# OverflowingStash.com
# 3D MASK PATTERN

Version 3 (1 December 2020)

**DISCLAIMER:** Please note I'm not a healthcare or epidemic professional. Information here are based on what I've read / watched online from various different Western & East Asian news sources. Masks offer some protection, but like everything else they're not 100% foolproof. Don't tempt Fate by taking more risk than advised by your country's healthcare professionals. Physically distance from other people as much as possible, avoid touching your eyes, nose, mouth with unwashed hands. Stay safe! Praying for your good health❣️

😷 More info on how I arrived at this tweaked 3D mask pattern on my blog at: http://overflowingstash.com/3Dmask

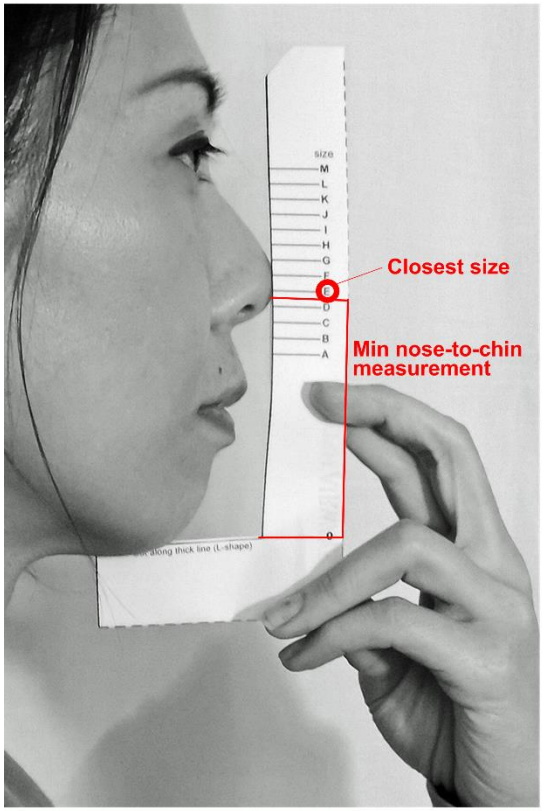
# Sizing

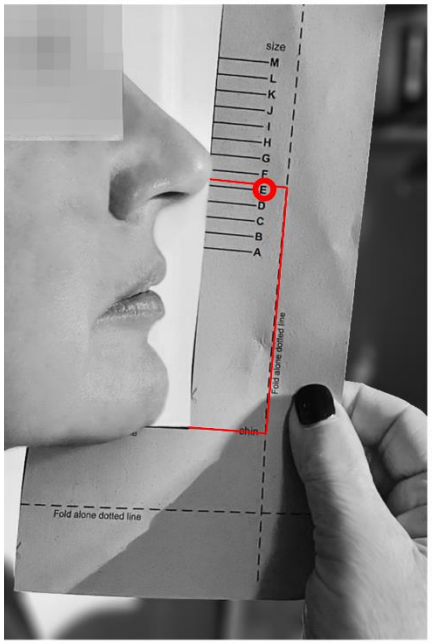
**How to choose:** Use the sizing ruler on the next page to help you choose the size closest to your minimum Nose→Chin measurement. If you're in between sizes, choose the smaller size so the mask will sit on top of your face rather than hug the face closely. I find most of my London friends in their 30s, 40s, & 50s take a size E for women & F for men. If you're on the chubbier side or have a full beard you may want to go up a size.

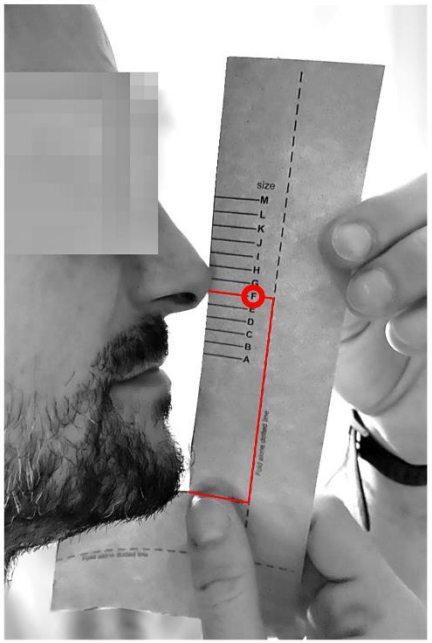
Make a muslin if you're unsure which size to choose or you want to ensure the best fit before using your preferred fabrics. You can simplify the sewing by omitting the middle layer for this size & fit test.

**Checking the fit:** Bend the nose wire roughly into the shape of cheek – nose - cheek. Put on mask. Adjust the elastic length(s). The mask's centre front should sit on your cheekbone & protrude forward like a moulded N95 rather than hug your face snugly like surgical masks & other soft fabric masks. Check that you have a snug fit at the edges of the mask – there should be very little gap at the top, sides, & chin. The bottom edge may stand away from your under-chin a little bit, but as long as your chin touches the fabric snugly the fit should be good.

| **IMPERIAL (inch)** | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Length: CF total | 5 | 5½ | 6 | 6⅜ | 6⅞ | 7⅜ | 7⅞ | 8¼ | 8¾ | 9¼ | 9¾ |
| Length: CF middle | 2¼ | 2½ | 2¾ | 2⅞ | 3⅛ | 3¼ | 3½ | 3⅝ | 3⅞ | 4⅛ | 4¼ |
| Length: sides | 2 | 2⅛ | 2¼ | 2½ | 2⅝ | 2¾ | 3 | 3⅛ | 3¼ | 3½ | 3⅝ |
| Width: top | 4¼ | 4⅝ | 5 | 5⅜ | 5⅞ | 6¼ | 6⅝ | 7 | 7⅜ | 7¾ | 8¼ |
| Width: middle | 5⅞ | 6⅜ | 6¾ | 7¼ | 7¾ | 8⅛ | 8⅝ | 9 | 9½ | 9⅞ | 10⅜ |
| Width: bottom | 3⅜ | 3¾ | 4 | 4⅜ | 4⅝ | 5 | 5¼ | 5⅝ | 5⅞ | 6¼ | 6½ |
| **METRIC (cm)** | A | B | C | D | E | F | G | H | I | J | K |
| Length: CF total | 12.7 | 13.9 | 15.1 | 16.3 | 17.5 | 18.7 | 19.9 | 21.1 | 22.3 | 23.5 | 24.7 |
| Length: CF middle | 5.8 | 6.3 | 6.8 | 7.3 | 7.8 | 8.3 | 8.8 | 9.3 | 9.8 | 10.3 | 10.8 |
| Length: sides | 4.9 | 5.4 | 5.8 | 6.2 | 6.6 | 7.1 | 7.5 | 7.9 | 8.3 | 8.7 | 9.2 |
| Width: top | 10.8 | 11.8 | 12.8 | 13.8 | 14.8 | 15.8 | 16.8 | 17.8 | 18.8 | 19.8 | 20.8 |
| Width: middle | 15.0 | 16.1 | 17.3 | 18.4 | 19.5 | 20.7 | 21.8 | 22.9 | 24.1 | 25.2 | 26.4 |
| Width: bottom | 8.6 | 9.4 | 10.2 | 11.0 | 11.8 | 12.6 | 13.4 | 14.2 | 15.0 | 15.8 | 16.6 |

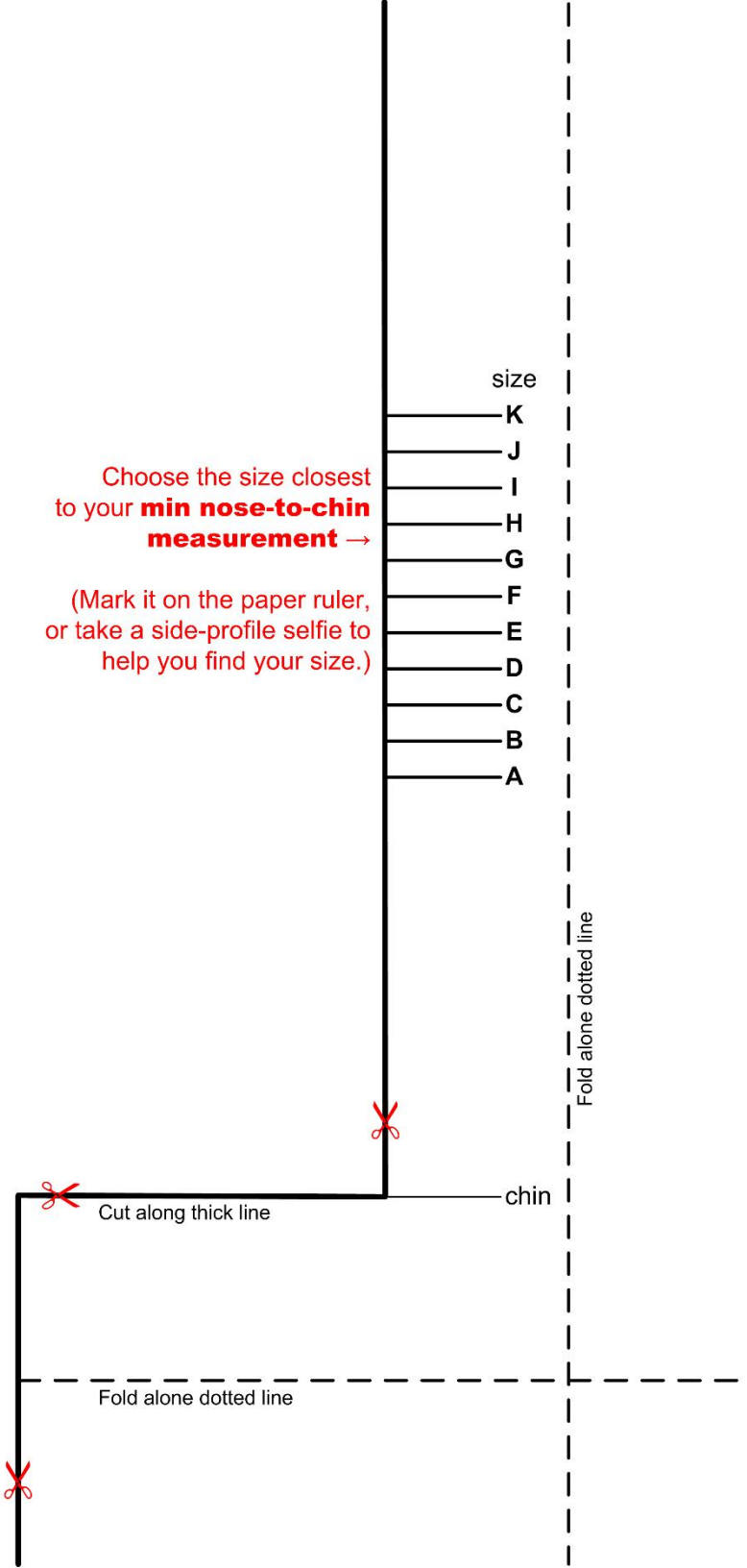



Choose the size closest to your **min nose-to-chin measurement** →

(Mark it on the paper ruler, or take a side-profile selfie to help you find your size.)



## Supplies

- Outer layer fabric: high thread count fabric eg poplin
- Middle layer fabric: staticky polyester lining fabric
- Inner layer fabric: stiff / crisp cotton fabric
- Ear loops or head ties: ⅛" / 3mm elastic band or soft elastic cord OR ¼" / 6mm elastic / fabric / ribbon tie
- Nose wire: ¼" / 5mm wide double wire nose bridge strip OR twist tie from product packaging (eg food, cables) or recycled from old surgical masks
- Nose wire casing: bias strip of fabric
- Thread
- Scissors, iron, pins

**If you live in a hot climate**, absorbent plant fibre fabrics like cotton, viscose/rayon, linen in light colour for the outer & inner layers may be more comfortable. The middle layer does need to be staticky, so polyester would be best, though some silk may work. See https://youtu.be/Q37qdWUQXBI on how you can test if your fabric is staticky enough. You can choose thinner fabrics as long as when held up together under the light you can't see outline of objects behind the layers clearly.

**To make the mask more comfortable to wear**, ensure the inner layer fabric is stiff / crisp to prevent fabric from sticking to your nostrils & mouth when you inhale or talk. You can interface this layer with thin fusible interfacing if your inner fabric is too soft / limp. Or you can add paper insert in the middle area with corners tucked into the side folds to prop up the mask.

**If you wear glasses and/or want to maximise protection for yourself**, then nose-wire should not be omitted. Ensuring a snug fit at the top edge helps reduce fogging of glasses & sunglasses. Snug fit at mask edges improves protection for yourself as it reduces the amount of coronavirus getting into the mask via the gaps at the edges. The mask does not have to hug your skin closely apart from the edges – most N95 are domed above the nose – mouth area & only snug at the mask edges. I think this should offer a good balance between comfort & protection.

| **IMPERIAL (inch)** | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pattern includes ⅜" seam & hem allowances. Sizes J & K seam allowances may get cut off at top & bottom in printout. Please measure & add back ⅜" SA. | | | | | | | | | | | |
| Outer fabric | 6¼ x 7¾ | 6¾ x 8⅛ | 7¼ x 8⅝ | 7¾ x 9 | 8⅛ x 9½ | 8⅝ x 9⅞ | 9⅛ x 10⅜ | 9⅝ x 10⅞ | 10 x 11¼ | 10½ x 11¾ | 11 x 12⅛ |
| Middle & inner fabrics | 6¼ x 6⅞ | 6¾ x 7⅜ | 7¼ x 7¾ | 7¾ x 8¼ | 8⅛ x 8¾ | 8⅝ x 9⅛ | 9⅛ x 9⅝ | 9⅝ x 10 | 10 x 10½ | 10½ x 10⅞ | 11 x 11⅜ |
| Elastic ear loops OR | 2 @ 10 | 2 @ 10½ | 2 @ 11 | 2 @ 11½ | 2 @ 12 | 2 @ 12½ | 2 @ 13 | 2 @ 13½ | 2 @ 14 | 2 @ 14½ | 2 @ 15 |
| Elastic / fabric / ribbon head tie | 1 @ 41¾ | 1 @ 42½ | 1 @ 43¼ | 1 @ 44⅛ | 1 @ 44⅞ | 1 @ 45⅝ | 41 @ 6½ | 1 @ 47¼ | 1 @ 48 | 1 @ 48⅞ | 1 @ 49⅝ |
| Nose wire length | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 |
| Bias strip | 3⅝ x 1 | 3⅝ x 1 | 3⅝ x 1 | 4⅝ x 1 | 4⅝ x 1 | 4⅝ x 1 | 4⅝ x 1 | 5⅝ x 1 | 5⅝ x 1 | 5⅝ x 1 | 5⅝ x 1 |
| Thick paper insert | 1½ x 4 | 1⅝ x 4½ | 1¾ x 5 | 2 x 5½ | 2⅛ x 6 | 2¼ x 6⅜ | 2½ x 6⅞ | 2⅝ x 7⅜ | 2¾ x 7⅞ | 3 x 8¼ | 3⅛ x 8¾ |

| METRIC (cm) | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pattern includes 1 cm seam & hem allowances. Sizes J & K seam allowances may get cut off at top & bottom in printout. Please measure & add back 1 cm SA. | | | | | | | | | | | |
| Outer fabric | 16 x 20 | 18 x 21 | 19 x 22 | 20 x 23 | 21 x 25 | 22 x 26 | 24 x 27 | 25 x 28 | 26 x 29 | 27 x 30 | 28 x 31 |
| Middle & inner fabrics | 16 x 18 | 18 x 19 | 19 x 20 | 20 x 21 | 21 x 23 | 22 x 24 | 24 x 25 | 25 x 26 | 26 x 27 | 27 x 28 | 28 x 29 |
| Elastic ear loops OR | 2 @ 25.5 | 2 @ 26.8 | 2 @ 28.0 | 2 @ 29.3 | 2 @ 30.6 | 2 @ 31.9 | 2 @ 33.1 | 2 @ 34.4 | 2 @ 35.7 | 2 @ 37.0 | 2 @ 38.2 |
| Elastic / fabric / ribbon head tie | 1 @ 106.0 | 1 @ 108.0 | 1 @ 110.0 | 1 @ 112.0 | 1 @ 114.0 | 1 @ 116.0 | 1 @ 118.0 | 1 @ 120.0 | 1 @ 122.0 | 1 @ 124.0 | 1 @ 126.0 |
| Nose wire length | 7.5 | 7.5c m | 7.5c m | 10.0 | 10.0 | 10.0 | 10.0 | 12.5 | 12.5 | 12.5 | 12.5 |
| Bias strip | 9.5 x 2.5 | 9.5 x 2.5 | 9.5 x 2.5 | 12.0 x 2.5 | 12.0 x 2.5 | 12.0 x 2.5 | 12.0 x 2.5 | 13.5 x 2.5 | 13.5 x 2.5 | 13.5 x 2.5 | 13.5 x 2.5 |
| Thick paper insert | 3.7 x 10.3 | 4.2 x 11.5 | 4.6 x 12.7 | 5.0 x 13.9 | 5.4 x 15.1 | 5.9 x 16.3 | 6.3 x 17.5 | 6.7 x 18.7 | 7.1 x 19.9 | 7.5 x 21.1 | 8.0 x 22.3 |

## Sewing Instruction

1. Patterns are at the end of this document. Print out the pattern for your chosen size at 100% or "Actual size". Don't allow the printer to scale up or down (don't choose "Fit" or "Shrink oversized pages"). Check the printout is the right scale by checking the 1 inch and/or 1 cm squares on the pattern sheet are in fact printed out as 1 inch & 1 cm squares.

   If you're printing from the Letter paper size version of the PDF, please note that the XX-Large patter.n may not fit the printable area vertically – bits of the cutting line may be missing, but the seam line should still be within printable area. Just manually draw in the missing cutting line with ⅜" / 1cm seam allowance. This isn't a problem for the A4 paper size version of the PDF.

1. Cut out the outer, middle, & inner layers.

   Mark the Centre Panel's centre front top & bottom points on the right side of the outer fabric.

   OPTIONAL: interface outer and / or inner layer if the fabric is soft & drapey. Use lightweight non-woven fusible interfacing.

2. Sew nose-wire casing bias strip to the inner layer upper edge:

   Right sides together stitch ¾" / 2cm from cut edge.

   Reinforce with another stitch in the seam allowance close to the first one.

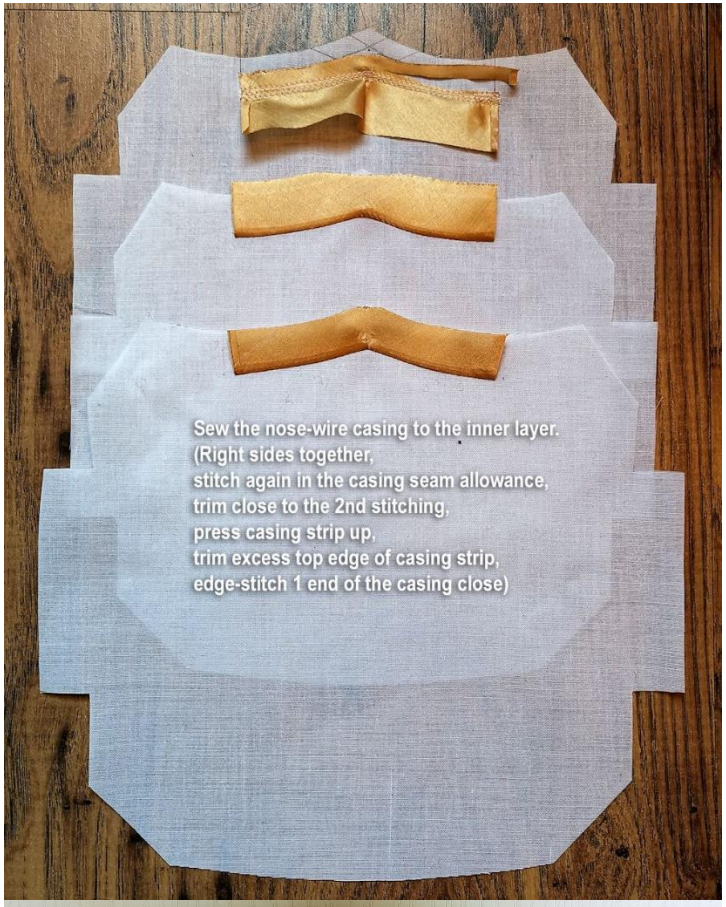
   Trim close to the second row of stitching.

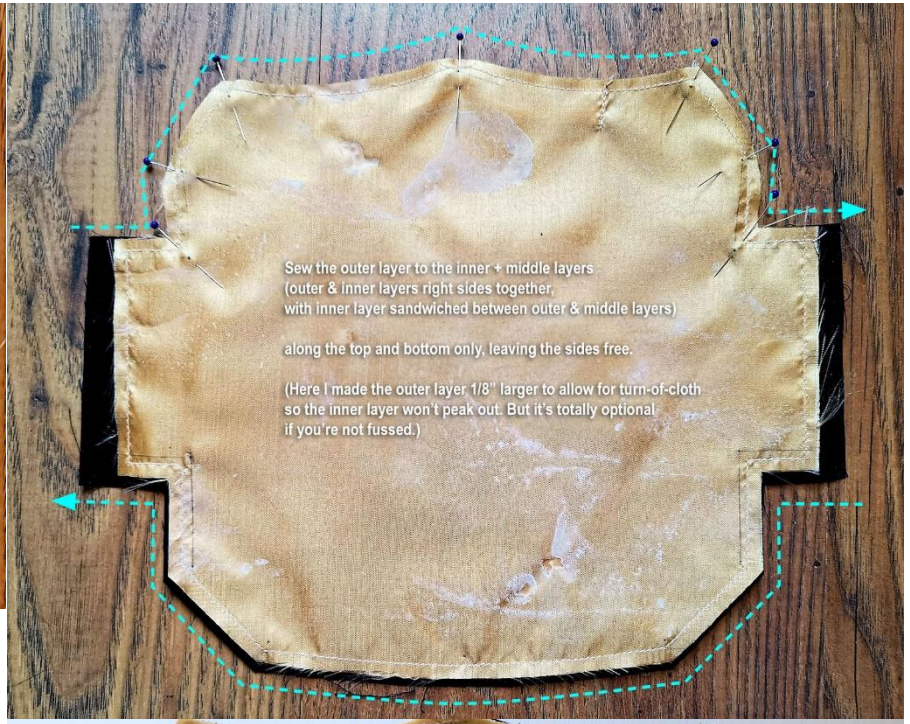
   Press bias tape up towards cut edge.

   Trim any excess bias tape from top edge.

   Edge stitch one end of the casing close.

   ALTERNATIVELY: sew buttonholes for nose wire insertion if you prefer to sandwich the wire between layers instead of using a casing.






3. OPTIONAL: Baste the middle layer to the wrong side of the inner layer.

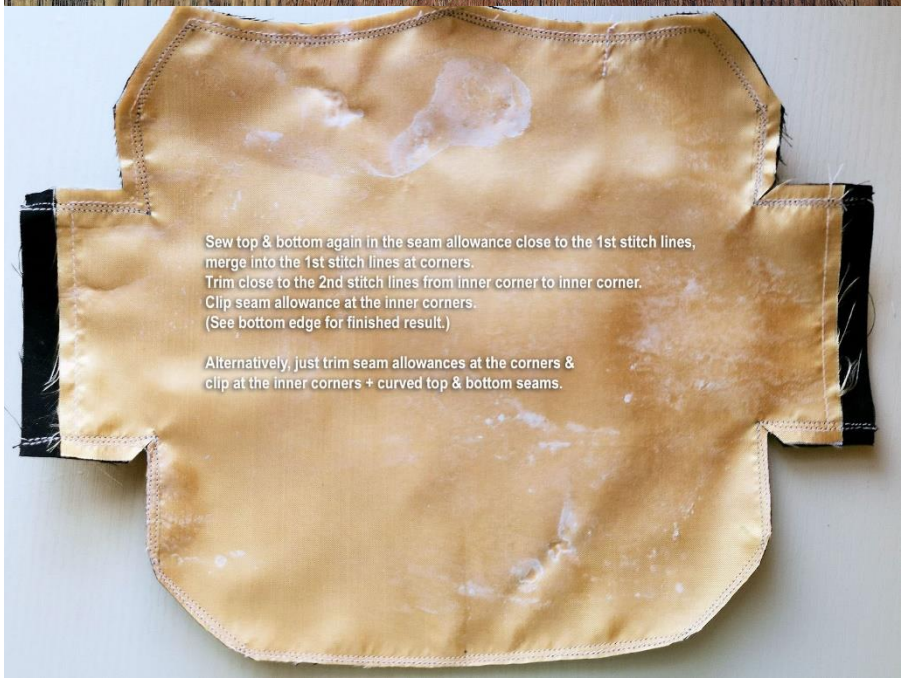
4. Sew the outer layer to the inner + middle layers with outer & inner layers right sides together & the inner layer sandwiched between the outer & middle layers.

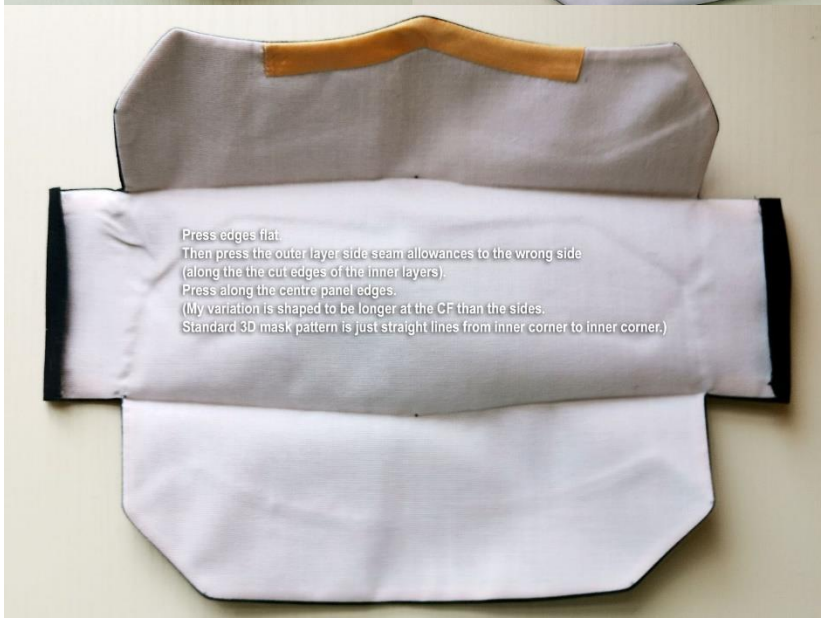
   Sew along the top & bottom from side hem to side hem, leaving the sides open.

5. OPTIONAL: Reinforce the stitch with another line of stitch in the seam allowance close to the first one, merge into the first one at inner & outer corners.

   Trim close to the second line of stitch from the inner corner to the inner corner. Clip seam allowance at the inner corner right up to the stitch line, but don't cut through the stitching. See bottom edge for an example of the trimmed result →

   ALTERNATIVELY: just trim seam allowances at the corners & clip at the inner corners + along the curved top & bottom seams so that the corners and curved edges will lie flat when turned right side out & pressed.






6. Turn mask right side out through one of the unstitched side hems. Poke the outer corners out with a blunt but pointed object – eg knitting / yarn needle or a point turner.

7. Press edges flat.

   Then press the outer layer side hem allowances to the wrong side along the cut edges of the inner layers.

   Press Nose & Chin Panels towards the Centre Panel along the V-shaped fold line.

8. Edge stitch ⅛" / 0.3cm from the Centre Panel's edges (top V-shaped fold line, side hem, bottom V-shaped fold line, & side hem).

   Edge stitch ⅛" / 0.3cm from the Chin Panel's bottom edge.

   Edge stitch ⅜" / 1cm from the Nose Panel's top edge.

9. Fold ½" / 1.2cm side hems to the inside to form the elastic casing, butting the edge against the inner corners (where Nose & Chin Panels join the Centre Panel). Pin in place.

   Fold Nose & Chin Panels to the inside, butting the short straight sides against the elastic casing. Fold both panels in half vertically so that the top / bottom curved edges meet the Centre Panel's top & bottom edges (matching the markers 1's & 2's on the pattern). Make sure all layers of the Nose & Chin Panel's short straight sides are still butting against the elastic casing. Pin in place. (At this point, the Nose & Chin Panels will pull the Centre Panel's sides up to create the mask's 3D shape.)

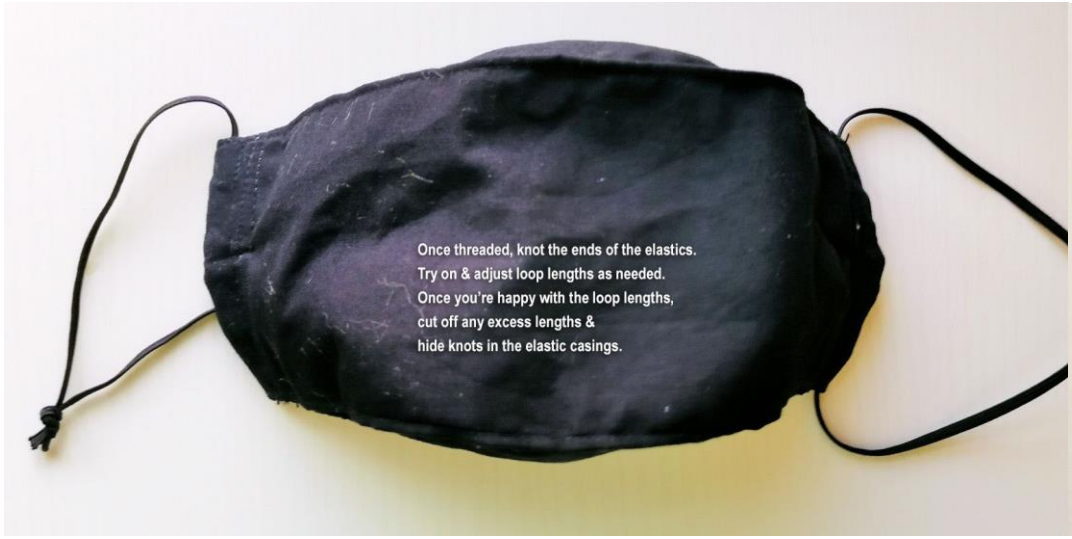
ALTERNATIVELY: baste the Nose & Chin Panels' side pleats & the elastic casing in place instead of just pinning. (I slip-stitch the innermost layer of the Nose & Chin Panels to the elastic casing edge to make it easier to sew the next step.)

10. Stitch elastic casing in place ⅜" / 1cm from the side edge.

    Stitch the Nose & Chin Panels' side pleats in place ¼" / 0.5cm from the casing stitch line. Stitch a third line ⅛" / 0.3cm from the second line to ensure the panels' side pleats are secure from top to bottom.

11. Thread the elastics or fabric tie / ribbon through the elastic casings using a hair pin.

    If using head tie instead of ear loops, thread from top to bottom. You'll have a loop at the top & loose ends at the bottom. Try on the mask with the top loop behind your head. Tie the loose ends behind your head at the nape to fit.



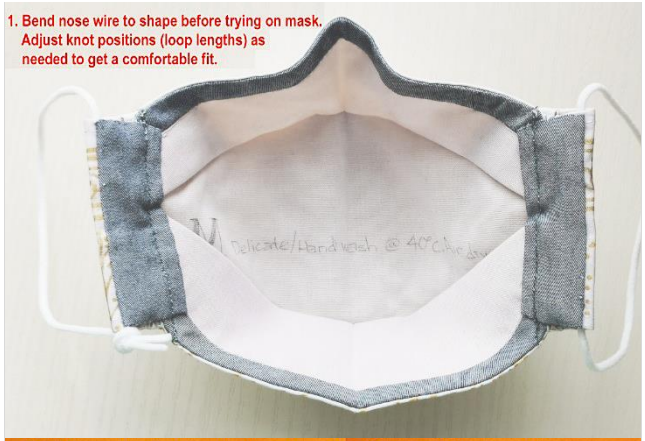
12. IF EAR LOOPS: tentatively tie the ends of the elastic into knots. Try on for fit. Adjust knots' positions (loop circumferences) as needed to get a comfortable fit. Cut off any excess elastics & hide knots in the elastic casings.

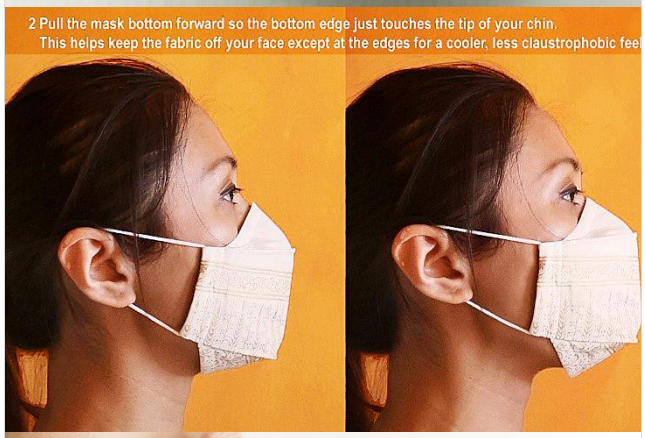
    IF HEAD TIE: pull the top loop over your head. Tie the bottom ends of the tie around the back of your head near the nape. If using elastic rather than fabric tie / ribbon, check for fit, then tie a proper knot & hide the knot in one of the elastic casings.

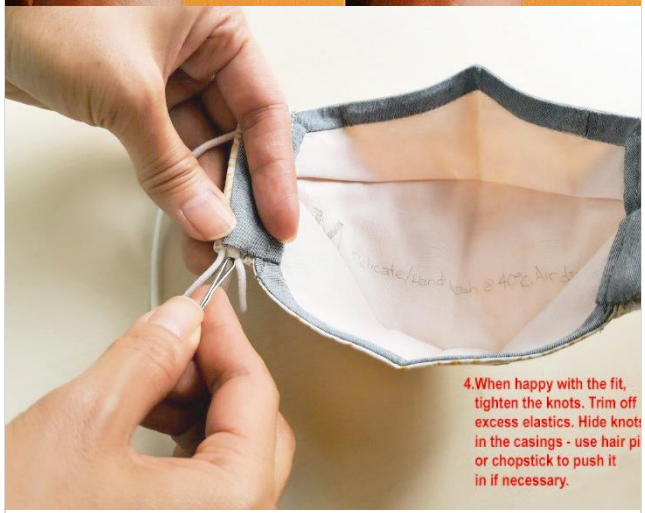
13. Slip nose wire into the nose wire casing, or between the layers through the buttonhole openings if you chose the buttonhole option.

## Wear & Care Instruction

If you are making these masks for others, you can print out the wear and care instructions on the next page to include with the mask.




**Checking for fit & comfort:**

1. The nose wire helps provide a more protective fit at the top. It also helps reduce chances of glasses / sun glasses fogging up from the water vapour in your breath.

   Bend the nose wire roughly into the shape of cheek – nose –cheek. Try on mask. Adjust the elastic knot positions (loop lengths) as needed to get a comfortable fit.

2. The mask is meant to be worn with the centre protruding forward like a moulded N95 rather than hug your face snugly everywhere like surgical masks & other soft fabric masks.

   Check that you have a snug fit at the edges of the mask – there should be very little gap at the top, sides, & chin. The bottom edge may stand away from your under-chin a little bit, but as long as your chin touches the fabric snugly there should be very little gap.

3. When happy with the fit tighten the knots, cut off excess elastic, & hide the knots in the elastic casings at the sides of the mask. Use a blunt stick like hair pin or chopstick to push the knots into the casings if needed.

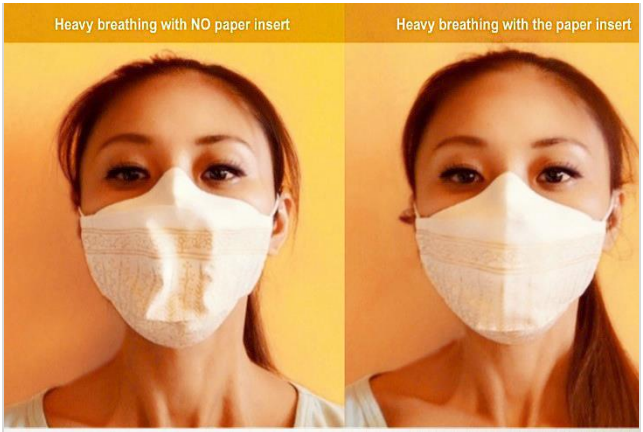
4. When breathing heavily the fabric may get sucked in & touch your face. If you like, you can stick the piece of thick paper provided in the middle, tucking the corners of the paper into the folds at the sides of the mask. This helps keep the fabric off your face. Remove paper before washing the mask.

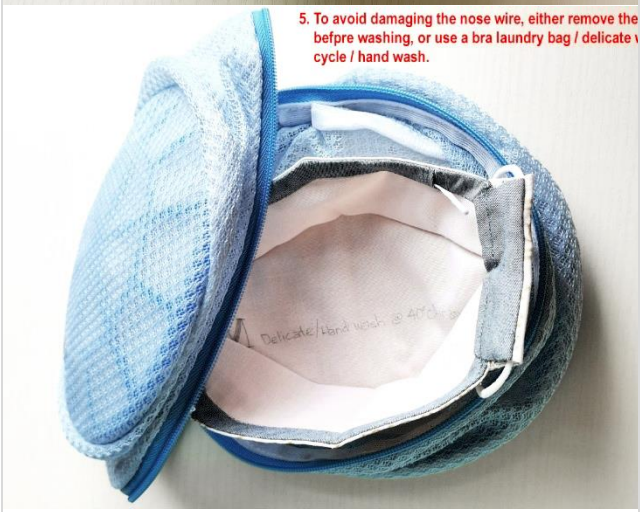
**Care instruction**

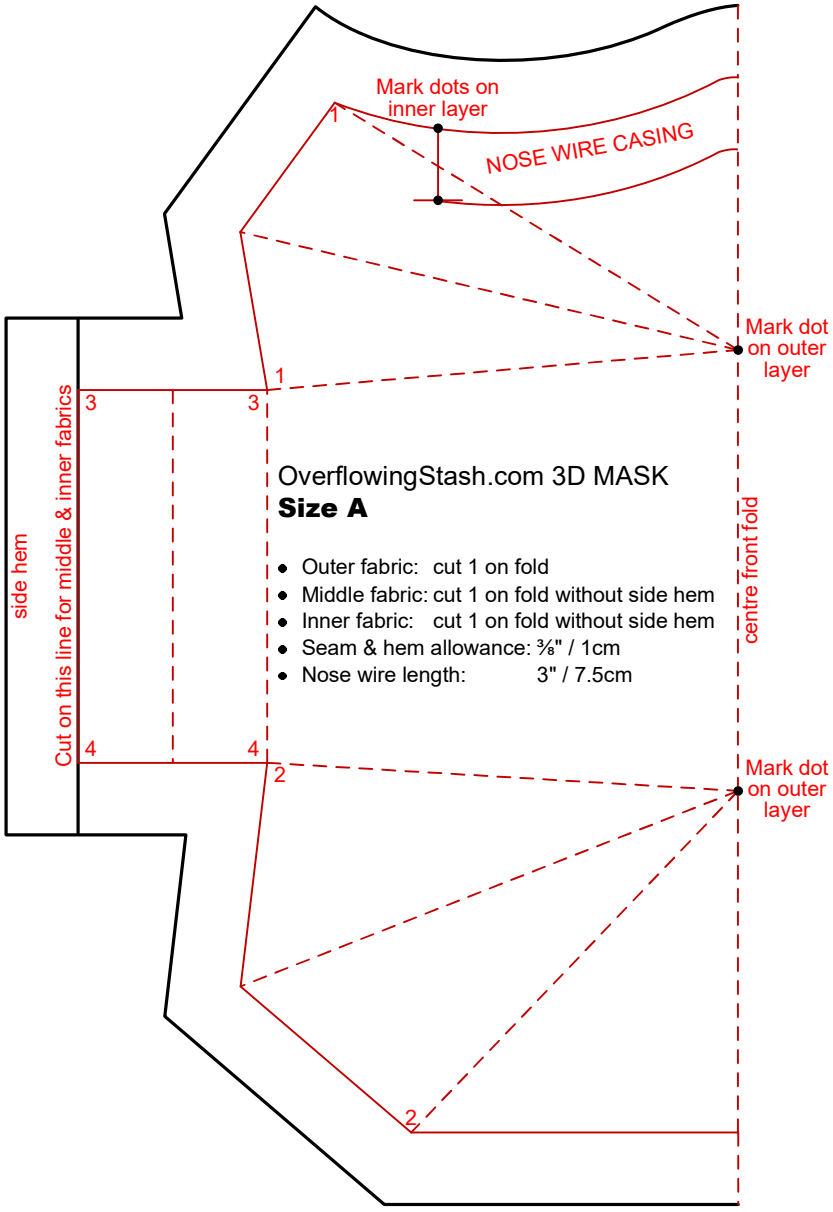
5. The nose wire is removable. I recommend removing the wire before washing, especially if washing by machine. If the nose wire gets damaged for any reason, you can replace it with wire ties that come with electronic cables.

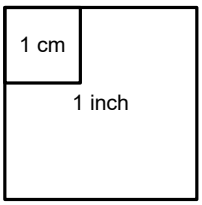
   Wash mask at 40°C with soap or detergent, by hand or machine gentle cycle. Air dry if wire is not removed. Otherwise you can tumble dry the mask on low heat.

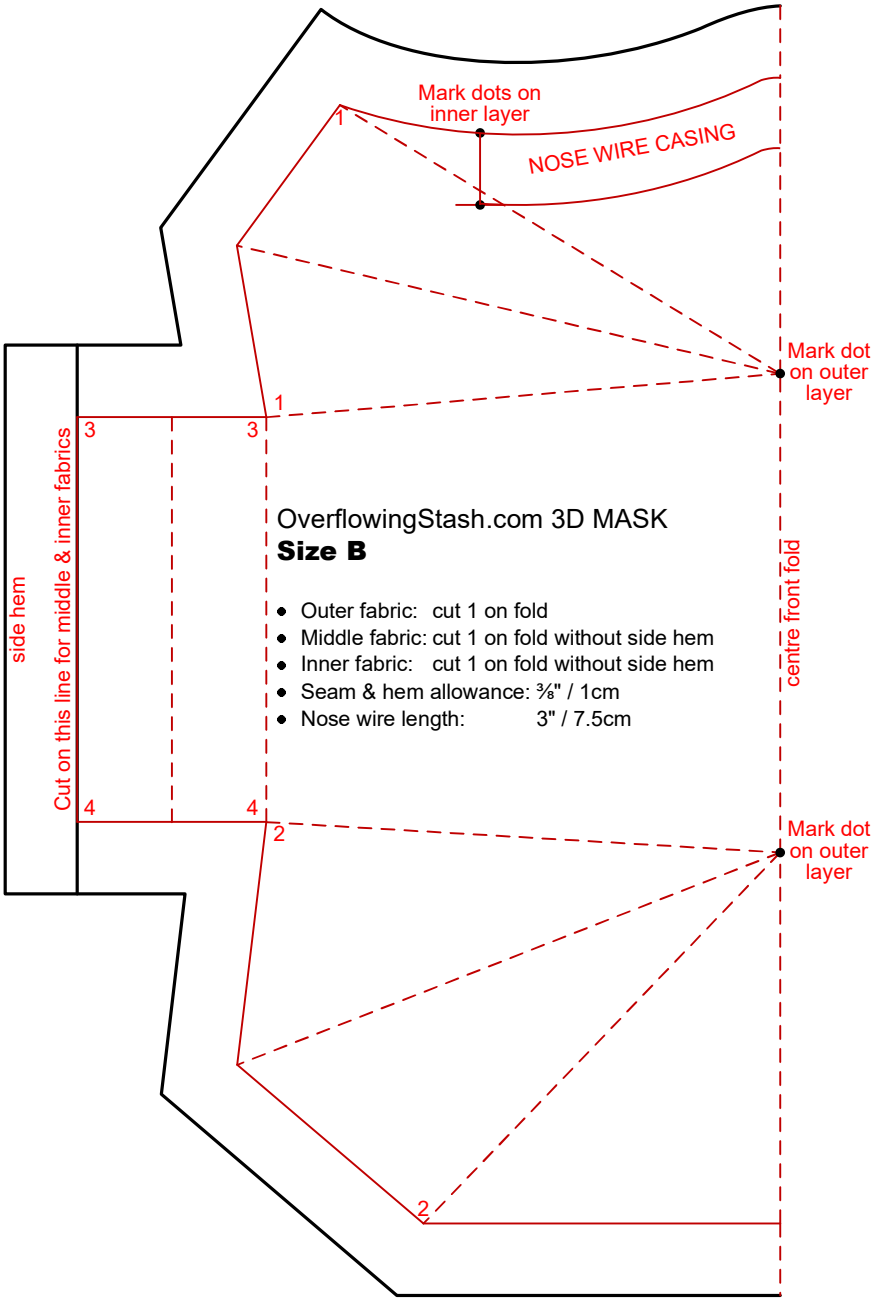
   If you have a bra laundry bag, you can wash & dry the mask in the bag to help reduce wrinkling. (No need to remove nose wire if washing in bra laundry bag.)

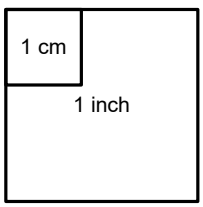





Mark dots on inner layer
1
NOSE WIRE CASING
Mark dot on outer layer
1
3
3
side hem
Cut on this line for middle & inner fabrics
OverflowingStash.com 3D MASK
Size A
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 3" / 7.5cm
centre front fold
4
4
2
Mark dot on outer layer
2


1 cm
1 inch


Mark dots on inner layer
NOSE WIRE CASING
1
Mark dot on outer layer
1
3
3
side hem
Cut on this line for middle & inner fabrics
OverflowingStash.com 3D MASK
Size B
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 3" / 7.5cm
centre front fold
4
4
2
Mark dot on outer layer
2


1 cm
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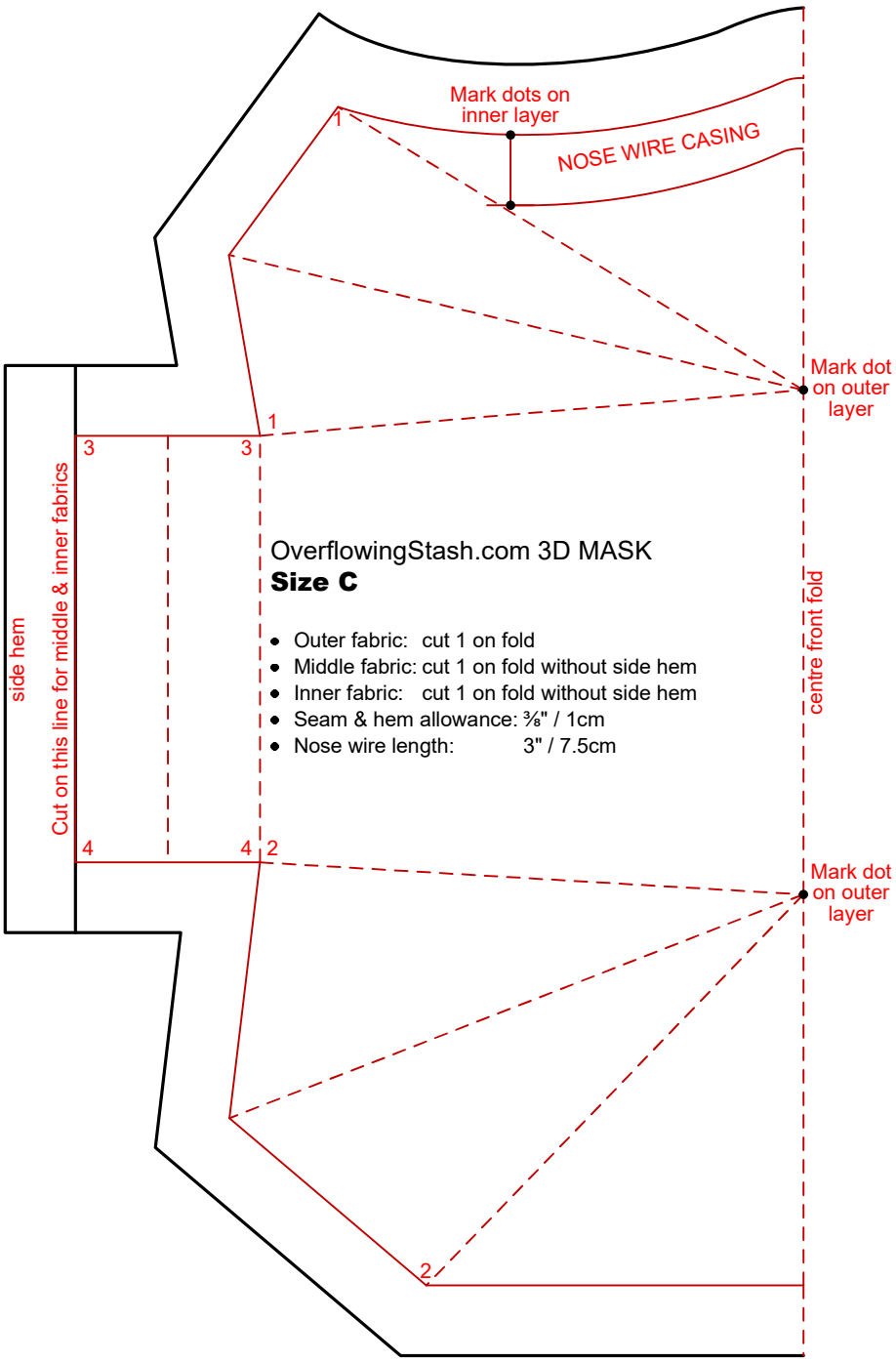
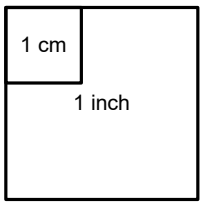
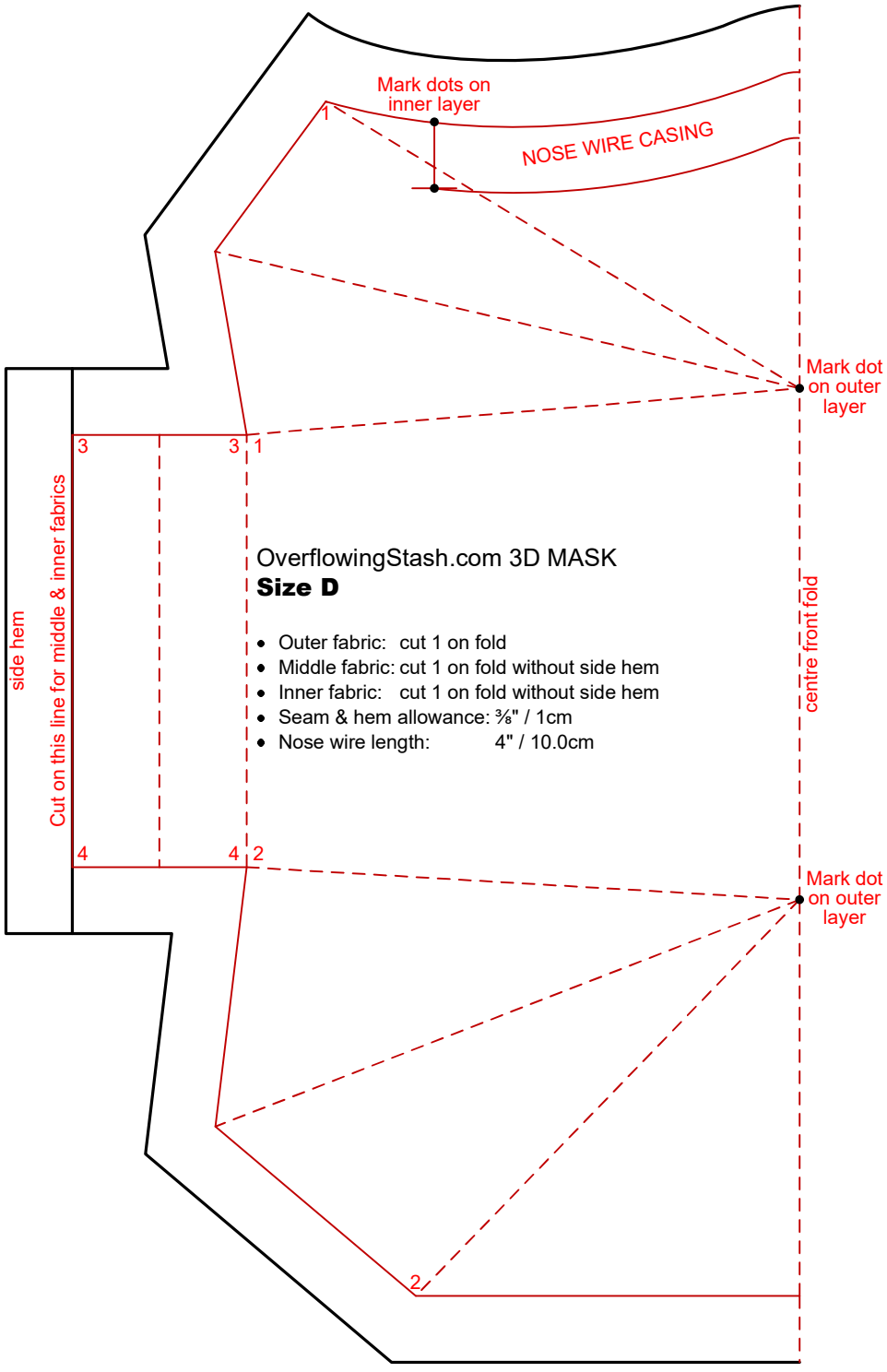
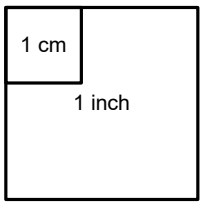
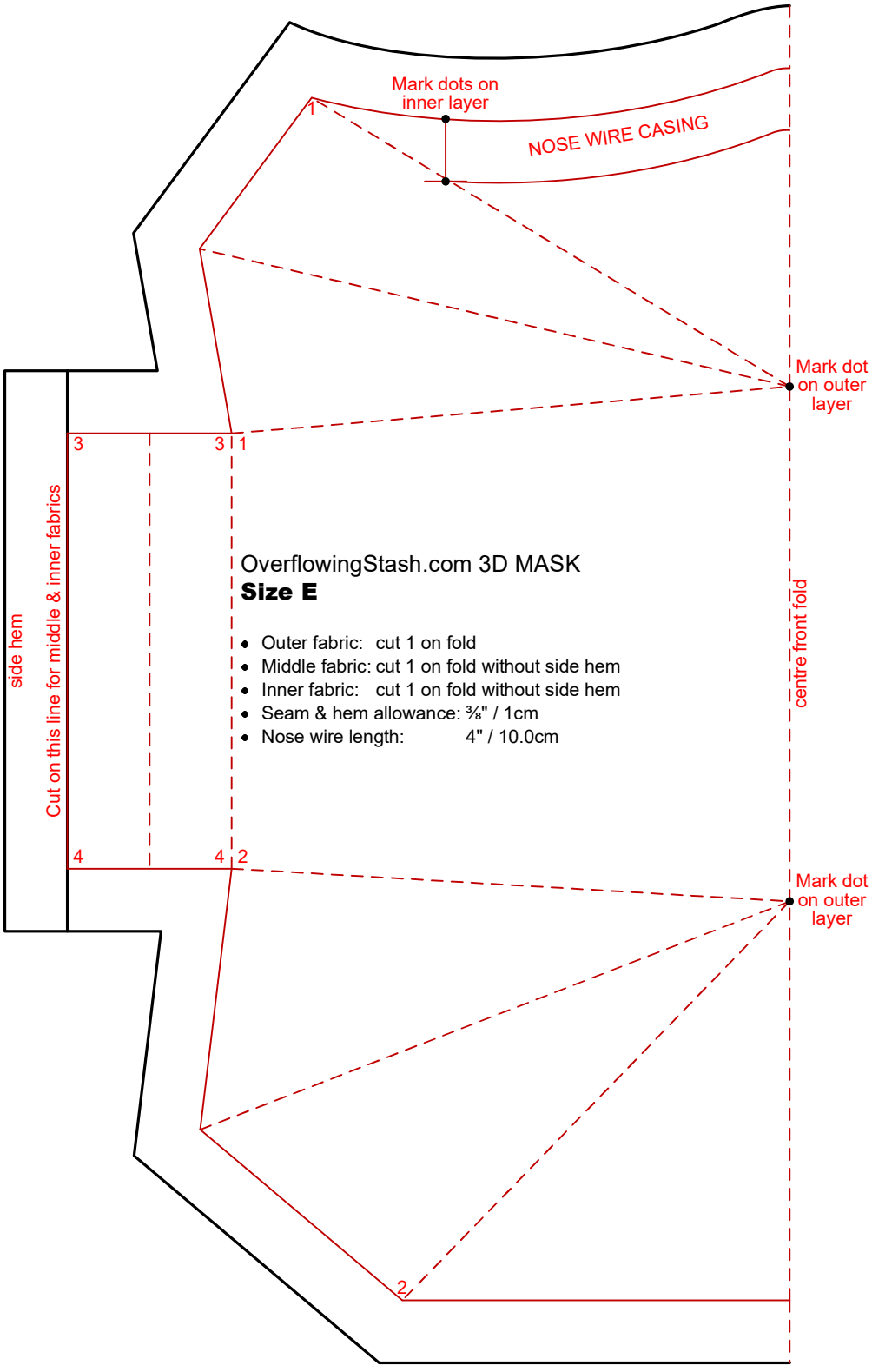
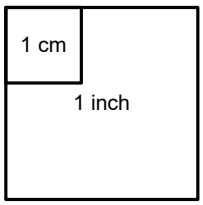

Mark dots on inner layer
1
NOSE WIRE CASING
Mark dot on outer layer
1
3
3
side hem
Cut on this line for middle & inner fabrics
OverflowingStash.com 3D MASK
Size C
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 3" / 7.5cm
centre front fold
4
4
2
Mark dot on outer layer
2

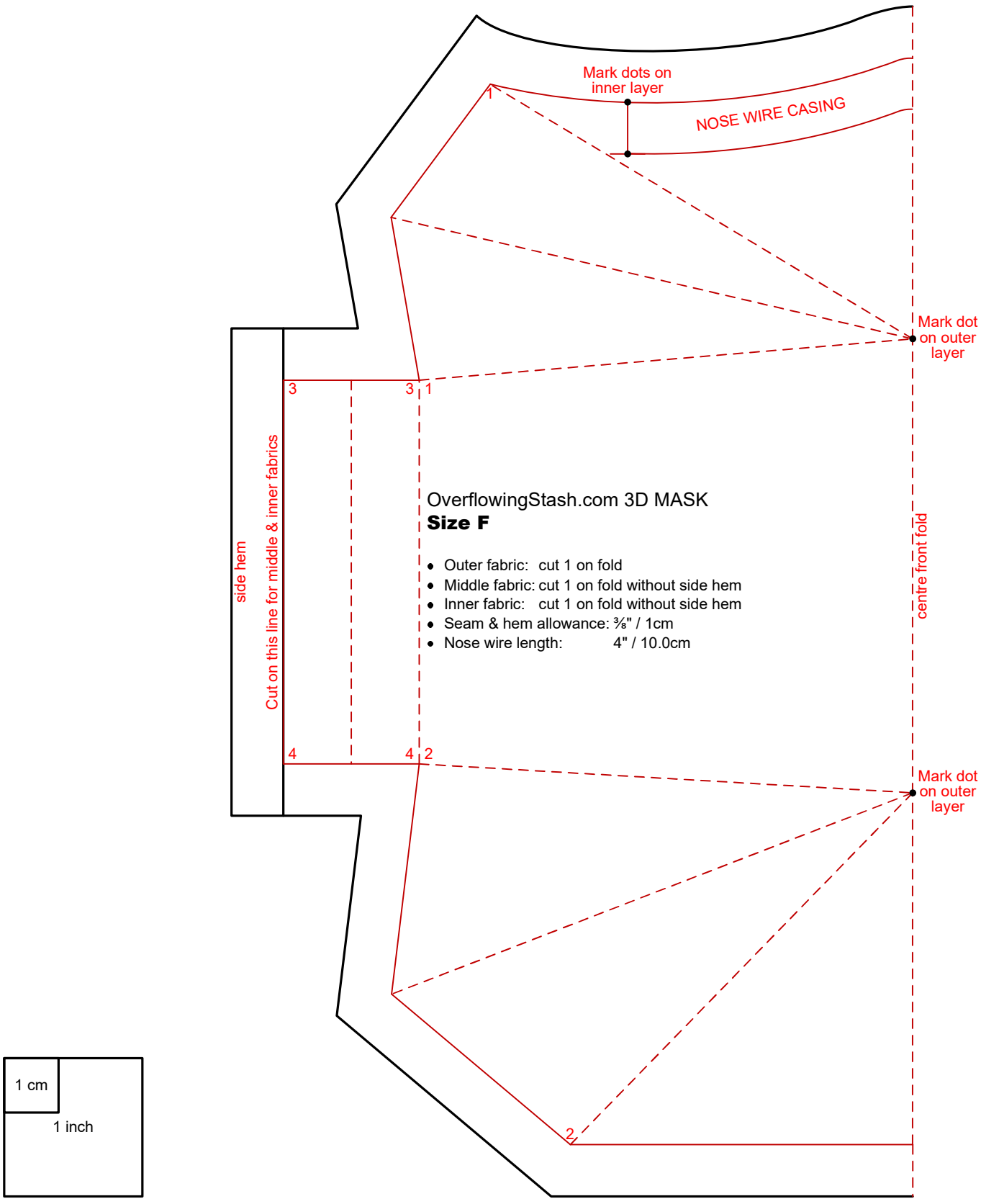

1 cm
1 inch

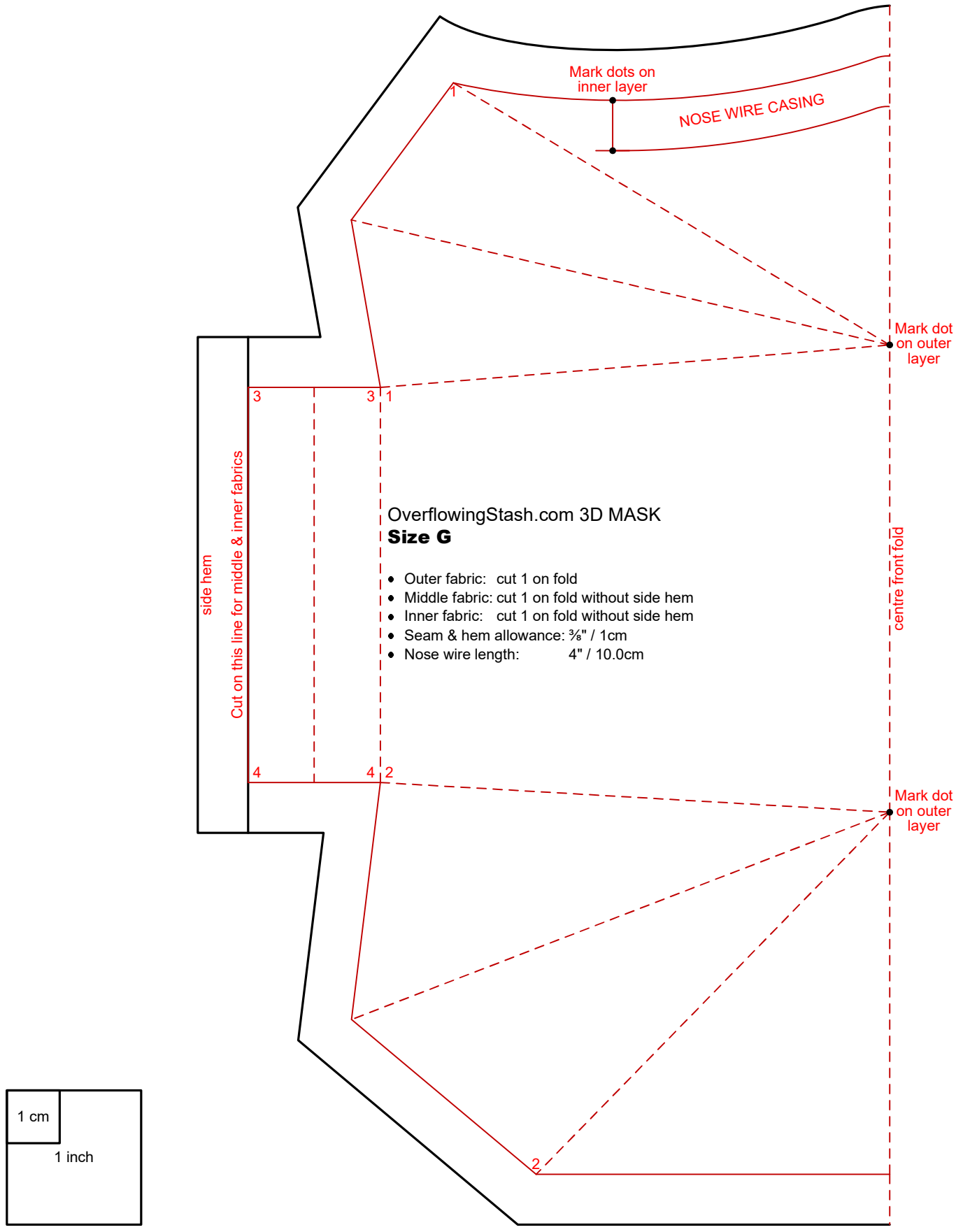

Mark dots on inner layer
1
NOSE WIRE CASING
Mark dot on outer layer
3
3
1
side hem
Cut on this line for middle & inner fabrics
centre front fold
OverflowingStash.com 3D MASK
Size D
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 4" / 10.0cm
4
4
2
Mark dot on outer layer
2

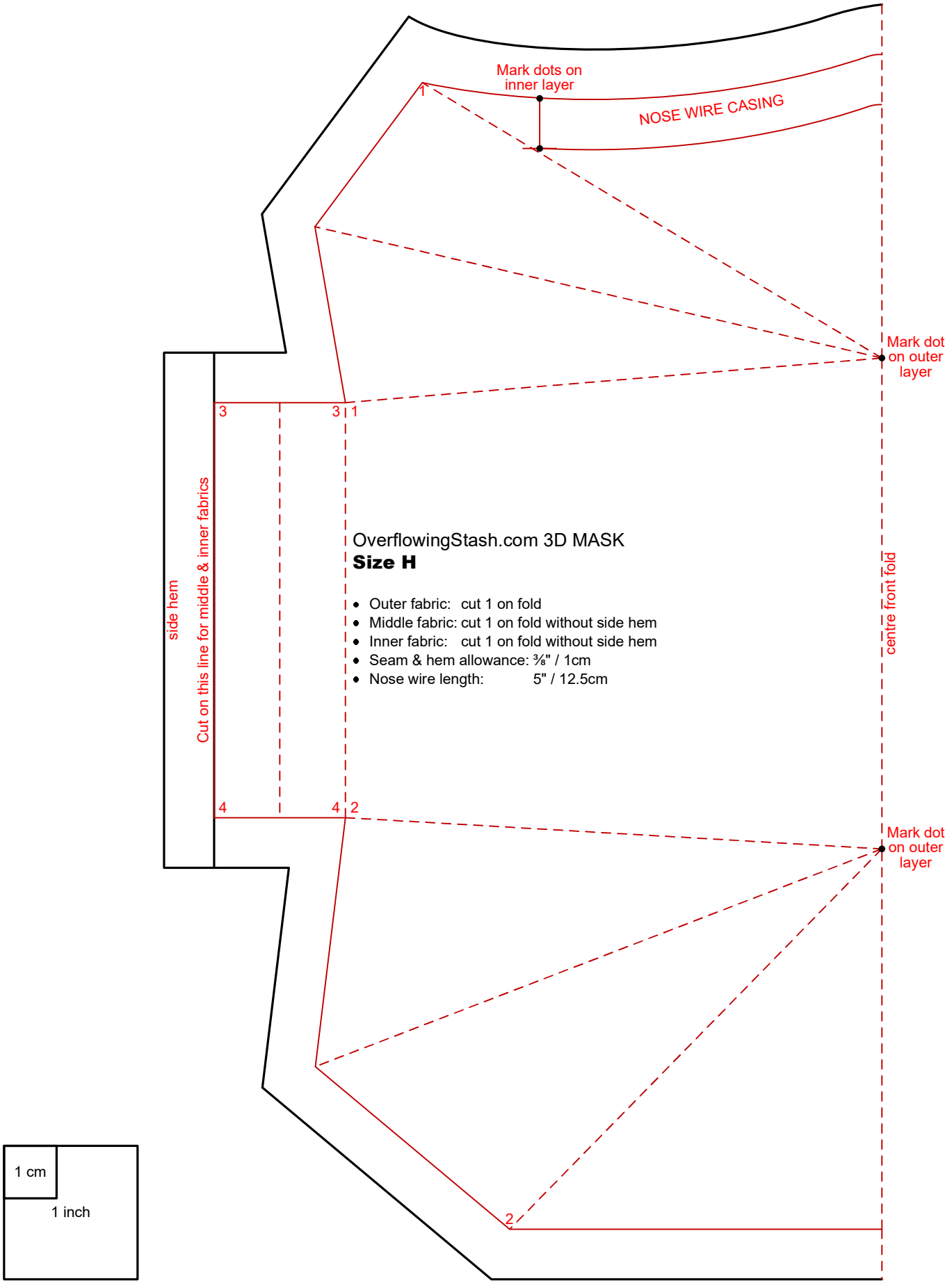

1 cm
1 inch

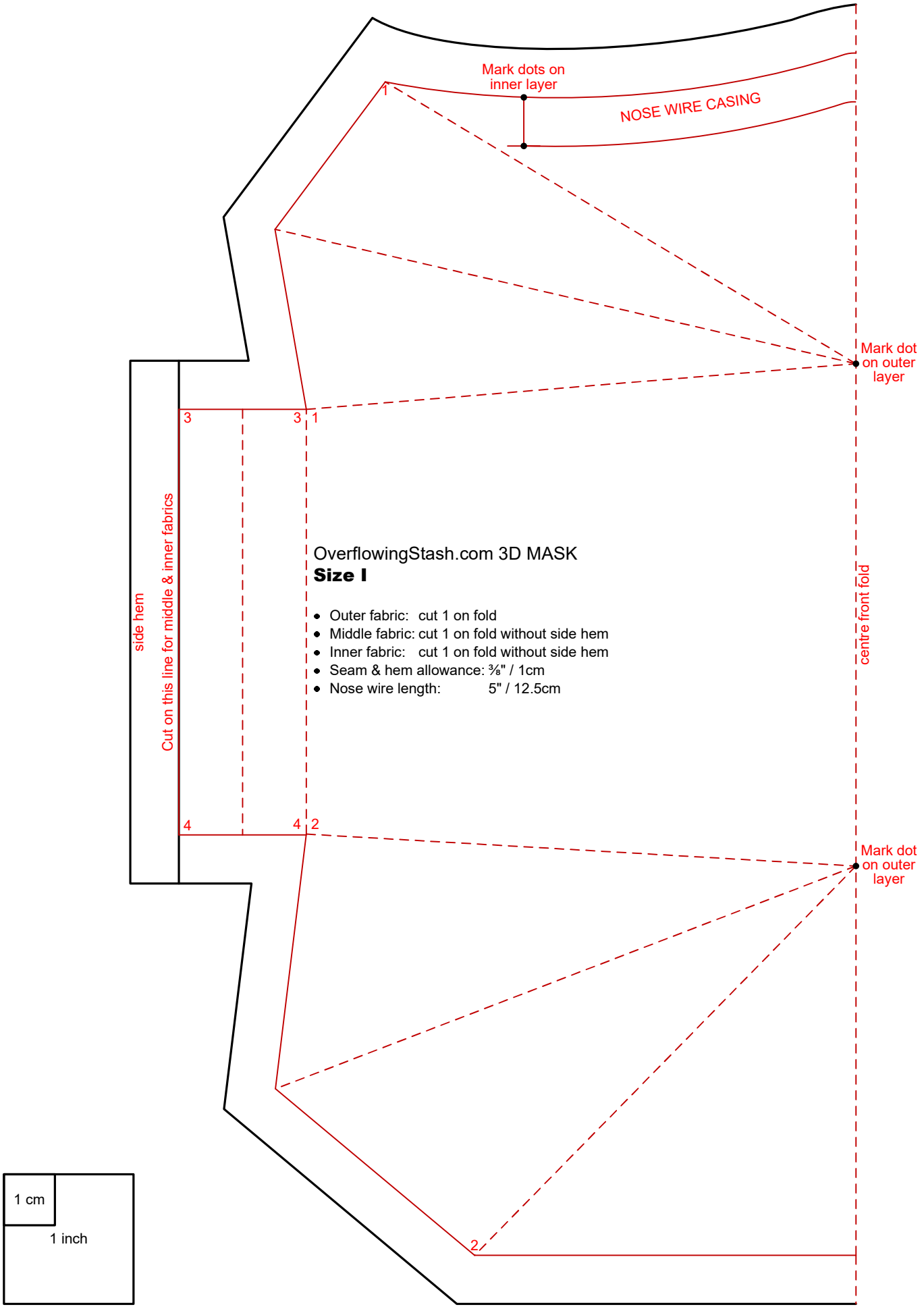

Mark dots on inner layer
1
NOSE WIRE CASING
Mark dot on outer layer
3
3
1
side hem
Cut on this line for middle & inner fabrics
OverflowingStash.com 3D MASK
Size E
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 4" / 10.0cm
centre front fold
4
4
2
Mark dot on outer layer
2

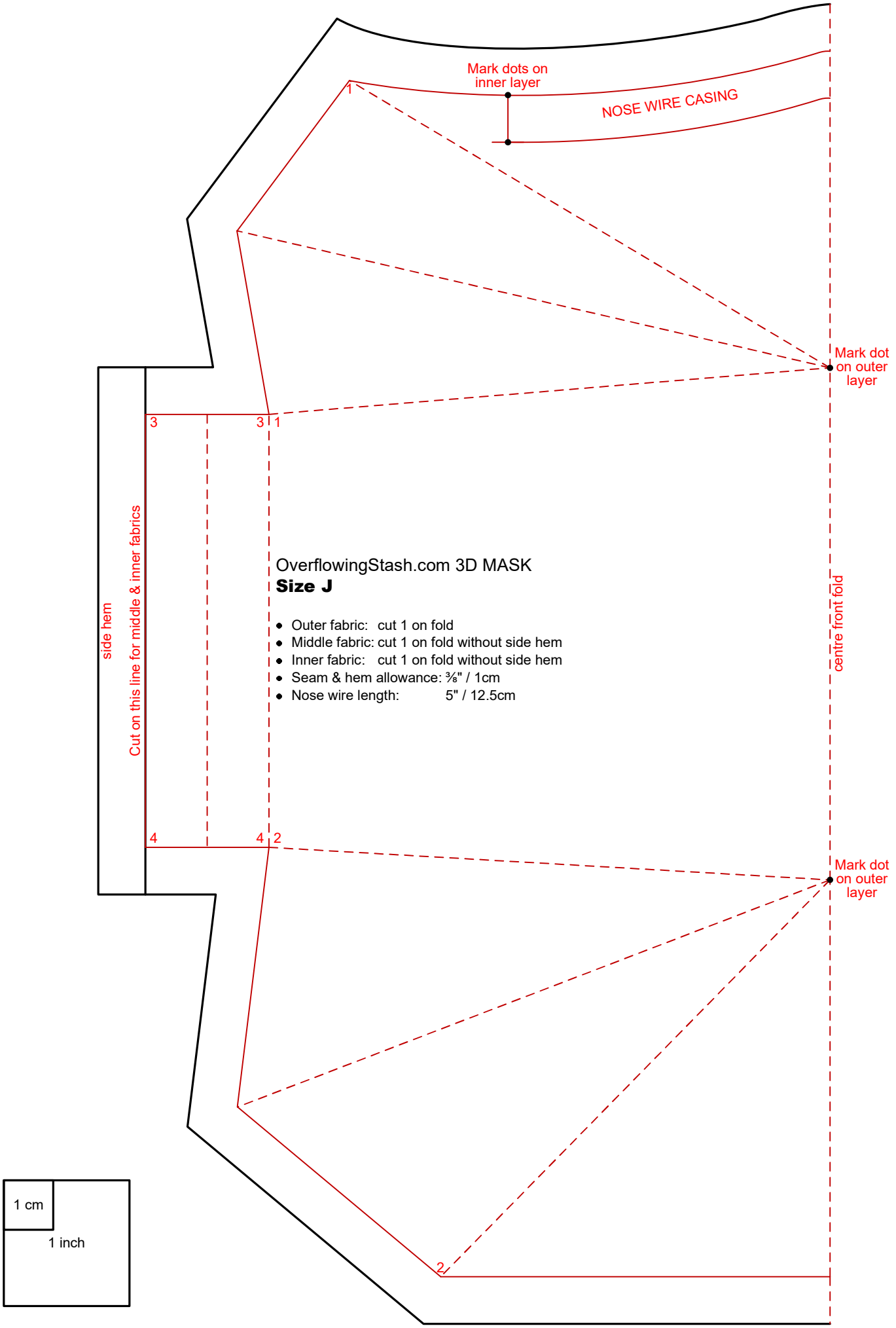

1 cm
1 inch

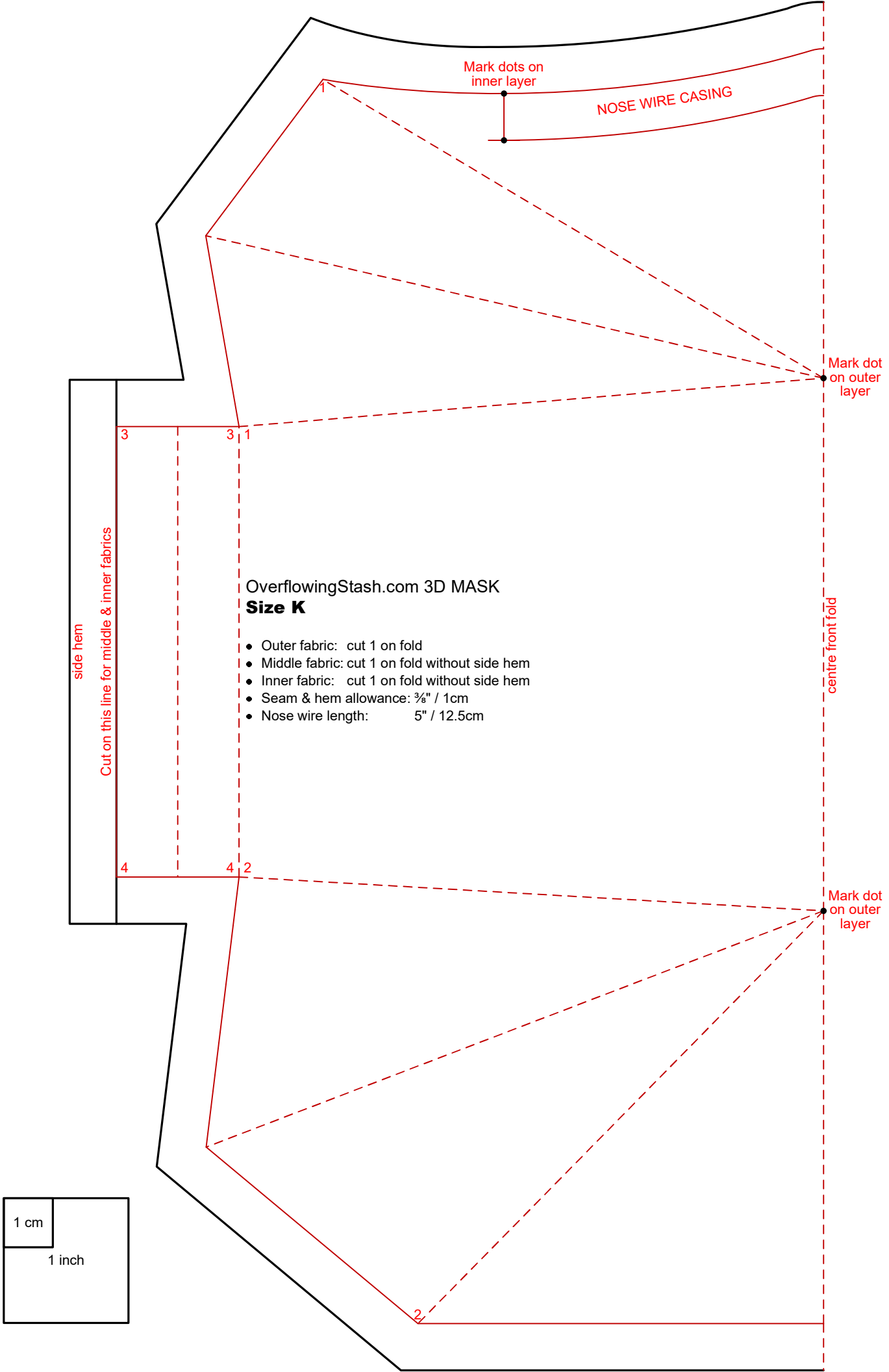

Mark dots on inner layer
NOSE WIRE CASING
1
Mark dot on outer layer
3
3
1
side hem
Cut on this line for middle & inner fabrics
centre front fold
OverflowingStash.com 3D MASK
Size F
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 4" / 10.0cm
4
4
2
Mark dot on outer layer
2
1 cm
1 inch


Mark dots on inner layer
NOSE WIRE CASING
1
Mark dot on outer layer
3
3
1
side hem
Cut on this line for middle & inner fabrics
centre front fold
OverflowingStash.com 3D MASK
Size G
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 4" / 10.0cm
4
4
2
Mark dot on outer layer
2
1 cm
1 inch


Mark dots on inner layer
NOSE WIRE CASING
1
Mark dot on outer layer
3
3
1
side hem
Cut on this line for middle & inner fabrics
centre front fold
OverflowingStash.com 3D MASK
Size H
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 5" / 12.5cm
4
4
2
Mark dot on outer layer
2
1 cm
1 inch


Mark dots on inner layer
NOSE WIRE CASING
1
Mark dot on outer layer
3
3
1
side hem
Cut on this line for middle & inner fabrics
centre front fold
OverflowingStash.com 3D MASK
Size I
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 5" / 12.5cm
4
4
2
Mark dot on outer layer
2
1 cm
1 inch


Mark dots on inner layer
1
NOSE WIRE CASING
Mark dot on outer layer
3
3
1
side hem
Cut on this line for middle & inner fabrics
centre front fold
OverflowingStash.com 3D MASK
Size J
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 5" / 12.5cm
4
4
2
Mark dot on outer layer
2
1 cm
1 inch


Mark dots on inner layer
NOSE WIRE CASING
1
Mark dot on outer layer
3
3
1
side hem
Cut on this line for middle & inner fabrics
OverflowingStash.com 3D MASK
Size K
Outer fabric: cut 1 on fold
Middle fabric: cut 1 on fold without side hem
Inner fabric: cut 1 on fold without side hem
Seam & hem allowance: ⅜" / 1cm
Nose wire length: 5" / 12.5cm
centre front fold
4
4
2
Mark dot on outer layer
2
1 cm
1 inch