



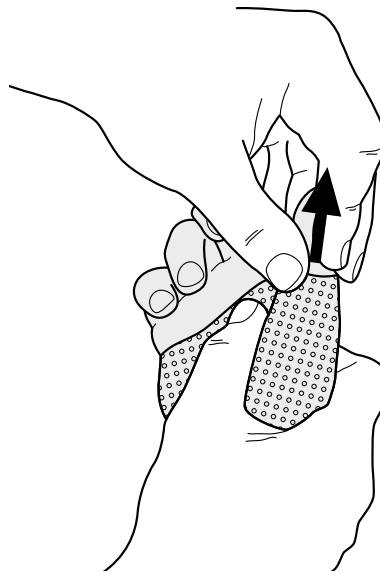
B. Bring the straight edges together on the dorsal aspect of the thumb and stick them together.



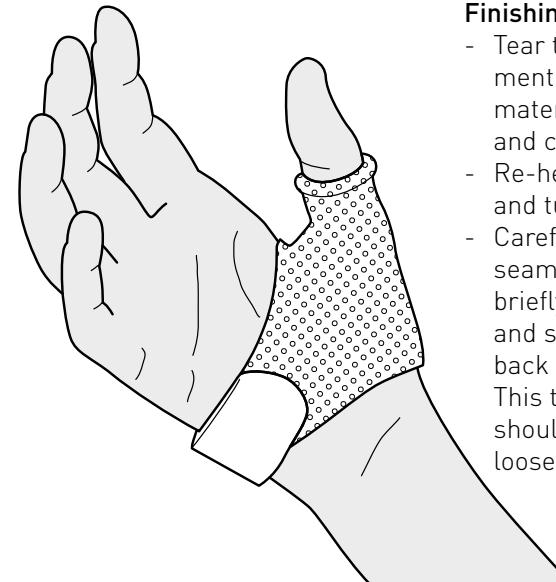
C. Pull the two loose pieces ulnarly and stick them together.



D. As long as the material can be stretched with ease, the seam is raised slightly away from the skin while any surplus material is being cut off. In this way, a nicely smooth and practically invisible seam is obtained.



E. Stretch out the material to get rid of the creases.



Finishing:

- Tear the ulnar attachment loose after the material has hardened, and cut to length.
- Re-heat the distal edge and turn it around.
- Carefully loosen the seam, heat both edges briefly with a hot air gun and stick them firmly back together. This time the seam should no longer come loose.

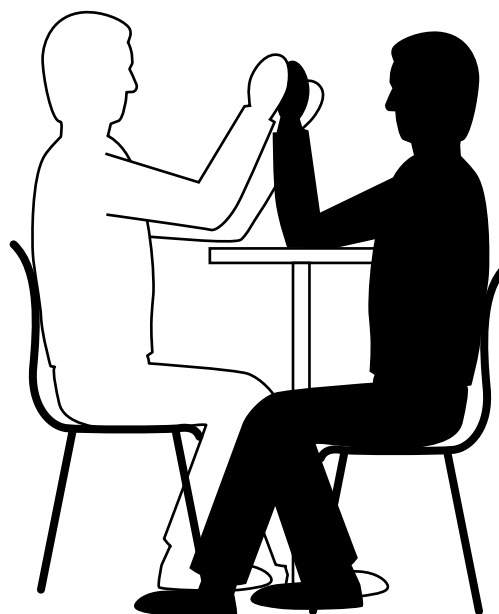
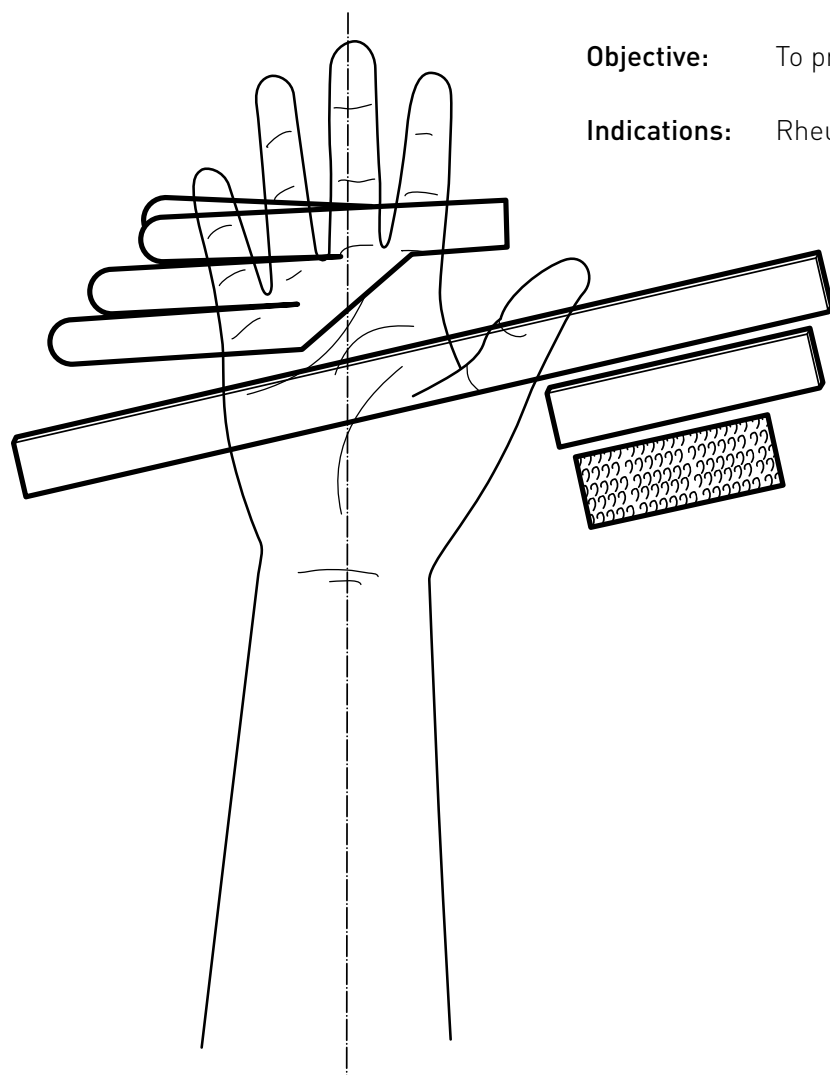
Fixation:

- Attach a short fixation strap.

8. ULNAR DRIFT SPLINT

Objective: To prevent the ulnar deviation of MCP joints II to V

Indications: Rheumatoid arthritis



Starting position

The following materials
are highly recommended
for this splint:

1. Orfit® Classic
2. Orfit® Eco
3. Tecnofit®
4. Orfit® Ease
5. Orfit® Strips

Thicknesses:

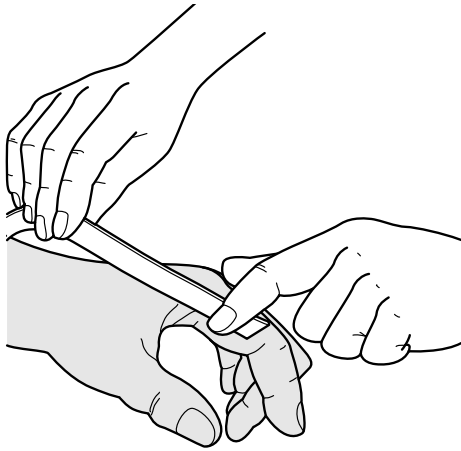
2.5 mm (3/32")

3.2 mm (1/8")

Perforation Styles:

non perforated

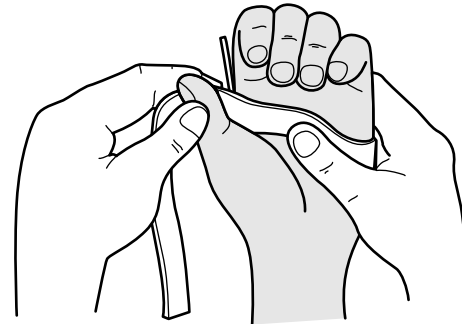
TIP: this splint is available as a
pre-cut. Ask your sales contact
for more information or e-mail
us at welcome@orfit.com.



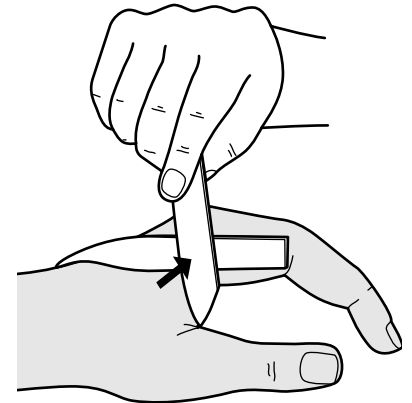
A. Mould the strip of splint material laterally over the index finger from the PIP joint to past the MCP joint.



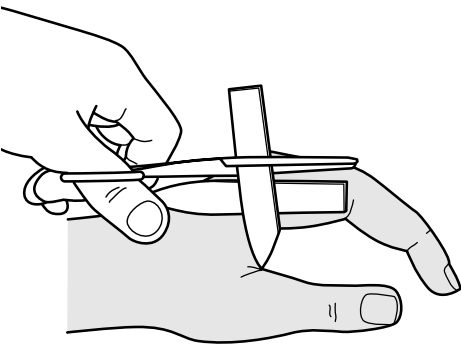
B. Turn over the back of the hand almost to the flexion crease of the wrist.....



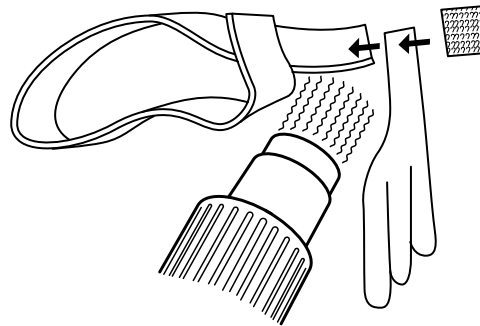
C.and then back towards the palm, below the transverse crease.



D. Finish off at the level of the 2nd MCP joint and stick together by pressing.



E. Cut off any surplus material.

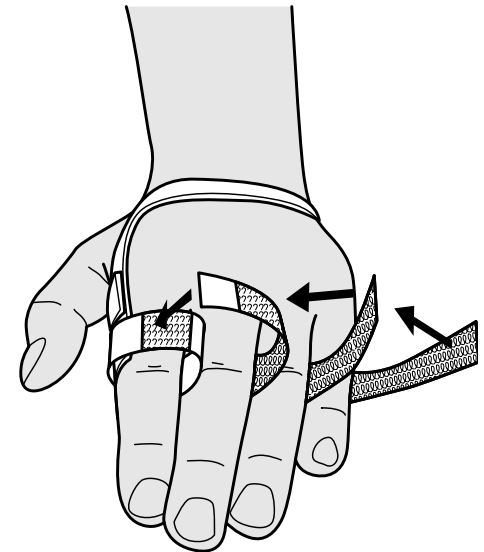


F. Attach the supplied loop tape distally over the outrigger with the heat gun.

G. Stick a piece of hook tape on top.

H. Bring the straight loop around the index finger and attach it to outrigger.

I. Stick a piece of hook tape dorsally at the level of the index finger and bring the next loop around the middle finger. Continue with all the fingers.



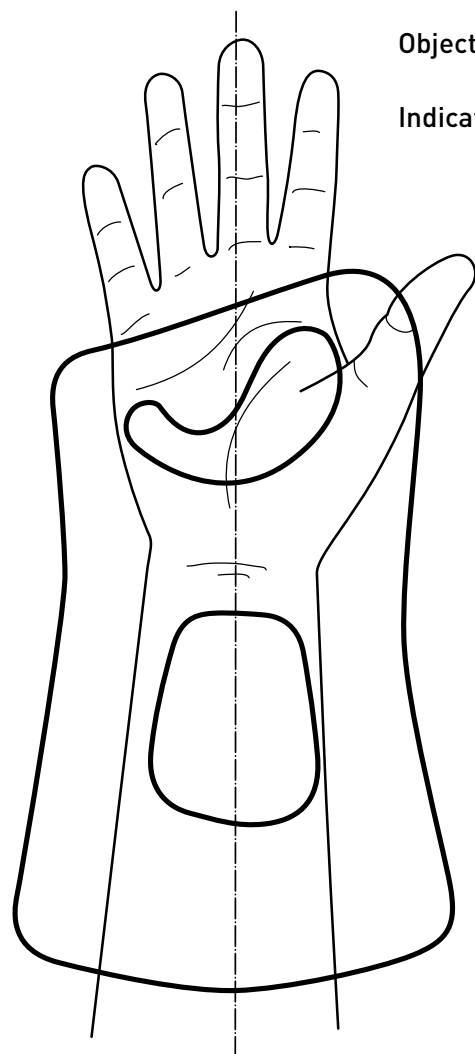
Finishing:

- Apply some soft padded material at the level of the MCP II joint.

Fixation:

- Sometimes it may be desirable to open the splint at the level of the 2nd metacarpal and close it again with a hook and loop tape.

9. DORSAL COCK-UP SPLINT



Objective: Immobilization of the wrist in a functional or antalgic position

Indications: All flaccid palsies of the wrist
(radial nerve injuries, neuropathy, etc.)
Post traumatic flexion contracture
Carpal tunnel syndrome



Starting position

The following materials
are highly recommended
for this splint:

1. Orfit® Eco
2. Orfit® Eco Black NS
3. Orfibrace™ NS
4. Orfit® Classic Stiff
5. Orfit® Classic
6. Orfit® NS
7. Aquafit™ NS
8. Orfit® Colors NS
9. Orfilight®
10. Orfilight® Black NS
11. Orfilight® Atomic Blue NS

Thicknesses:

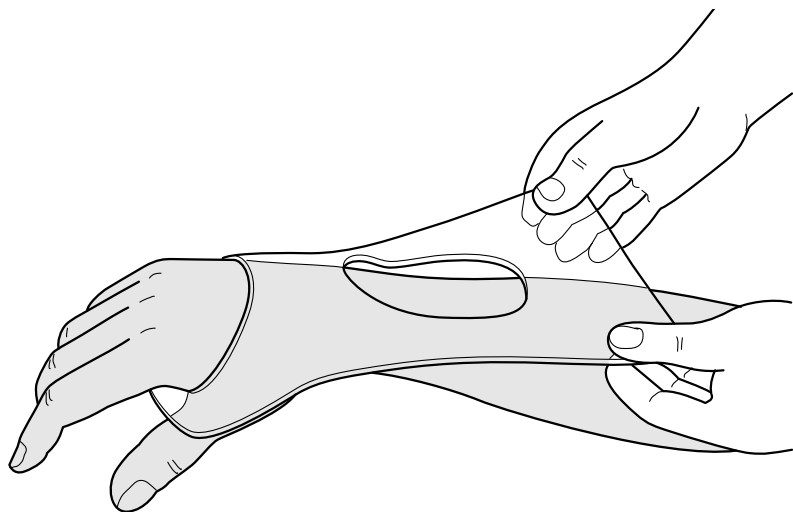
2.5 mm (3/32")

3.2 mm (1/8")

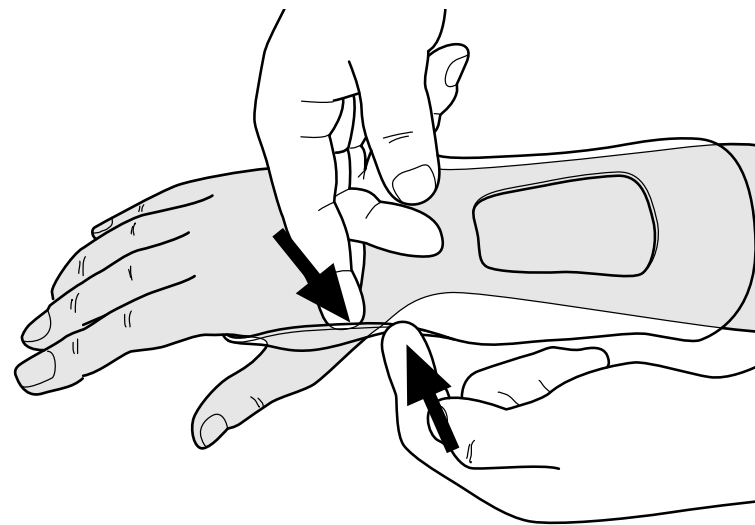
Perforation Styles:

non perforated

TIP: this splint is available as a pre-cut. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



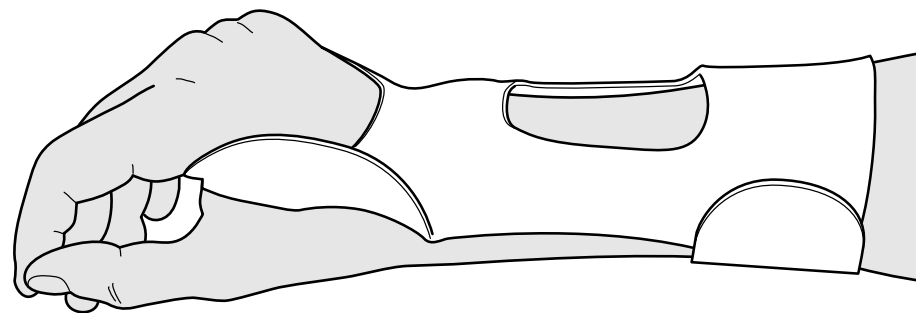
A. Slide the pattern over the patient's hand, ensuring that it is in the right L-R direction, and slide the edge of the opening up to the wrist. Do not let the palmar support turn round.



B. Fold the lateral wings one after each other upwards so that there is a gradual transition from the palmar to the dorsal side.



C. Press the wings together to stick them together, while holding the desired starting position.



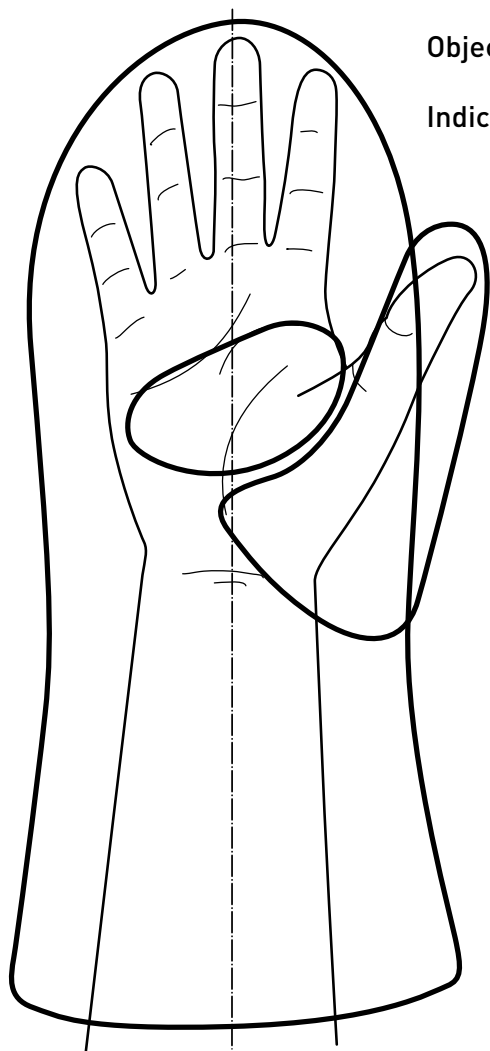
Finishing:

- Pay particular attention to the proper finishing of the portion along the first web space, to the dorsal edge at the level of the wrist, and to the shape of the ulnar styloid process.

Fixation:

- One broad strap applied to the proximal end.
- Optionally, a narrow strap around the wrist.

10. TONE REDUCING SPLINT FOR LONG FLEXOR MUSCLES



Objective: To inhibit muscle tone by lowering the stretch reflex

Indications: Hypertonia (spasticity) of the long flexor muscles



Starting position

The following materials
are highly recommended
for this splint:

1. Orfit® Eco
2. Orfit® Eco Black NS
3. Orfibrace™ NS
4. Orfit® Classic Stiff

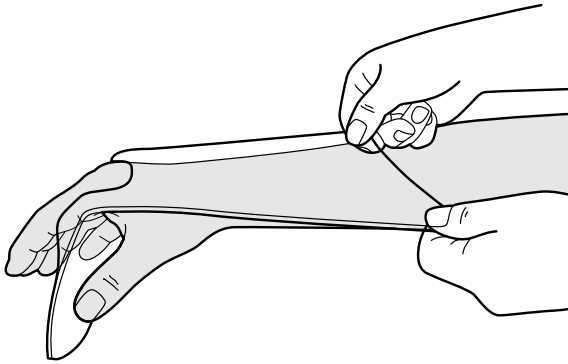
Thicknesses:

3.2 mm (1/8")

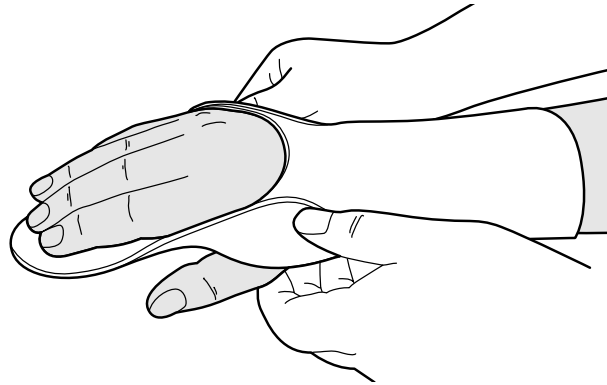
Perforation Styles:

non perforated

TIP: this splint is available as a
pre-cut. Ask your sales contact
for more information or e-mail
us at welcome@orfit.com.



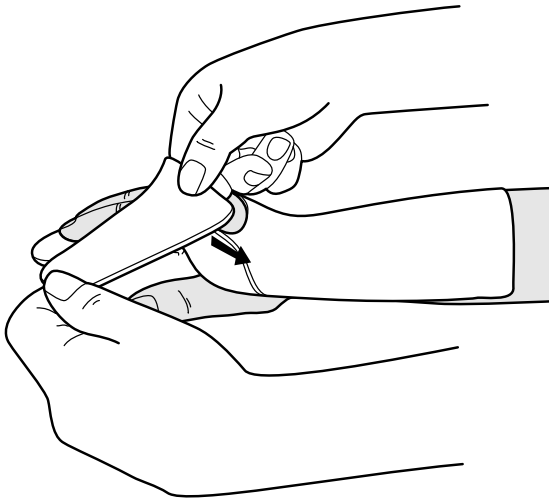
A. Slide the pattern over the patient's hand, ensuring that it is in the right L-R direction, and slide the edge of the opening up to the wrist.



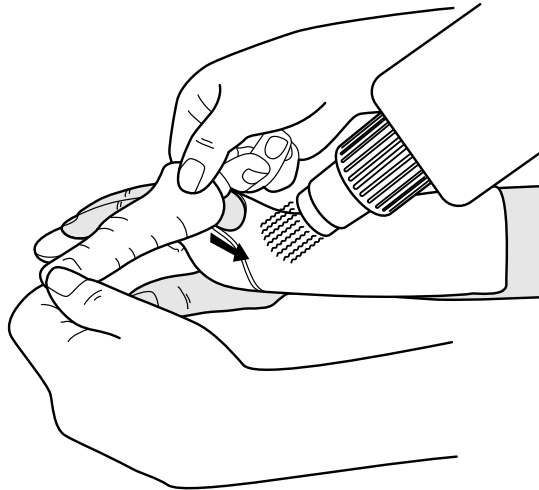
B. Fold both wings one after each other upwards, so that there is a gradual transition from the palmar to the dorsal side. Press them together to make them stick.



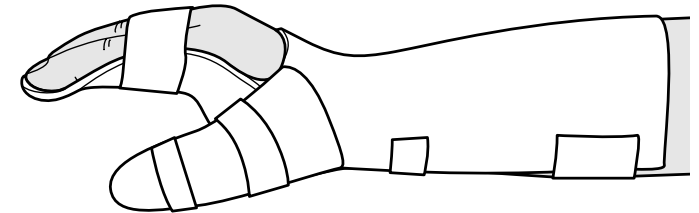
C. As the patient relaxes, gradually adopt the desired starting position.



D. After the material has hardened and the edges have been finished off, stick the thumb piece on top of the splint and give it the shape of the thumb (funnel shape).



E. After it has hardened, loosen the thumb piece, dry heat both contact surfaces and stick it back permanently.



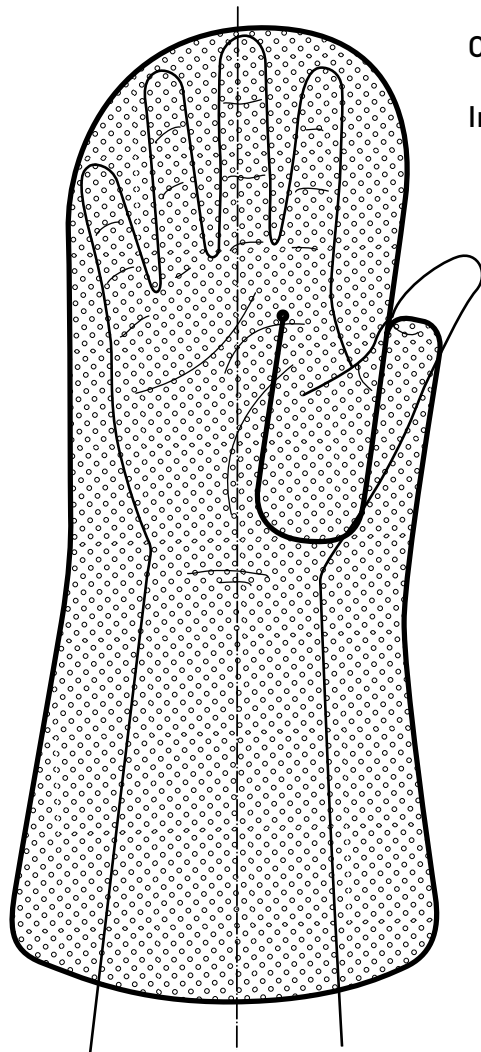
Finishing:

- Pay careful attention to the perfect finishing of the edges, particularly the portion that lies along the first web space. Avoid any exteroception tingling that could be caused by the splint.

Fixation:

- a broad strap at the proximal end.
- a broad strap over the PIP joints.
- 2 narrow straps at the level of the thumb (first and second phalanx).
- optionally, 1 narrow strap under the wrist.

11. TONE REDUCING SPLINT FOR INTRINSIC HAND MUSCLES



Objective: To reduce muscle tone by lowering the extensor reflex

Indications: Hypertonia of the short hand muscles (brain injury)



Starting position

The following materials are highly recommended for this splint:

1. Orfit® Eco
2. Orfit® Eco Black NS
3. Orfibrace™ NS
4. Orfit® Classic Stiff

Thicknesses:

3.2 mm (1/8")

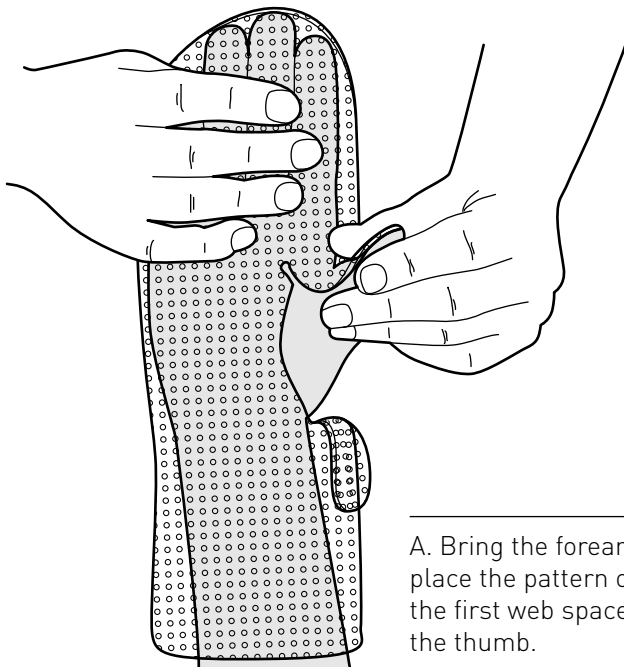
Perforation Styles:

non perforated

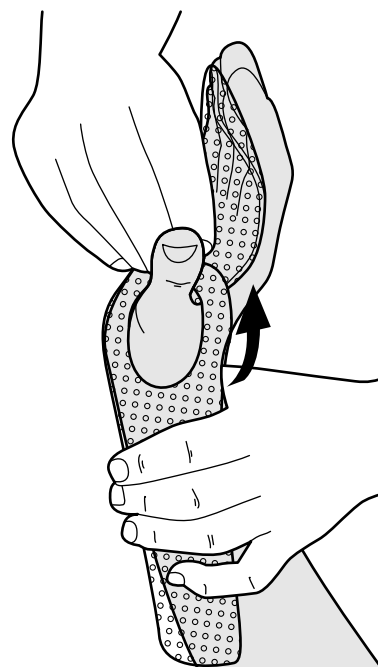
mini perforated

macro perforated

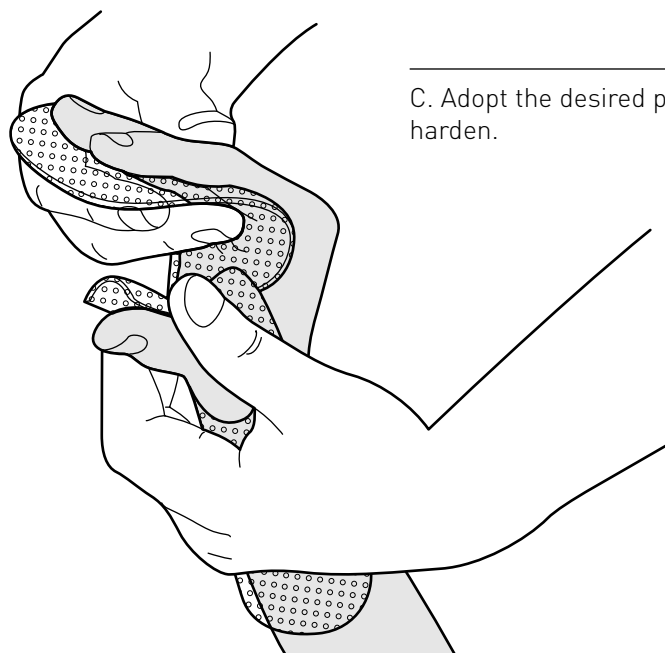
TIP: this splint is available as a pre-cut. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



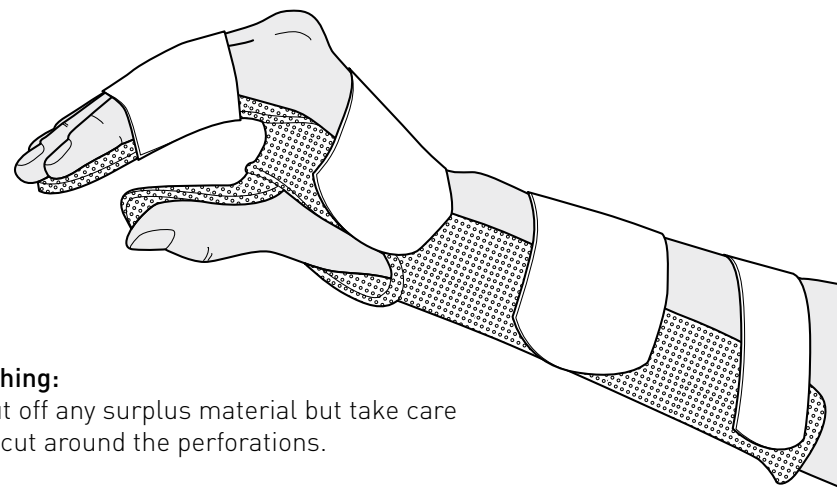
A. Bring the forearm in a vertical position and place the pattern over the palm of the hand, the first web space and the palmar surface of the thumb.



B. Bring the radial strip through the web space and stick it on the splint.



C. Adopt the desired position and leave to harden.



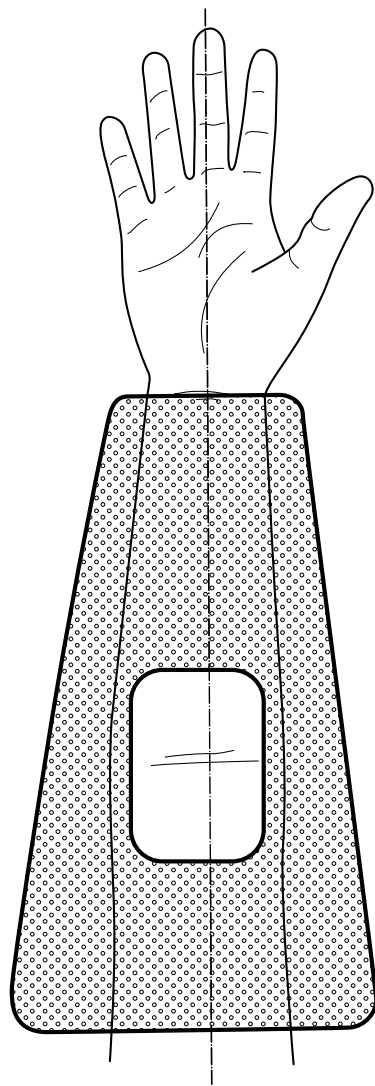
Finishing:

- Cut off any surplus material but take care to cut around the perforations.

Fixation:

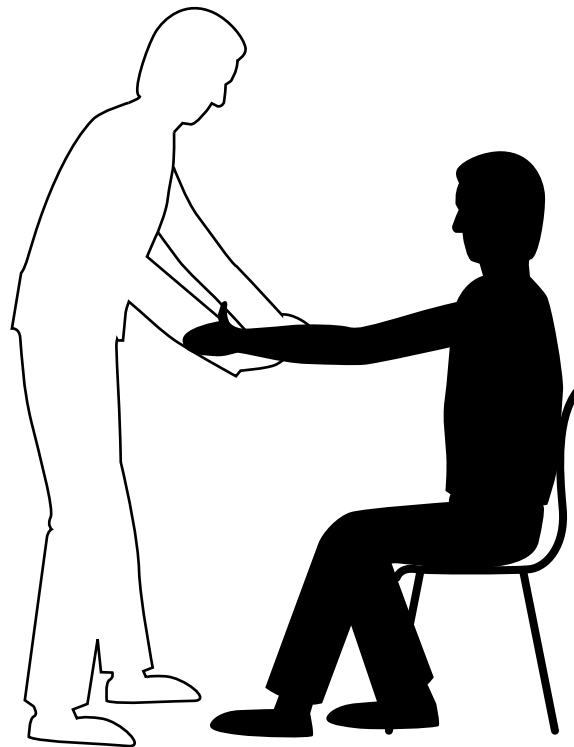
- One broad strap over the fingers (PIP)
- One broad strap over the back of the hand
- One strap over the thumb (optional)
- One strap over the wrist (broad)
- One strap over the forearm

12. ELBOW EXTENSION SPLINT



Objective: To promote elbow extension

Indications: Elbow flexion contracture of whatever origin
Hypertonicity of the elbow flexors



Starting position

The following materials
are highly recommended
for this splint:

1. Orfit® Eco
2. Orfit® Eco Black NS
3. Orfibrace™ NS
4. Orfit® Classic Stiff

Thicknesses:

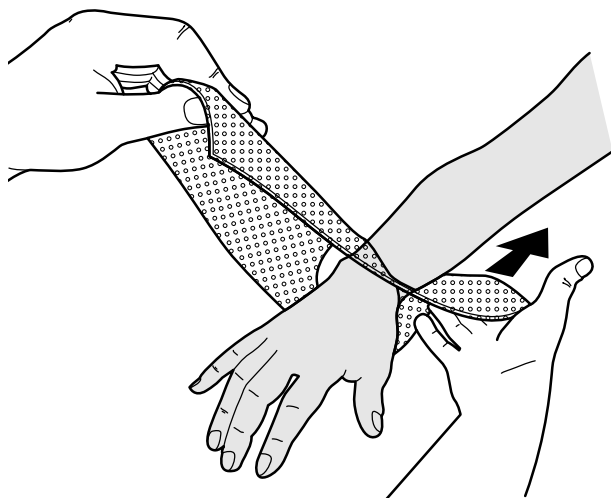
3.2 mm (1/8")

Perforation Styles:

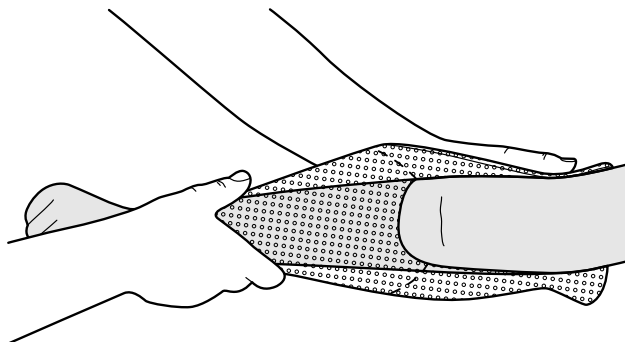
non perforated

mini perforated

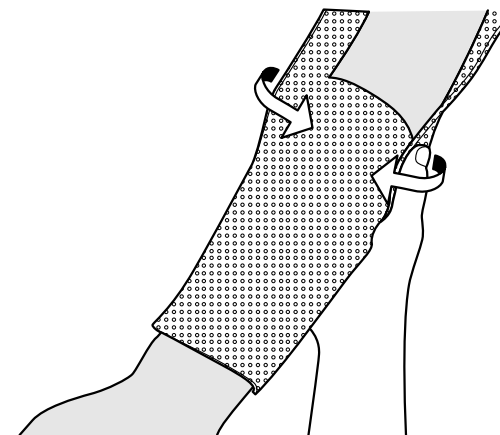
macro perforated



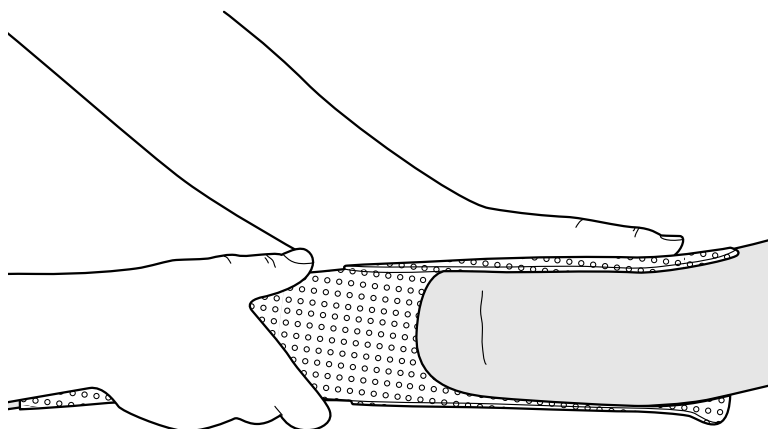
A. Slide the shortest piece of the pattern on the volar aspect over the arm until it lies directly above the olecranon.



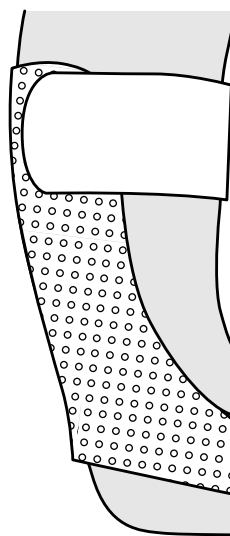
B. Adjust the shape to fit the arm and forearm and mark the location of the creases (dotted lines) for the sake of convenience.



C. Fold the lateral wings one after the other towards the palm and press them together to make them stick.



D. Hold the final position until the material has hardened.



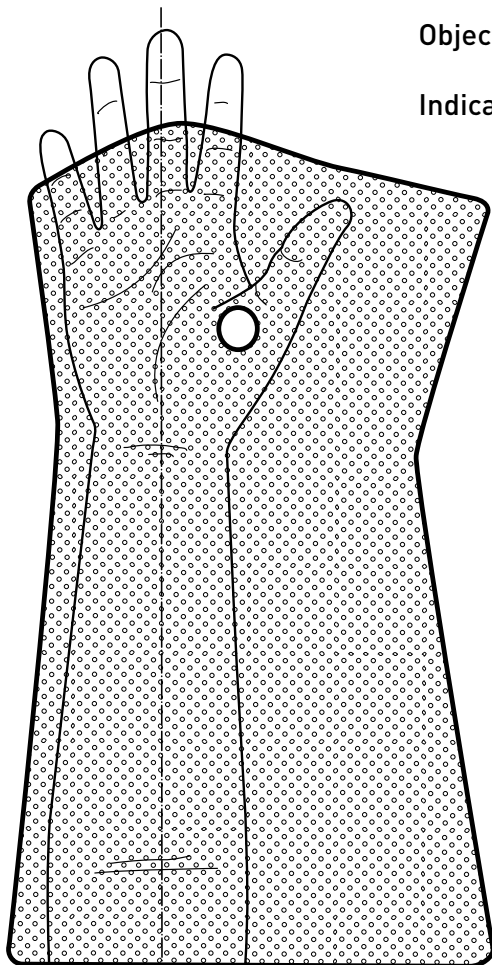
Finishing:

- Cut the palmar edge at a reasonable distance from the elbow flexion crease and pad the distal portion.

Fixation:

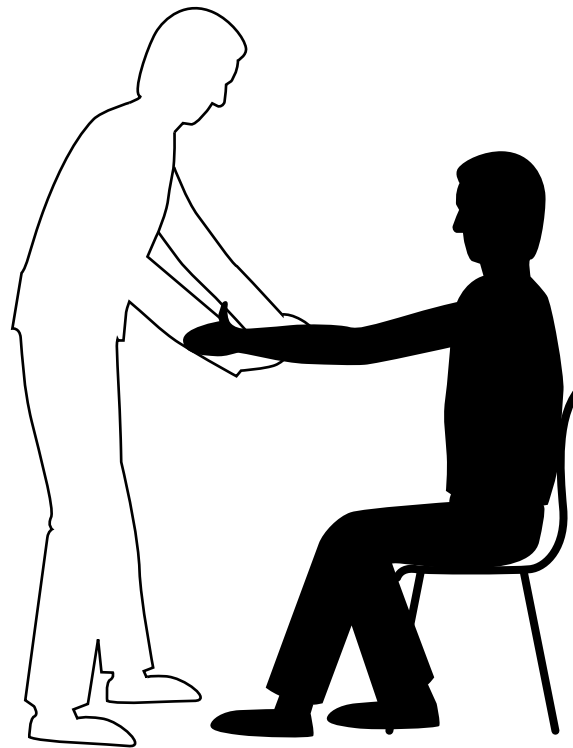
- One very broad strap at the proximal end.
- Optionally, 1 narrow strap around the wrist.

13. EPICONDYLITIS Resting SPLINT



Objective: To rest all the epicondyle muscles

Indications: Acute inflammation of the epicondyle muscles or their insertion point.



Starting position

The following materials are highly recommended for this splint:

1. Orfit® Classic
2. Orfit® NS
3. Aquafit™ NS
4. Orfilight®
5. Orfilight® Black NS
6. Orfilight® Atomic Blue NS
7. Orfit® Colors NS
8. Tecnofit®

Thicknesses:

2.5 mm (3/32")

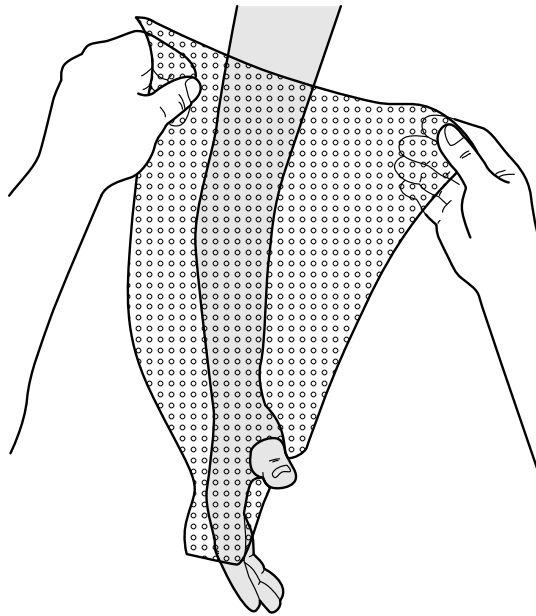
3.2 mm (1/8")

Perforation Styles:

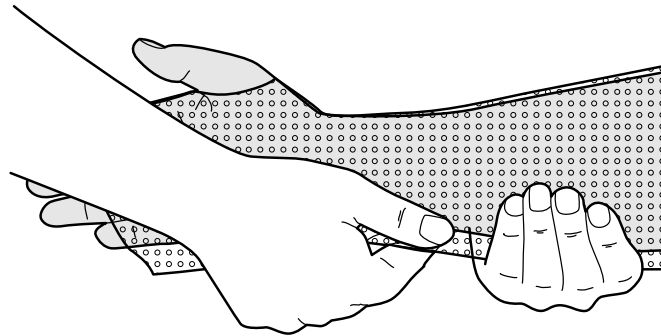
micro perforated

micro plus perforated

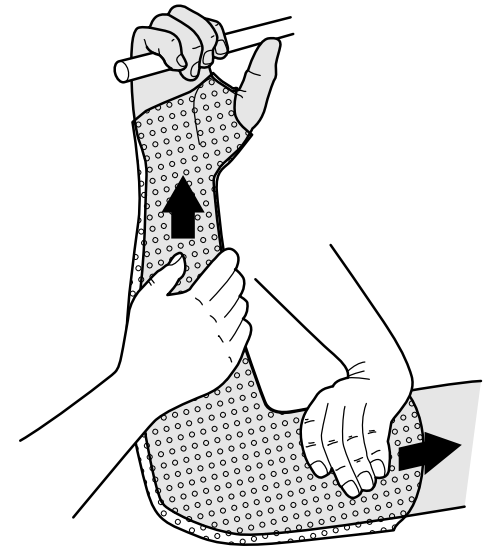
maxi perforated



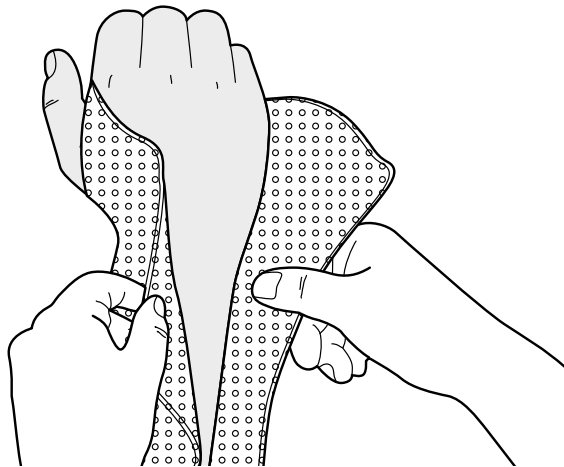
A. Stick the thumb through the opening of the pattern and place the material on the forearm, stretching it to halfway up the arm.



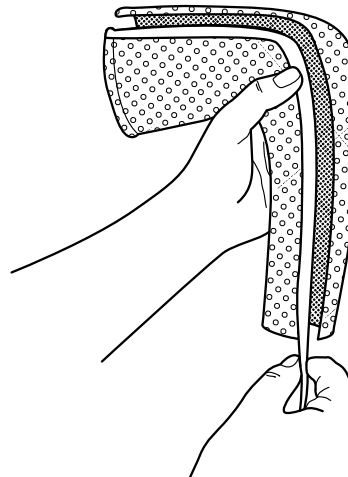
B. Now stretch the material slightly along its width and stick the edges together.



C. Ask the patient to slowly grasp the T bar (hook grasp only) while the arm portion is pulled further upwards to avoid the formation of creases.

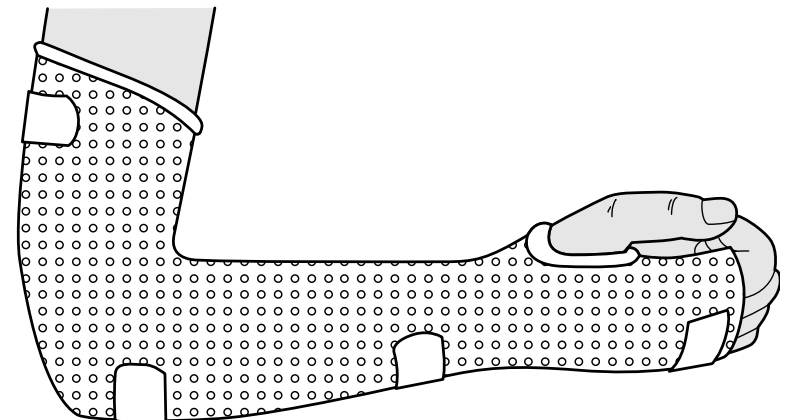


D. After the material has hardened, tear off the seam and remove the splint.



Finishing:

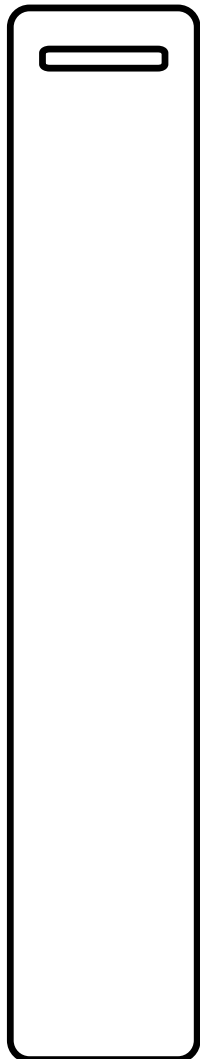
- Cut off the edges evenly and leave an opening of approximately 2 cm wide. Cover the serrated edge with thermoplastic edging strip.



Fixation:

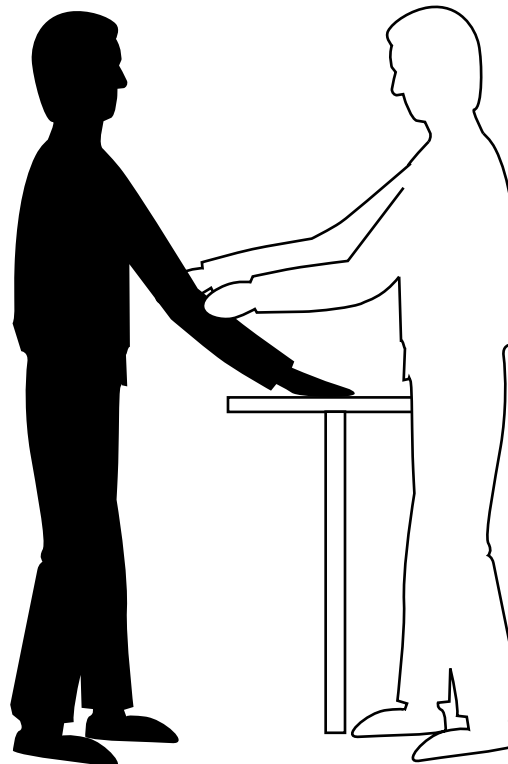
- 4 short narrow fixation straps to close the splint.

14. TENNIS ELBOW TENSION RING



Objective: To provide relief to the proximal insertion points of the epicondyle muscles

Indications: Prevention, or treatment of chronic tennis elbow



Starting position

The following materials are highly recommended for this splint:

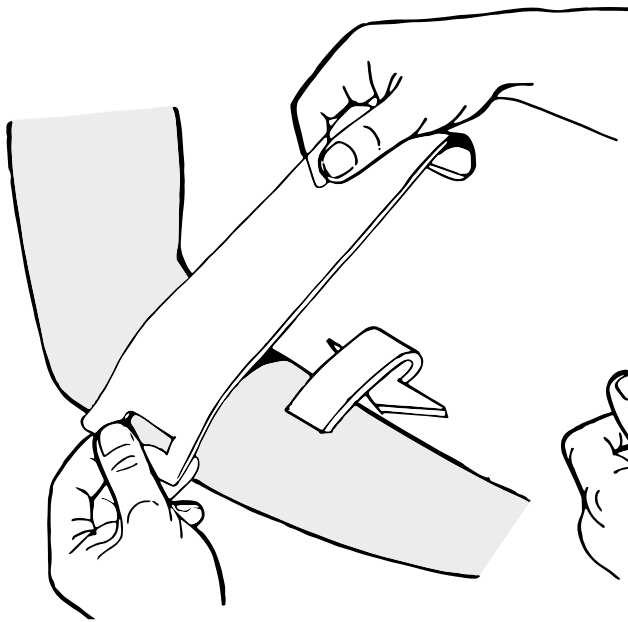
1. Orfit® Classic Stiff
2. Orfit® Eco
3. Orfit® Eco Black NS
4. Orfibrace™ NS
5. Orflight®
6. Orflight® Black NS
7. Orflight® Atomic Blue NS
8. Aquafit™ NS
9. Orfit® Colors NS
10. Tecnofit®
11. Orficast®

Thicknesses:

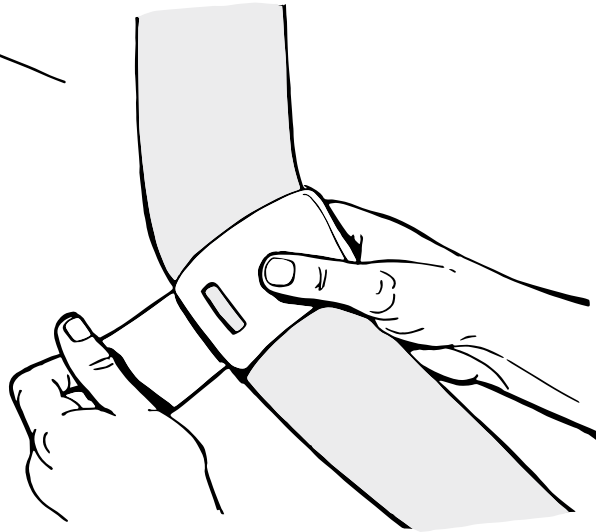
3.2 mm (1/8")

Perforation Styles:

non perforated



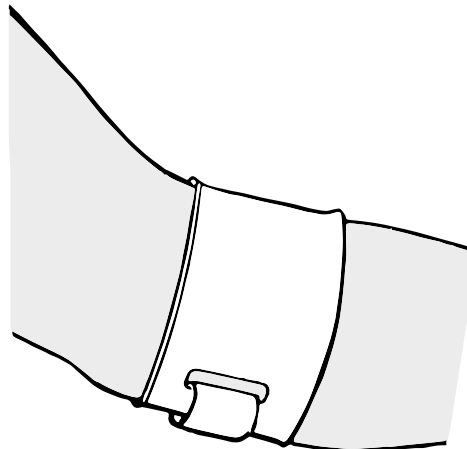
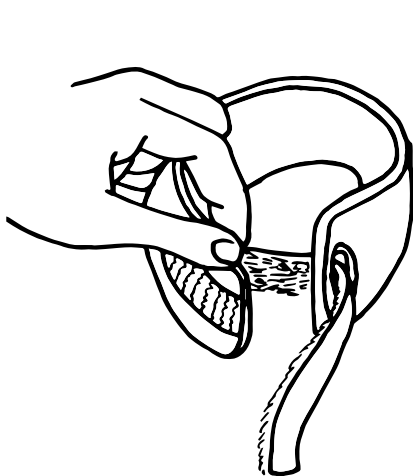
A. Place the pattern around the forearm, just distal to the inflammation site.



B. Wrap the pattern around the forearm.



C. Give the ring a flattened shape by applying selective pressure with the thenar muscle (right hand in the illustration) on the area shown until the material is cooled.



Fixation:

- Affix a piece of hook tape to the rear and the front of the ring (using dry heat).
- Insert the loop tape in the slot and affix to the hook tapes.

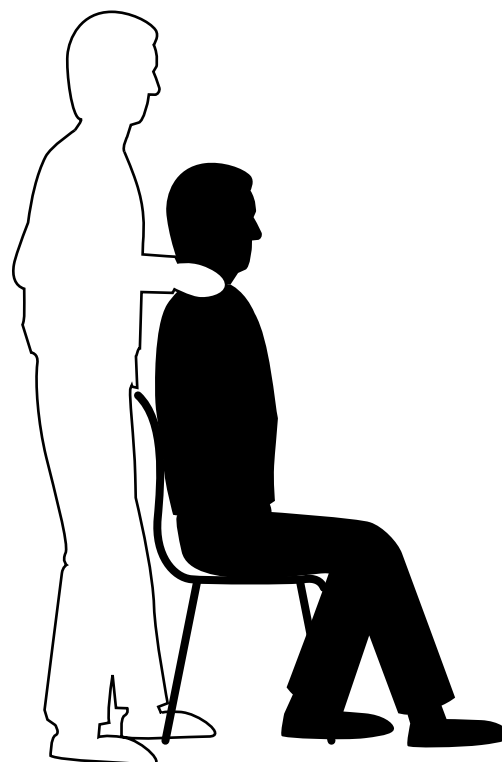
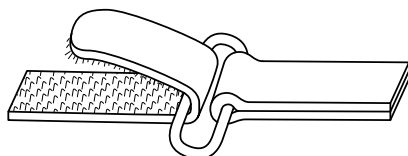
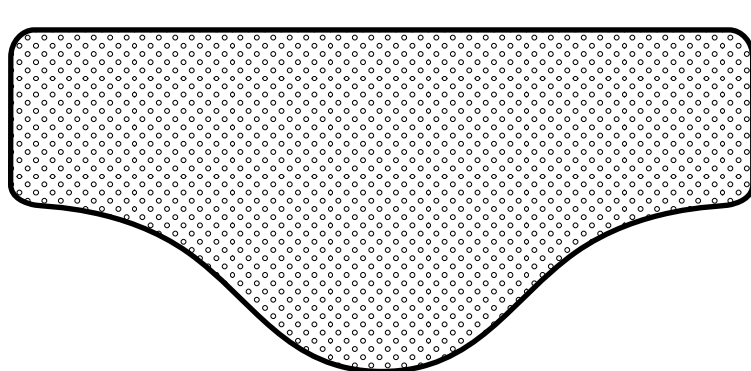
Finishing:

- Ensure that the edges have been curved outwards.

15. CERVICAL COLLAR

Objective: Support of the cervical vertebrae or compression therapy for neck burns

Indications: Rheumatoid arthritis, Cervical subluxation, whiplash, Burns



Starting position

The following materials are highly recommended for this splint:

1. Orfit® Classic Stiff
2. Orfit® NS
3. Aquafit™ NS
4. Orfilight®
5. Orfilight® Black NS
6. Orfilight® Atomic Blue NS
7. Orfit® Colors NS
8. Tecnofit®
9. Orfit® Ease
10. Orfit® Flex NS

Thicknesses:

2.5 mm (3/32")

3.2 mm (1/8")

Perforation Styles:

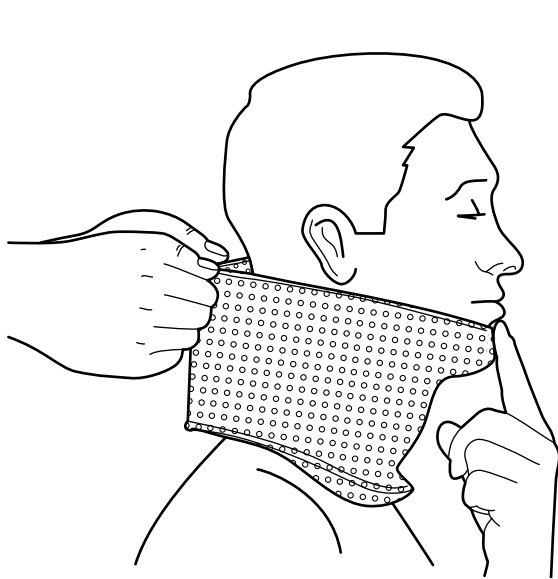
non perforated

micro perforated

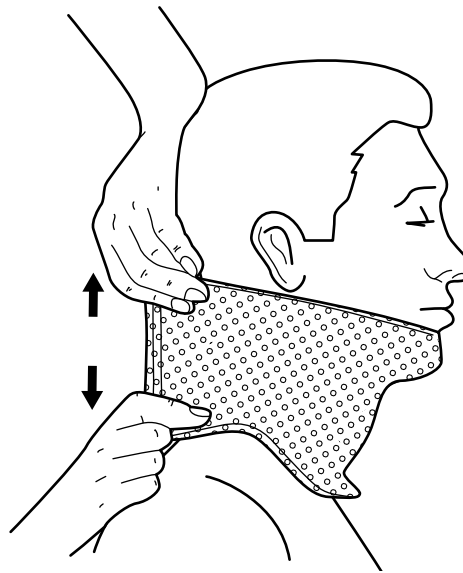
micro plus perforated

macro perforated

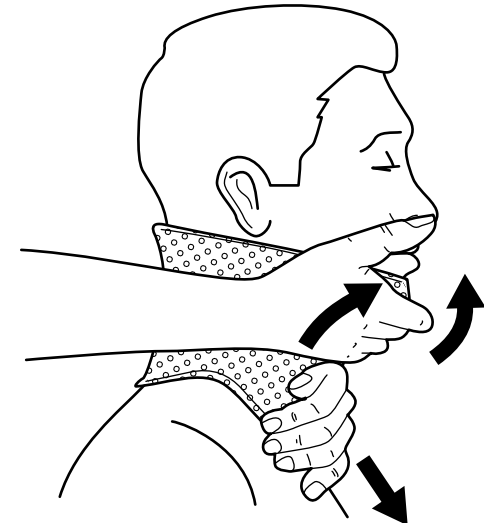
mini perforated



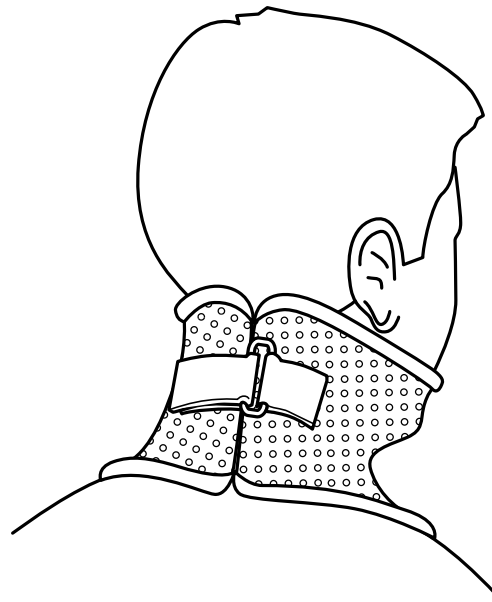
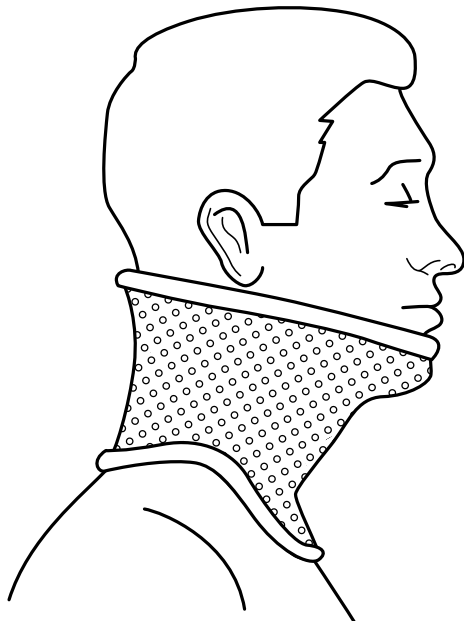
A. Place the pattern under the chin and ask the patient to hold it with the index finger.



B. Stretch the pattern sufficiently so that the two edges can be firmly stuck together.



C. Place the patient's head as desired and smooth the material, particularly around the support areas (chin and sternum).



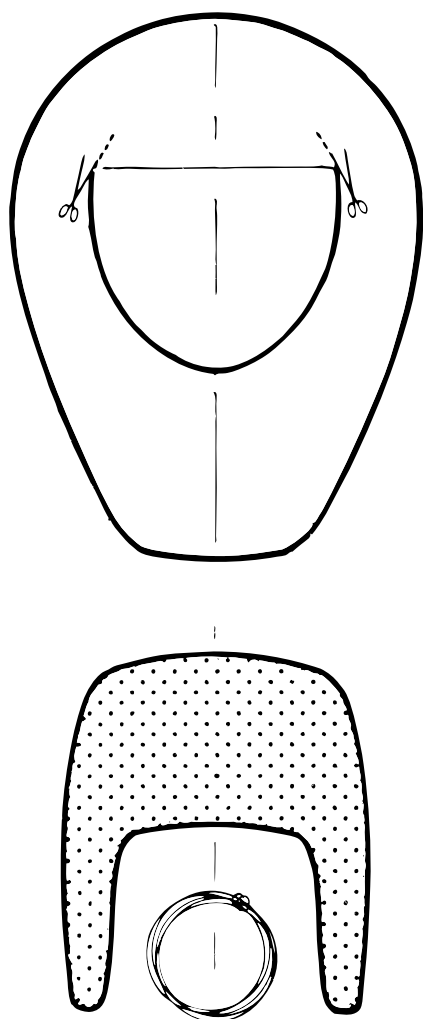
Finishing:

- Carefully finish off the edges, and apply Orfilastic™ edging tape.

Fixation:

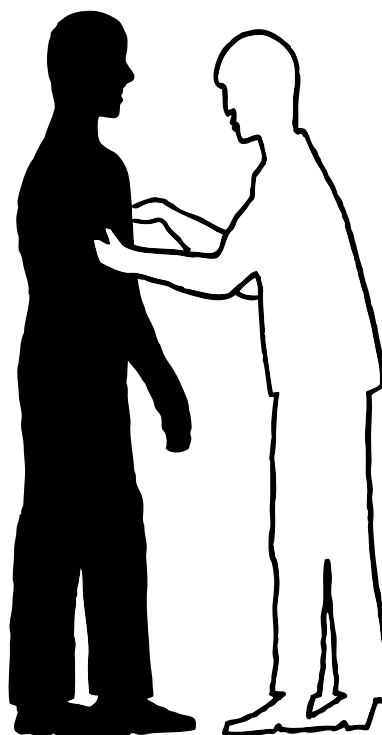
- Stick the two-sided loop of a D-ring closure system by heating the splint material, and use a self-adhesive hook and loop tape on the opposite side.

16. SCAPULO-HUMERAL SHOULDER CUFF ORTHOSIS



Objective: Scapulo-humeral recoaptation without immobilizing the shoulder.

Indications: Scapulo-humeral subluxation following a coapting muscle paralysis (flaccid hemiplegia, brachial plexus injury).



Starting position

The following materials are highly recommended for this splint:

1. Orfit® Classic
2. Orfit® NS
3. Aquafit™ NS
4. Orfit® Colors NS

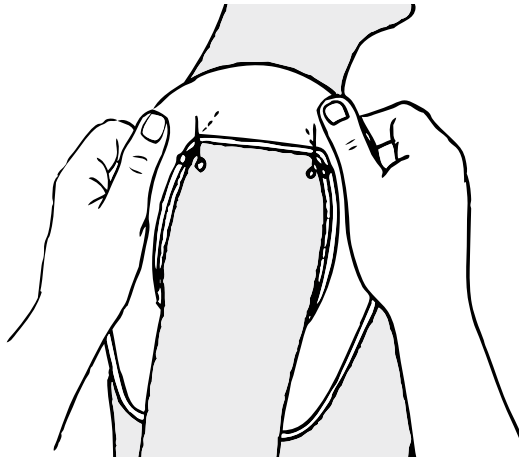
Thicknesses:

- 1.6 mm [1/16"]
- 2.0 mm [1/12"]
- 2.5 mm [3/32"]

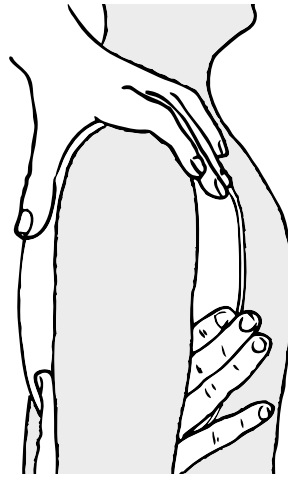
Perforation Styles:

- non perforated
- micro perforated
- micro plus perforated

TIP: this splint is available as a kit. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



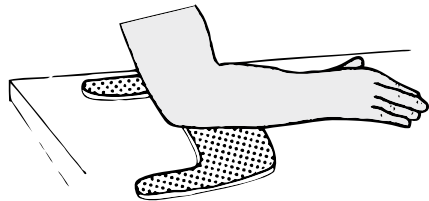
A. Make two cuts in the pattern as shown above. Pass the arm through the orthosis and lift the orthosis up to the shoulder.



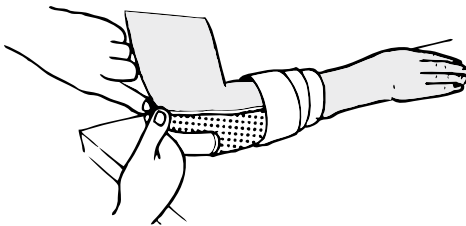
B. Form a perfect cast around the shoulder and the chest.



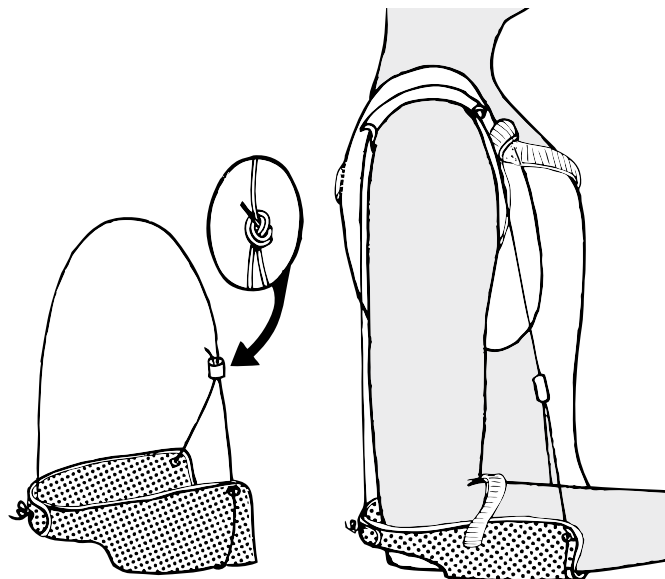
C. Before the material hardens, refold the outer edge in order to obtain a small channel.



D. Place the wet pattern, then the arm, on the worktable.



E. Wrap a non-adhesive bandage around the orthosis. Join and stick together the two tabs at the back.



F. Make two holes at the front and one at the back. Pass a strong nylon thread through the front holes and tie a knot which will subsequently be covered with thermoplastic material.

Pass the long end through the back hole and tie a knot at the desired length.

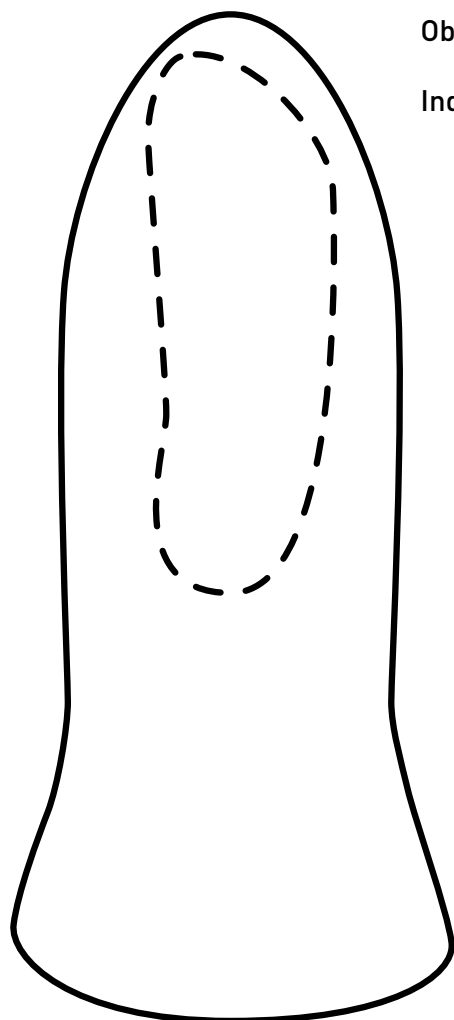
Finishing:

Smooth the edges and put padding on the part in contact with the shoulder cap.

Fixation:

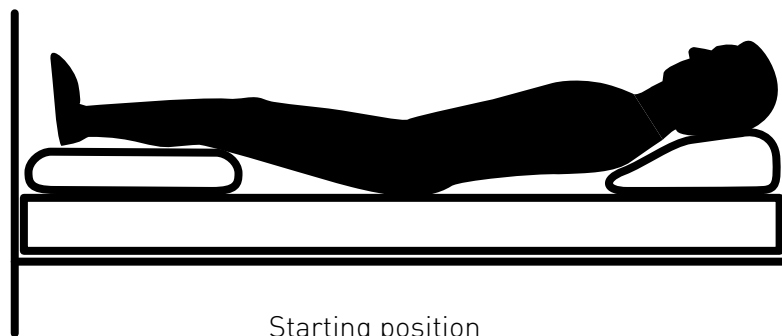
- Attach the strap with a self gripping strip; the loop portion starts from the back, (rather high), circles the chest and is attached to the self-adhesive closure located at the same height in front of the strap.
- Attach the elbow cradle with a self-gripping strip placed right next to the elbow.

17. DORSAL DROPFOOT SPLINT



Objective: Positioning of the foot in bed-ridden patients

Indications: Flaccid hemiplegia, cerebral paralysis, peripheral nerve lesions, congenital deflexion of the foot (clubfoot)



Starting position

The following materials
are highly recommended
for this splint:

1. Orfit® Classic Stiff
2. Orfit® NS
3. Aquafit™ NS
4. Orfit® Colors NS
5. Orfit® Ease

Thicknesses:

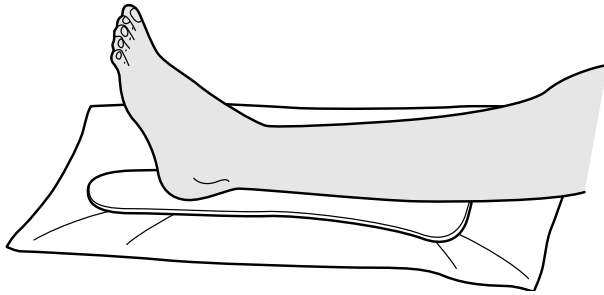
3.2 mm (1/8")

4.2 mm (3/16")

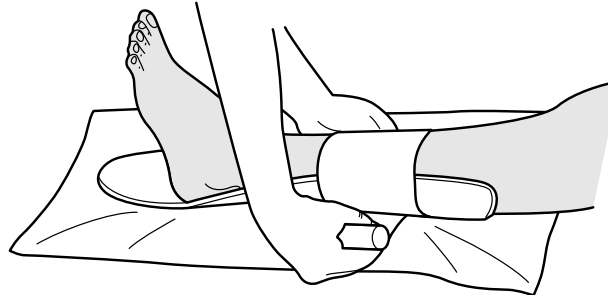
Perforation Styles:

non perforated

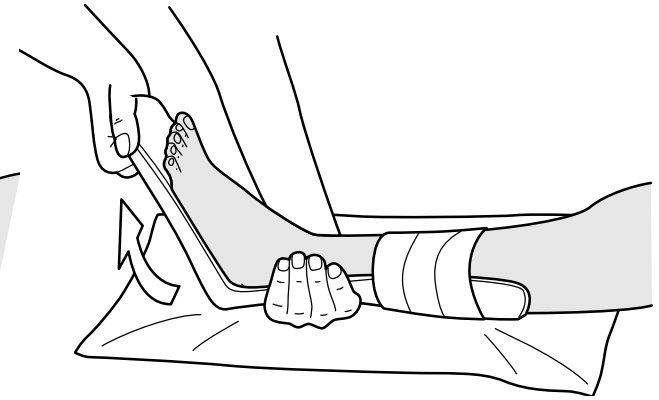
macro perforated



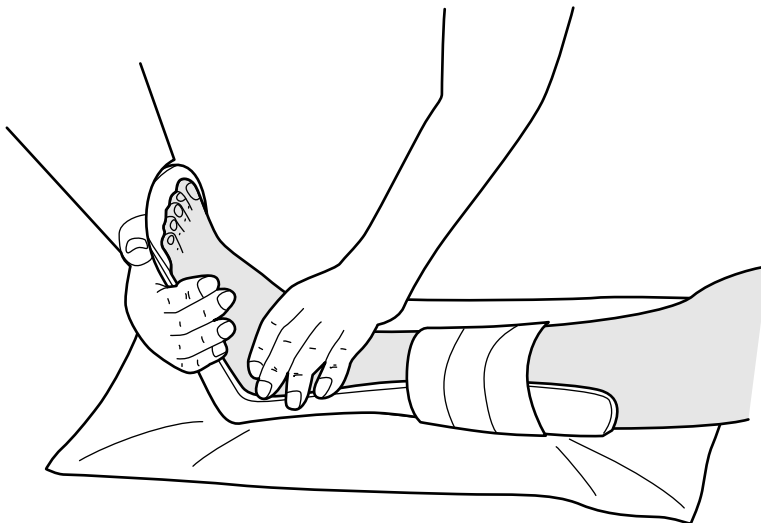
A. Place the pattern of a non stick (NS) treated product on the underlay. Place the leg on top, ensuring that the calf is covered (not the foot).



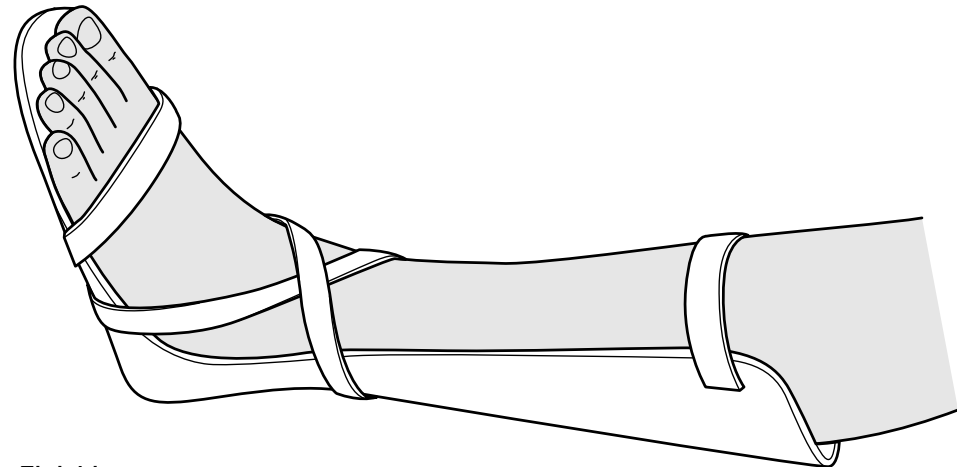
B. Secure the pattern to the leg using a bandage.



C. Stretch the material so that the foot is now entirely covered.



D. Hold the foot in the desired position until the material has hardened.



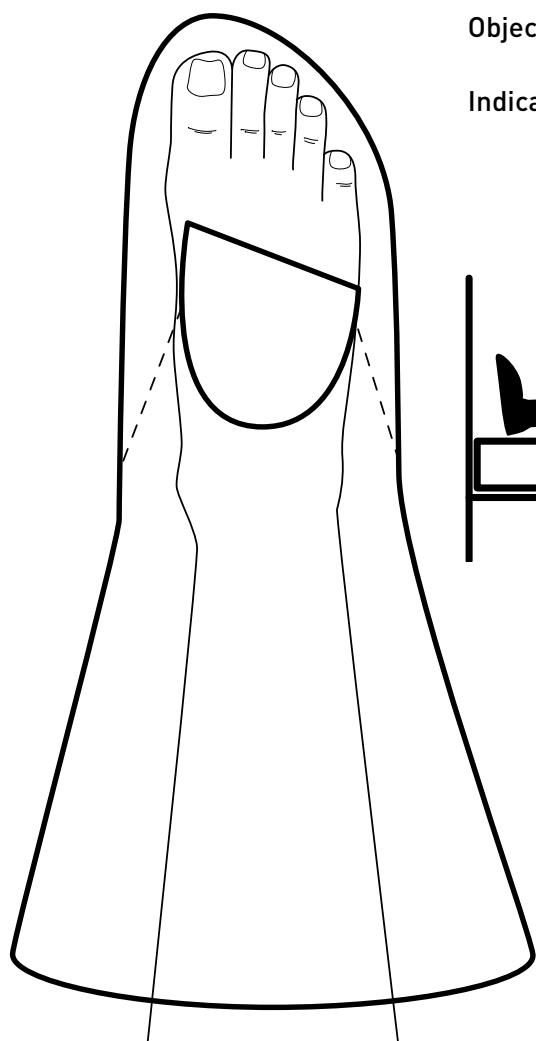
Finishing:

- Widen the splint at the level of the malleoli and apply soft padding material around the ankle.

Fixation:

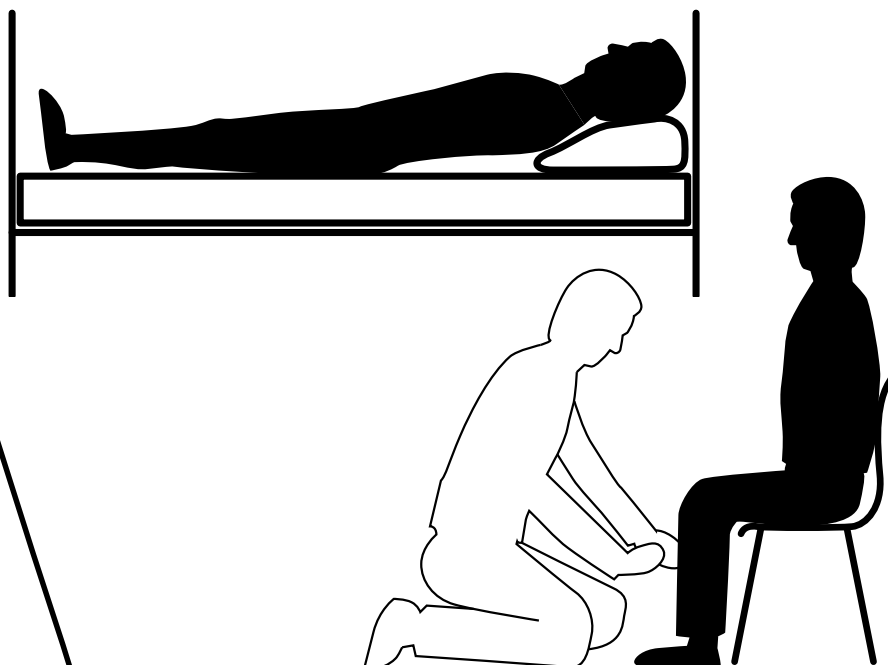
- a very large strap around the calf
- a narrow strap over the instep.

18. FUNCTIONAL DROPFOOT SPLINT



Objective: Positioning of the ankle joint and the foot

Indications: Muscle contractures and joint ankylosis in talipes equinus position
Spastic hemiplegia



Possible starting positions

The following materials are highly recommended for this splint:

1. Orfit® Eco
2. Orfit® Eco Black NS
3. Orfibrace™ NS
4. Orfit® Classic Stiff
5. Tecnofit®

Thicknesses:

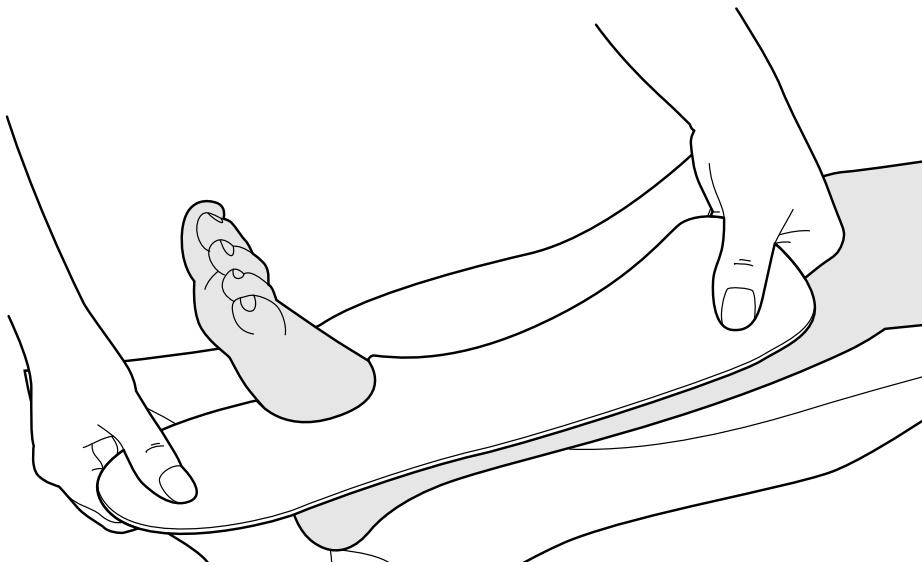
3.2 mm (1/8")

Perforation Styles:

non perforated

macro perforated

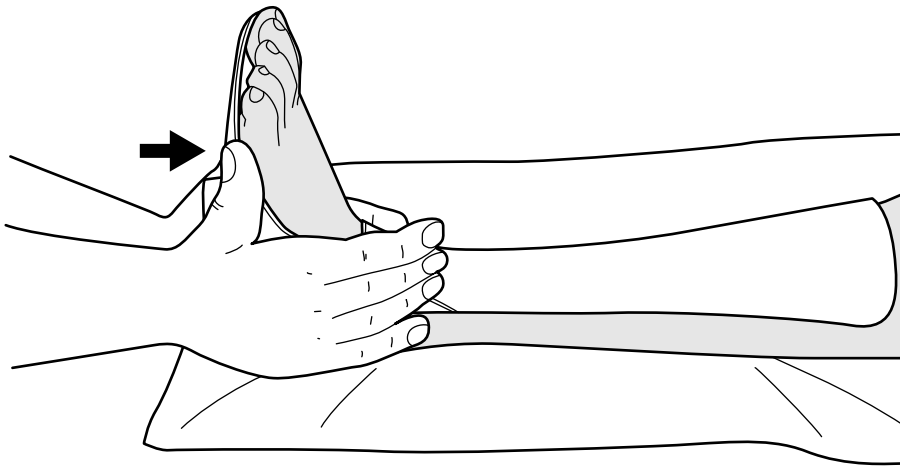
TIP: this splint is available as a pre-cut. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



A. Place the pattern over the patient's foot with the distal edge of the opening under the metatarsals.



B. Fold the two lateral wings upwards.



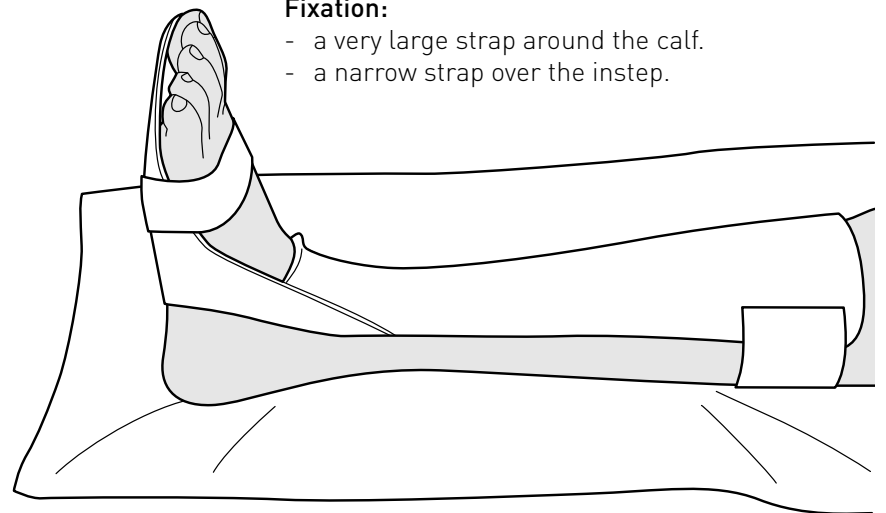
C. Hold the foot in the desired position

Finishing:

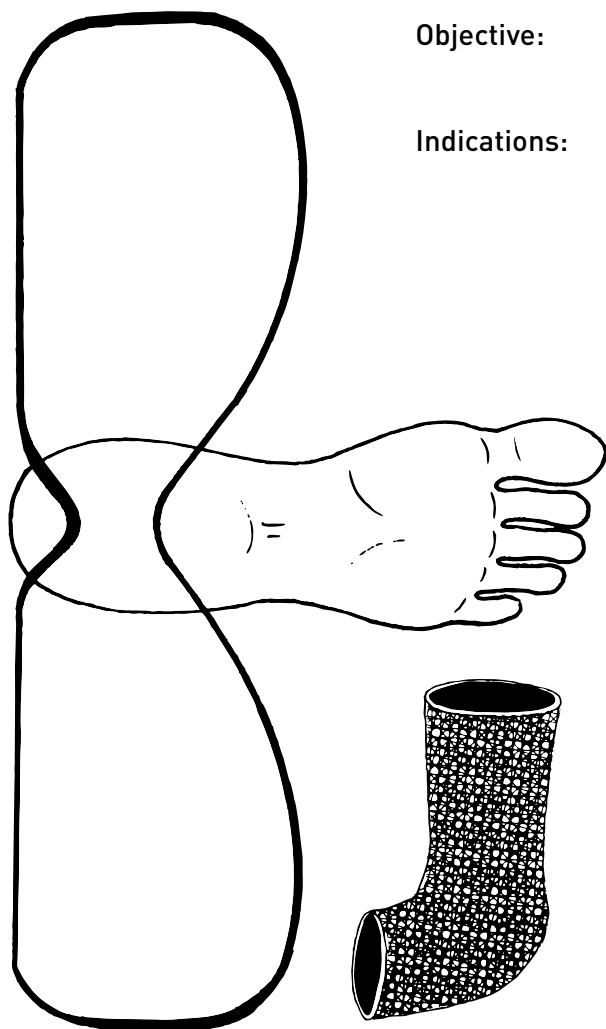
- Widen the splint at the level of the malleoli and apply soft padding material around the ankle.

Fixation:

- a very large strap around the calf.
- a narrow strap over the instep.

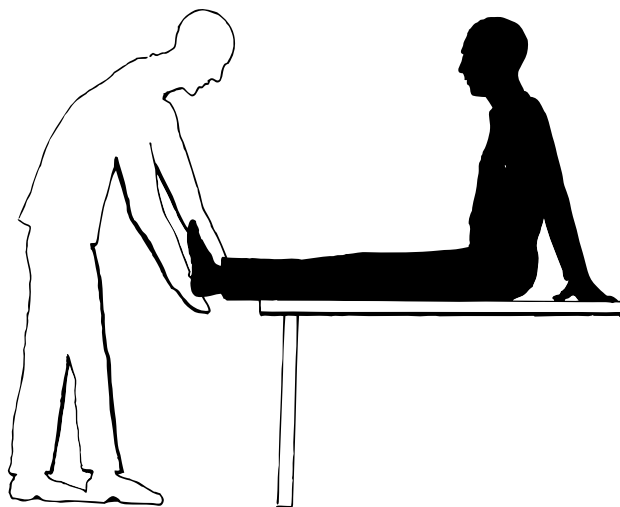


19. ANKLE ORTHOSIS



Objective: To prevent hyperangulating movements while enabling running and ball game practice.

Indications: Preventive and functional treatment of ankle sprain.



Starting position

The following materials are highly recommended for this splint:

1. Orfit® Eco
2. Orfit® Eco Black NS
3. Orfibrace™ NS
4. Orfit® Classic Stiff
5. Tecnofit®

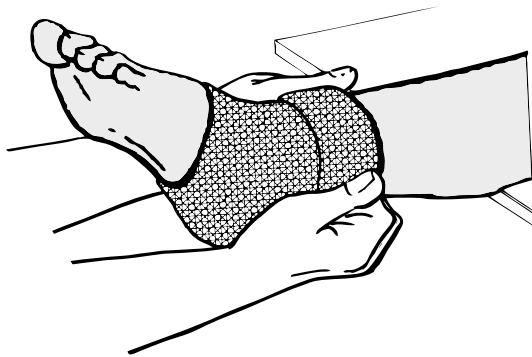
Thicknesses:

- 3.0 mm (1/8")
- 3.2 mm (1/8")
- 4.2 mm (3/16")

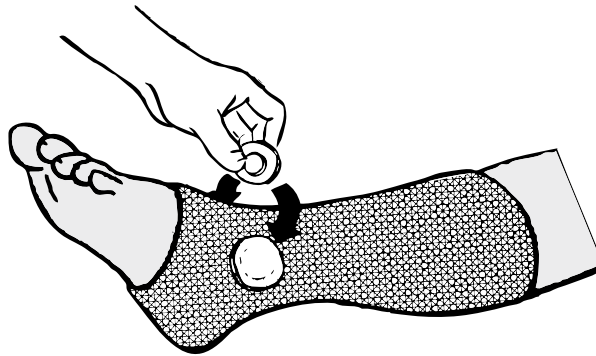
Perforation Styles:

- non perforated
- macro perforated

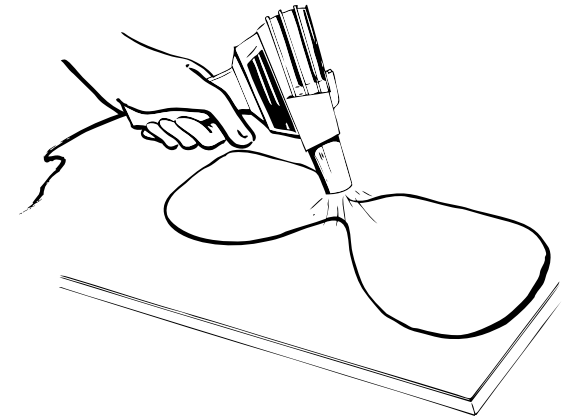
TIP: this splint is available as a kit. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



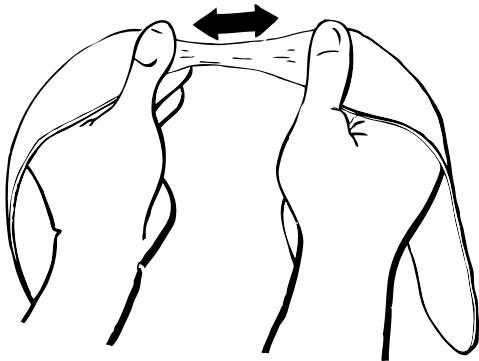
A. Slip on a cotton or Neoprene sock. It is very tight around the heel.



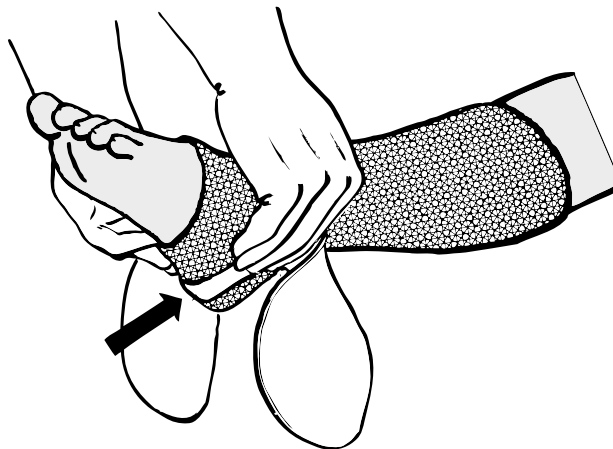
B. Cut out two LUXOFOAM disks about 5 cm in diameter. Stick the Luxofoam and silicone disks on the sock together in order to protect the malleoli.



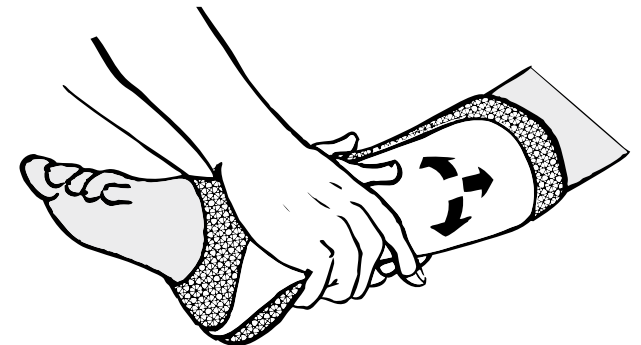
C. Note the asymmetry between the front and the back of the splint shape. Place the wet and activated material on the worktable. Quickly and carefully dry the top side and heat it with a heat gun to optimise adherence.



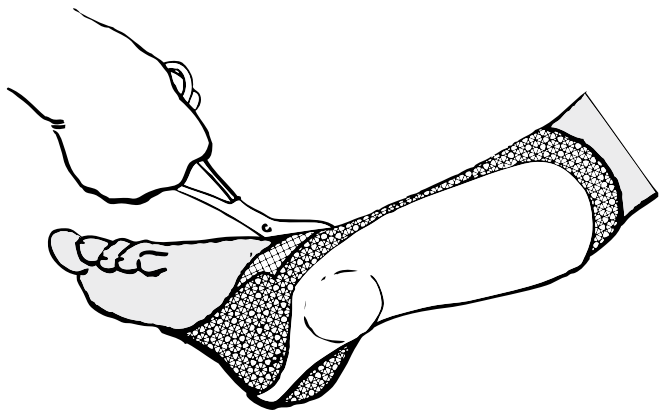
D. The pattern is stretched in the middle according to the size of the heel. The result is a very thin transversal section.



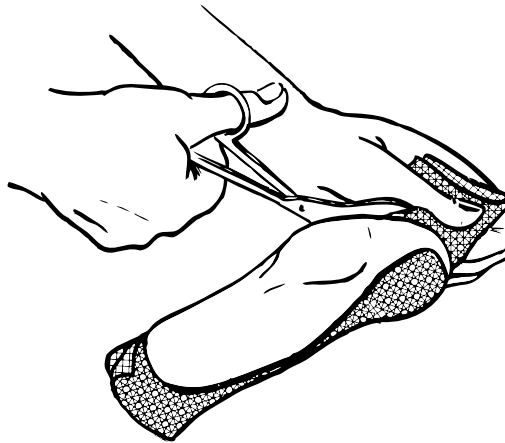
E. The transversal section is stuck to the Neoprene under the heel.



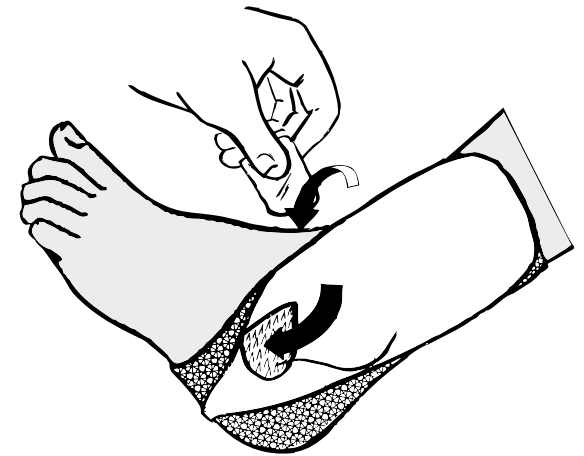
F. The two (non-stretched) upward portions are shaped around the malleoli.



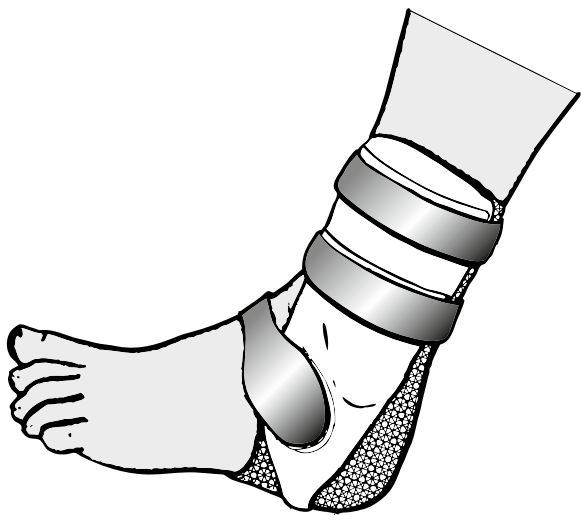
G. The cotton or neoprene sock is cut in front.



H. The edges are marked and cut.



I. Two self-gripping closures are stuck right under the malleoli.



J. A large loop band (optionally fitted with foam) is tightened at the forefoot. The orthosis is fixed with 2 "Velstraps", one right under the malleoli, the other at the upper end.

DYNAMIC HAND SPLINTS

INTRODUCTION

Dynamic splints are characterized by their mobility and their energy which is derived from elastics, springs, and even electromotors. The basis of a good dynamic splint, of course, is always a durable static splint, such as described above.

The objective of dynamic splints is primarily twofold: firstly, to encourage the patient to recover their mobility as quickly as possible (after a surgical procedure) and thus prevent the adhesion of soft tissues. Secondly, to assist muscle imbalance. The latter has a double effect: to prevent muscular contractures and to enable the hand to rapidly regain its functional use.

Dynamic splints are frequently regarded as “highly technological devices”, although the technology employed today is rather unpretentious. However, it is much more difficult to create a dynamic splint which the patient feels is quite comfortable. This is because many dynamic splints are unnecessarily cumbersome and also because the continual tensile force of a dynamic splint can feel a hindrance in the long run.

The cumbersome nature of a splint may not really be bothersome in postoperative situations, but it can certainly be in functional situations. The splint manufacturer must therefore establish what is important: tensile precision or functional benefit. This brings us to the categories used in this manual: acute therapeutic splints versus functional splints.

Please keep in mind that the most special component of a dynamic splint is the energy source, which is why special attention should be paid to this aspect.

Happy splinting!

A. DYNAMIC SPLINTS FOR ACUTE TREATMENTS

In order to adjust the tensile force and the direction of the dynamic traction as accurately as possible, an elastic is used which is attached to an outrigger. One speaks of a horizontal profile when the elastic runs parallel to the longitudinal axis of the hand via a directional pulley perpendicular to the finger. One speaks of a vertical profile when the elastic is directly attached to the outrigger.

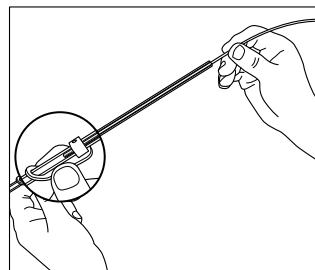
A low profile is when the directional pulley lies close to the finger, and a high profile when the reverse is the case. Both have specific indications.

The tensile strength of the elastic is optimal whenever the angle of incidence lies at 90° to the limb. Generally, the tensile strength is meant to improve the starting position. Whenever the starting position has effectively been improved thanks to the splint treatment (for example: increased extension) the suspension point of the elastic must be pulled back proximally in order to recover the 90° angle of incidence.

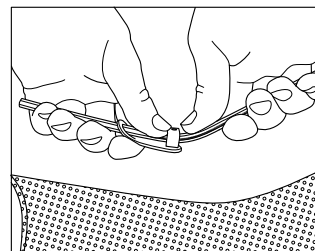
In 1988, Orfit Industries introduced the Orfitube™ which enables the outrigger and the directional pulley to be fitted in a single operation.

Instructions for use for the Orfitube™ (Art. N° 35310):

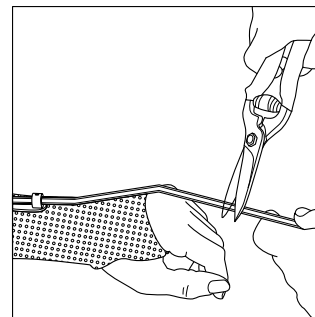
A. Push the nylon rod provided into the Orfitube™ up to the point where the tube must be bent. The nylon rod prevents the Orfitube™ from snapping close when the latter is being bent.



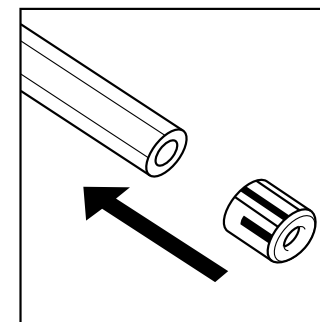
B. Bend the tube into the desired shape by hand or with a tube bender, removing the nylon thread each time from the different bends.



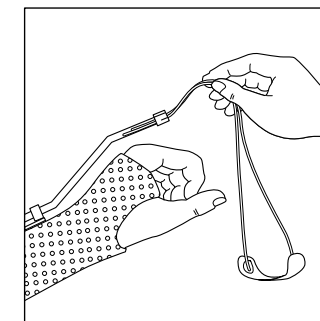
C. Score the tube with scissors at the correct length and break the tube ...



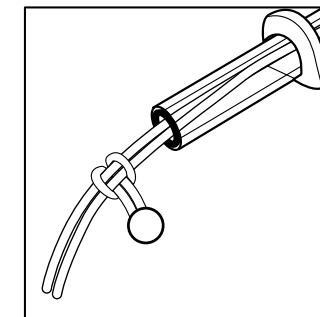
... and place an Orfitube™ cap at the free end.



D. Place a Single Orfitube™ Adjuster at the desired location.



E. Introduce the elastic with finger cuff through the Orfitube™, distally to proximally, and make a gliding knot with a stop. This allows the tension of the elastic to be easily adjusted.



Handwriting practice lines consisting of 20 horizontal dotted lines.

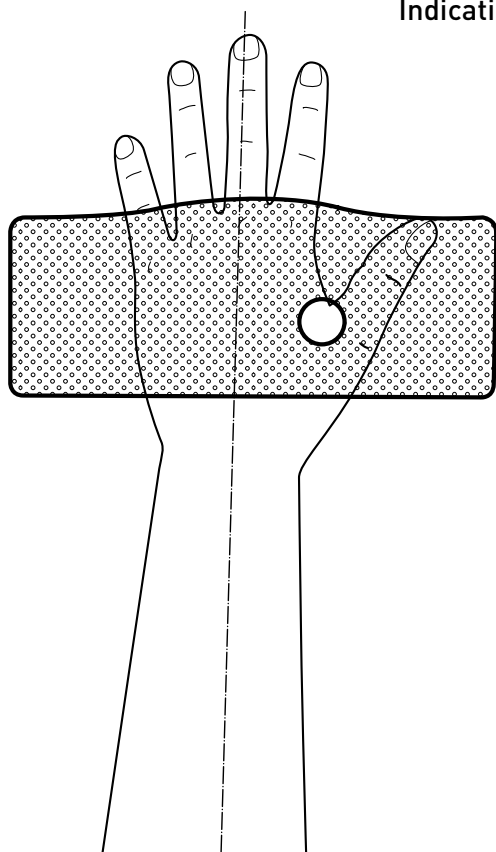
A large empty rectangular box for drawing or free writing.

1. MCP ARTHROPLASTY SPLINT

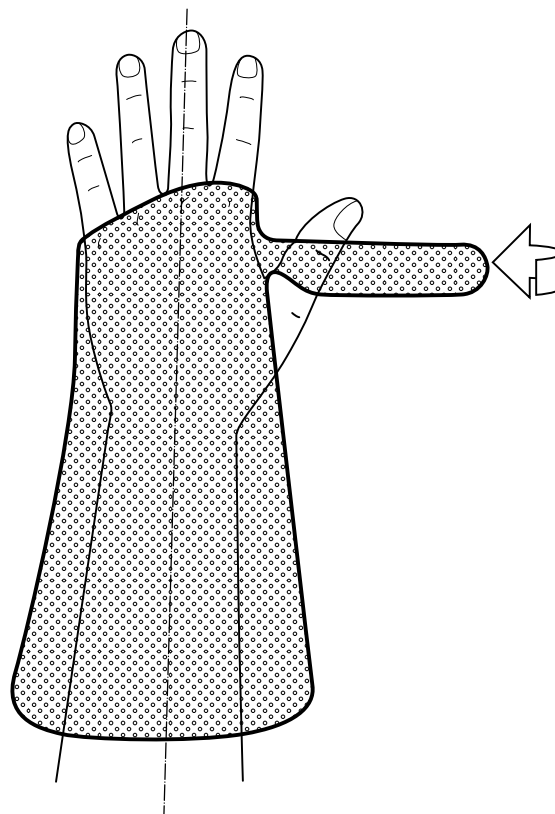
Objective:

- extension of the MCP joints
- postoperative support

Indications: Postoperative synovectomy or arthroplasty (short base)



MODEL A: Hand Base



MODEL B: Forearm Base

The following materials are highly recommended for this splint:

1. Orfit® Classic Stiff
2. Orfit® NS
3. Aquafit™ NS
4. Orfit® Colors NS
5. Orfilight®
6. Orfilight® Black NS
7. Orfilight® Atomic Blue NS
8. Orfit® Ease
9. Orfit® Flex NS

Thicknesses:

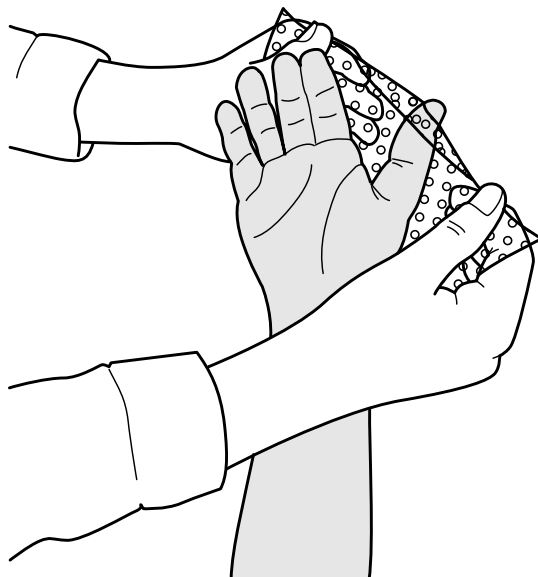
- 1.6 mm [1/16"]
- 2.0 mm [1/12"]
- 2.5 mm [3/32"]
- 3.2 mm [1/8"]

Perforation Styles:

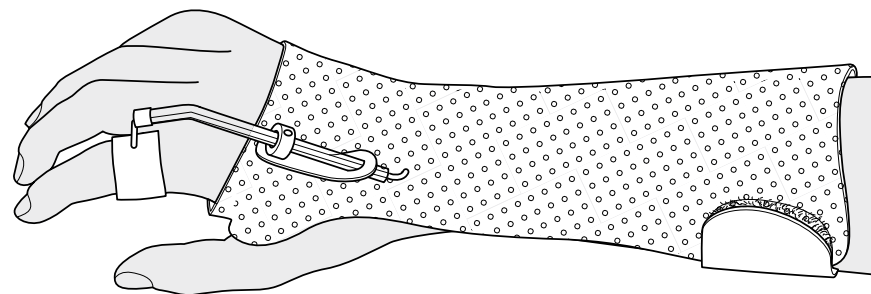
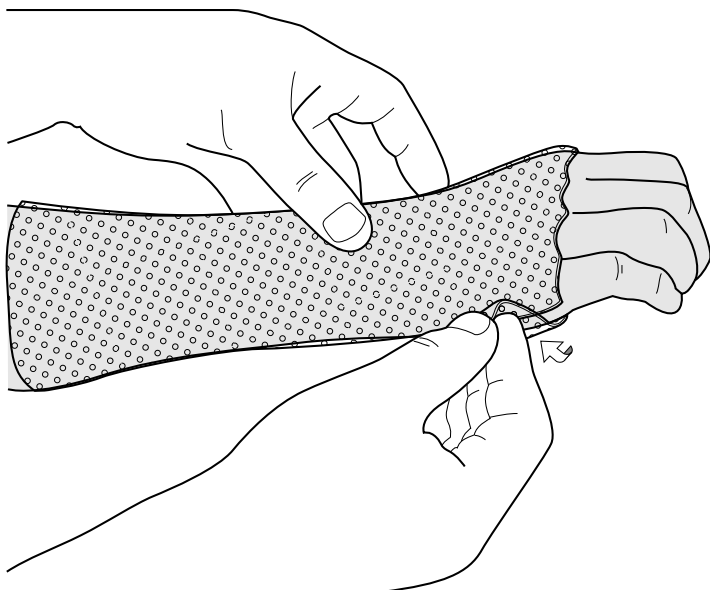
- non perforated
- micro perforated
- micro plus perforated
- mini perforated
- maxi perforated
- macro perforated

Model A:

Pull the pattern over the thumb all the way down, bring the edges together and stick them temporarily.

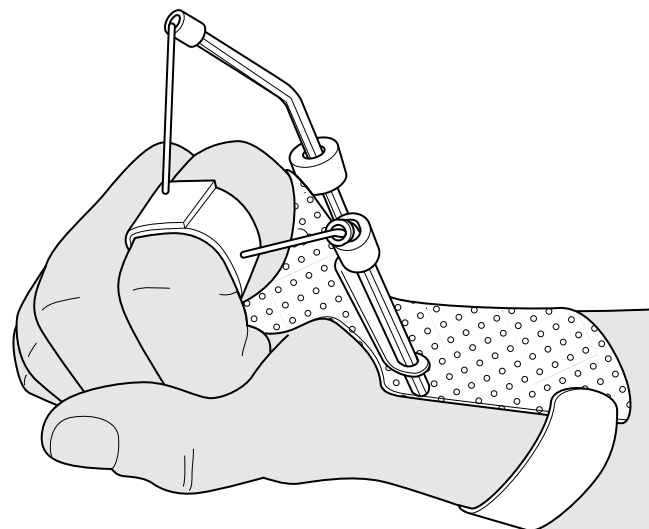
**Model B:**

Place the splint pattern on the dorsal aspect of the hand to precisely cover the MCP joints. Mould the palmar portion proximal to the transverse skin crease. Close with a hook and loop tape.

**Both models:**

Mould an Orfitube™ as shown in the drawing, and stick a Single Orfitube™ Adjuster to the splint base with an Orfitube™ in line with the index finger. Make a finger loop with Orfilight®, stick an elastic to it and thread through the tube. Provide an adjustable sliding knot.

Mould a second Orfitube™ to be placed laterally along the index finger with the tip of the tube perpendicularly to the proximal phalanx when in full flexion. Attach a non-elastic cord laterally on the finger ring and tighten only when the index finger is in full extension.

**Finishing and Fixation:**

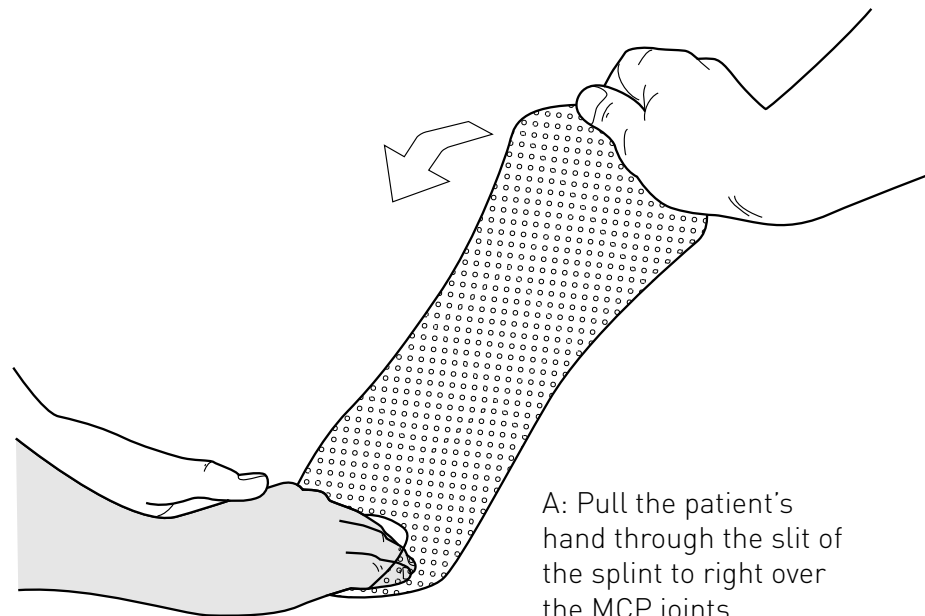
- Pay attention to the pressure on the ulnar styloid process.
- Apply a broad velcro strap proximally under the forearm.

2. EXTENSOR TENDON MOBILIZATION: ZONE 5 & 6



Objective: Early passive mobilization of the extensor tendons

Indications: Post-surgical tendon suture



A: Pull the patient's hand through the slit of the splint to right over the MCP joints.

The following materials are highly recommended for this splint:

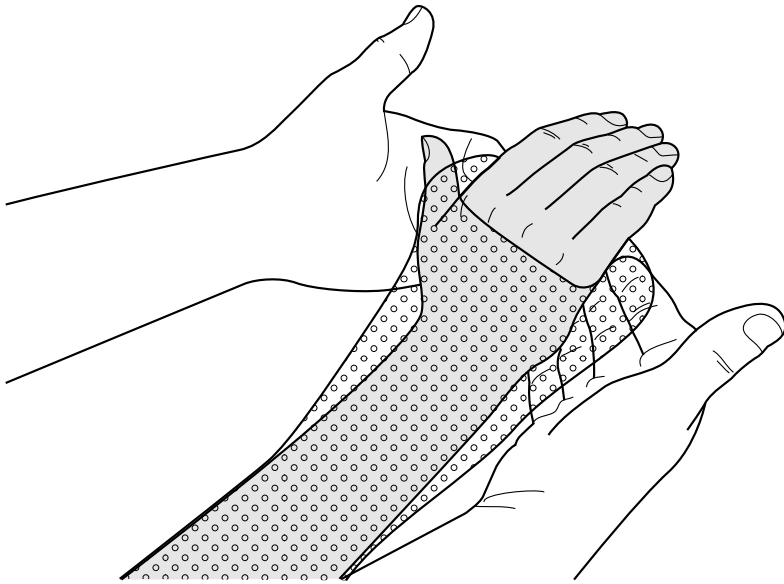
1. Orfit® Classic Stiff
2. Orfit® NS
3. Aquafit™ NS
4. Orfit® Colors NS
5. Orfilight®
6. Orfilight® Black NS
7. Orfilight® Atomic Blue NS
8. Orfit® Ease
9. Orfit® Flex NS

Thicknesses:

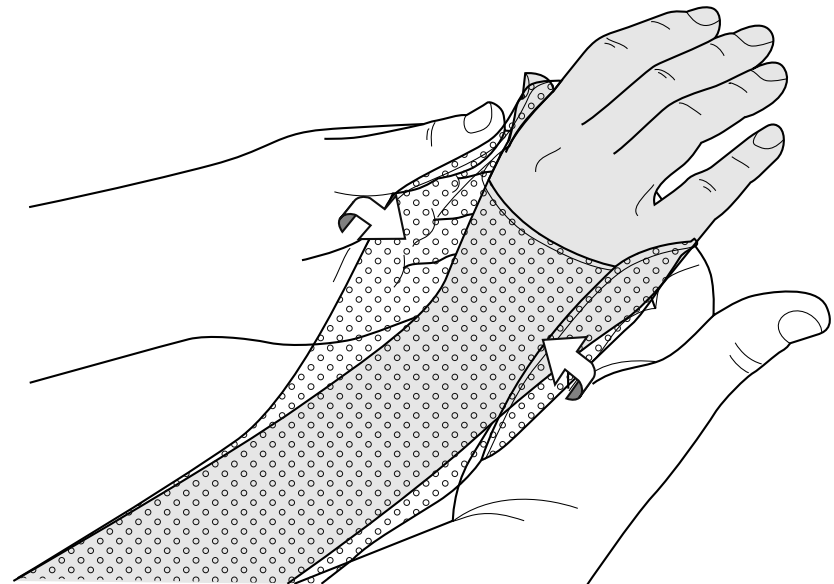
- 1.6 mm [1/16"]
- 2.0 mm [1/12"]
- 2.5 mm [3/32"]
- 3.2 mm [1/8"]

Perforation Styles:

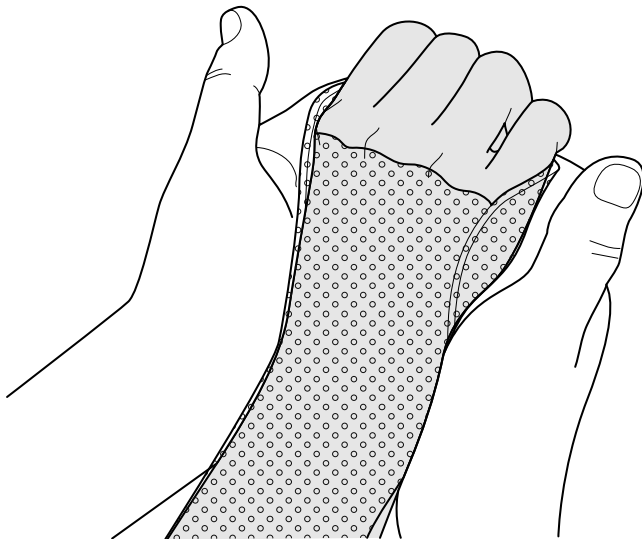
- non perforated
- micro perforated
- micro plus perforated
- mini perforated
- maxi perforated



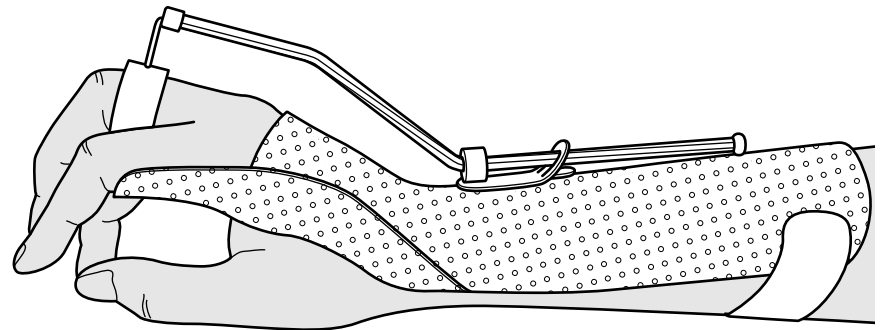
B. Mould the palmar resting plate for the fingers.



C. Fold the lateral wings upwards. Press so that they stick.



D. Position the fingers (e.g. 30° flexion) and the wrist (e.g. 30° extension).

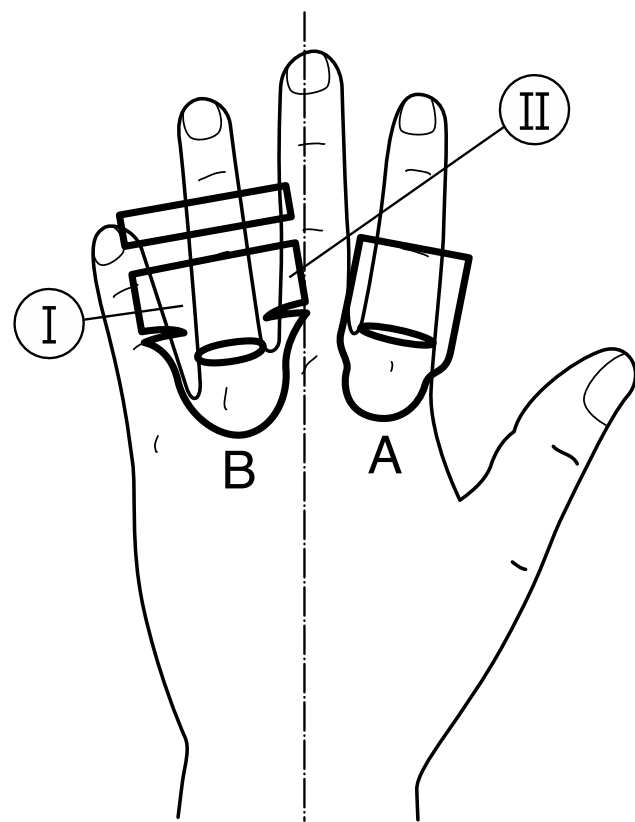


E. Attach the necessary number of Orfitubes™, and make the finger loops and elastics as described in the introduction.

Finishing and fixation straps:

- Leave sufficient room between the back of the hand and the splint.
- Fit a broad fixation strap proximally under the forearm.

3. PIP EXTENSION SPLINTS

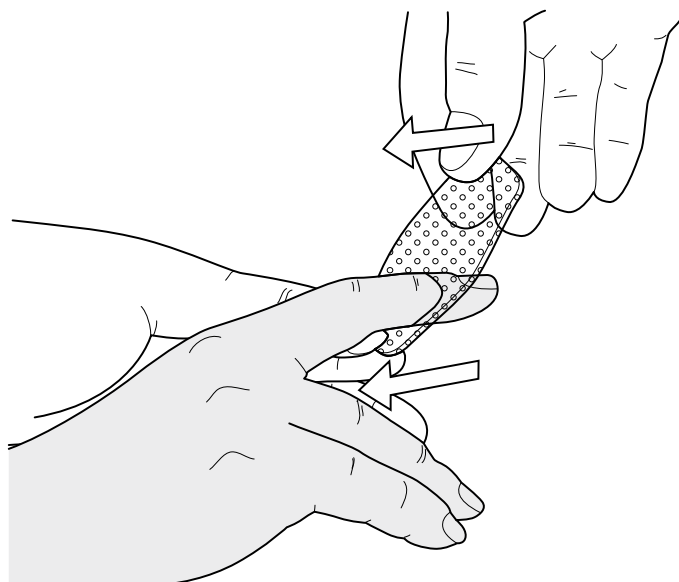


Objective: To promote active PIP extension

Indications:

- extensor tendon laceration in zone IV
- PIP flexion contractures- stiffness

Application method pattern A: the VL splint



A. Stick the finger through the slit of the splint pattern in a downward direction.

The following materials are highly recommended for this splint:

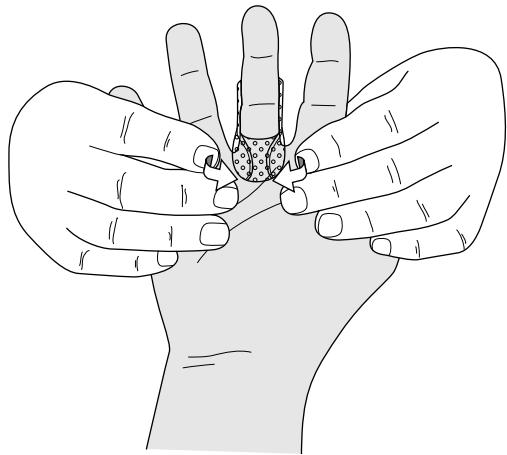
1. Orfit® Classic Soft
2. Orfit® Classic Stiff
3. Orfit® NS
4. Aquafit™ NS
5. Orfit® Colors NS
6. Orfilight®
7. Orfilight® Black NS
8. Orfilight® Atomic Blue NS

Thicknesses:

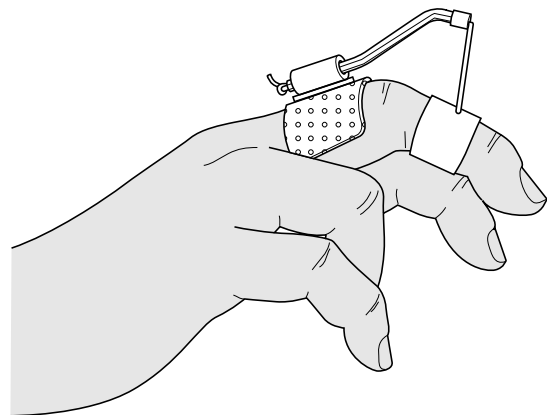
- 1.6 mm [1/16"]
- 2.0 mm [1/12"]
- 2.5 mm [3/32"]

Perforation Styles:

- non perforated
- micro perforated

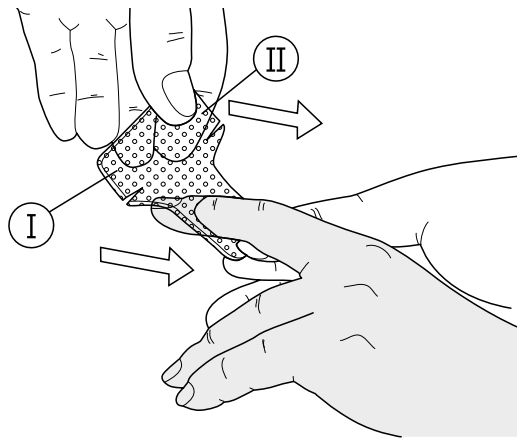


B. Fold the side edges inwards at the level of the palmar section.



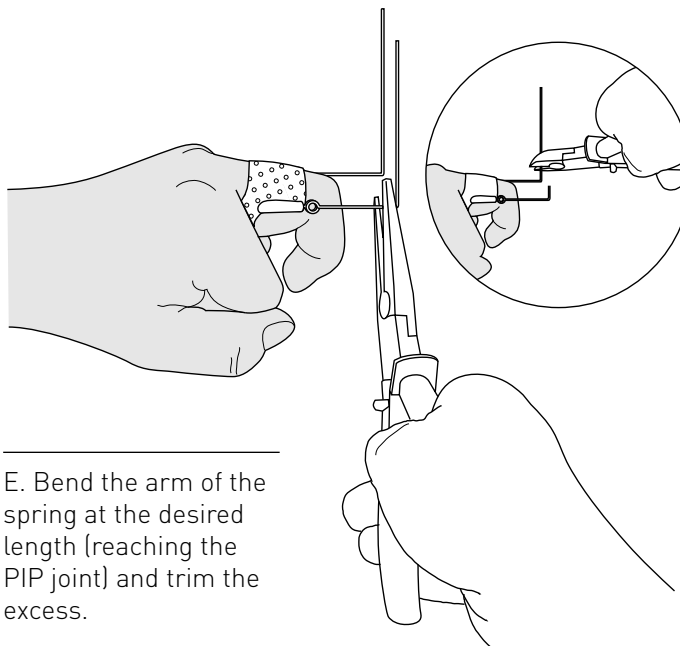
C. Make a ring out of Orfit® Classic to stick the Orfitube™ to the splint base and attach the elastic with finger sling as described earlier.

Application method pattern B: the Capener splint

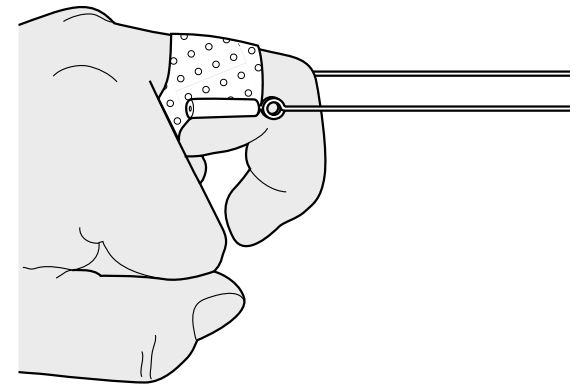


A. Push the finger through the slit of the splint in a downward direction.

B. Fold the lateral edges inwards at the level of the palmar section.

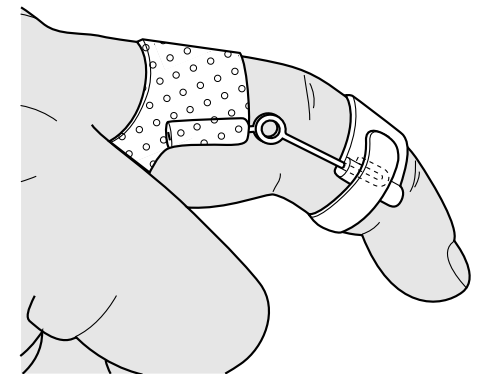


E. Bend the arm of the spring at the desired length (reaching the PIP joint) and trim the excess.



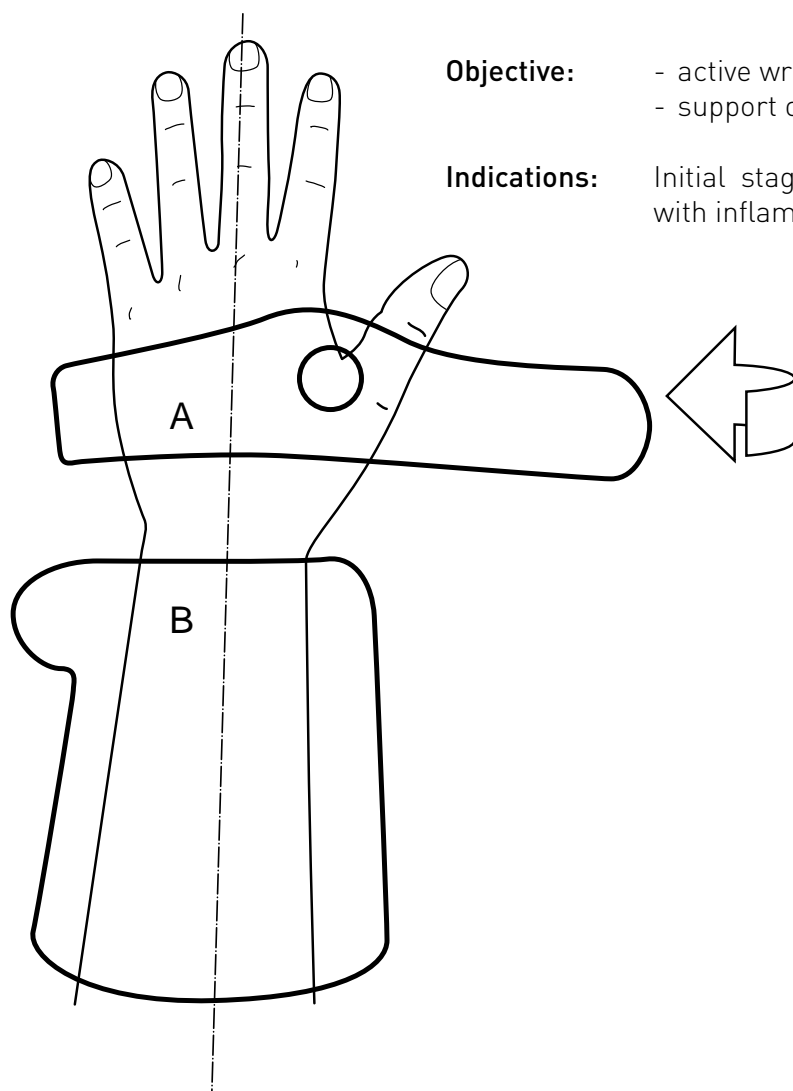
C. Mark the joint axis and align the lateral extension spring accordingly.

D. Heat the wings I and II and fold them upwards while the spring is held in place.



F. Make a dorsal bridge, distal to the middle phalanx, and stick the edges around the spring wire.

4. WRIST EXTENSION ANTI-DEVIATION SPLINT



- Objective:**
- active wrist extension
 - support of the m. extensor carpi ulnaris
- Indications:** Initial stages of rheumatoid arthritis, with inflammation of the distal radioulnar joint.

The following materials
are highly recommended
for this splint:

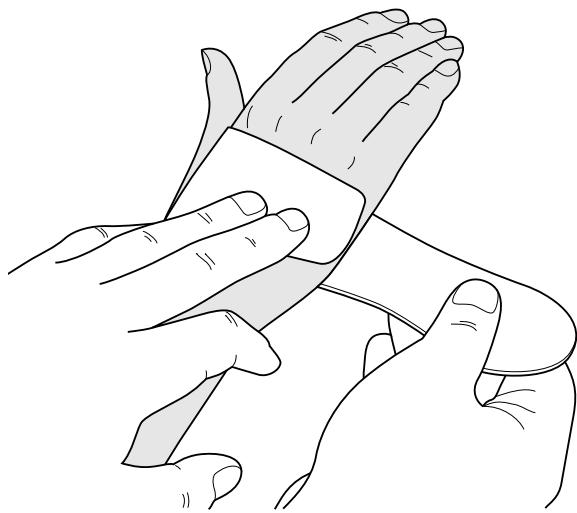
1. Orfit® Classic Stiff
2. Orfit® NS
3. Aquafit™ NS
4. Orfit® Colors NS
5. Orfilight®
6. Orfilight® Black NS
7. Orfilight® Atomic Blue NS
8. Tecnofit®
9. Orfit® Ease
10. Orfit® Flex NS

Thicknesses:

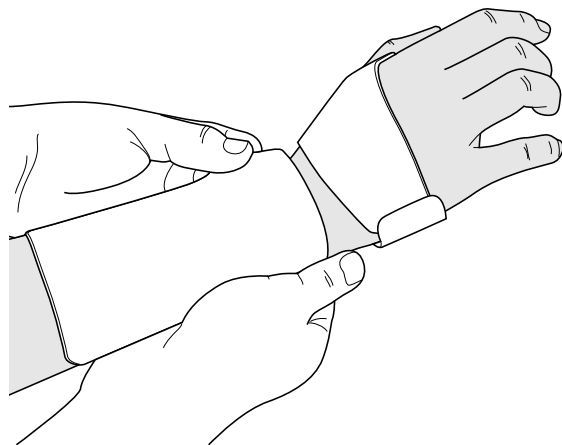
- 2.0 mm [1/12"]
- 2.5 mm [3/32"]
- 3.2 mm [1/8"]

Perforation Styles:

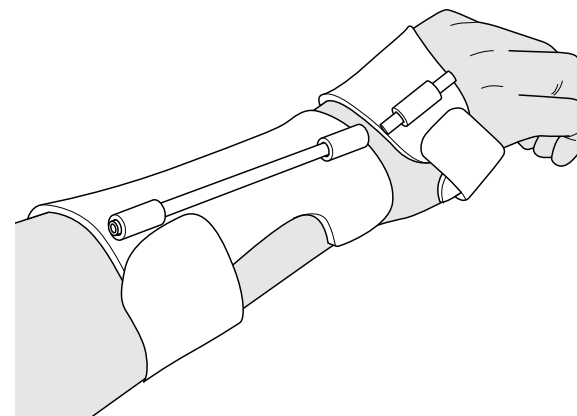
- non perforated
- micro perforated
- mini perforated
- macro perforated



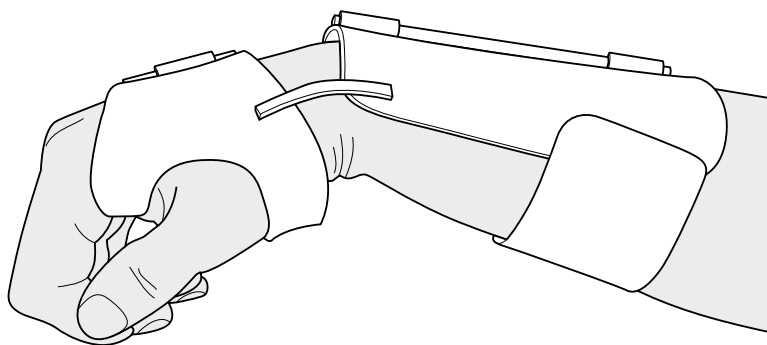
A. Push the thumb through the hole of pattern A and mould around the hand.



B. Mould pattern B on the forearm, taking care to fully cover the ulnar side of wrist.

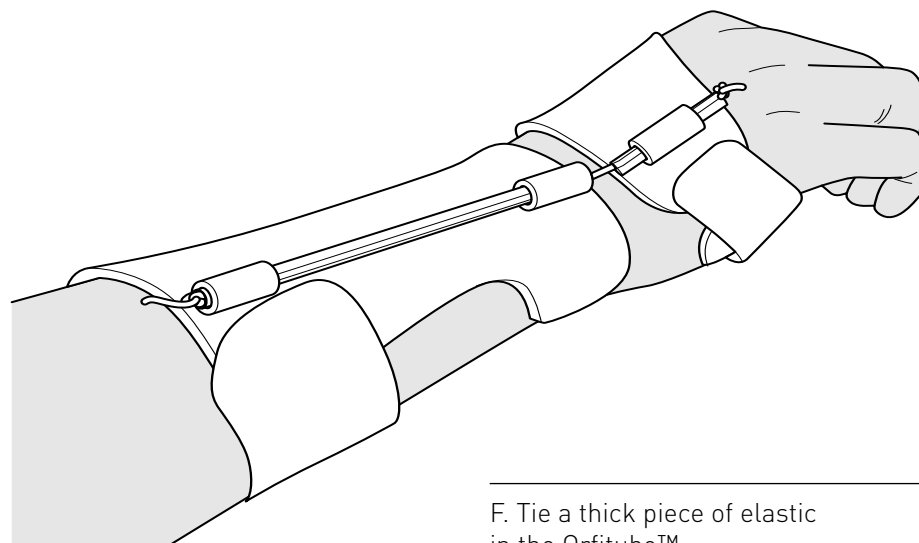


C. Attach the fixation straps of both sections of the splint.



D. Attach an Orfitube™ dorsally on the ulnar side of the forearm section (pattern B) as well as on the hand portion (pattern A).

E. Stick an Orfit® Classic 3.2 mm (1/8") rod on the radial side for use as a hinging connection piece.

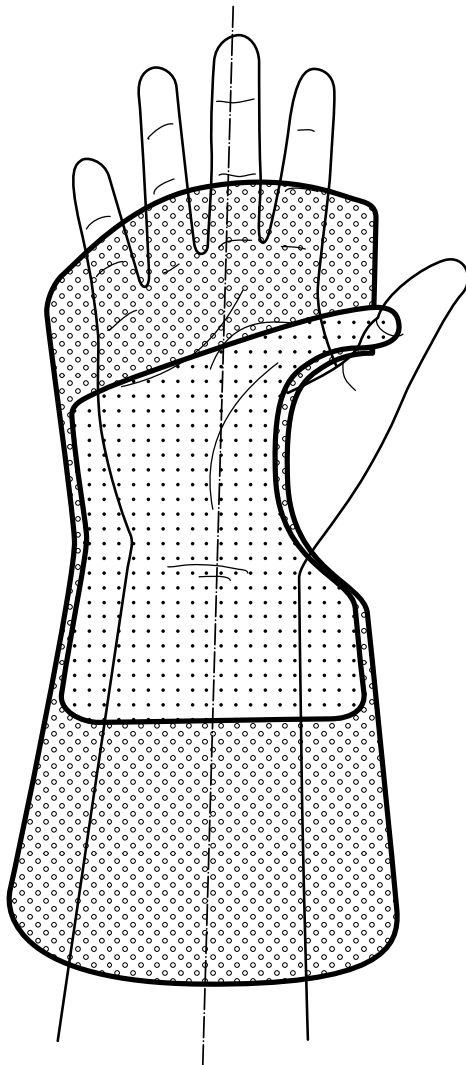


F. Tie a thick piece of elastic in the Orfitube™.

Finishing:

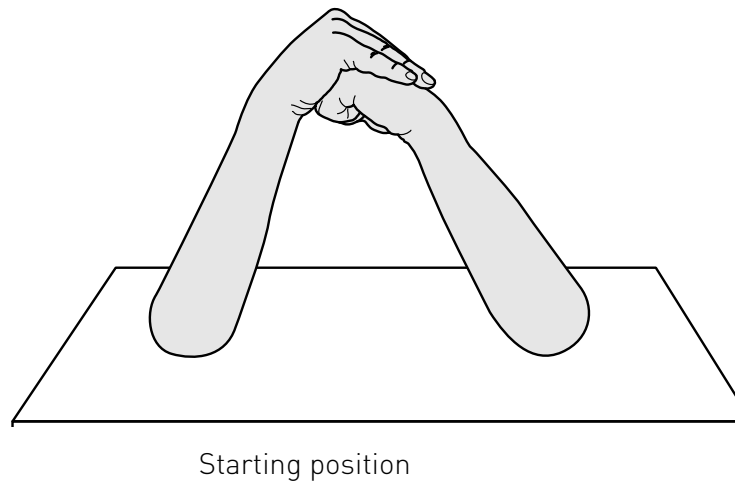
- Leave room for the ulnar styloid process and apply some soft foam material at the level of the wrist.

5. FLEXOR TENDON MOBILIZATION SPLINT



Objective: Passive mobilization of the long flexor tendons

Indications: Early mobilisation of flexor tendon suture at the level of the proximal phalanges



The following materials are highly recommended for this splint:

1. Orfit® Flex NS
2. Orfit® Ease
3. Orfilight®
4. Orfilight® Beige
5. Orfilight® Black NS
6. Orfilight® Atomic Blue NS
7. Aquafit™ NS
8. Orfit® NS
9. Orfit® Colors NS

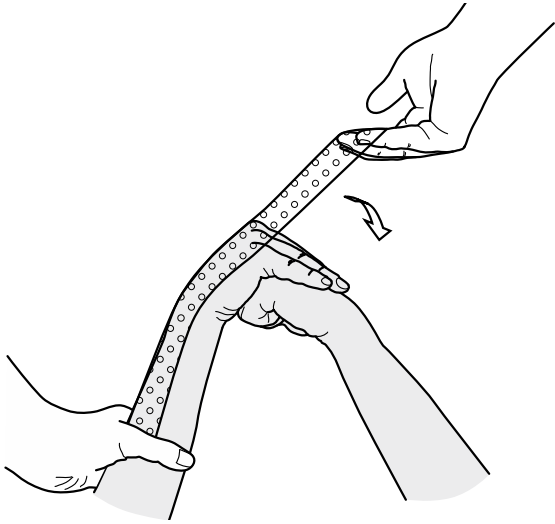
Thicknesses:

- | | |
|---------------|----------------|
| Dorsal piece: | 2.5 mm (3/32") |
| | 3.2 mm (1/8") |
| Palmar piece: | 1.6 mm (1/16") |
| | 2.0 mm (1/12") |
| | 2.5 mm (3/32") |

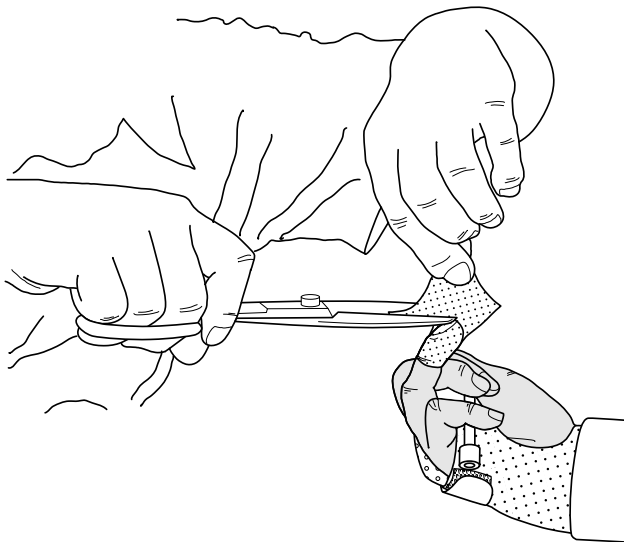
Perforation Styles:

- non perforated
- micro perforated,
- micro plus perforated
- mini perforated
- macro perforated

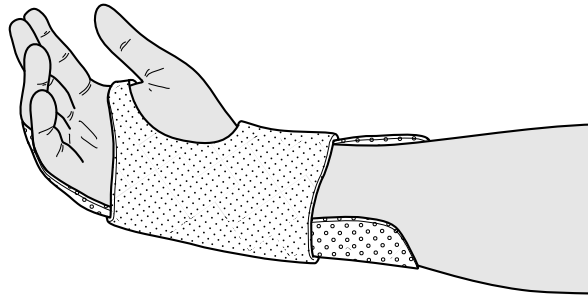
TIP: this splint is available as a kit. Ask your sales contact for more information or e-mail us at welcome@orfit.com.



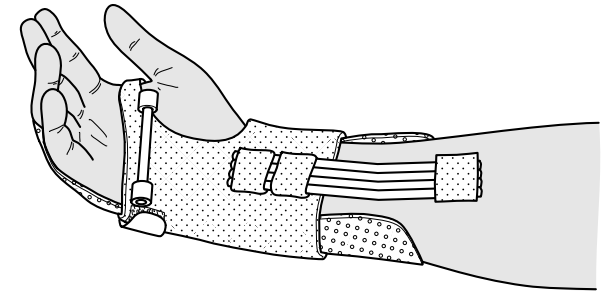
A. Place the splint material dorsally over the forearm and slightly stretch it before placing it on the proximal phalanges. In this way, there should be no creases forming on the side.



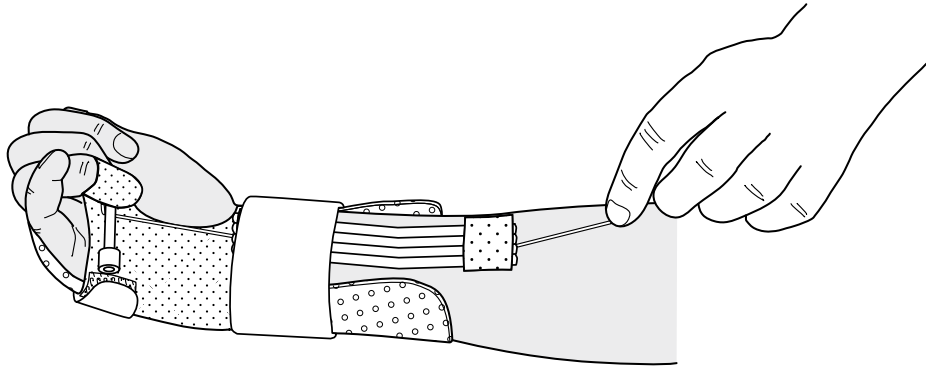
D. Make finger caps out of thin Orfit® Classic with the seam on the dorsal side.



B. As soon as the material has hardened, the hand may be turned in a supine position. Now mould the palmar portion. The edges overlap the dorsal shell.



C. Stick on one or multiple Orfitubes™ to each other, each 15 cm long, with a strip of self-adhesive splint material at both ends. Bend all the tubes together at a slight angle, and attach all the tubes to the palmar hand section at the level of the wrist.

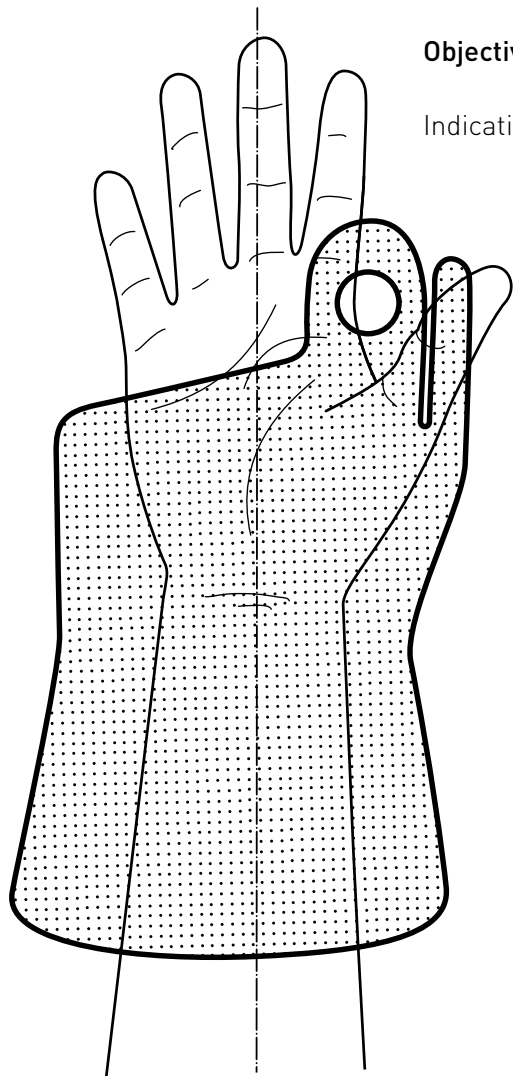


E. Make a knot at the end of the elastic and stick a piece of Orfit® Classic around it. Now stick this piece of Orfit® Classic to the underside of the finger cap, approximately in the middle of the phalanx.

Finishing and fixation straps:

- Take care to mould the material neatly around the knuckles to prevent pressure wounds.
- Make the elastic (and therefore the Orfitubes™) as long as possible in order to prevent PIP contractures in the long run.
- Apply a velcro strap onto the back of the hand and wrist area.

6. THUMB EXTENSOR TENDON SPLINT



Objective: Dynamic thumb IP extension.

Indication: Early mobilisation of thumb extensor tendon suture.

The following materials are highly recommended for this splint:

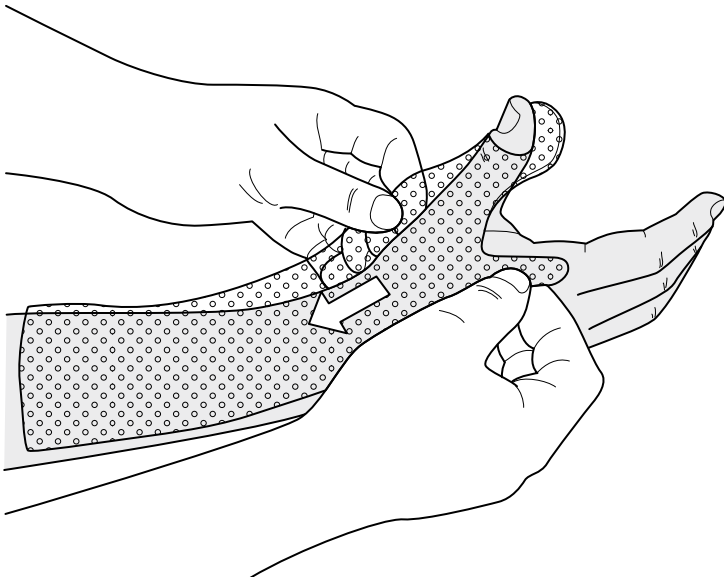
1. Orfilight®
2. Orfilight® Black NS
3. Orfilight® Atomic Blue NS
4. Aquafit™ NS
5. Orfit® NS
6. Orfit® Colors NS
7. Orfit® Flex NS
8. Orfit® Ease

Thicknesses:

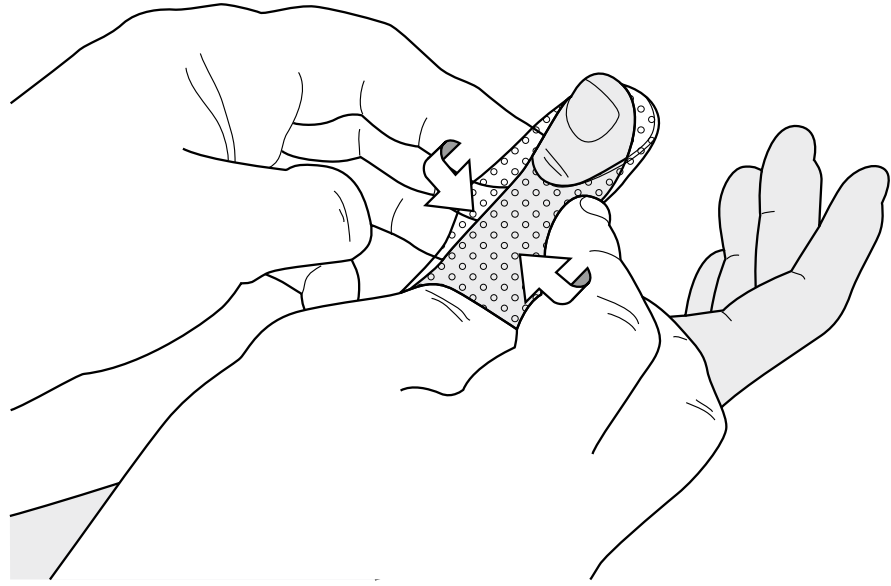
- 1.6 mm [1/16"]
- 2.0 mm [1/12"]
- 2.5 mm [3/32"]
- 3.2 mm [1/8"]

Perforation Styles:

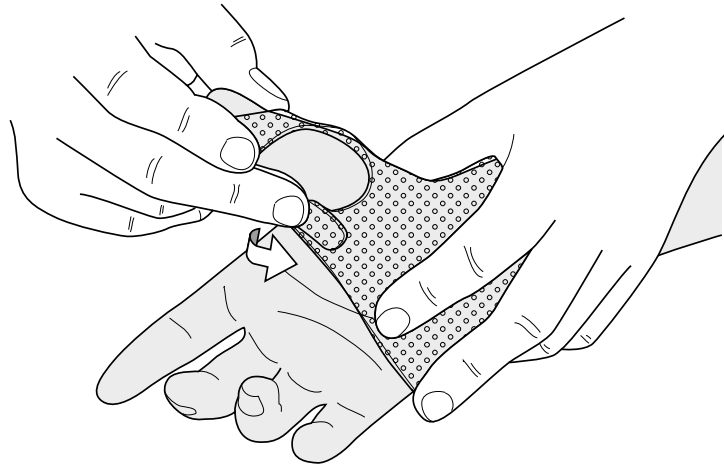
- non perforated
- mini perforated
- micro perforated
- macro perforated



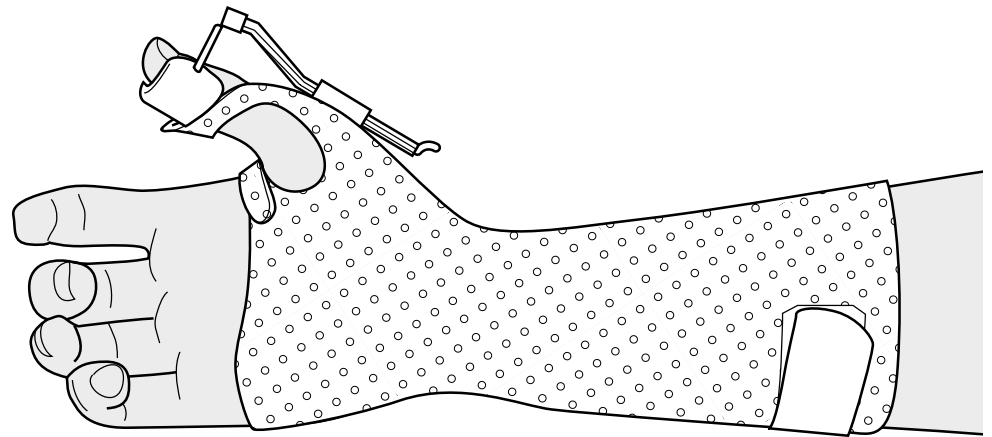
A. Push the thumb through the slit of the splint pattern.



B. Fold the lateral borders at the level of the MCP joint upwards.



C. Stick the small radial lip onto the hand palm section and position the wrist and thumb (wrist 30° extension, thumb 30° flexion).

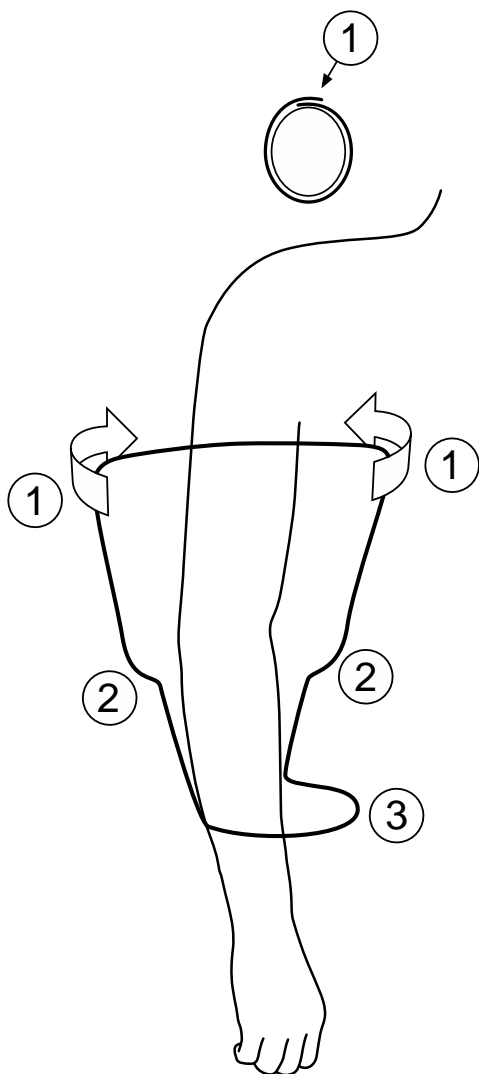


D. Attach an Orfitube™ with elastic and finger cuff as described in the introduction.

Finishing and fixation straps:

- Fit a broad fixation strap across the wrist and back of the hand, and a narrow one over the forearm.

7. PRONATION - SUPINATION SPLINT



Objective: To achieve passive or active pronation supination of the forearm

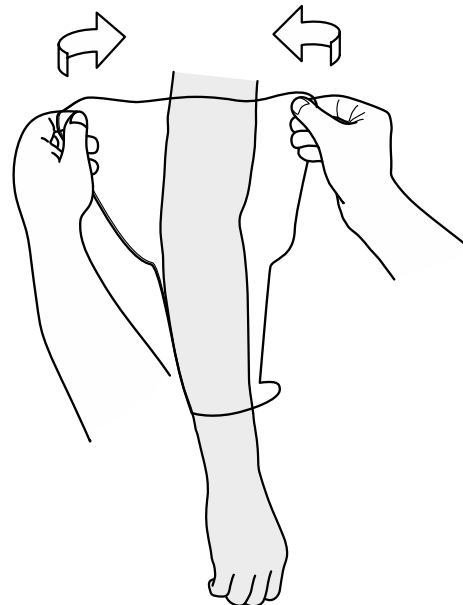
Indications:

- Peripheral or central nerve lesions.
- Distal radioulnar joint stiffness

Starting position: Standing, facing the patient

1. The elbow splint

A. Mould the splint pattern around the arm at the level of the axilla. Slightly stretch it out, and stick it together (ensure that it is easy to detach once it has hardened).



The following materials are highly recommended for this splint:

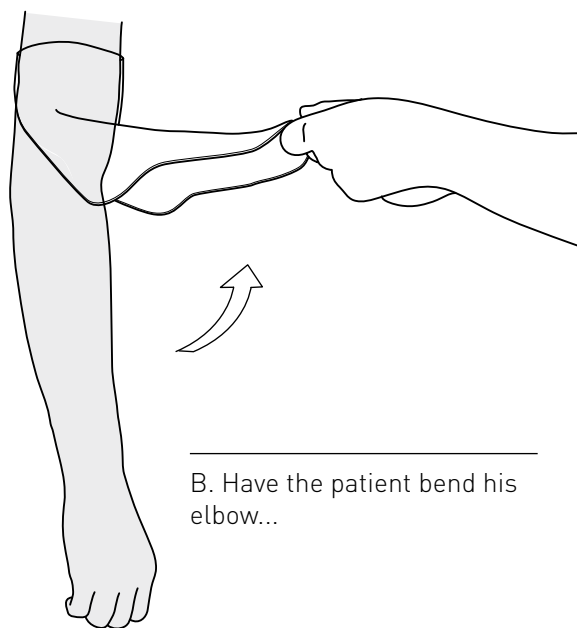
1. Orfit® Classic Stiff
2. Orfit® Flex NS
3. Orfit® Ease
4. Orfit® Eco Black NS
5. Aquafit™ NS
6. Orfit® NS
7. Orfit® Colors NS

Thicknesses:

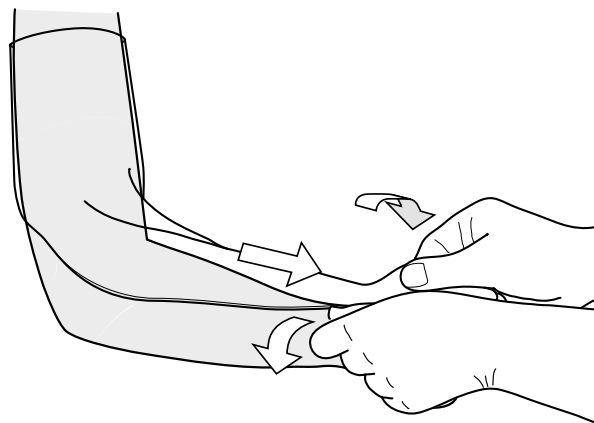
- 3.2 mm [1/8"]
- 4.2 mm [3/16"]

Perforation Styles:

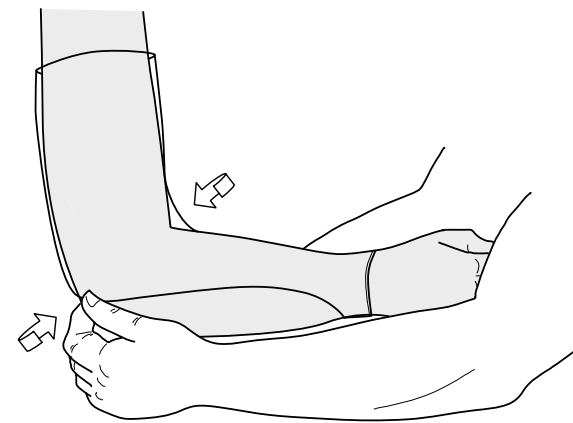
- non perforated
- mini perforated
- macro perforated



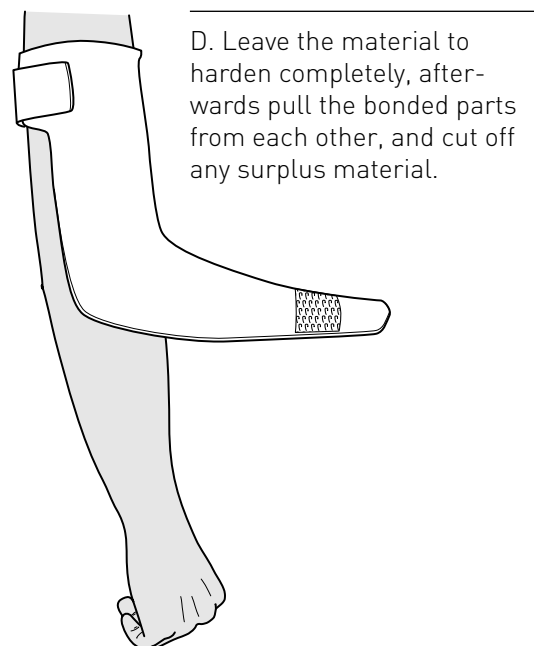
B. Have the patient bend his elbow...



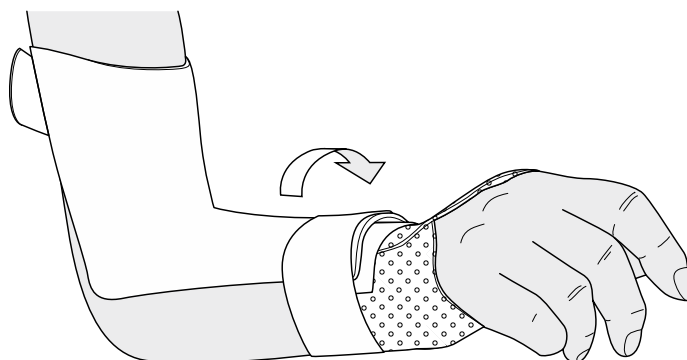
... while the distal portion of the splint is being pulled up to the wrist and attached around it. The material **MUST** be like a bow string, if not, the pattern must be shortened.



C. Slowly stretch the wings at the height of the elbow in the direction of the olecranon, and stick them together (again, ensure that it is easy to detach once it has hardened).



D. Leave the material to harden completely, afterwards pull the bonded parts from each other, and cut off any surplus material.



2. The hand splint

E. Make a circular hand splint as described on page 9, 4.2. (WRIST IMMOBILIZATION SPLINT)

3. The dynamic element

F. Close the **hand splint** with a broad elastic loop and make 1 or more turns.

G. Hook the loop to the elbow splint (on the radial side to achieve supination, or on the ulnar side to achieve pronation).

Finishing and fixation straps:

- The volar side at the proximal end can be shortened, but the distal end must reach up to the wrist. Cut off any surplus material on the sides of the forearm so that only a slightly curved plateau remains, not wider than the wrist.
- Secure proximally with a very broad fixation strap.
- Stick some hook tape as distally as possible.

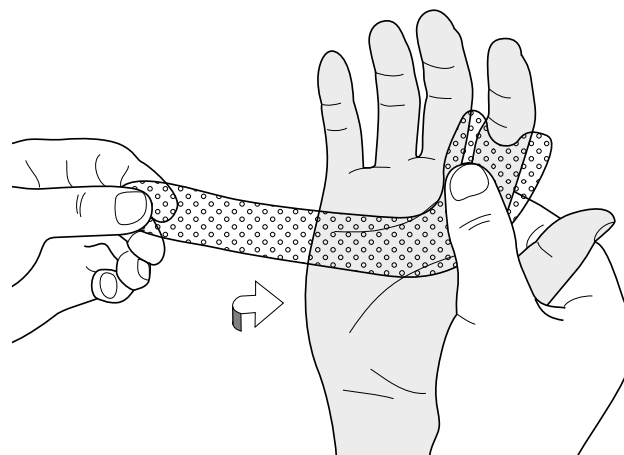
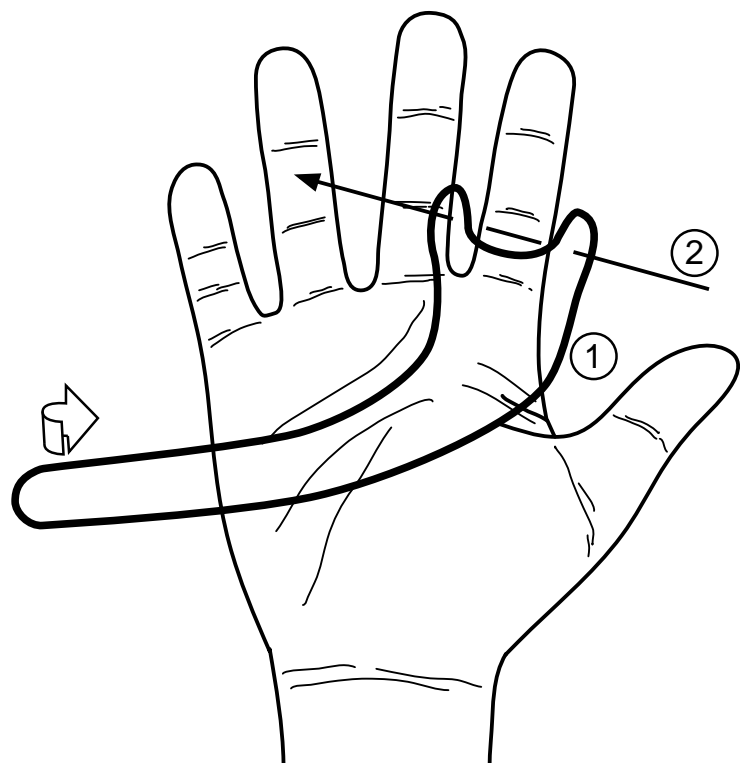
8. “GVV” SWING TRACTION SPLINT

Objective: Passive mobilization of the PIP joint over a full range of motion

Indications:

- joint stiffness
- adhesion of the extensor hood mechanism
- flexor tendon tenolysis and arthrolysis

Note: Design a wide pattern at PIP level to cover the joint axes totally



A. Stretch the ulnar portion and mould, dorsally, over the back of the hand back towards the index finger.

The following materials are highly recommended for this splint:

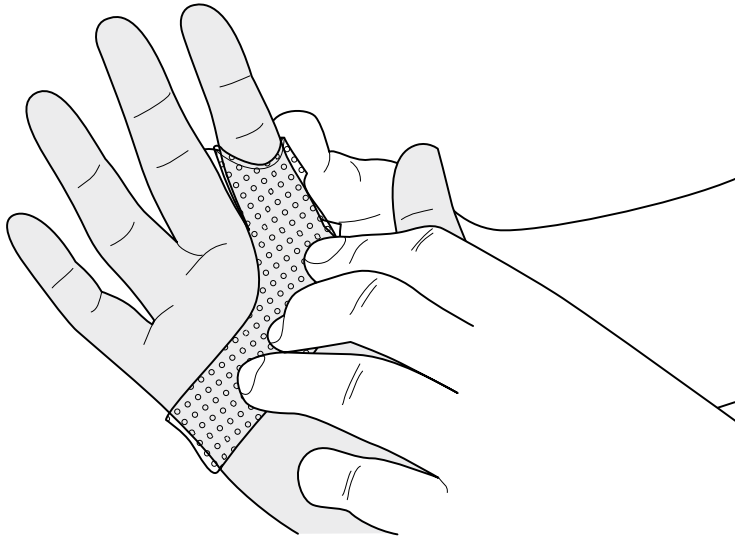
1. Orfit® Classic Stiff
2. Orfit® NS
3. Aquafit™ NS
4. Orfit® Colors NS
5. Orfit® Eco
6. Orfit® Eco Black NS
7. Orfilight®
8. Orfilight® Black NS
9. Orfilight® Atomic Blue NS
10. Orfit® Flex NS
11. Tecnofit®
12. Orfit® Ease
13. Orfibrace™ NS

Thicknesses:

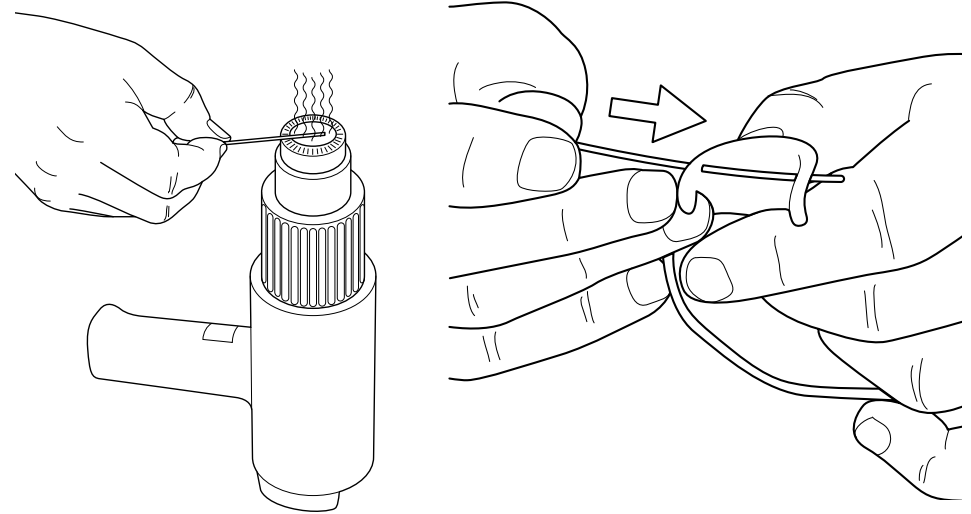
3.2 mm [1/8"]

Perforation Styles:

non perforated

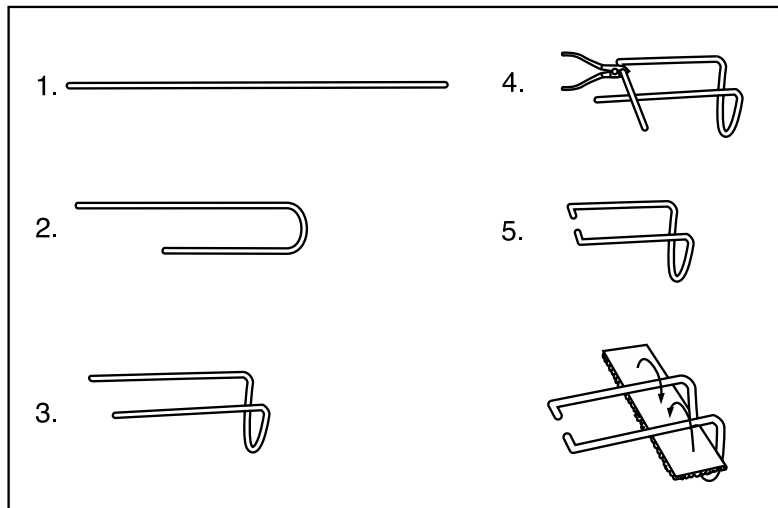


Overlap and stick together. Mark on the skin as well as on the splint the position of the PIP flexion axis.



B. After the material has hardened, remove the splint. Heat the steel wire provided to make the “swing”, and pierce both sides where marked. Make sure to observe the alignment.

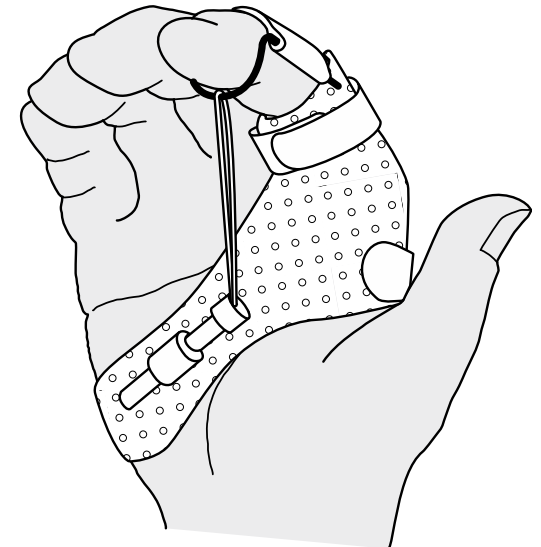
C. Make up the swing with the help of pliers and cutters.



D. Make a small bridge at the distal end of the swing. Use self-adhesive loop tape for the purpose. Avoid too long a swing. Hook the swing into the splint.

E. Position the swing until it touches the palmar support of the splint and stick an Orfitube™ right at this spot.

F. Attach an elastic to the swing, bring it through the Orfitube™ and attach with a knot.



Handwriting practice lines consisting of 20 horizontal dotted lines.

A large empty rectangular box for drawing or free writing.

B. FUNCTIONAL DYNAMIC SPLINTS

Functional dynamic splints are used to compensate for loss of strength as in peripheral palsy.

The intensity of the force exerted by a functional dynamic splint doesn't need to be precise, but it must be functionally effective and the splint design should not be cumbersome. More important are ease of use and acceptability.

Splints with outriggers are by definition not very functional, with the result that elastics cannot be used as in traditional splints. Instead, coil springs are used, which can sometimes be affixed neatly at the side, so as to give a zero profile.

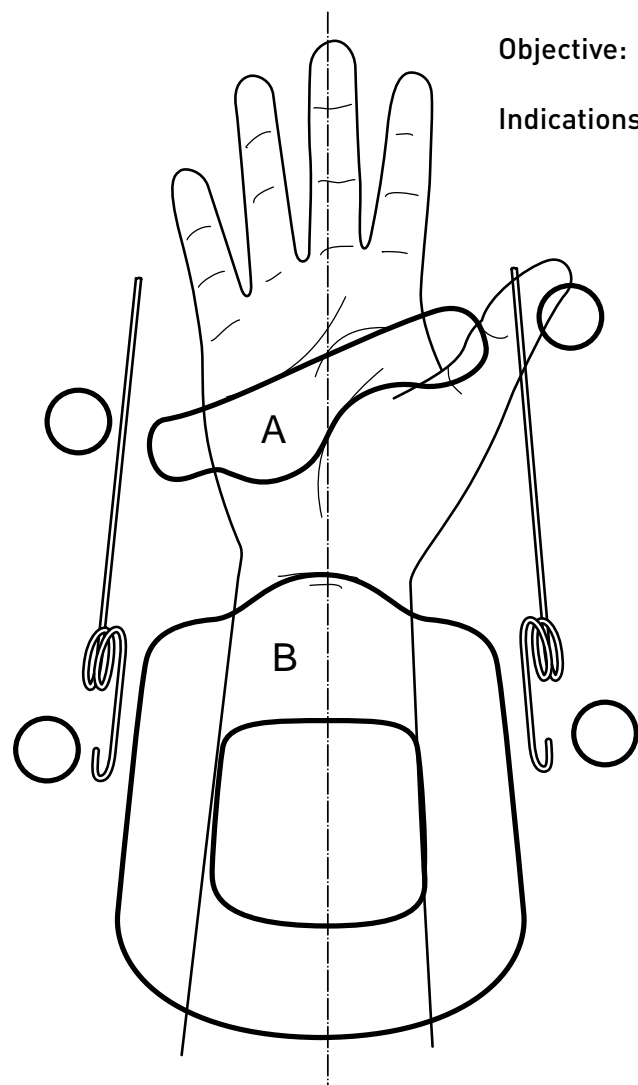
The design and manufacture of springs is not the task of the splint maker but that of a spring engineer. Quality springs are made of spring wire (not piano wire), and spiral springs must be fitted in such a way that they wind up (not unwind).

The movement of the extremity in the splint closes the coil. Relaxation allows the coil to return to its original position.

In order to attach coil springs to the splint, it is best to heat the spring arm and melt it into the plastic. The fixation is secured by sticking a small thin Orfit® Classic coin on top.

In order to give the splint a chance to fulfill its functional role, it must be worn first, and this can only be done if the splint feels comfortable and looks good.

9. FUNCTIONAL WRIST EXTENSION SPLINT



Objective: Dynamic wrist extension.

Indications: Paralysis of the wrist extensors (radial nerve palsy)

The following materials
are highly recommended
for this splint:

1. Orfit® Classic Stiff

2. Orfit® Eco

Thicknesses:

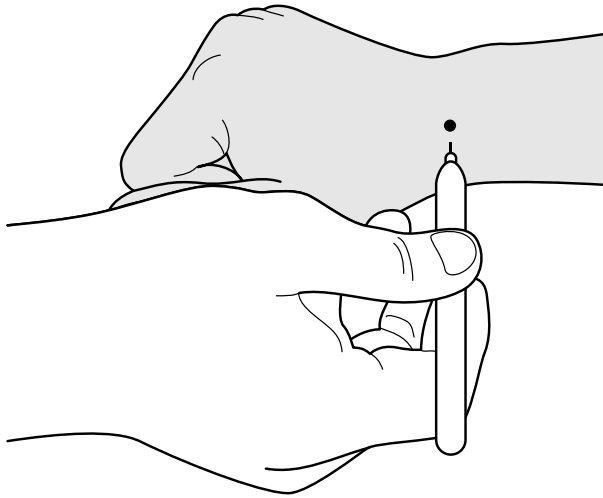
2.5 mm (3/32")

3.2 mm (1/8")

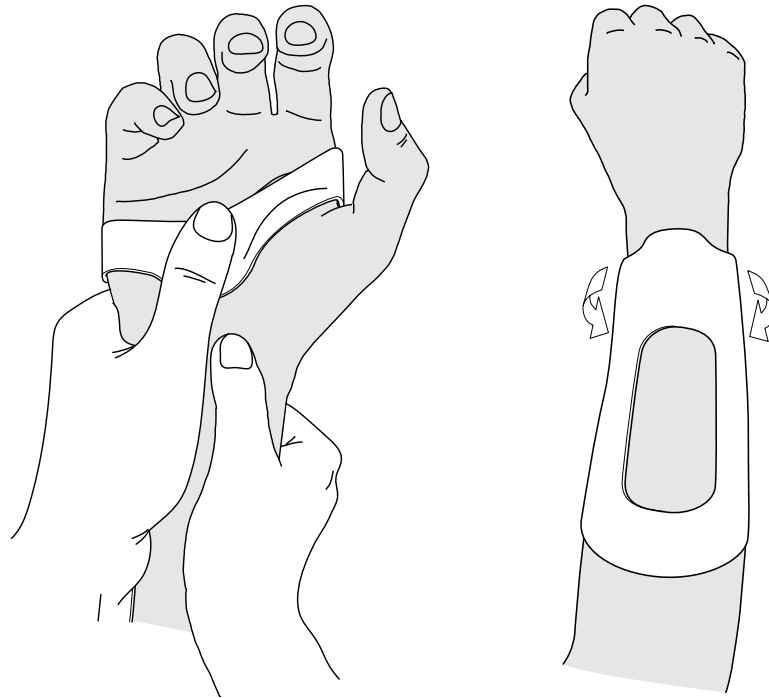
Perforation Styles:

non perforated

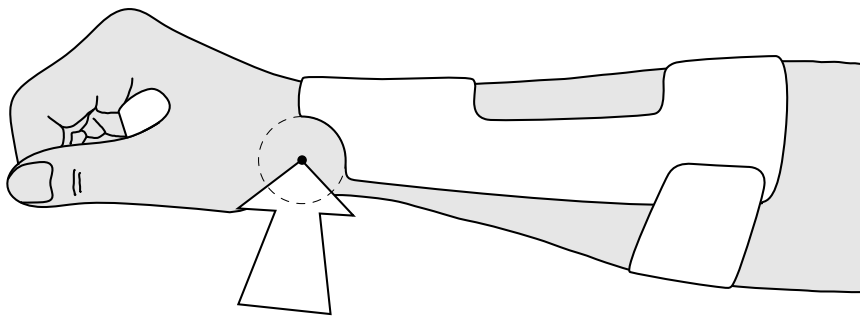
TIP: this splint is available as a
kit. Ask your sales contact for
more information or e-mail us
at welcome@orfit.com.



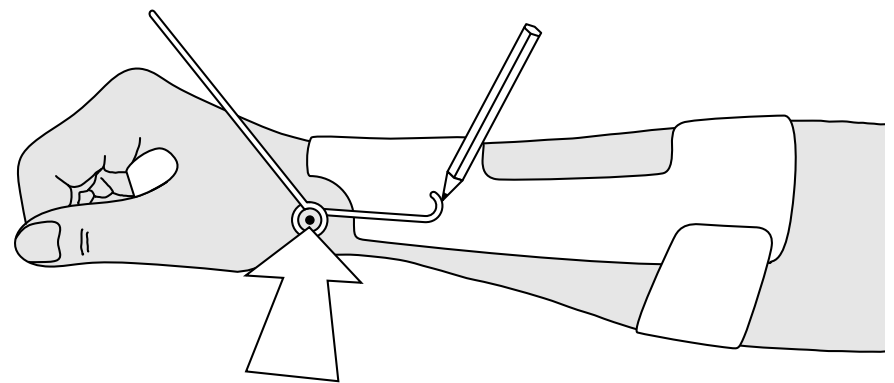
A. Mark the flexion-extension axis of the wrist.



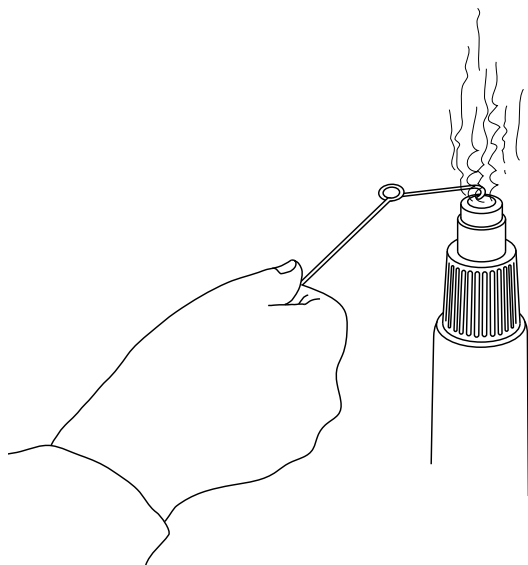
B. Successively mould pattern A in the palm of the hand and pattern B on the forearm.



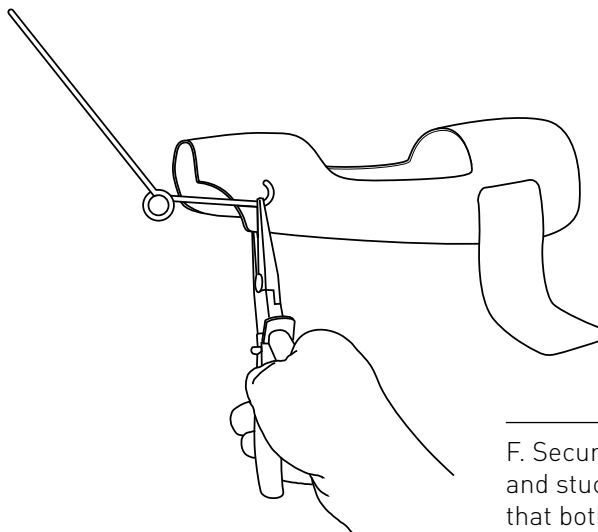
C. Position pattern B exactly as shown on the drawing and attach a broad Velcro band proximally on the forearm section.



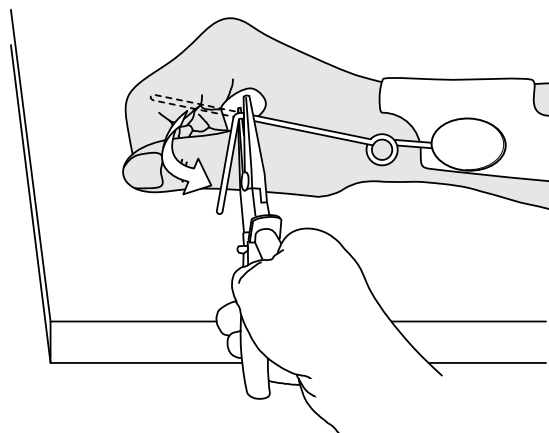
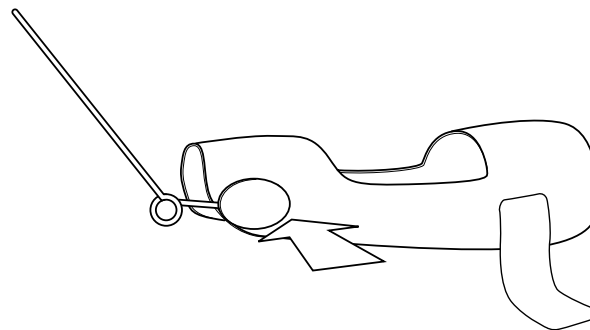
D. Mark the place of the spring as it is aligned with the flexion-extension axis.



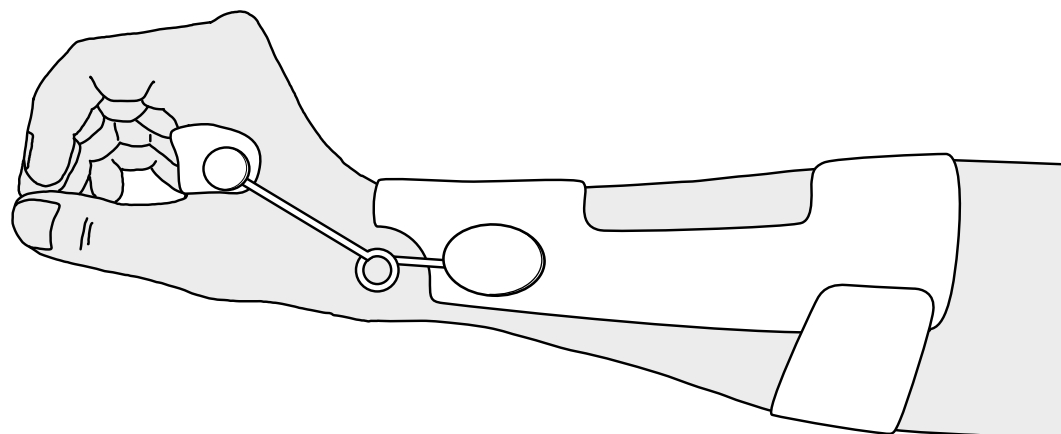
E. Remove the splint from the patient. Heat the curved end of the spring and melt into the splint material.



F. Secure the fixation with a thermoplastic coin dry heated and stuck over it. Fit the 2nd spring in the same way, ensuring that both are perfectly aligned.



G. Place the splint back on the patient. The patient holds the volar piece of the splint in a fist whilst resting the hand on the table. Push the free arm of the spring downwards until parallel to the metacarpal. Measure the distance and bend the spring arm 90° downwards and further into a U-shape. Cut off the excess material. Mark the position of the U-shape on the side of the splint.



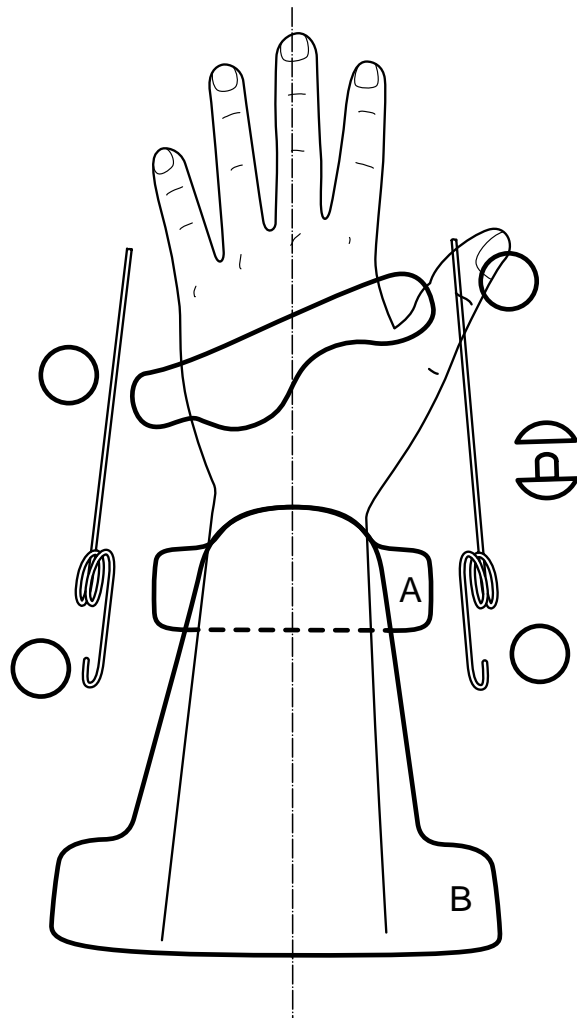
H. Remove the splint from the patient. Heat the U-shape and melt it into the plastic. Secure with a thermoplastic coin. Proceed in exactly the same way on the ulnar side.

Finishing and fixation straps:

- Apply soft padding material at the level of the wrist.
- One strap already provided proximally.
- Optionally, a narrow strap crossing the wrist and one over the back of the hand for greater comfort.

This image shows a single sheet of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting or typing. There are no margins, text, or other markings on the paper.

10. FUNCTIONAL WRIST EXTENSION - AB - ADDUCTION SPLINT



Objective: Dynamic wrist extension with free abduction/adduction movement.

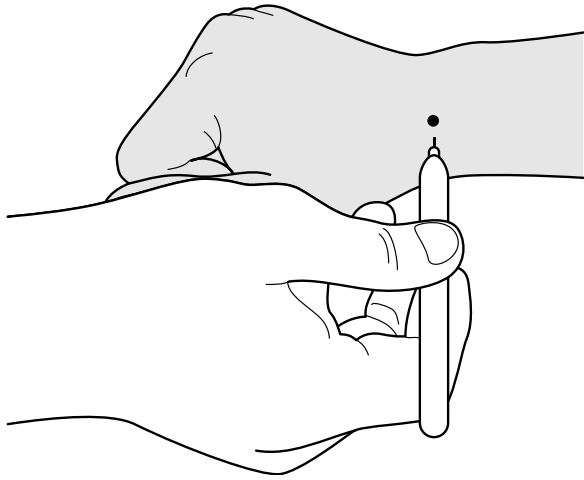
Indications: Paralysis of the wrist extensors

The following materials
are highly recommended
for this splint:

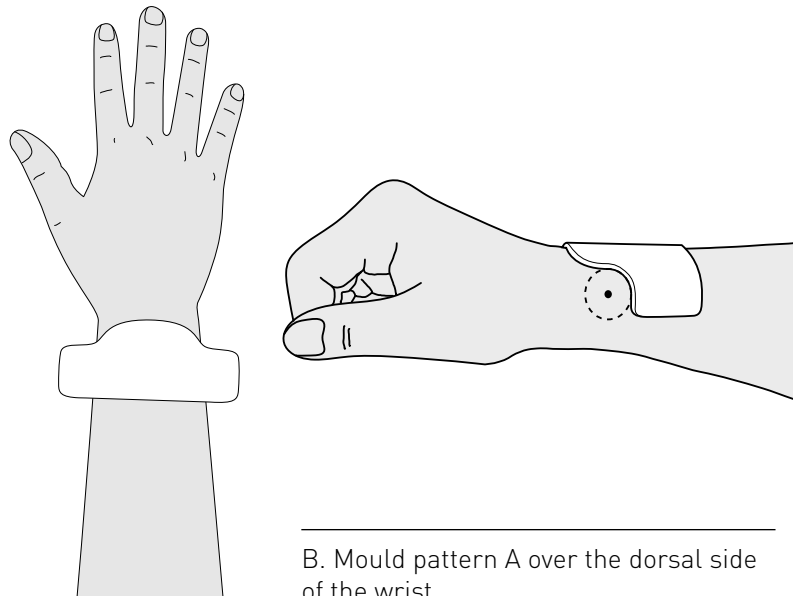
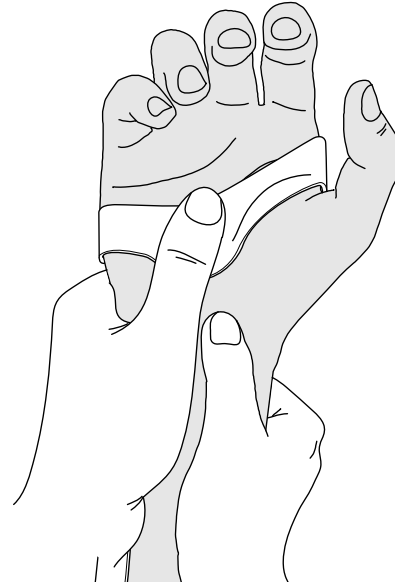
1. Orfit® Classic Stiff
2. Orfit® Eco

Thicknesses:
3.2 mm (1/8")

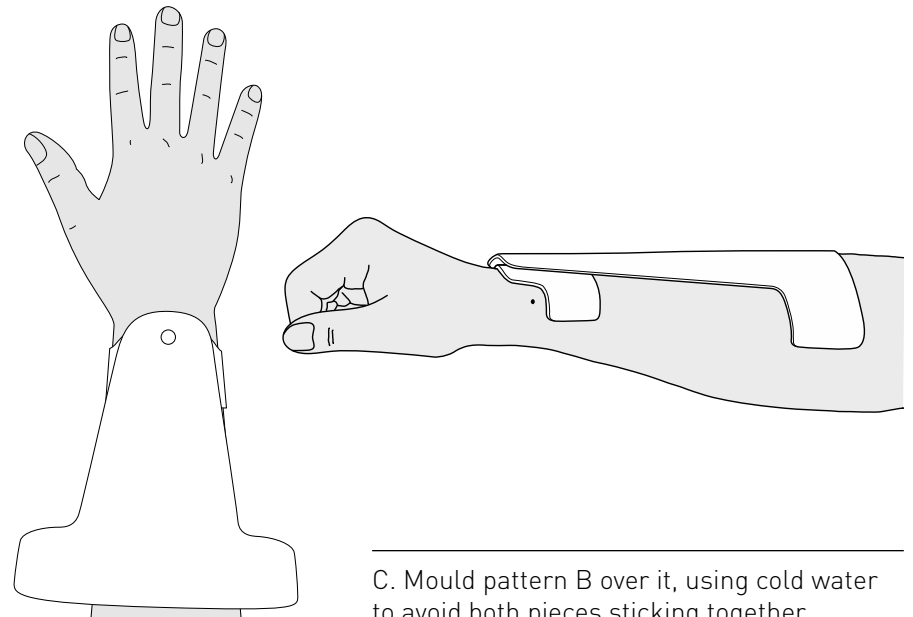
Perforation Styles:
non perforated



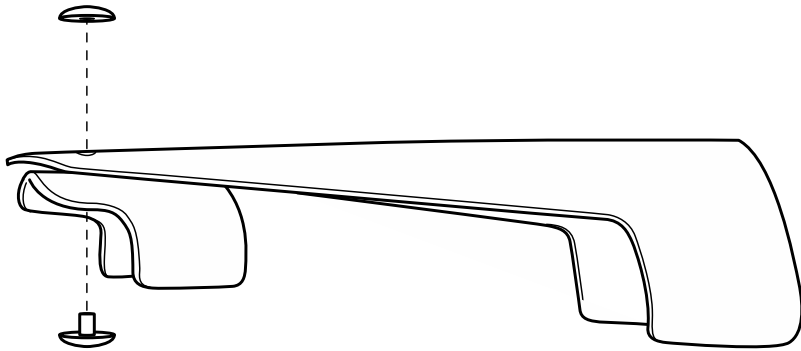
A. Mark the flexion-extension axis of the wrist and mould the volar piece of the splint.



B. Mould pattern A over the dorsal side of the wrist.

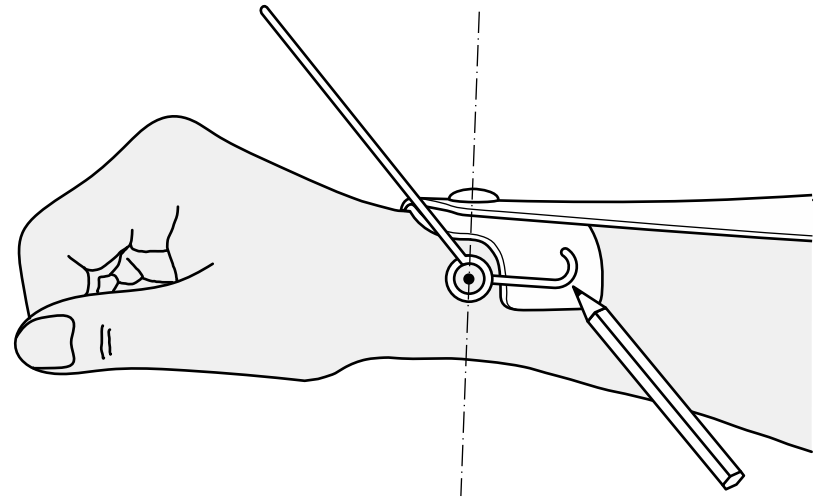


C. Mould pattern B over it, using cold water to avoid both pieces sticking together.

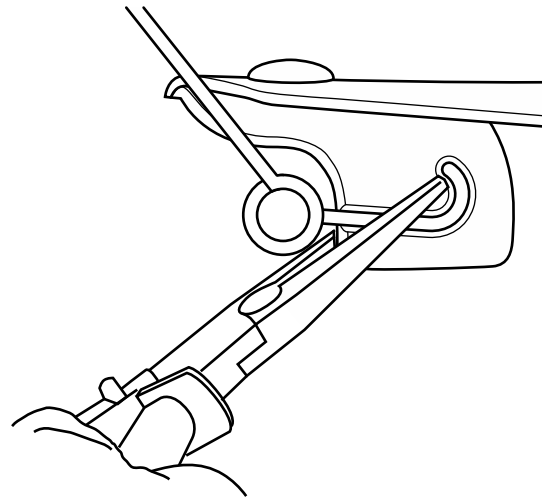
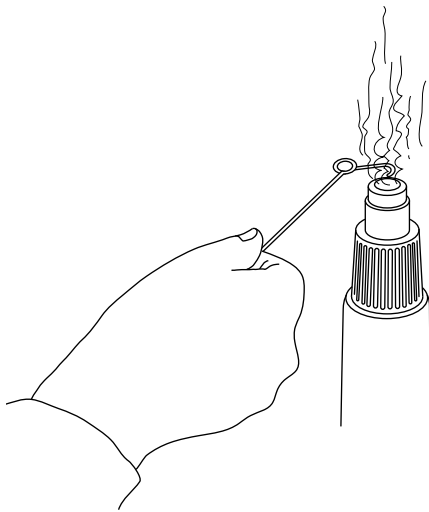


D. Bore a small hole through both sections at the level of the abduction-adduction axis and hinge them with a rivet.

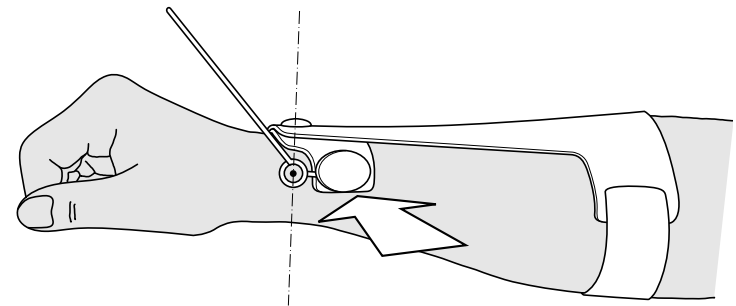
E. Attach a broad Velcro strap proximally on the forearm section. (Not shown)



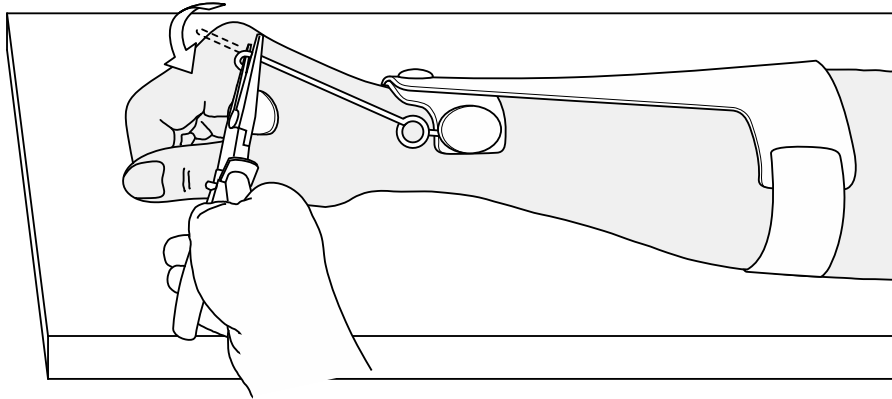
F. Mark the place of the spring as it is aligned with the flexion-extension axis.



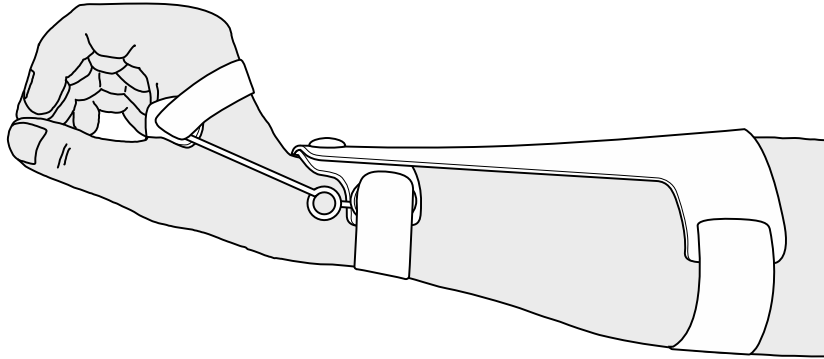
G. Remove the splint from the patient. Heat the curved end of the spring and melt it into the splint material.



H. Secure the fixation with a thermoplastic coin dry heated and stuck over it. Fit the 2nd spring in the same way, ensuring that both are perfectly aligned.



I. Place the splint back on the patient. The patient holds the volar piece of the splint in a fist whilst resting the hand on the table. Push the free arm of the spring downwards until parallel to the metacarpal. Measure the distance and bend the spring arm 90° downwards and further into a U-shape. Cut off the excess material. Mark the position of the U-shape on the side of the splint.

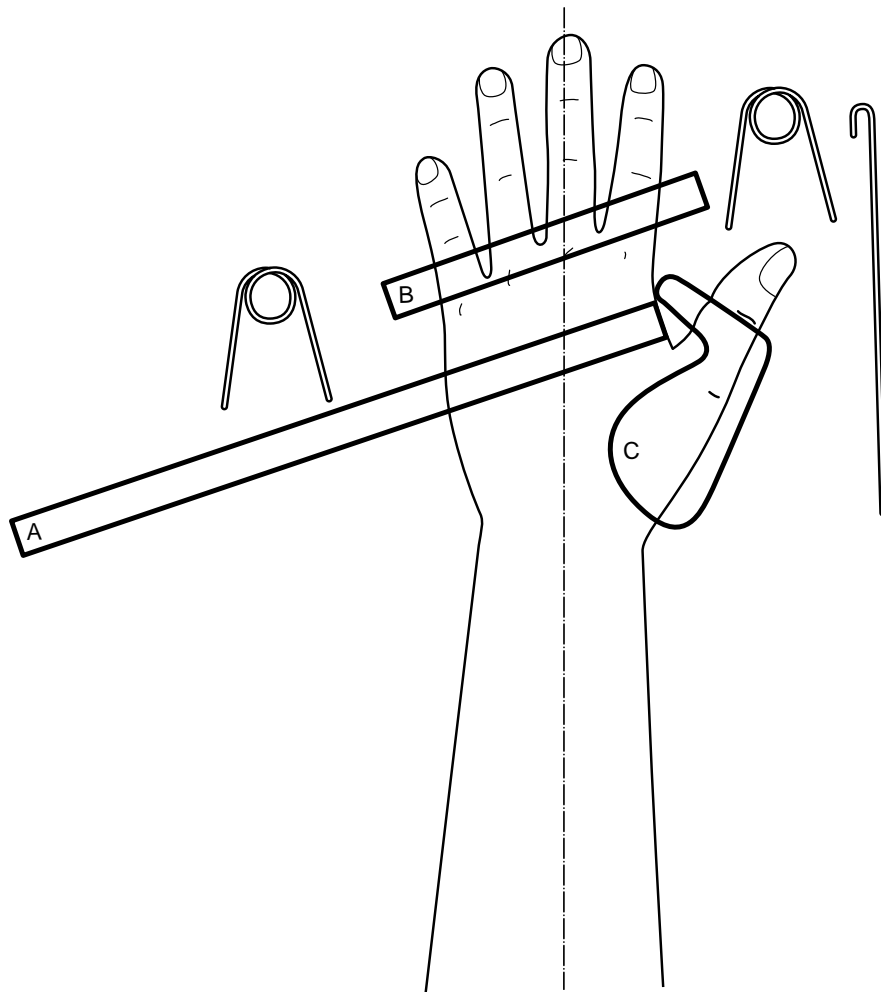


J. Remove the splint from the patient. Heat the U-shape and melt it into the plastic. Secure with a thermoplastic coin. Proceed in exactly the same way on the ulnar side.

Finishing and fixation straps :

- Apply soft padding material at the level of the wrist.
- One strap already provided proximally. Optionally, a narrow strap crossing the wrist and one over the back of the hand for greater comfort.

11. FUNCTIONAL ULNAR NERVE SPLINT AND COMBINED ULNAR MEDIAN NERVE SPLINT



Objective:

to support the intrinsic muscles (third finger and little finger for ulnar nerve injury, and all the fingers for combined injuries) + m.opponens pollicis.

Indications:

all intrinsic minus deformities (claw hand) with absence of joint contractures such as seen with peripheral nerve lesions, leprosy, poliomyelitis, Guillain-Barré syndrome, etc.

The following materials
are highly recommended
for this splint:

1. Orfit® Classic Stiff
2. Orfit® Eco
3. Orfit® Strips

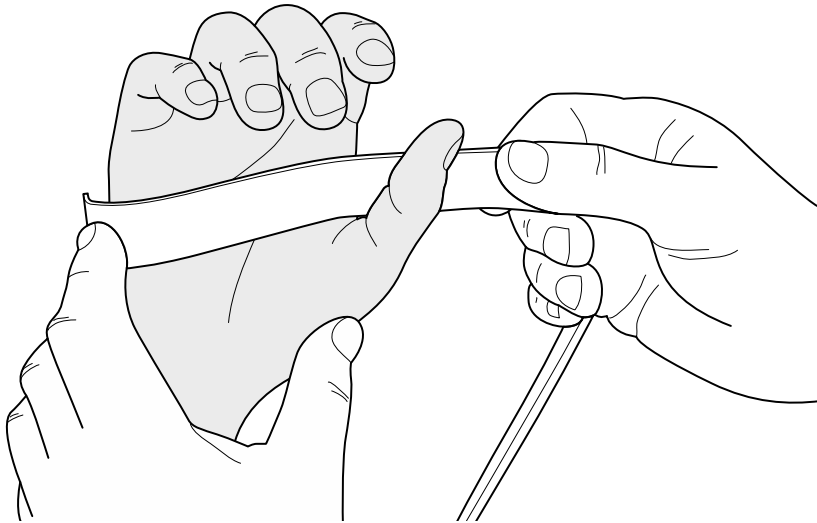
Thicknesses:

2.5 mm (3/32")

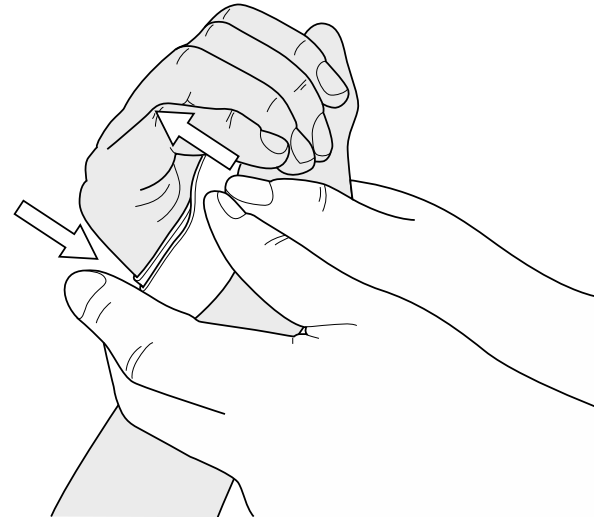
3.2 mm (1/8")

Perforation Styles:

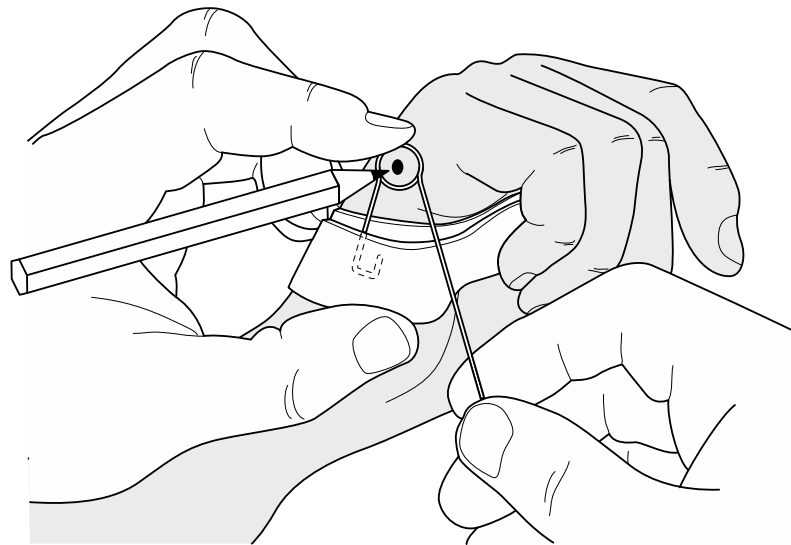
non perforated



A. Mould strap A from the ulnar aspect of the hand over the palm and around the metacarpals. Overlap in the palm of the hand but do not press to avoid permanent bonding.

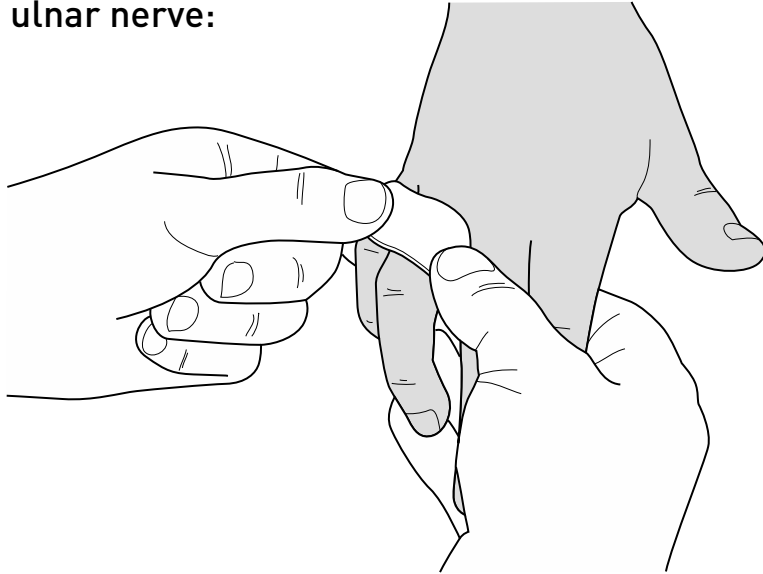


B. Adjust the metacarpal ring, so that the palmar section reaches the transverse crease, and the dorsal section reaches the wrist.

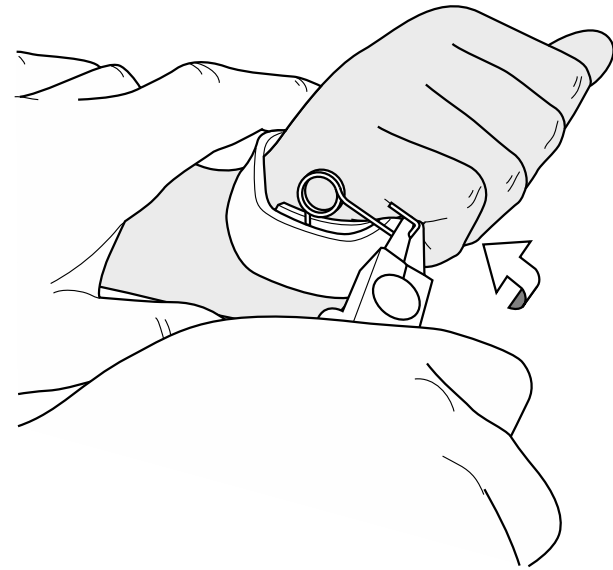


C. Loosen the overlapping portion on the ulnar side. U-shape the spring arm and melt it into the plastic.

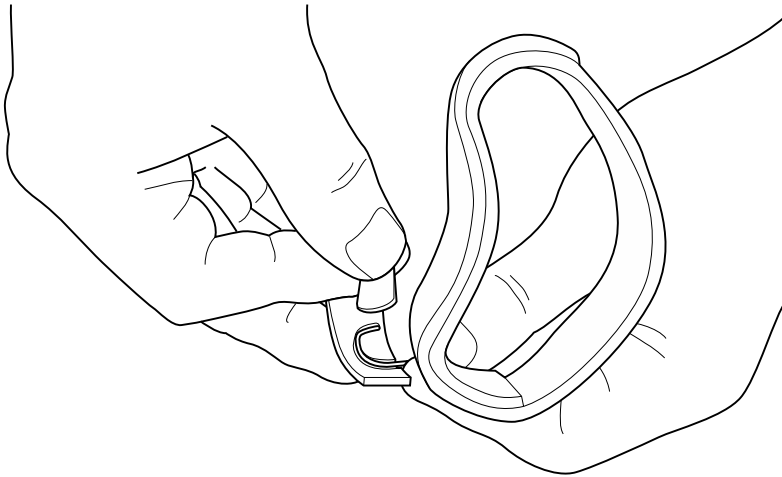
For the ulnar nerve:



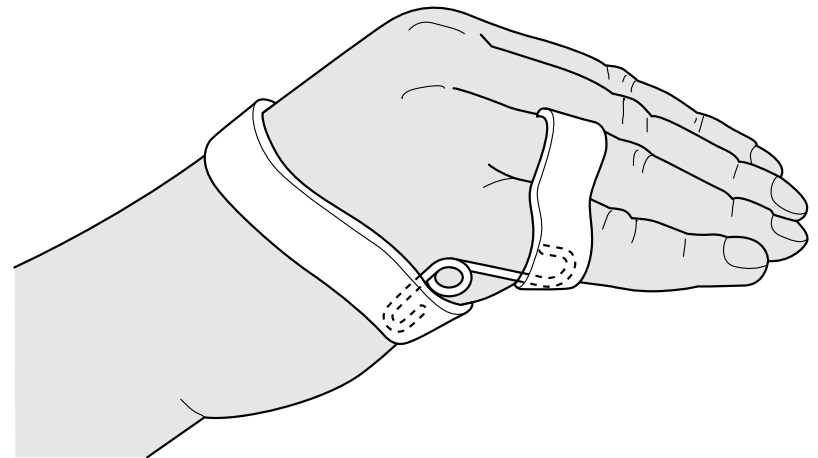
D. Mould strap A around the ring finger and over the little finger covering the lateral aspect only.



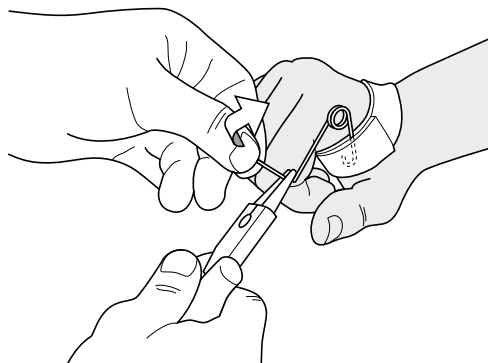
E. Measure the length of the free spring arm, bend in a U-shape and cut to length.



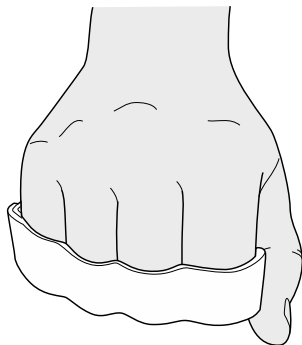
F. Heat the U-shape and melt it into the inside of the finger ring. Consolidate the attachment by sticking a small layer of Orfit® Classic on top.



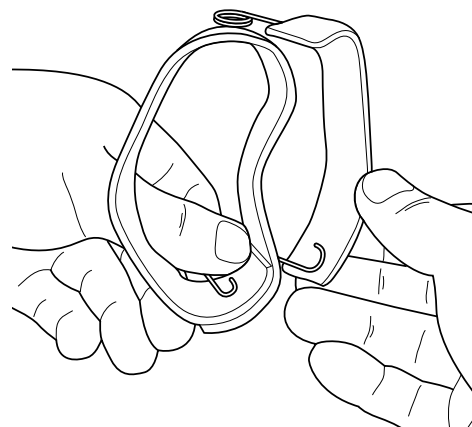
For combined injuries:



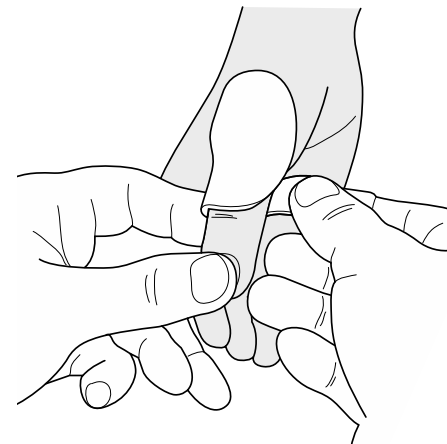
D. Loosen the overlapping portion on the radial side, and attach a spring in the same way as for the ulnar side.



F. Mould strip B over all the fingers up to the PIP joints.

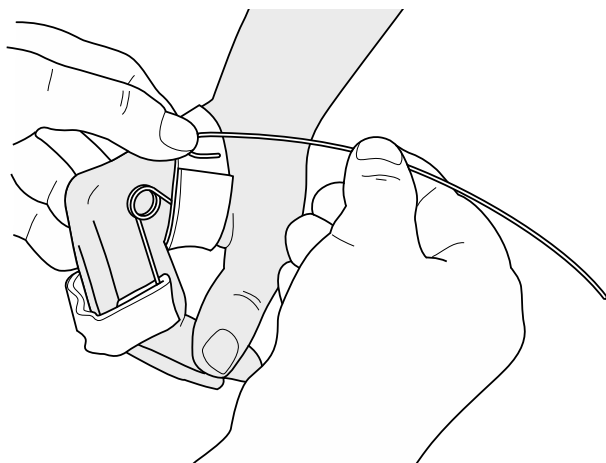


G. Melt the spring arms in their respective places. Consolidate the attachments by sticking a thin layer of Orfit® Classic on top.

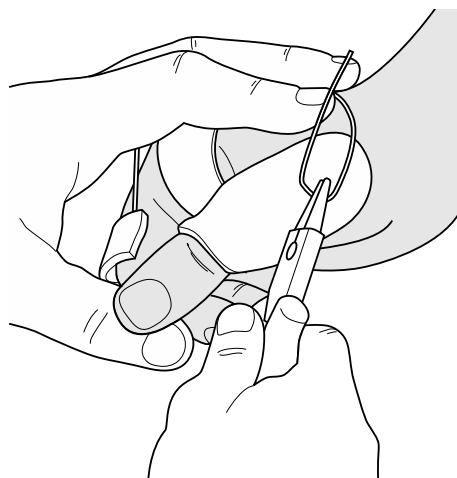


H. Mould piece C on the metacarpal of the thumb and around the first phalanx.

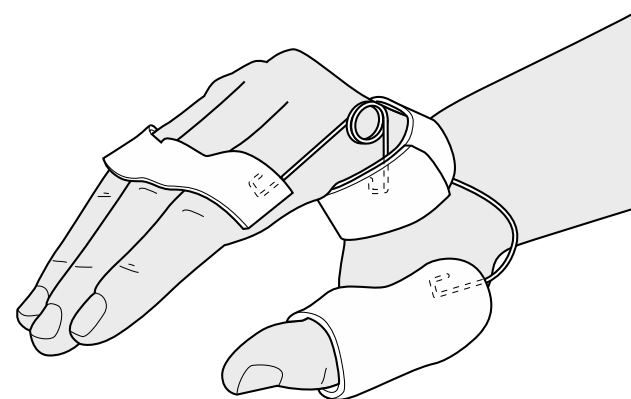
E. Bend and cut to length.



I. Make a U-shape in a spring wire 1.5 cm thick, heat it and melt it onto the dorsal aspect of the metacarpal ring. Cover the attachment with a thin piece of Orfit® Classic.

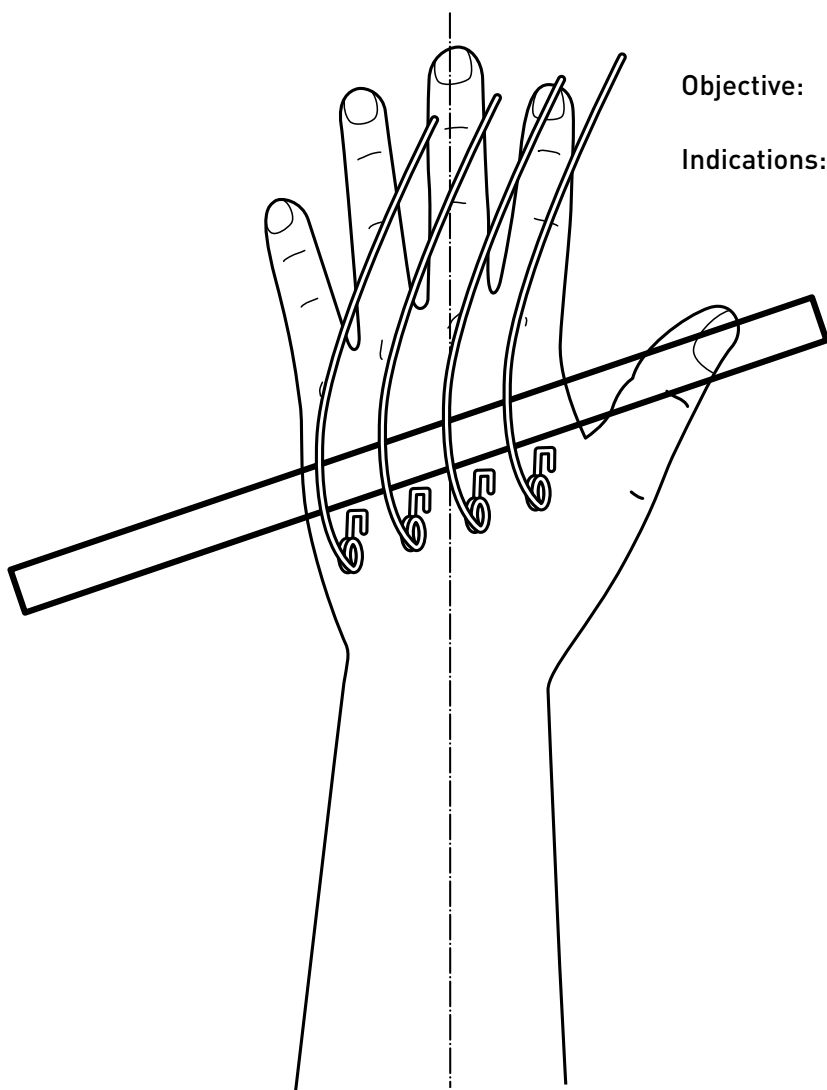


J. Bend the wire to correspond with the width of the first web space, measure the length, make a U-shape and fix it into the thumb piece.



K. Bend and twist the spring wire in such a way that the thumb piece comes in (exaggerated) opposition (not shown).

12. DISTAL RADIAL NERVE SPLINT



Objective: To support the long finger and thumb extensors

Indications: Distal radial nerve palsy

The following materials
are highly recommended
for this splint:

1. Orfit® Classic Stiff
2. Orfit® Eco
3. Orfit® Strips

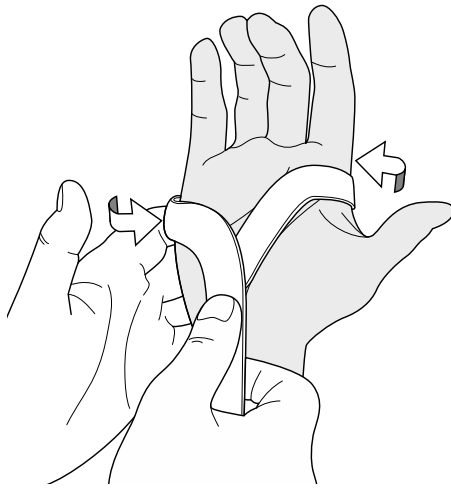
Thicknesses:

2.5 mm (3/32")

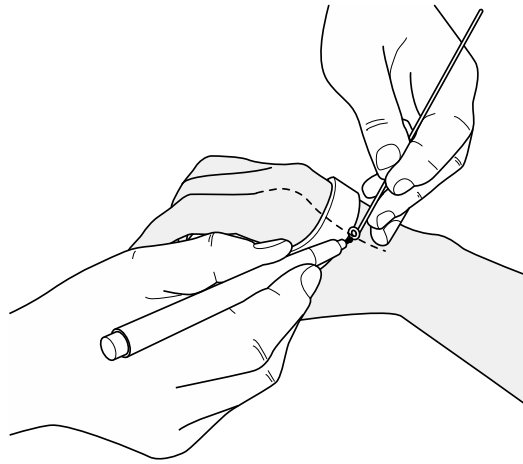
3.2 mm (1/8")

Perforation Styles:

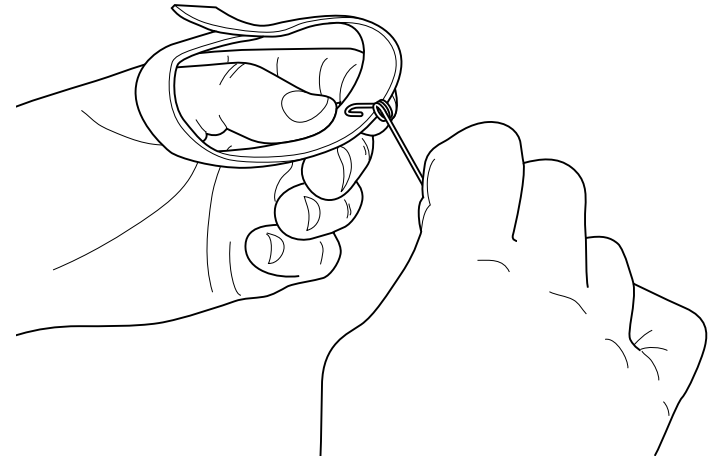
non perforated



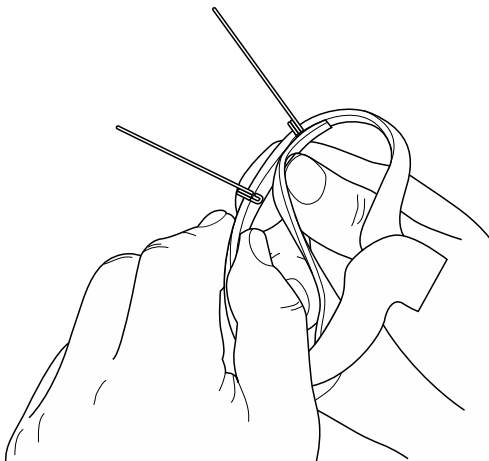
A. Mould a metacarpal ring where the palmar section rests proximally on the carpals and dorsally crosses the middle of the back of the hand.



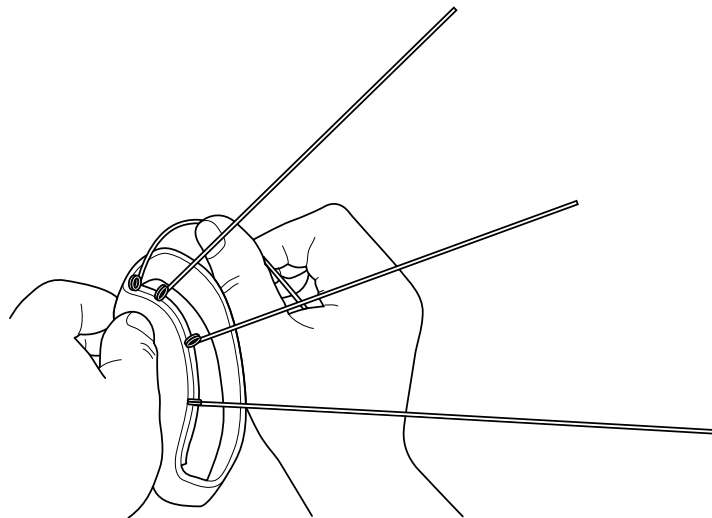
B. Mark the place where the various extension springs are to lie, which is directly opposite the web spaces.



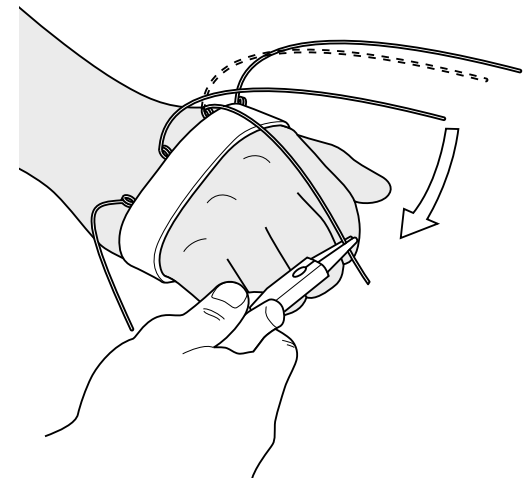
C. Heat the U-shaped spring arm and stick it at the bottom into the plastic. Attach all the springs in this manner.



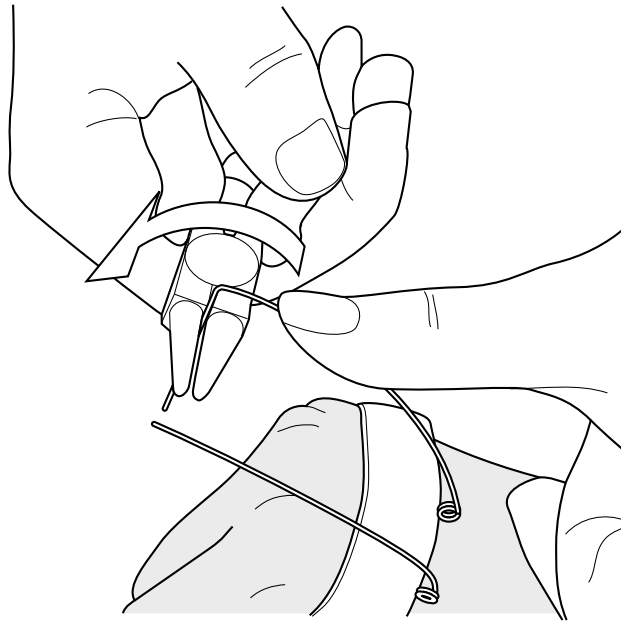
D. Briefly heat the underside of the metacarpal ring and cover with a thin layer of Orfit® Classic. Leave to harden completely.



E. Bend the long spring arms into a bow.



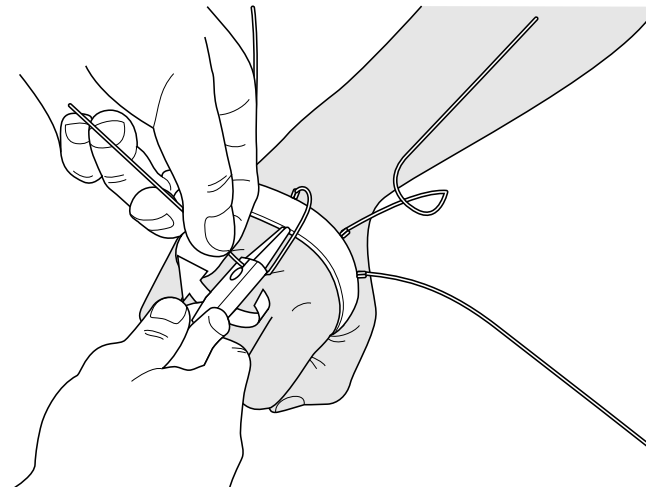
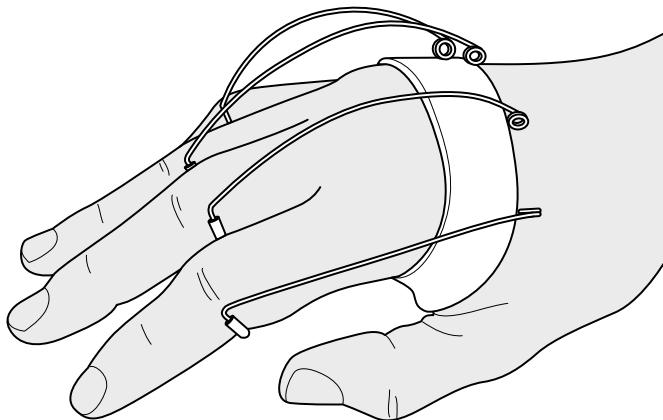
F. Have the patient make a fist, push the spring in between the knuckles and mark the length of the proximal phalanx.



G. Bend the wire at that point downwards in a 90° angle.

Finishing:

Strip an electricity wire 1.2 mm thick and use the insulation to cover the finger rings. If necessary, secure with a drop of cement.

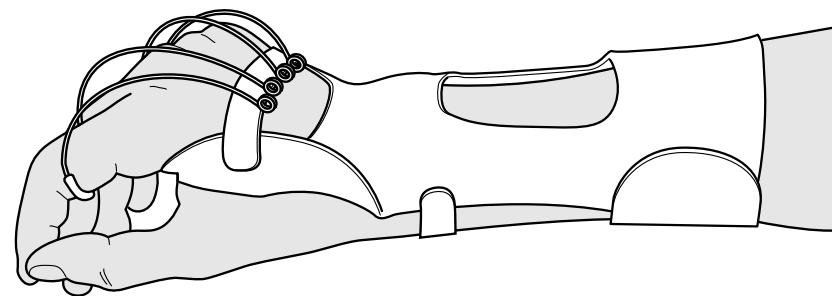


H. Shape the wire into a half ring ulnarly.

ALTERNATIVES:

The MCP extension splint can also be part of a wrist extension splint, whether fixed (A) or removable (B).

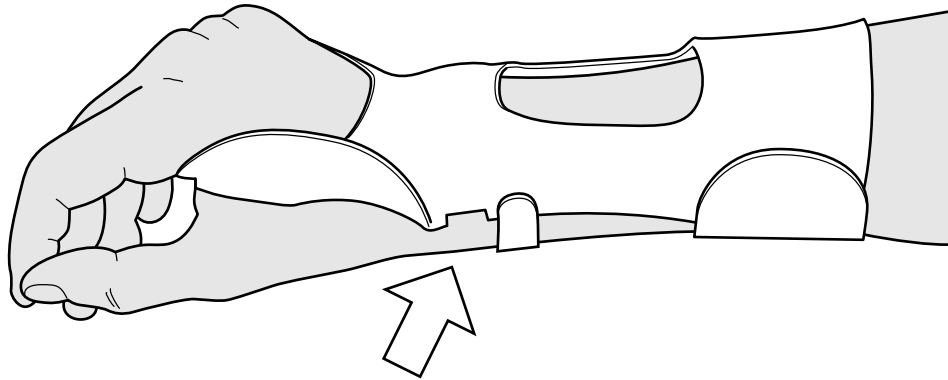
A. Fixed:



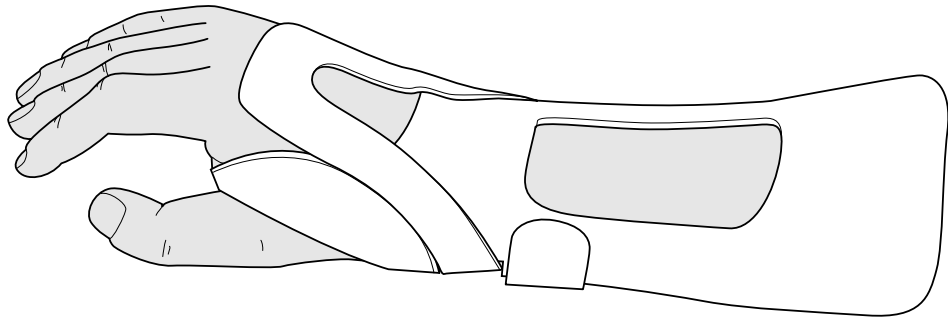
I. Stick a 3.2 mm strip of unperforated Orfit® Classic over both lateral wings of the splint base.

Continue as from step B above. (see page 76)

B. Removable:

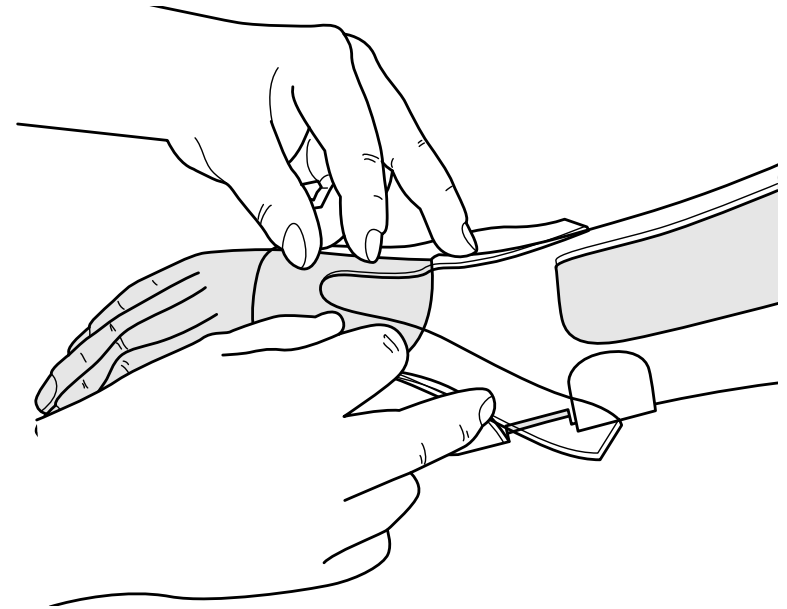


J. Make two incisions in the splint base, just behind the folded wings.

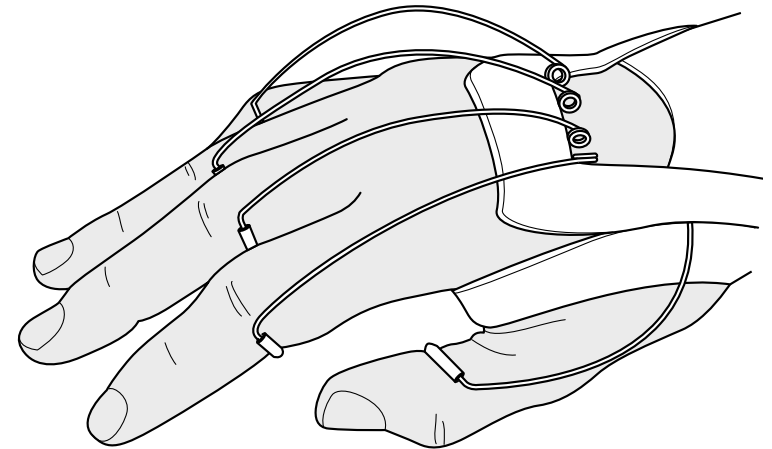


L. Trim the legs to length, stretch the ends and fold them into the cut-aways.

Flatten the resultant small hook completely so that no extra thickness can be felt.



K. Mould a U-shaped Orfit® Classic pattern over the dorsal aspect of the hand, both legs resting neatly along the wings of the splint base.





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