A seed savers guide to sieves

Seed savers often face problems which could be solved by access to the right equipment, and in 2025 the Gaia Foundation launched a ‘microfund’, financed by the Kreitman Foundation, to address this. The Wales Seed Hub obtained a grant to make sets of sieves for their seed growers and to produce this guide. It includes details of materials and where to source them, how to construct the sieves, and our experiences of using them. We also made a video showing how to construct the sieves on YouTube

Why are sieves useful?



Sieves are a simple but essential tool for cleaning seed after harvest. They work when the size of the ‘chaff’ - the bits of stalk, seed pod and other debris - is different to the size of the seed. You can use sieves with holes that are bigger than your seed, so the seed goes through and the larger pieces of chaff are removed, or you can then use sieves with holes smaller than your seed to remove small pieces of debris and dust, leaving the seed behind. Sieves can also be used for grading seed into different sizes e.g. for removing small seeds which may lack vigour and reduce the germination rate of a batch of seed.
The terms ‘sieves’ and ‘screen’ are often used interchangeably, but in this guide we use ‘screen’ to refer to the perforated material which is on a ‘frame, and together these make up the ‘sieve’.



How many sieves do I need?

Most seed companies have a whole range, varying in the size and shape of the holes in the screen (woven mesh or perforated metal; round or slotted holes or 'herringbone' design). Wild Garden Seeds in the US, for example, say they have 75. For every crop, there is a ‘magic’ screen that is just right, so a good range is essential if you need to clean a lot of different crops quickly to a high standard. There are, however, a few sizes that are most useful, so start with these if you are growing just a few crops for seed.

Where do I get them from?

Sieves may be available in a variety of materials, including nylon, brass, steel and aluminium.
Start by looking in your kitchen or garden shed, and in hardware and charity shops for colanders, strainers, kitchen sieves, and other 'holey' items such as plastic trays with drainage holes, pond baskets, etc. It's surprising how many there are, and how effective they can be!





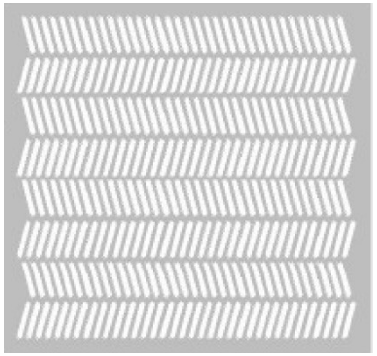
You can also buy specialist sieves online (used for accurate laboratory testing of soil samples etc), but these can be very expensive. A quick Google search will bring up many suppliers - Endecotts is one of the leading UK specialists.

Another option – the one taken by the Wales Seed hub - is to buy pieces of mesh or perforated metal and construct the sieves yourself. This is most flexible option as the materials are available in a whole range of specifications.

What should I look for?

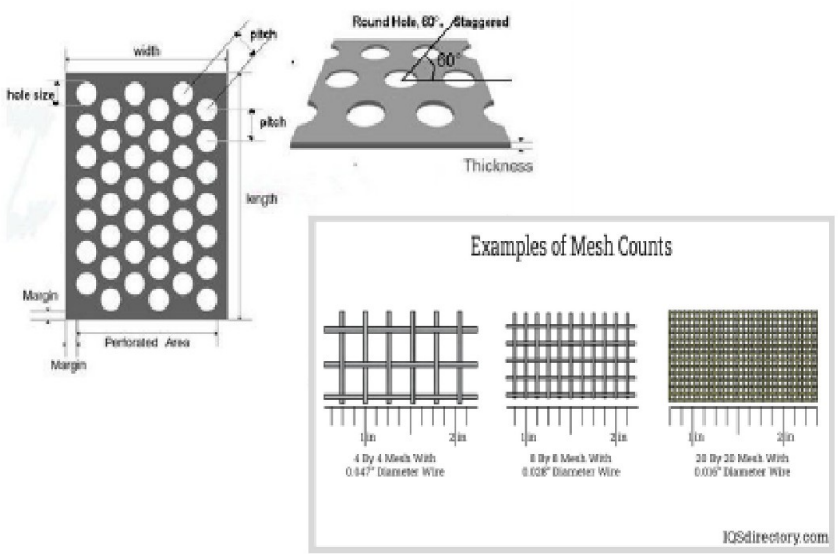
Size and shape of the screen holes

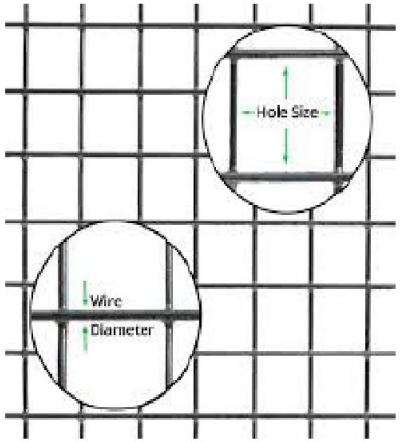
Mesh screens (square or approximately square openings) are the most commonly used for basic cleaning and the easiest to get hold of, particularly those with larger openings (say above 5mm. Soil sieves from a garden centre will work for this, for example.
Round- holed screens are said to be better for some seed-cleaning than mesh screens, but are more difficult to find. Screens with slots are even more difficult to come by, and finding those with a *herringbone pattern* is virtually impossible in the UK.



Comparing different materials, whether mesh or perforated metal, can be a bit of a mind twisting exercise because their specifications can be given in all sorts of ways:

- Measurements can be given in fractions of an inch, mm or microns.
- For mesh screens, the gap size could be given by the number of wires per inch or cm, and there will be different wire thicknesses which will determine how rigid the mesh is.
- For perforated metal, there could be different plate thicknesses, and also hole pitch – the distance between the centres of adjacent holes.





If you are constructing your own sieves, you can find many suppliers of 'wire mesh' and 'perforated metal' by doing a simple internet search. The Wales Seed Hub used the following companies as they were recommended to us:

- Mesh Direct for our wire mesh
- The Mesh Company for our perforated metal.

Our herringbone screen came from QC Screens in the US. There was an additional small bank charge for the currency conversion to dollars, but the process was straightforward and it was delivered quickly and easily.

Size and shape of the sieve

This will depend largely on what quantity of seeds you are cleaning and what you are sieving the material into. For example,





- It can be useful to have large sieves for the initial separation of bulk material that you collect from the plot, but they can be more difficult to shake.
- Smaller sieves might be ok for the final cleaning stages where quantities are smaller.
- Round sieves are easy to shake into round trugs as you can hold them low inside round sieves are easier to shake into trugs, but rectangular ones are easier to construct and to store.
- High sides on sieves can allow more material to be put in without it spilling, but not so high as to make the sieve unwieldy or be too heavy.
- Handles can help make shaking easier

Other considerations/if you are making your own

- Make sure your screen material is rigid enough – particularly for large sieves
- There should be no gaps for seed to get stuck, especially in the corners.
- For the frame material, wood is easy to work with and relatively inexpensive, and with 'planed smooth' timber, the seeds are less likely to get caught in the crevices. 'Rough sawn' timber is cheaper, but it takes time to smooth by hand. You could also use recycled plastic ‘wood’ .
- The screen material needs to be held securely, particularly thinner gauge mesh, which is far less rigid than metal plate. It is possible to screw the screen to the frame directly. However, stainless steel plate is hard to drill through, and drilling through mesh can force apart the strands making the hole size bigger. You can also get jagged edges. One answer is to use a wooden frame with a recess routed out along the bottom inside edge, allowing the mesh to fit inside the recess; you can then screw on a small base frame to sandwich the mesh without drilling through it and hold it securely.

Which are the most useful sieves?

This obviously depends on which seeds you are cleaning – the size and shape of the seed and the chaff. It is difficult to be prescriptive – experimenting is the key. A range of screens with openings (holes and/or mesh) from 1mm to 5mm is ideal – with as many in between sizes as possible. Overall:

- The smallest sized mesh screens (1mm) are useful for removing dusty chaff from most seeds and for very small seeds such as celery.
- The largest (5mm or more) will remove large chaff and let through most seeds.
- 2mm and 3mm screens are useful for many seeds – most brassicas and alliums, for example.
- 3mm- ≥ 8mm are useful larger seeds such leaf beet, beetroot, peas and sweetcorn.
- Slotted or herringbone sieves, if you can get them, are great because they will let through long thin pieces of chaff whilst retaining the seed, or conversely let through elongated seed whilst retaining slightly larger pieces of chaff.
- Combinations of sieves can be really helpful, for instance with lettuce seeds, using a fine sieve to remove dust and smallest seeds while retaining the viable seeds, and then the herringbone sieve which lets through the good sized lettuce seeds.

What the Wales Seed Hub chose and why

The brief

We have growers all over Wales, currently within three regional clusters. We wanted to provide a comprehensive set of sieves to each cluster, that the growers within it could use. This would be done by purchasing the screen material, then framing it with a wooden frame to make the sieve.

They would need to be easy to handle, transportable, robust and be able to be stored in a variety of conditions. Due to the number that would be produced, they would need to be easy to construct, and all be the same size, enabling efficient replication. Costs would also need to be kept to a reasonable level.

Materials

Stainless steel was chosen for the screen material as this was available in the widest range of sizes, is very strong, and won't rust, unlike mild steel. Galvanised steel and aluminium was also available for some sizes, but the galvanised coating would not have lasted, and aluminium would not be sufficiently robust.

Screen types and sizes

We decided on a selection of mesh sieves plus a selection of round-holed, perforated metal sieves, and one sieve with a herringbone pattern screen

- For the mesh sieves, the screens ranged from 1mm to 4mm, in increments of 0.5mm or the nearest available to this. There were no further options in terms of wire thickness for those sizes,
- For the round-holed, perforated metal sieves, the hole sizes of the screens ranged from 1mm to 4mm, in increments of 1mm. The pitch and / or plate thickness also needed selecting. We went with a standard thickness of 1mm for everything (which determined the pitch), making sieve construction easier.
- For the herringbone pattern screen, we chose a 1/2" x 1/26" (12.7mm x 1mm) screen. Frank Morton, renowned lettuce breeder from US, recommends as the 'magic' screen for cleaning lettuce seed. It is also recommended by Vital Seeds as '*jaw droppingly effective*'. This needed to be ordered from the US, and was only available in a 12" x 18" rectangular piece of plain steel.

Sieve shape and size

Although round sieves are easier to shake into trugs, these would have been too difficult to construct and not particularly easy to store, so from the beginning, rectangular sieves were planned.

The majority of UK suppliers sell wire mesh by the square meter, so making the sieves the same size as the herringbone would not be ideal, as each piece would yield 6 sieves, plus a 10cm off cut. We did not want to waste mesh, so went with eight pieces, each 50cm x 25cm.

This would leave surplus mesh for other similar sized sieves, should these be needed. Perforated steel also comes in metric sizes, so two standard 50cm x 50cm pieces would yield four 50cm x 25cm pieces, again with no off cuts.

A 50cm x 25cm sieve would be easy to handle, and could be shaken into a large watering tray. Many growers already have these to hand, however they are easily purchasable from garden centres at a cost of around £10-£20.



Sieve design

The sieve design itself needed to be simple and easy to construct, not too costly, and above all, effective!
We chose wood for the frames as this was easy to work with and relatively inexpensive, selecting 'planed smooth' timber so the seeds would be less likely to get caught in the crevices. 'Rough sawn' timber was cheaper, but it would have taken too long to then smooth it by hand.

The overall design was for a basic wooden frame with a recess routed out along the bottom inside edge, allowing the mesh to fit inside the recess. A small base frame would then be screwed on, sandwiching the mesh to hold it securely. The recess depth would exactly match the width of the mesh, ensuring both frames would fit tightly together and there was no gap for seed to get trapped. If necessary, the sieve can be partly deconstructed and put back together with relative ease, allowing a proper clean.
The finished sieve measures approx 54cm long by 29cm wide and is 12cm high. Its internal dimensions, where seed can be held and shaken, are 48cm by 23cm by 10cm – about 11 litres.

Our sieve design can be seen in appendix 1.

Making the sieves

You need a certain amount of DIY skills and equipment for making these sieves – if this puts you off, you could think about asking a local community workshop to make them for you. The equipment needed includes:

- Tin snips (for mesh screen)
- Angle grinder (for metal plate)
- Chopsaw. mitre saw or mitre block
- Pillar drill or drill stand
- Rabbeting bit
- Stanley knife and chisel
- Roundover router bit

Below are detailed guidelines for construction, and you can also watch the accompanying YouTube video

Cutting the screen material.

Unless you size your sieves according to the availability of materials, it's likely you'll need to cut your metal. For mesh, this is a relatively straight forward process using a pair of tin snips, that can be bought from most hardware stores for a few pounds. If the mesh is thin and lightweight, a pair of heavy duty scissors will also work.





Perforated metal is essentially a piece of metal plate, with holes punched through it. Metal cutting blades are available for a wide variety of power tools, e.g. a jigsaw, but if you're using stainless steel, which is very hard, you're likely to blunt your blade before you've cut even a few inches. The best thing to use therefore is an angle grinder. They're surprisingly simple to use, even for a beginner, or you ask a friend or neighbour with one to help you out – it's a quick and easy job.

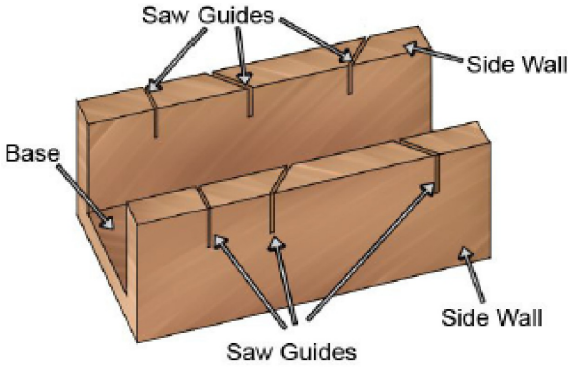
Try and be as accurate as possible when marking up, as there won't be much flexibility later on, and make sure you measure the metal you've been supplied with in the first place, as you may not get the exact size you ordered. Some companies give a little bit extra, so simply cutting in half what you think is a 500mm piece of metal may give you two pieces that turn out to be more than 250mm.

Cutting the wood.

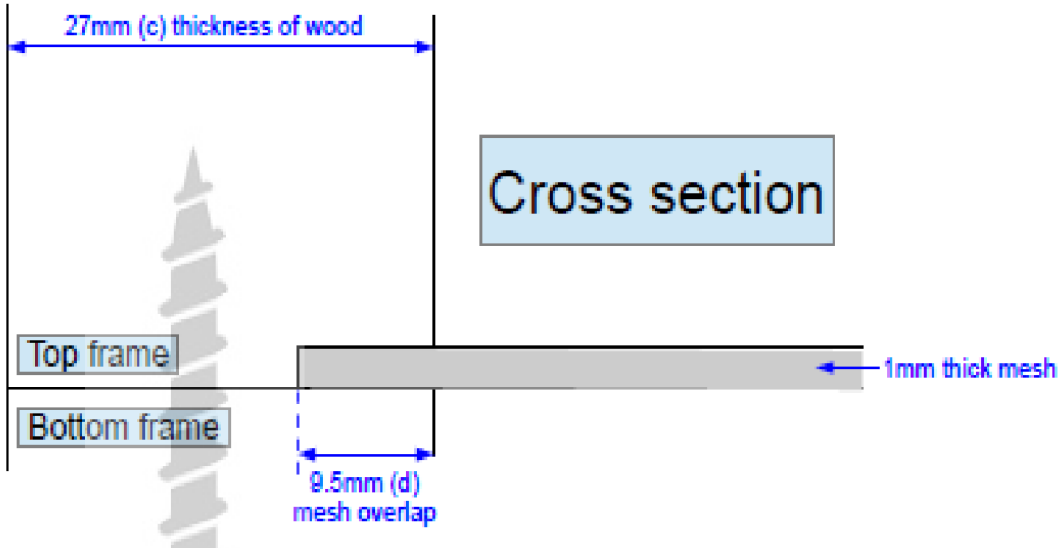
The accuracy of your cuts is key to your finished sieves. Again, metal has no flexibility, so any 'adjustments' due to a slightly off angle will result in gaps when the pieces of wood are screwed together, allowing seed to get stuck.

A chop saw, or mitre saw will ensure your angles are all dead on 90 degrees, and if you don't have either, a mitre block is fine, and can be bought from a hardware shop for a few pounds.





When you calculate the lengths of wood needed, you'll need to take into account the thickness of your wood, and how far the wood is overlapped by the mesh. i.e. how far in you make your recess.



We decided on 27mm thick wood and a 9.5mm overlap. The diagram shows how the top and base pieces fit together around the mesh and are held with screws. Stainless steel plate is too hard to drill through without anything other than specialist and expensive drill bits. It's also time consuming and messy as a cooling lubricant would be needed. Drilling through mesh may either force apart the strands making the hole size bigger, or even pull individual strands out completely if they wrap themselves round the drill bit. The screw therefore had to be outside of the metal, so the wood needed to be thick enough for this to be done without splitting it. In addition the mesh overlap needed to be big enough so the mesh did not simply push out of the frame if pressure was applied to it.

The diagrams in appendix 2 show how you then use this information to calculate the lengths of wood you'll need. Note that the long and the short lengths of the pieces for the bottom frame are the opposite of those for the top frame. This ensures the corners overlap, giving the sieve additional strength. In terms of width, timber can be purchased in the width required, or if you prefer, you can buy wider board, and rip it down to get the narrower pieces for your bottom frame, which ensures both frames are the same thickness.



If you're making quite a few sieves, it's worth taking a bit of time at the beginning, to set up your workspace and equipment so you can 'mass produce' as efficiently as possible. For example, using a stop block with your saw, fixed at the length you require, means you don't have to measure each individual piece of wood.

Once all the pieces of the same length have been cut, you can move your stop block and cut the next ones.

Drilling your wood

The accuracy of your screw holes will also help ensure your sieve is perfectly square, so here a pillar drill is useful. If you don't have one, a stand that you can simply fix your drill to can be bought for under £20.







If this is cost prohibitive, then simply try and be as accurate as possible when drilling by hand. It's also helpful to make a 'jig', so you can drill in the same place each time. You'll see in the previous cross section diagram that the screws need to be slightly offset to ensure they don't hit the mesh. This can be as simple as a block of wood and some guide lines on the base.

Once you've drilled your holes, you'll need to countersink them. This allows the screw to penetrate further into the wood and the screw heads to disappear easily into the wood so you don't catch anything on them. Without countersinking, there's a temptation to over tighten the screws to get the same result, potentially splitting the wood.

For the top frame, make sure you countersink the hole on the poorest / roughest side of the wood as these will be facing outwards when you assemble it. The nicer, smoother sides will then be on the inside, where the seed will go.







Assembling the top frame.

Another jig here is helpful as it will ensure your frame is perfectly square when screwing it together. Old, cut down kitchen or bathroom cabinets are great for this kind of thing as they're machine manufactured, so already perfectly square.



When you put your pieces of wood together, make sure the nicest, smoothest sides are facing inwards, and your countersunk holes are facing outwards. Sand the edges of the cut ends if there are any rough bits.





You then need to make sure all the top edges are flush with each other, so you're starting with a completely flat surface when making your recess for the mesh. To achieve this, raise each end that needs it, by putting something under it – paper, a plant label, or flat shim, depending on the thickness required.

Check the whole top by putting a ruler across, then clamp the wood to the jig before screwing it together. Make some good sized holes in the jig to put the screws through.



Adding the mesh.

You're going to need to make the recess for the mesh using a router with a rabbeting bit. You can adjust the ball-baring on the bit to give you the required recess width, in this case, 9.5mm; and adjust the bit within the router to give you the required recess depth, depending on the thickness of your mesh, in this case, 1mm.





You'll need to sit the router base on something to ensure your recesses remains at a constant depth the whole way along, so construct a wooden box that's a couple of inches smaller than the frame, but is the same height, then wedge it in the middle of the frame so it can't move. Again, you can make fine adjustments to the height using bits of paper or plastic to raise specific areas, checking the whole top by putting a ruler across.

You can then rout out the recess on the inside edge of the top frame.



The corners will be rounded, but you can simply cut in a proper square corner with a stanley knife, and chisel out.





Take out your inner wooden box, then raise the whole top frame up by the depth of your recess, using flat shims. Put back the inner box, which will now be 1mm lower than your top frame. This gives your mesh something to sit on when you put it in the recess; particularly useful for thinner, more flimsy mesh which can sag.



Fit your mesh into the recess, ensuring a good fit. If it overlaps slightly for any reason, you can cut away more of a recess using the stanley knife and chisel. If required, you can staple the mesh in place within the recess, again particularly useful for thinner, more flimsy mesh, where there's more of a risk of it being pushed out of the frame.



Adding the bottom frame

You can now simply screw the pieces for the bottom frame into position, checking that the offset holes are nearest the outside of the frame, ensuring the screws don't hit the mesh.





Finishing

Finish off the sieves by using a roundover router bit on all the top and side corners to give smooth, rounded edges. This makes the sieve nicer to use in your hands, negating the need for handles. The bottom edge where your hands grip underneath the sieve can be routed too.

Wood it a natural product, and the sieves have been made by hand, so it's likely that there will be some joins that aren't quite flush. If required, these can be planed smooth. You may also find that despite your best efforts, there are some gaps in the corners where seed may get stuck. Here you can use some decorator's caulk to fill in, smoothing off to give a nice finish. You may want to give the whole sieve a quick sand once complete. Don't forget that the bottom frame can easily be unscrewed and the mesh accessed / removed should any stuck seed need to be brushed out.

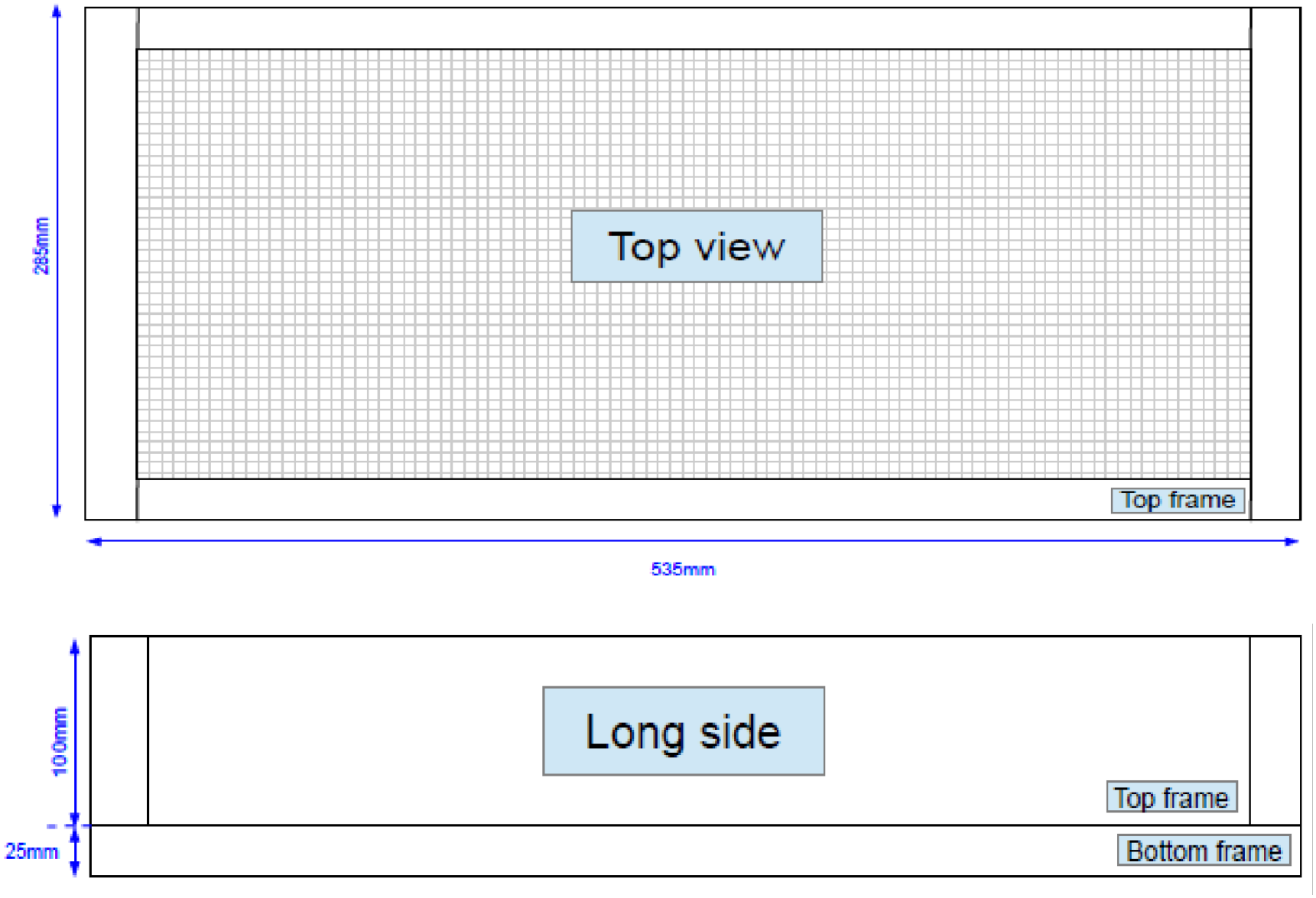
Enjoy your new sieves!

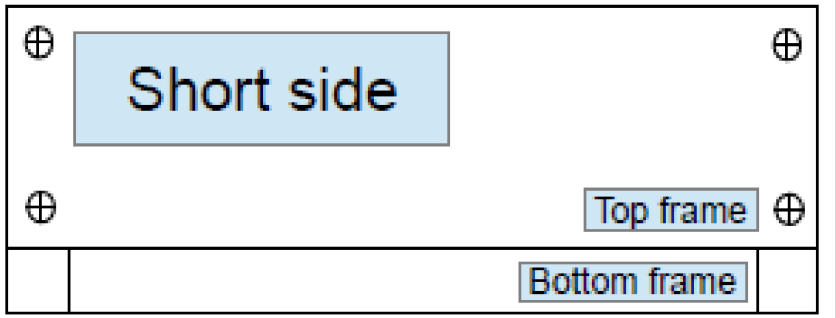


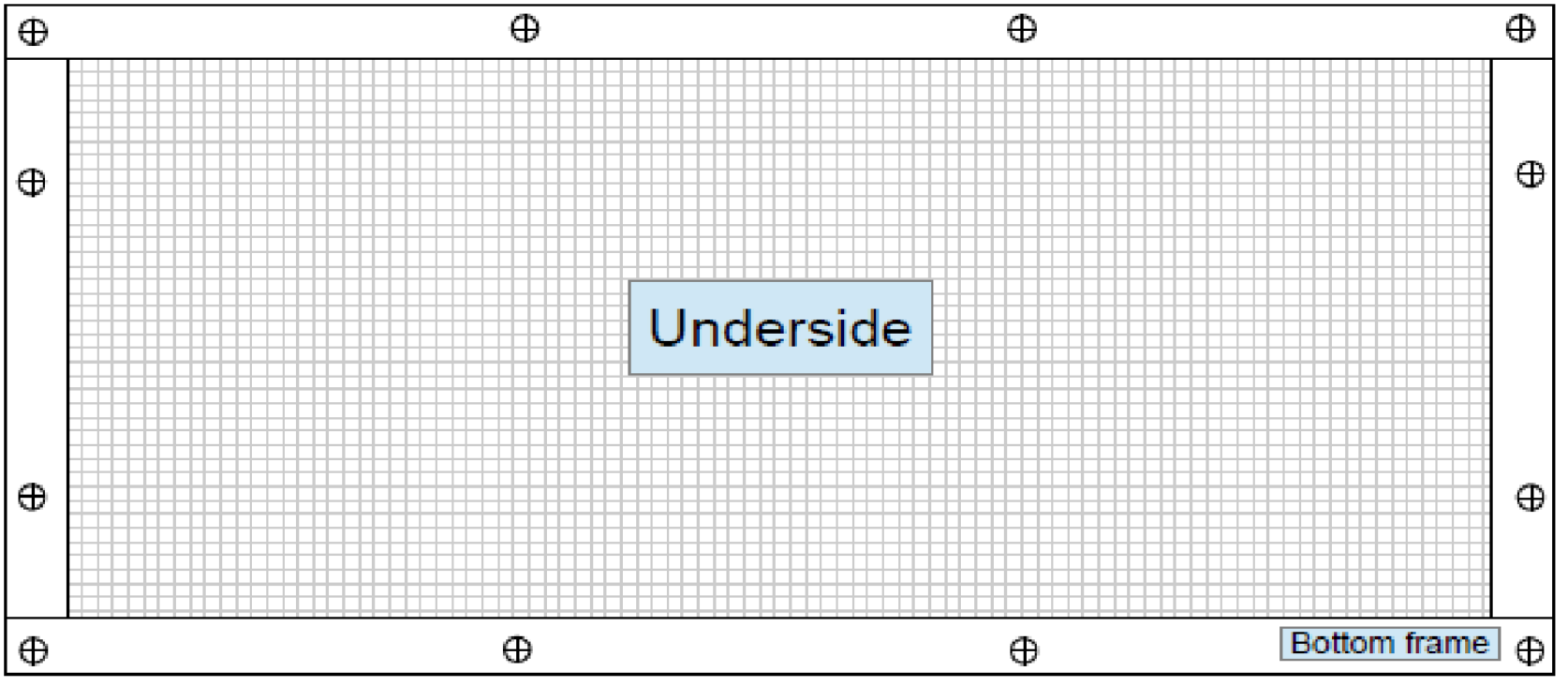




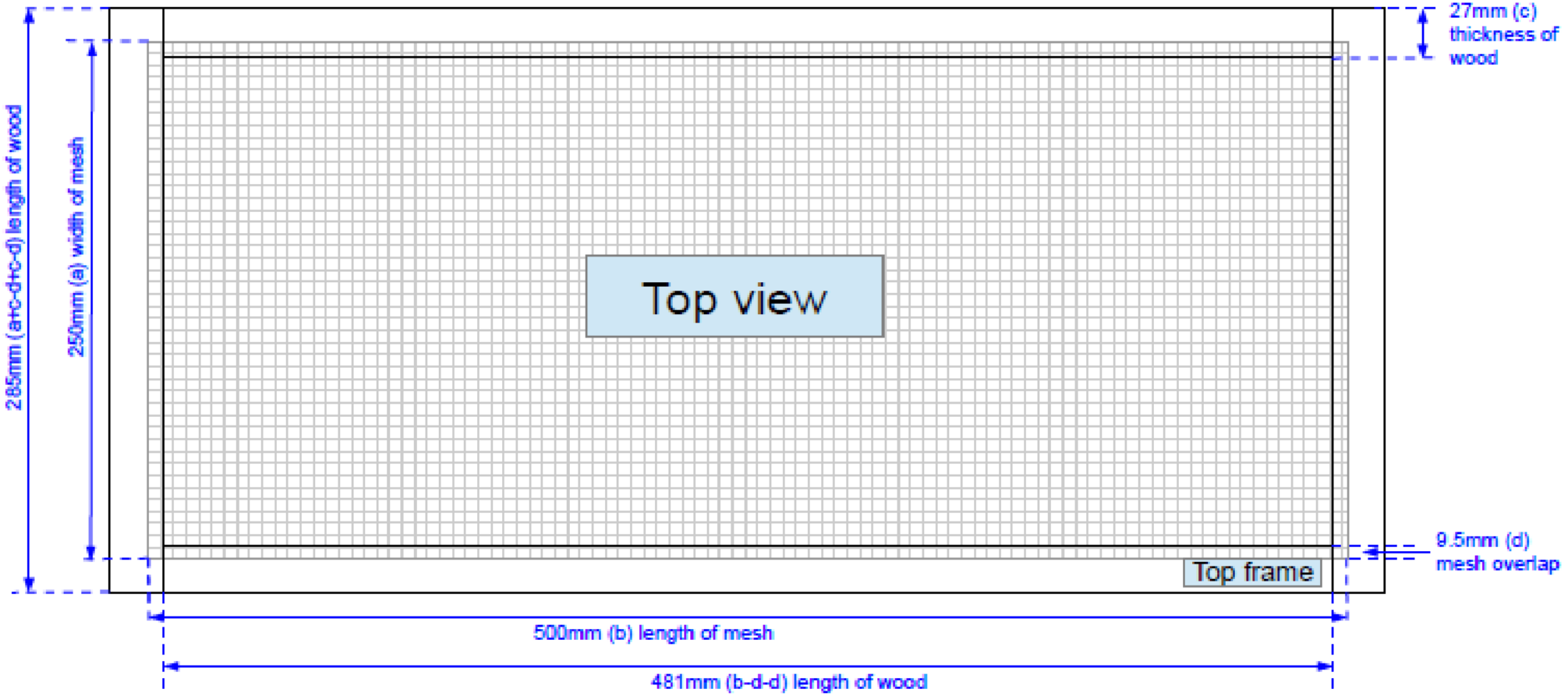
Appendix 1 – Sieve Design

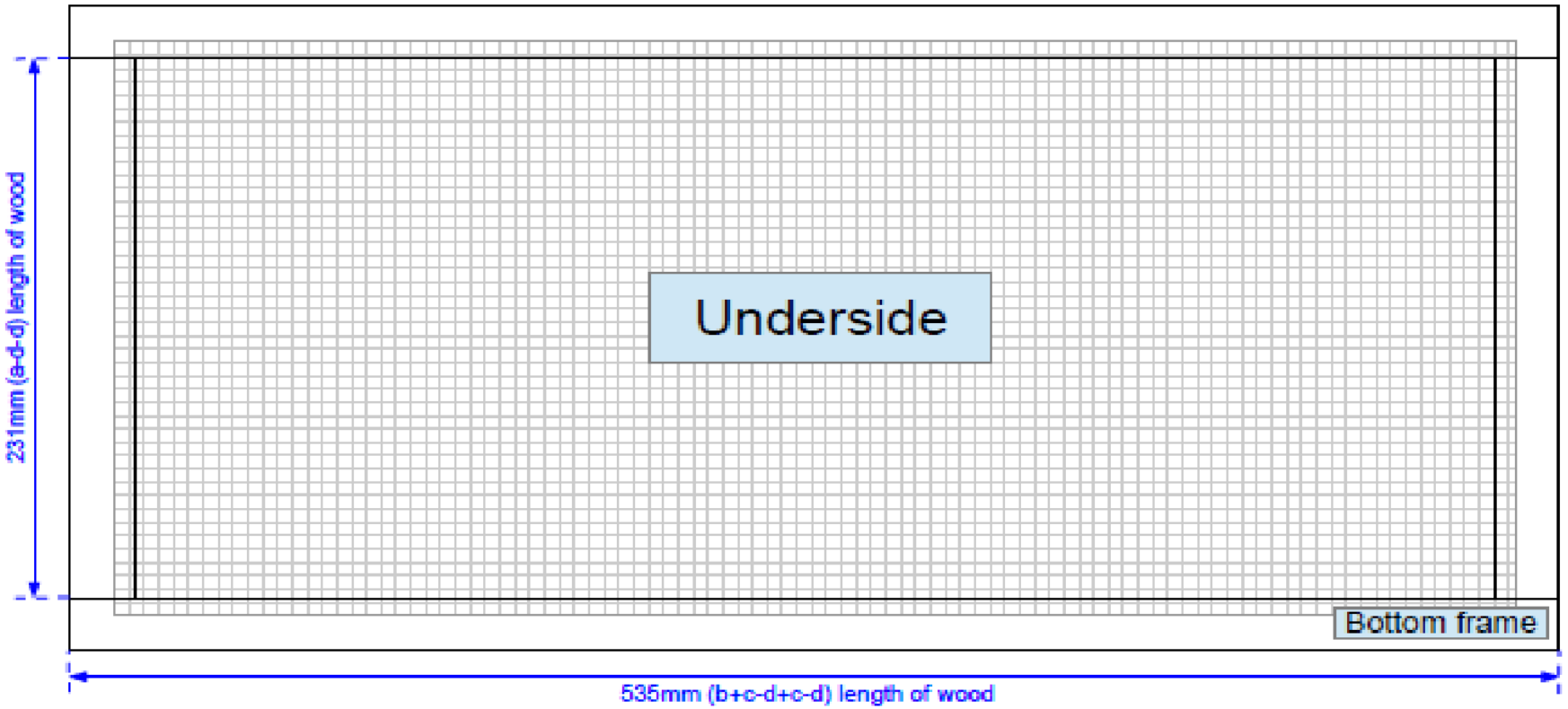



Short side
Top frame
Bottom frame


Underside
Bottom frame

Appendix 2 – Calculating wood lengths




231mm (a-d-d) length of wood
Underside
Bottom frame
535mm (b+c-d+c-d) length of wood