Super 120 System Magazine

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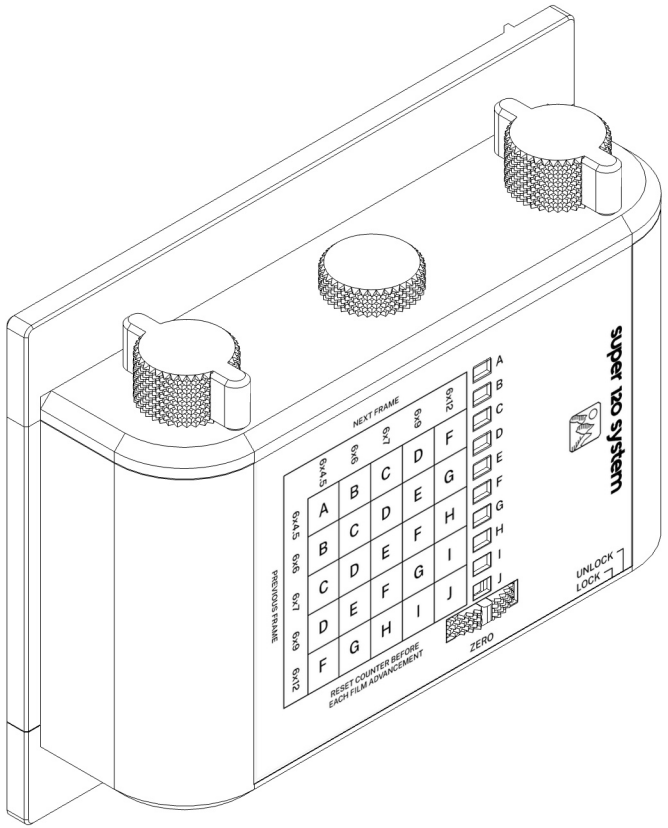

Assembly Guide

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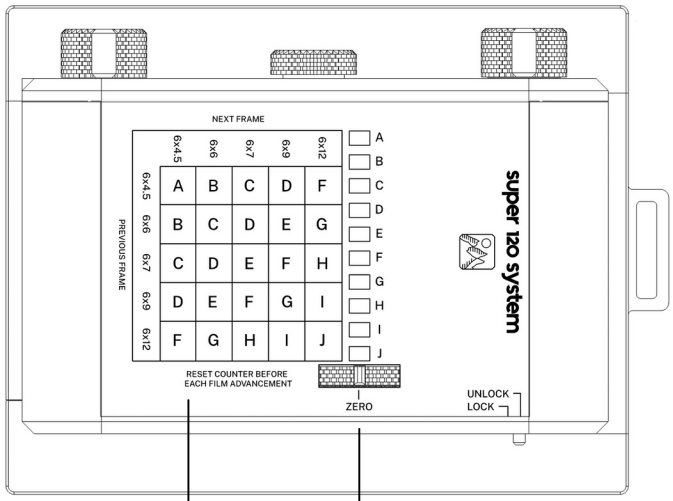
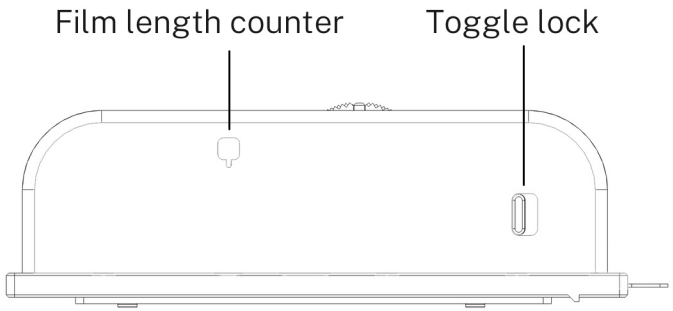
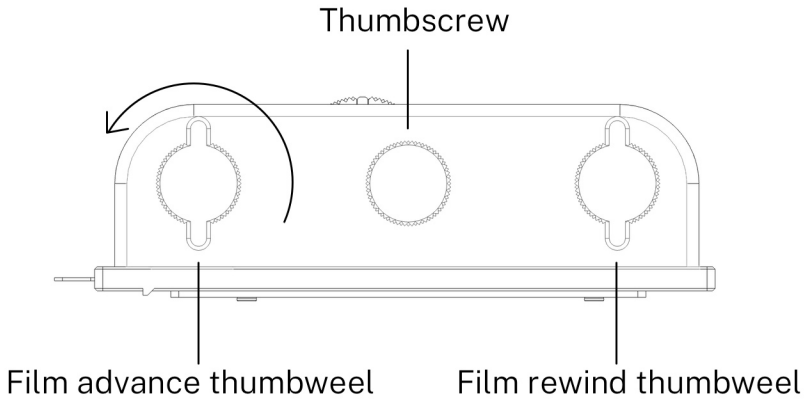
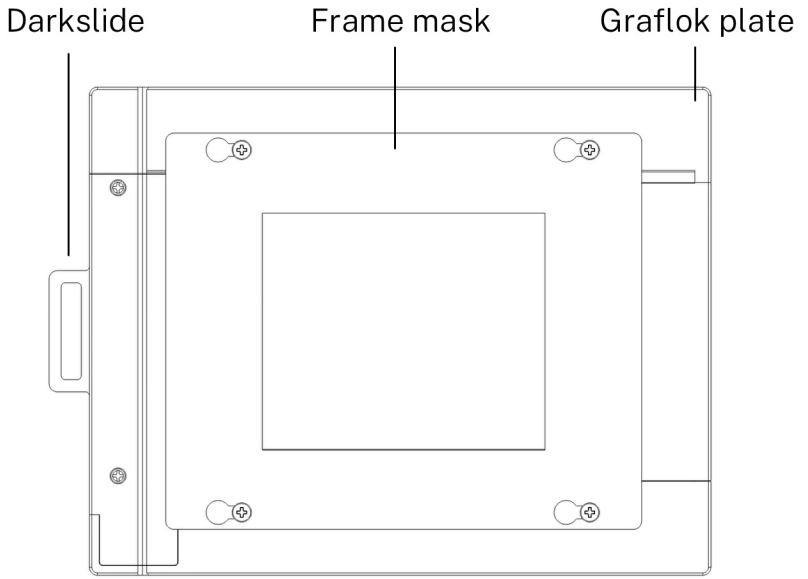
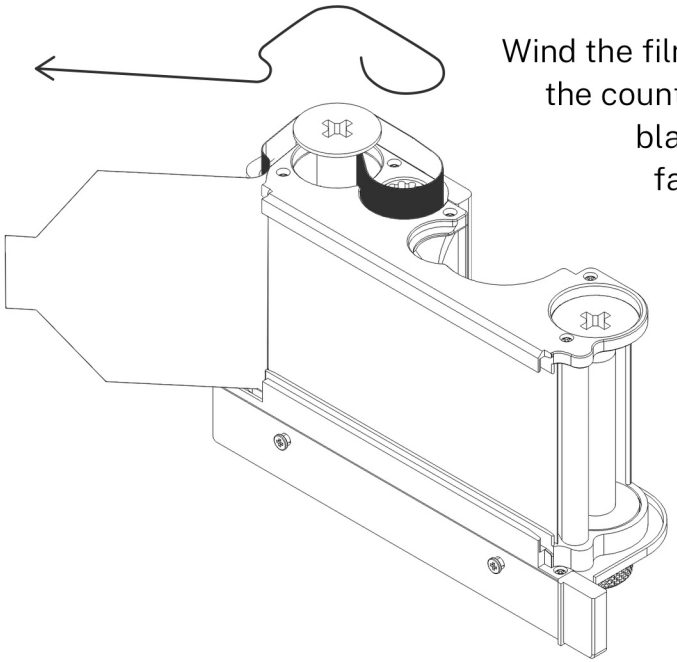
1. Overview and Workflow





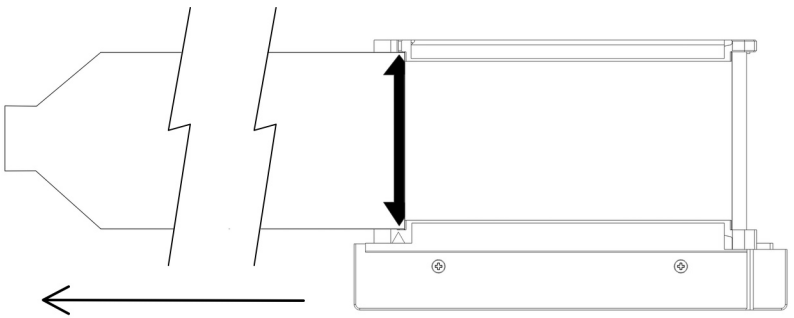




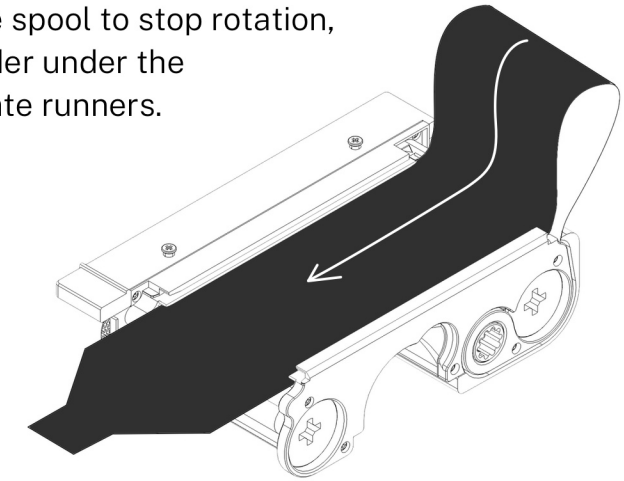


1.
Wind the film around the counter roller, black paper facing out.

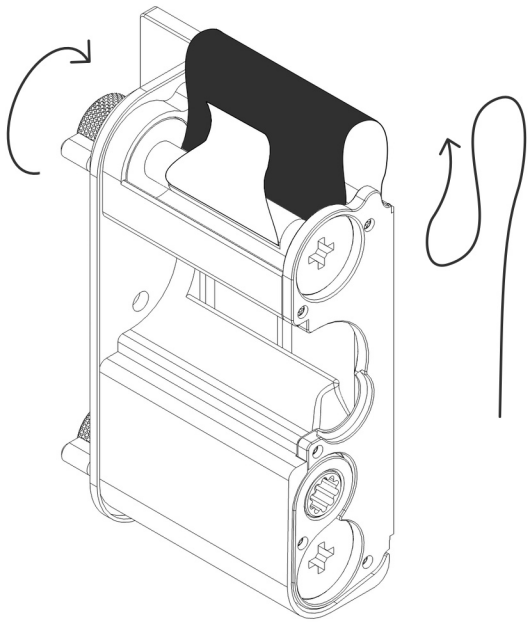
2.
Pull the leader through and align the start arrow with the arrow on the spool block body.

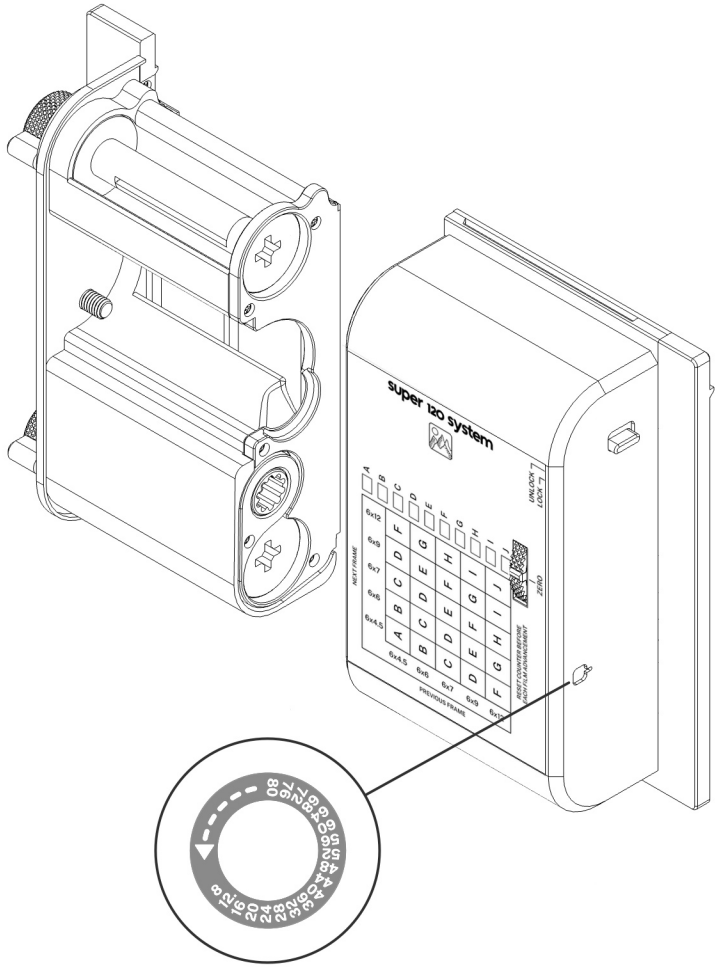


3.
Pinching the spool to stop rotation, pull the leader under the pressure plate runners.

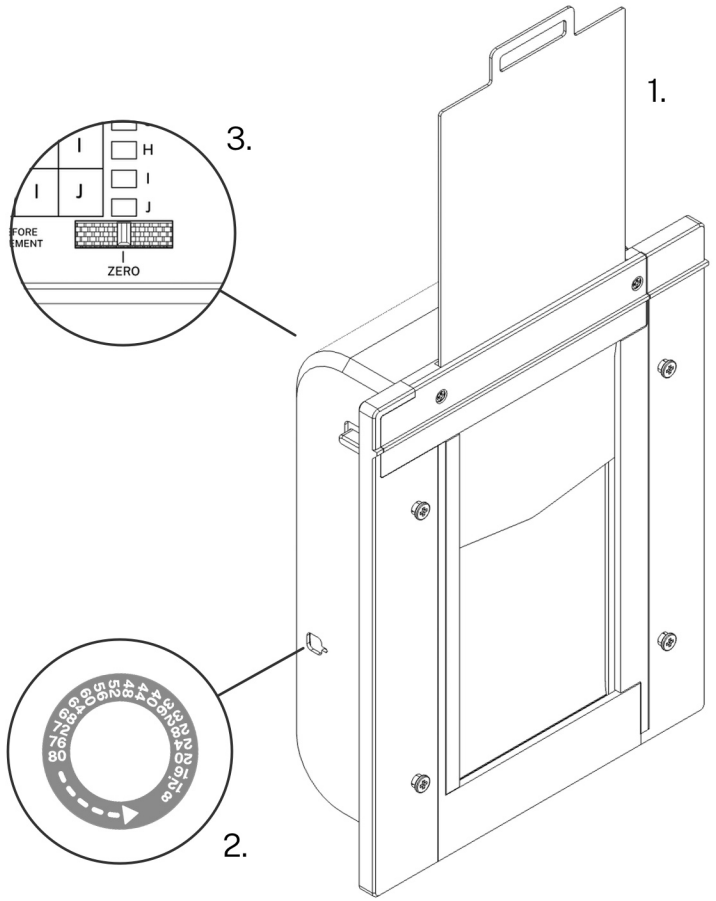


4.
Still holding the lower spool, feed the leader into the empty spool and wind on tightly, anti-clockwise.





5.
On the magazine shell, rotate the counter disc to the start arrow.
Then join the two halves and secure with the thumbscrew. Do not over-tighten the thumscrew.



6.
Insert the darkslide, then turn the advance thumbwheel until the first number appears in the counter disc window.
Ensure the counter drum is locked and rotated to zero, then attach the desired mask.
The magazine is now ready for shooting.

1. Overview and Workflow

The Super 120 allows you to shoot multiple aspect ratios on the same roll of film.

This is achieved with a mechanical counter, which displays the film advancement in a row of indicator windows.

When the film is first loaded and wound on, the film length counter will display the first value *(100% or 80cm).*
This should have enough film on the plate to fill 6x12, although be aware that some older films may vary.

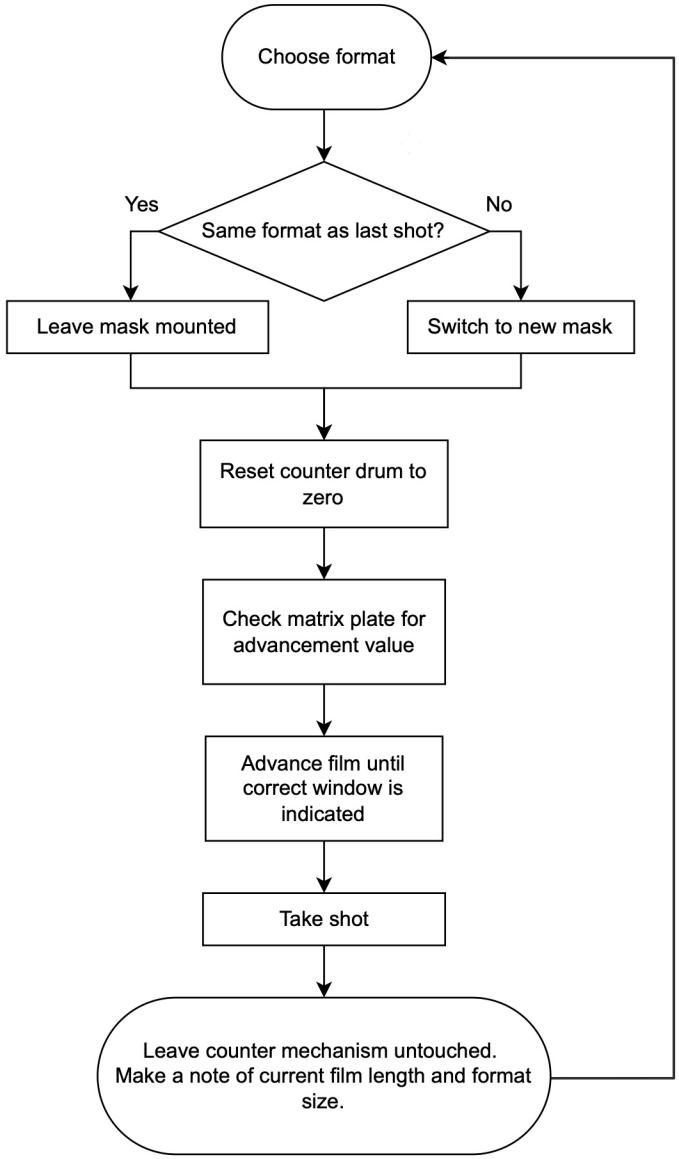
Subsequent frame advancements are calculated by resetting the frame counter drum, and winding the film advancement dial until the desired indicator window is filled.

Before each new advancement, the frame counter drum is reset. The matrix plate enables you to calculate how far the next frame should be wound.

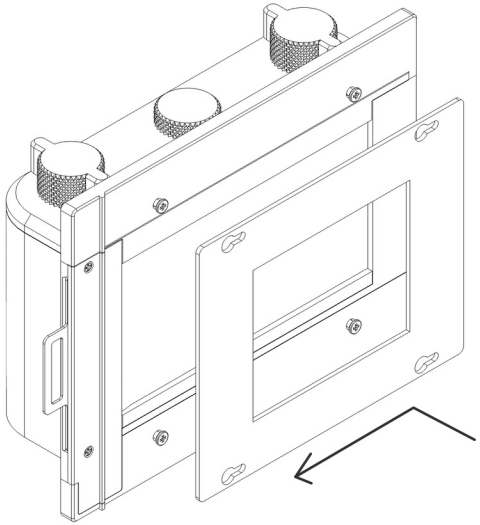
Whether you are sticking to one aspect ratio, or changing between them all:
the counter mechanism is always operated the same way.

For video demonstrations of loading film, switching masks and shooting with the Super 120 System, please visit the Intrepid Camera website.

Advancing Frames and Switching Formats



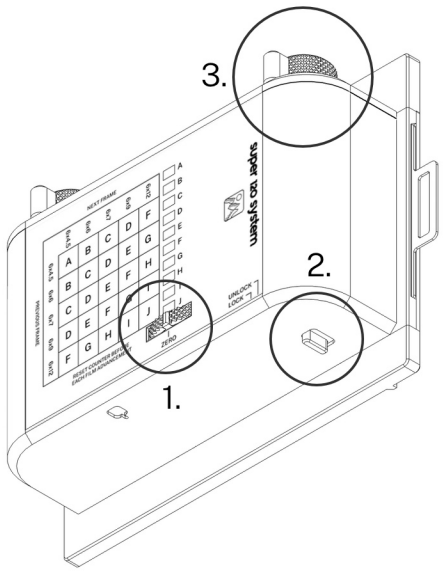
1.
Fit the desired frame mask onto the magazine



2.
Make a note of the previous frame size, then reset the counter drum to zero.

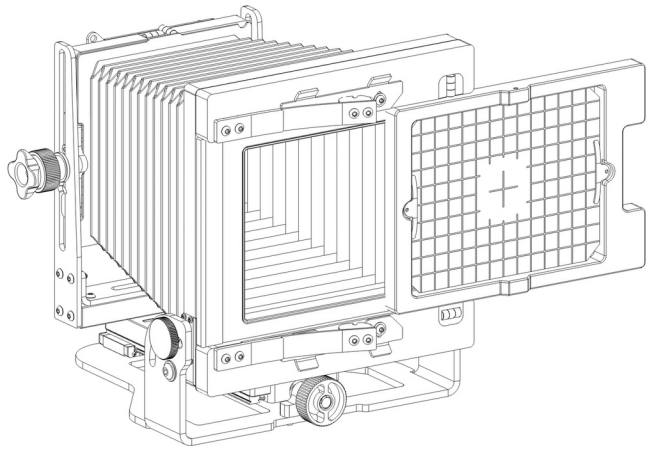
Unlock the counter mechanism, and advance the film to the correct value, referencing the matrix plate.

Lock the counter before shooting.



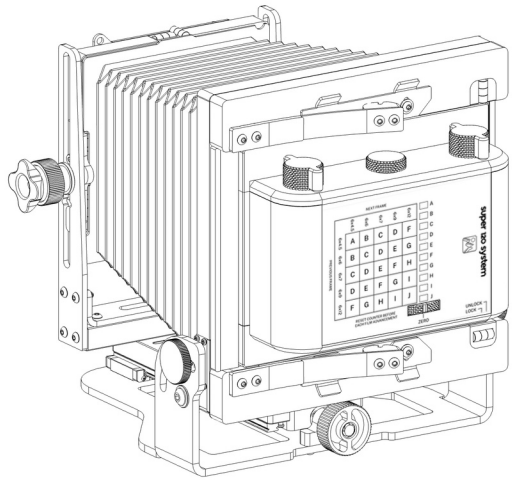
3.
Compose on the ground glass as usual, referencing the frame guides.

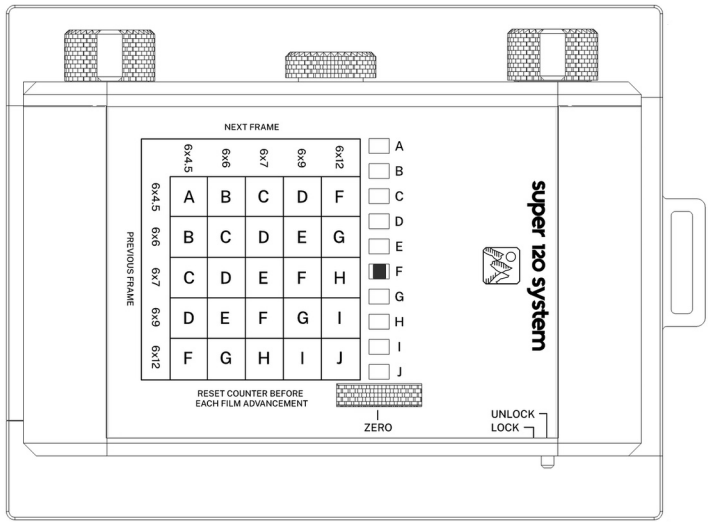
Remove the ground glass when ready.



4.
Fit the Super 120 Magazine into the camera.

Secure with Graflok clips, remove darkslide when ready to shoot.





After re-inserting the darkslide, ensure the toggle is locked.

Leave the mask in place, and the counter window in its last position. This will help you keep track for the next frame.

Recommended practice is to reset the counter just before each advancement, so that you don't advance a blank frame, or cause a double exposure.

Reference the film length counter to get an idea of how much film is remaining.

It's also a good idea to keep a note of your shots, especially if switching between many formats.

Format	Actual Size (mm)	Advancement Value (mm)
6x4.5	56 x 42	46
6x6	56 x 56	60
6x7	56 x 70	74
6x8	56 x 76	80
6x9	56 x 84	88
6x12	56 x 112	116

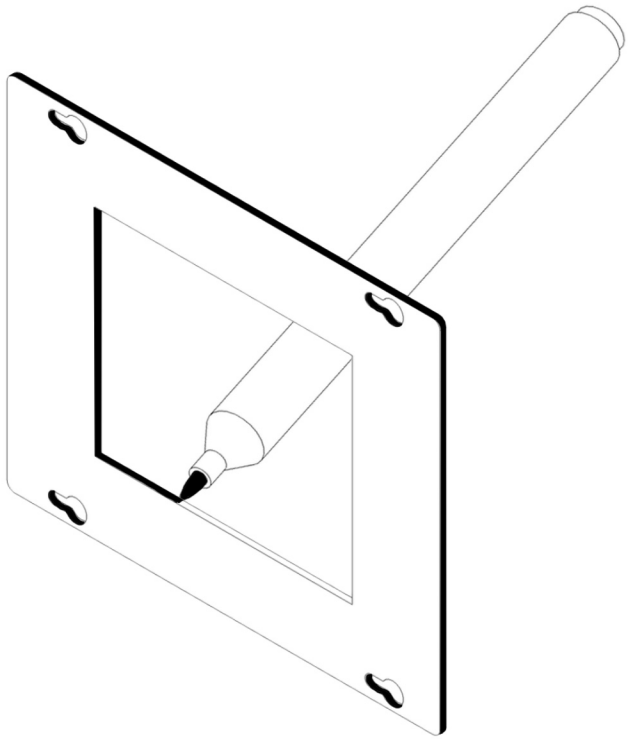
Although medium format has standardised nominal sizes, this table lists the exact frame dimensions of the Intrepid Super 120 System.

This may be useful for darkroom work, or if you would like to calculate accurate usage of your film; perhaps for double exposures or very narrow frame spacing.

The Super 120 System opens up many options for creative and technical exploration.

2. Assembly

Note: if at any point you are unsure of a part, the bill of materials with part names can be found at the back of this booklet.

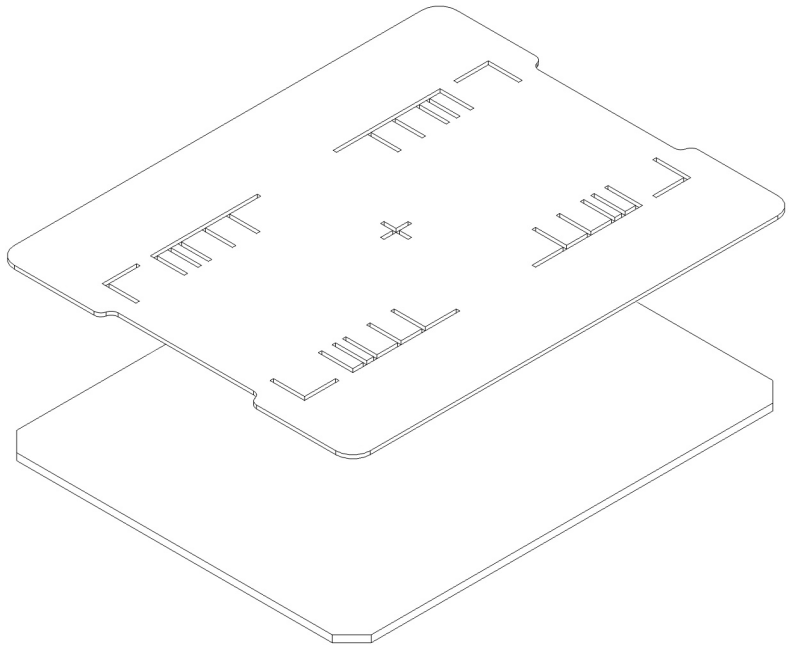


1-1.

Use the permanent marker to black out the edges on the fibreglass components: the darkslide, frame masks and matrix plate.

This is especially important on the insides of the frame masks, as it will prevent reflections or glare in your photographs.

Part Preparation



1-2.

Remove the ground glass from your camera.

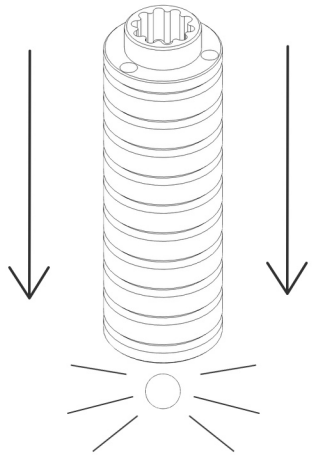
On the matte side of the glass, place the frame stencil.

Using a sharp pencil, draw directly onto the glass to mark the frame edges. This will help you to compose accurately.

The frame markings match the masks supplied with the kit:

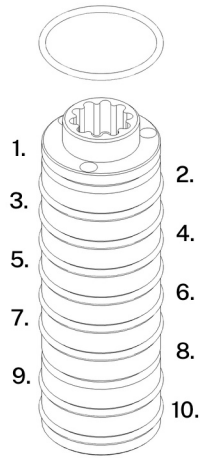
6x4.5, 6x6, 6x7, 6x8, 6x9 and 6x12.

Frames are all centered, which avoids needing lens movements for a sharp centre frame.



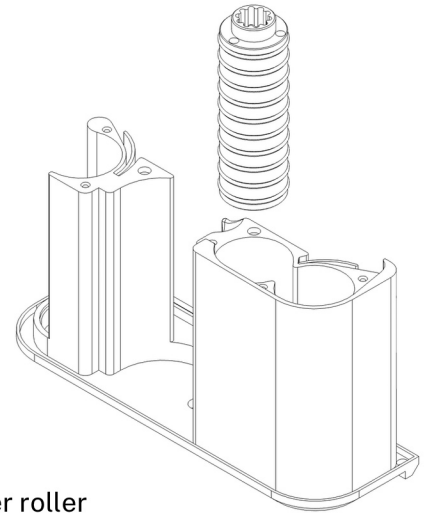
2-1.

Place a 6.35mm ball bearing on a hard surface, press the yellow counter roller onto it with force. The ball bearing will snap into place.



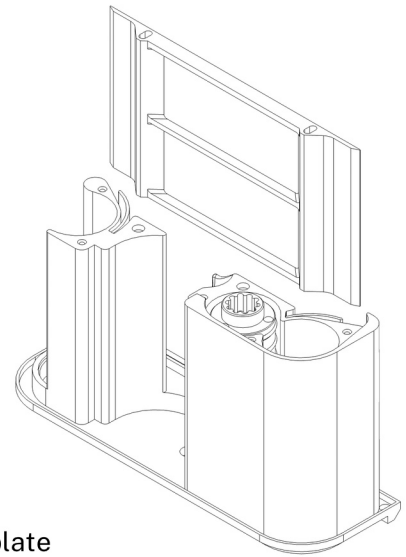
2-2.

Roll an O-ring into each of the counter roller grooves.
Spares are supplied in the hardware bag.



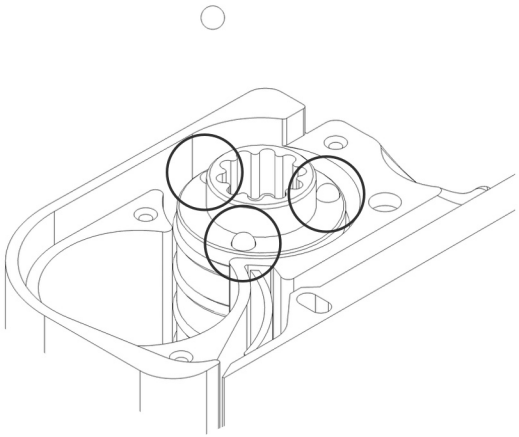
2-3.

Drop the counter roller into the spool block.



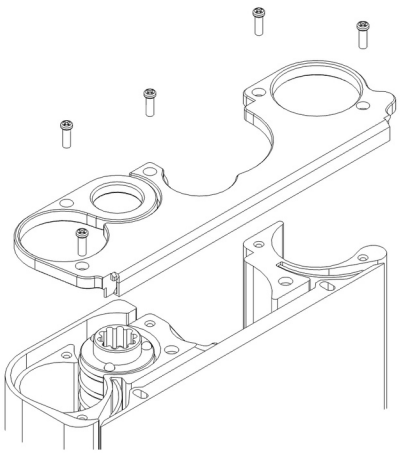
2-4.

Fit the pressure plate into the spool block.



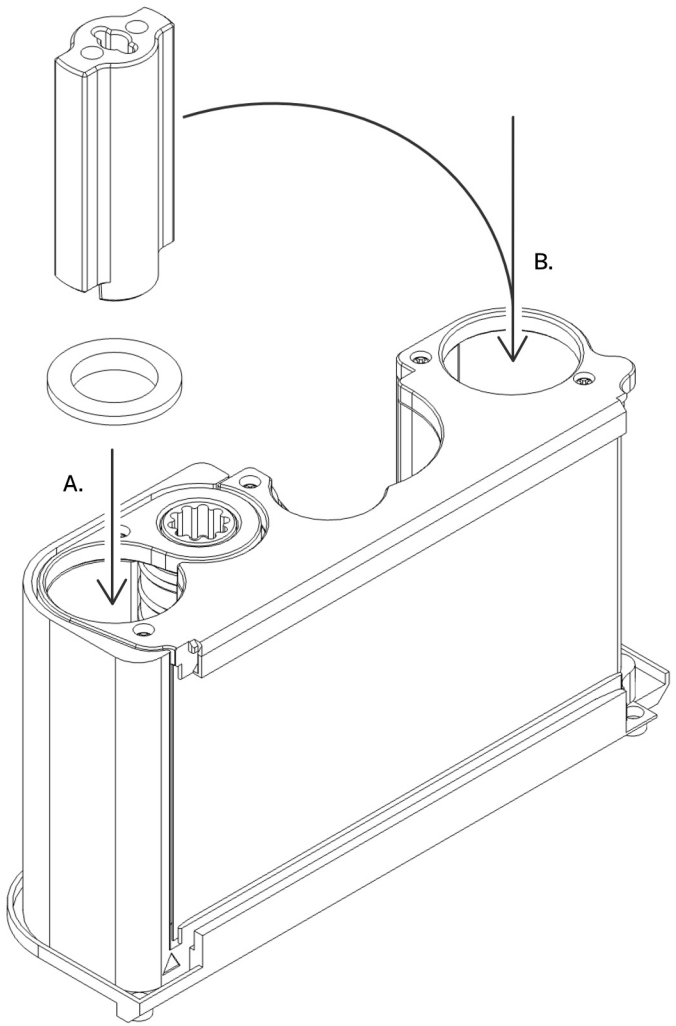
2-5.

Carefully place 3x 3mm ball bearings in the divots on the counter roller. This step can be fiddly, tweezers may help if you have some. Spare ball bearings are supplied in the hardware bag.



2-6.

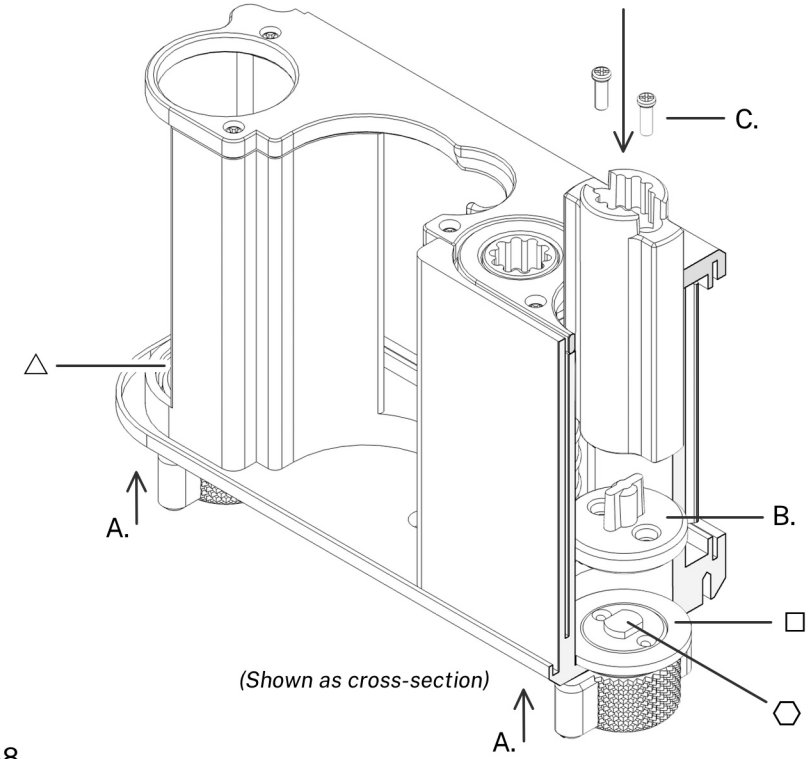
Fit the block cap in place, making sure not to dislodge the 3mm ball bearings. Screw it in place with 5x 2mm screws. Check that the counter roller moves freely, adjust the nearby screws as necessary.



2-7.

Using the assembly tool, press a nylon shoulder washer into each spool chamber. Ensure the washers are fully seated.

Turn the spool block upside down to drop the assembly tool out.



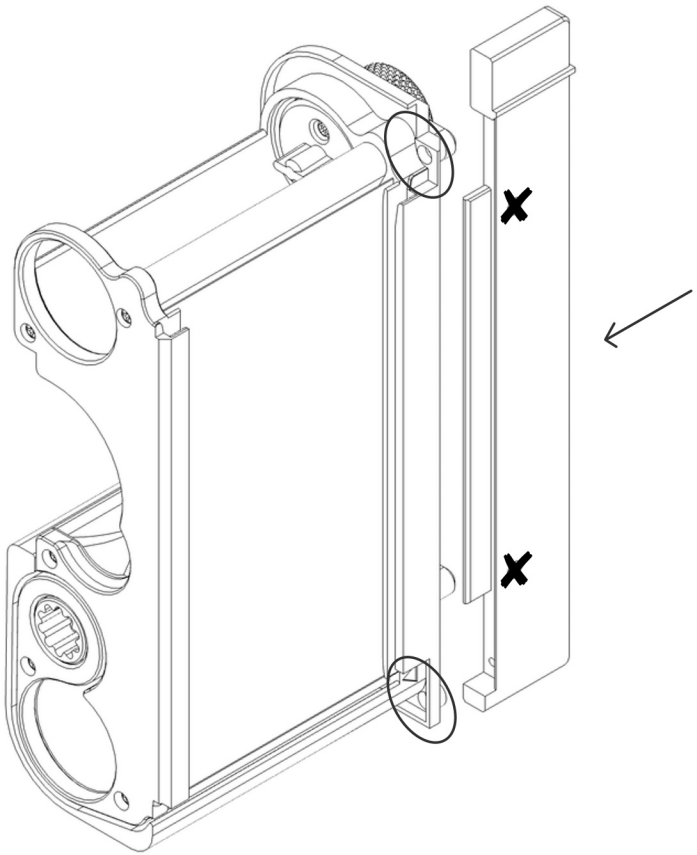
2-8.

A. Insert the advancement thumbwheel up into the washer.

B. Attach the spool key to the end of the assembly tool, and lower it into the spool chamber. Turn until the alignment stub(⬡) fits together.

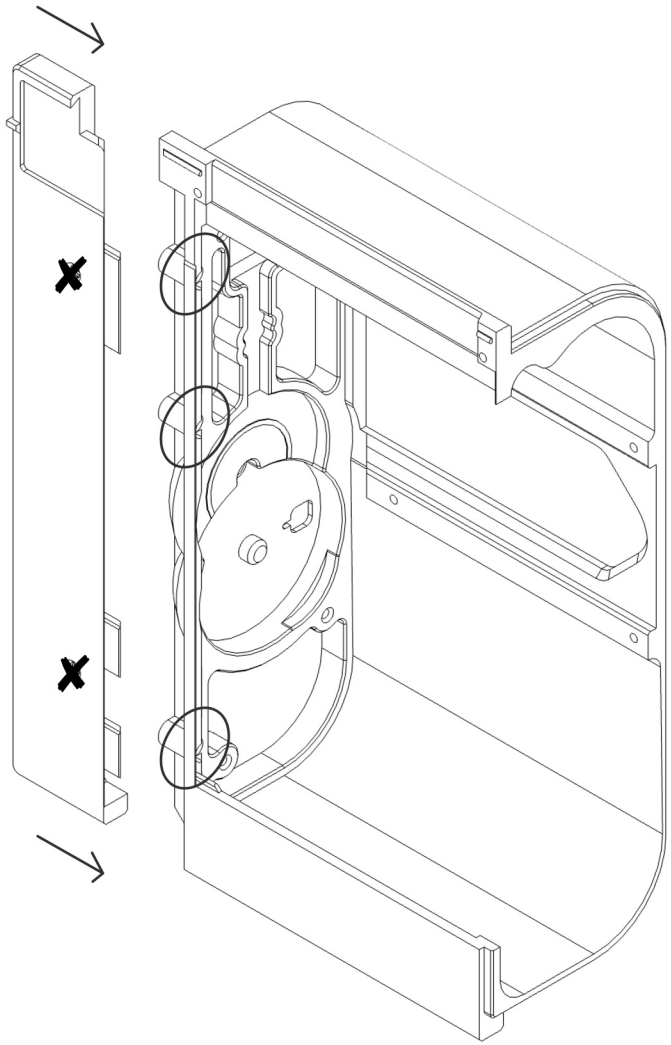
C. Using the magnetic tip of the screwdriver, drop 2x 2mm screws down the two holes of the assembly tool, and screw the spool key to the advancement knob. Remove the assembly tool by flipping the block over and tapping it out.

Repeat for both spool chambers (△ □).



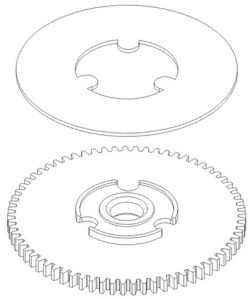
2-9.

Snap the spool block Graflok wing into place, and secure with 2x 2mm screws, ensure the screw heads are fully seated and not protruding.



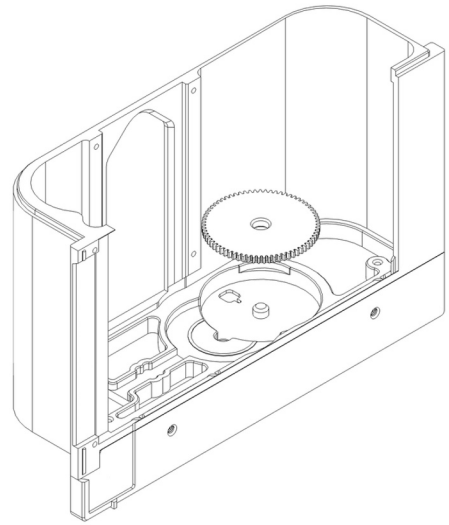
3-1.

Snap the magazine shell Graflok wing into the magazine shell, and secure with 3x 2mm screws through the shell.



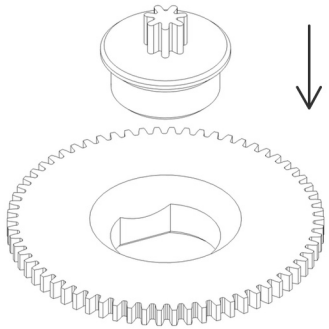
3-2A.

Press-fit the printed counter disc onto the red counter disc gear. (Note: before fitting the counter disc, decide whether you prefer *‘percentage used (100-0)’* or *‘centimetres remaining (80-0)’)*



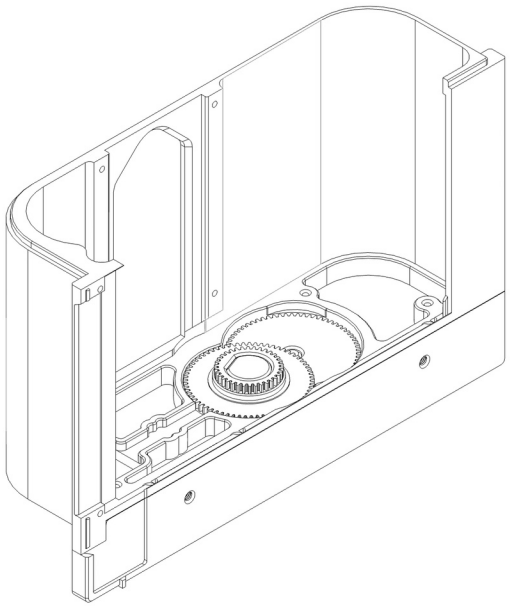
3-2B.

Drop the counter disc gear assembly into the magazine shell, counter numbers facing down so they appear through the shell window.



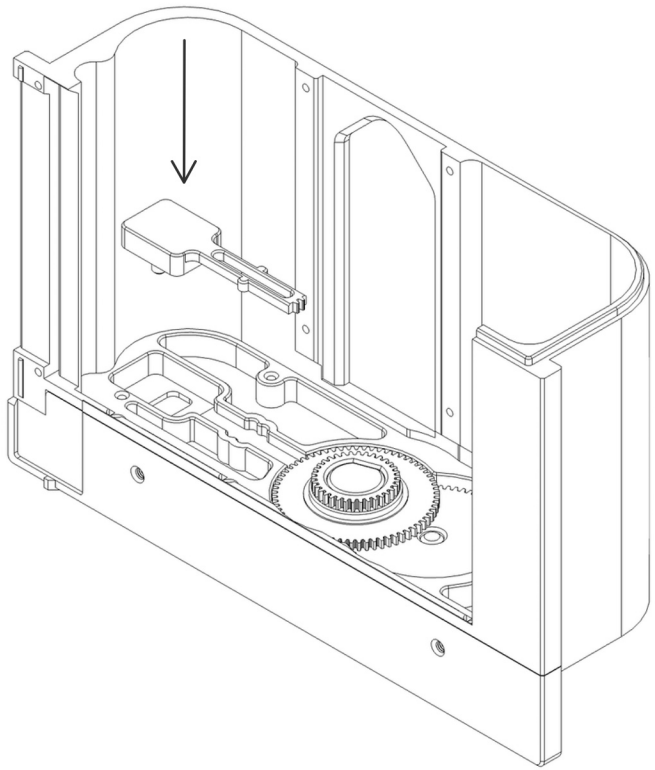
3-3A.

Press the grey calculator gear insert into the green calculator gear.



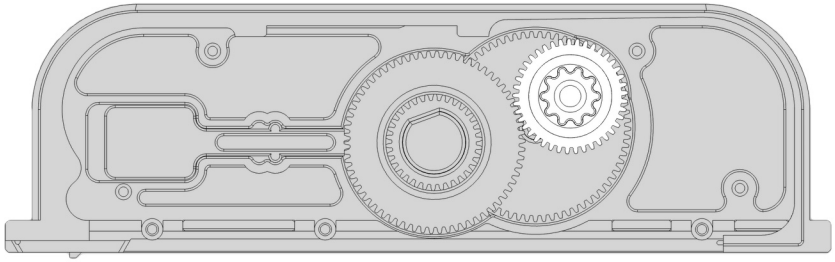
3-3B.

Drop the calculator gear assembly into place, grey gear facing down.



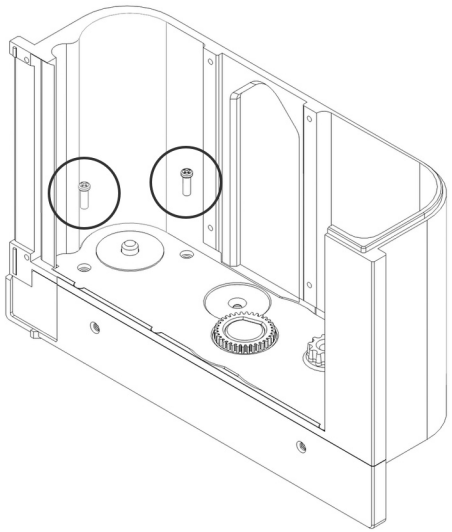
3-4.

Drop the toggle lock into the magazine shell, red marker facing down.



3-5.

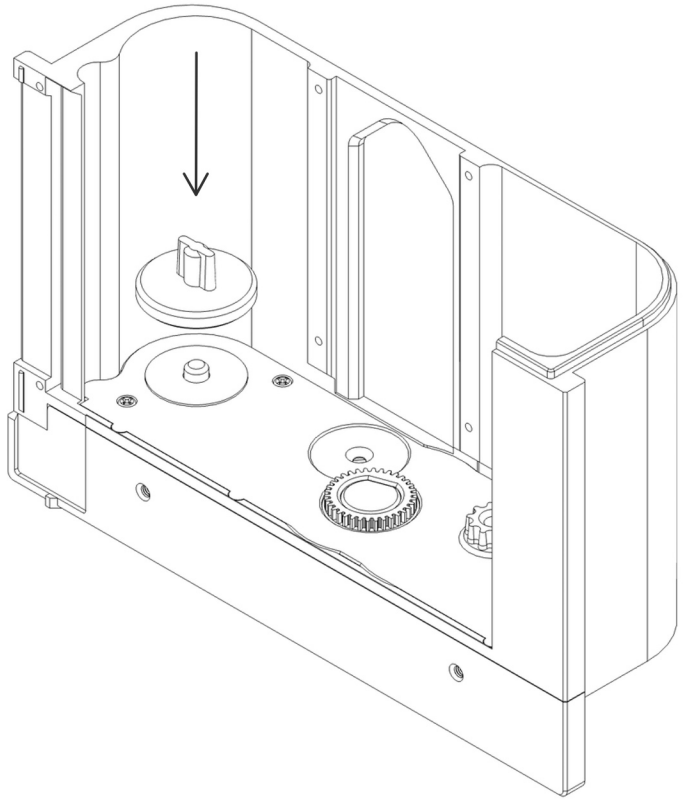
Align the yellow input gear with the green calculator gear, at this stage it will float freely until the gear train cover keeps it in place.



3-6.

Carefully put the gear train cover assembly over the gears in the magazine shell.

Secure the gear train cover with 4x 2mm screws. Ensure everything moves smoothly and the toggle lock engages correctly.



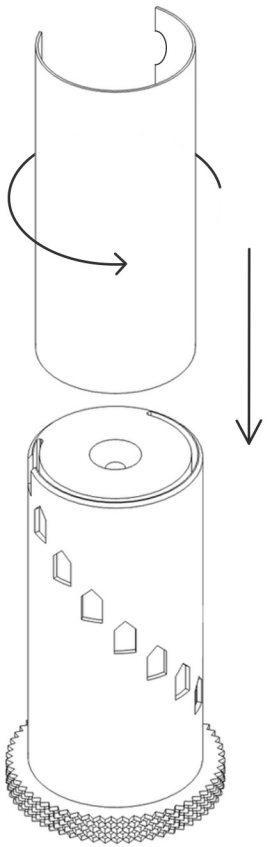
3-7.

Attach the magnetic damper to the gear train cover.

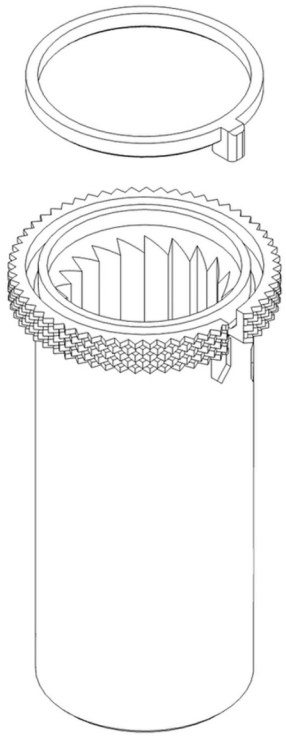
This component is designed to dampen rotation and keep tension on the takeup spool as the film is wound on.

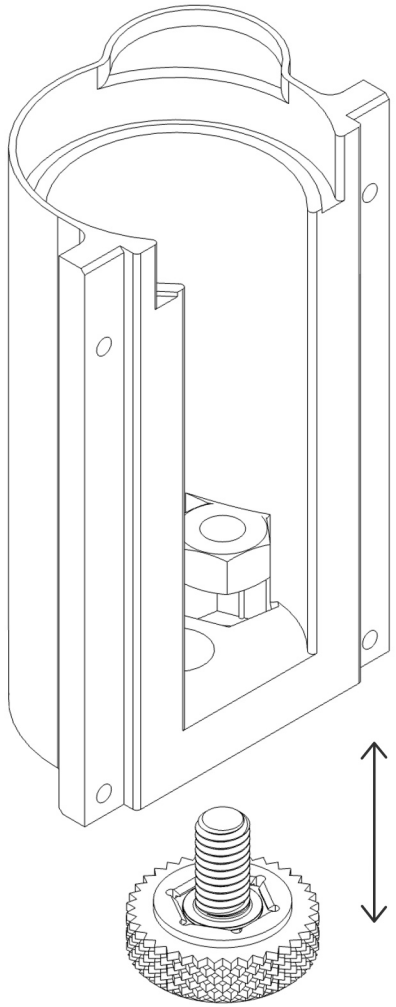
It should move freely but have some friction.

3-8.
Bend the white plastic insert and slide it into the counter drum, with the notches along one side.



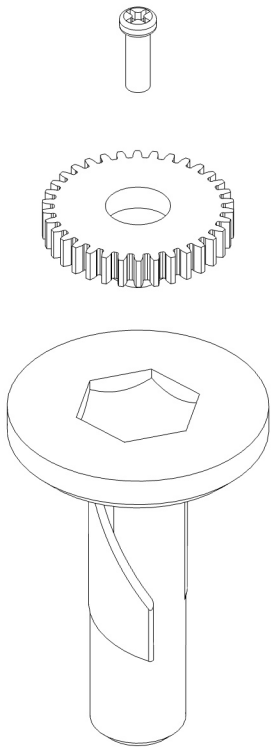
3-9
Press the red zero marker into the drum.
Ensure it is fully seated and that there are no protrusions that could limit the drum's rotation later in the assembly.



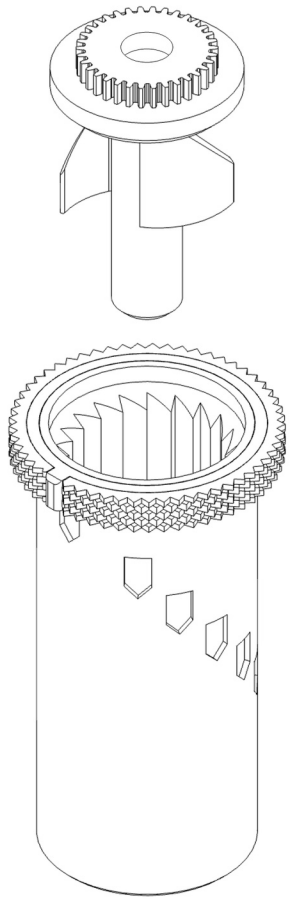


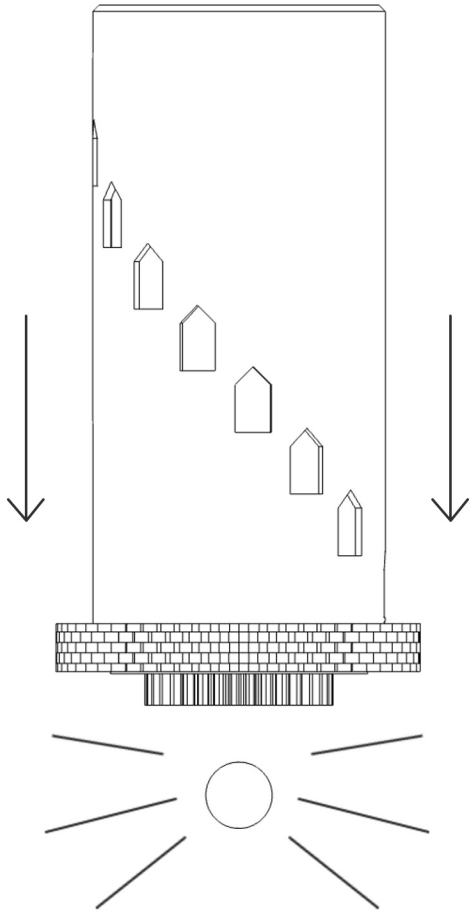
3-10.
Drop the M6 nut into the counter drum cover. Use the M6 thumbscrew to draw the nut fully into place, and remove it once the nut is seated.

3-11.
Using a 2mm screw, attach the blue counter drum gear into the blue counter drum pawl.



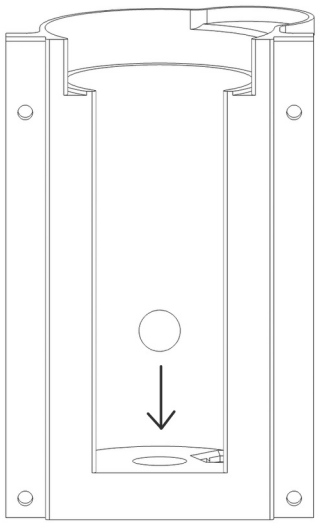
3-12.
Fit the pawl assembly into the drum, and check it ratchets correctly.



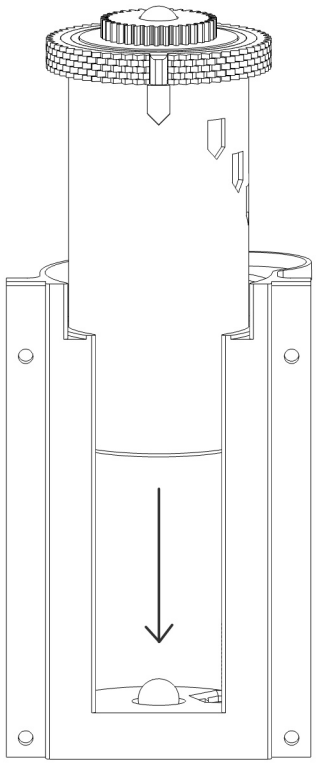


3-13.
Place a 6.35mm ball bearing on a hard surface, and press the drum-pawl assembly onto it with force.
The ball bearing will snap into place.

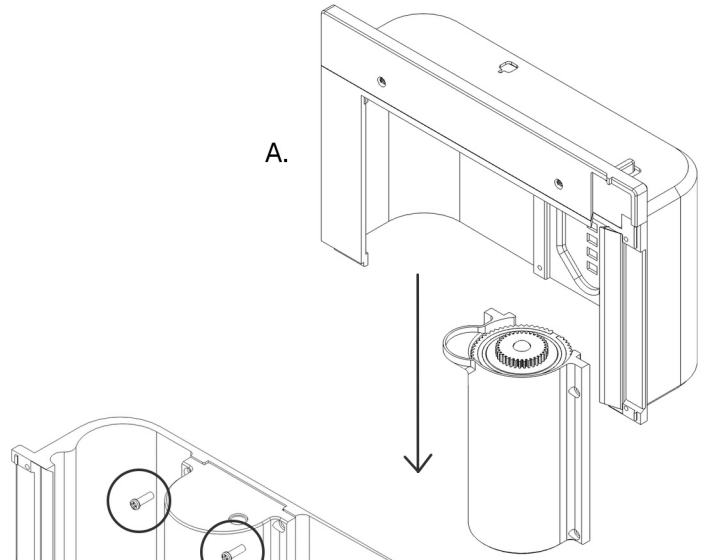
3-14.
Place a 6.35mm ball bearing in the divot of the drum cover.



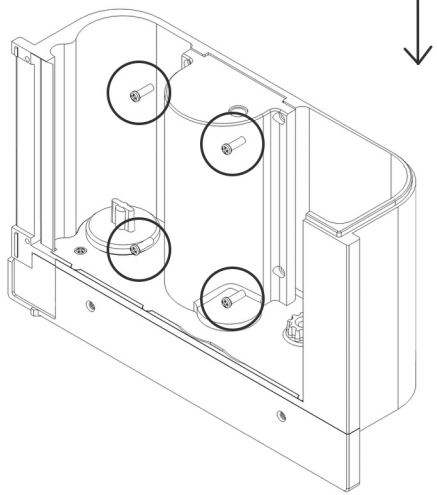
3-15.
Lower the counter drum assembly into the drum cover.



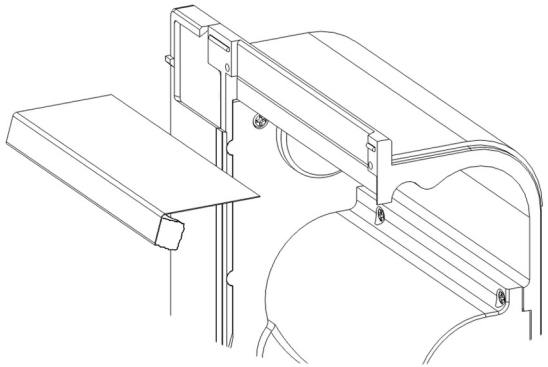
A.



B.



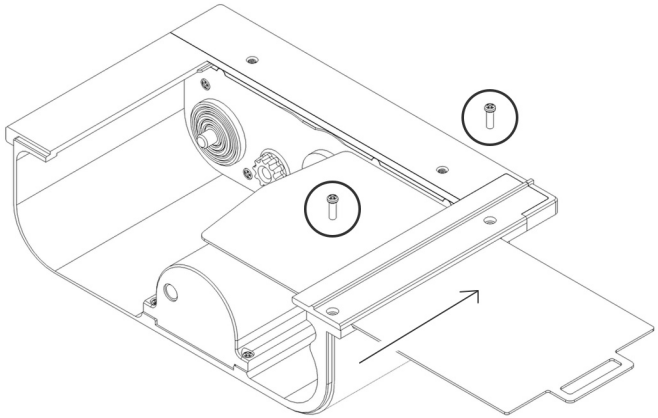
3-16.
Carefully lower the magazine shell assembled onto the counter drum assembly.
Use 4x 2mm screws to secure it in place; check that everything rotates freely and the gears are meshing. Engage the toggle lock and turn the counter drum to confirm the ratchet is working.



3-17.

Slot the light trap into the magazine shell.

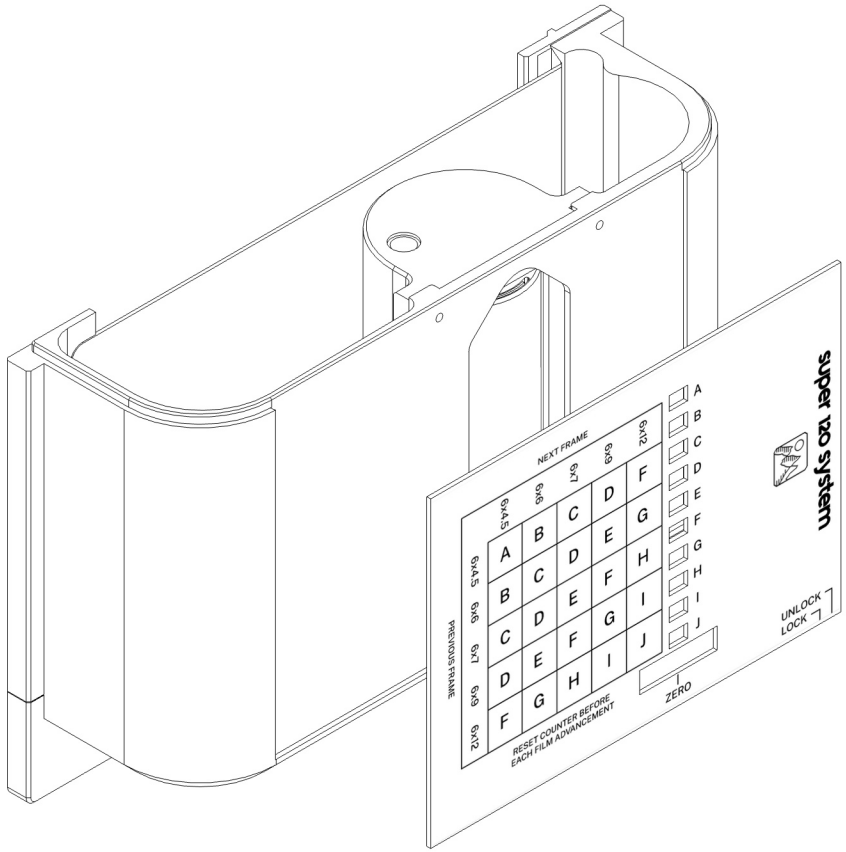
The foam acts as a compression spring, and over time may need a second foam strip added. A spare is provided, along with black velvet.



3-18.

Hold down the light trap with the darkslide. Slide the crown panel into the Graflok wing, and fasten it with 2x 2mm screws.

Remove the darkslide once the crown panel is attached.

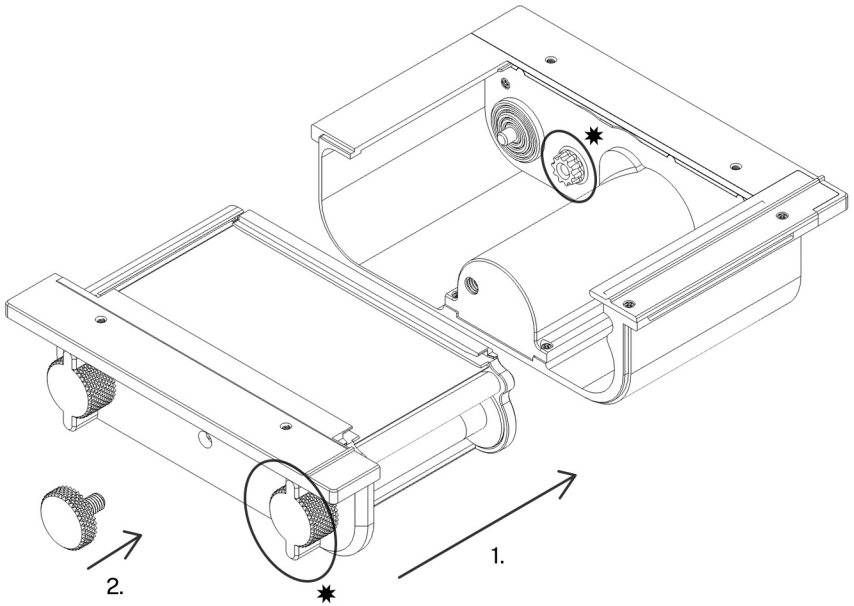


3-19.

Black out all the edges of the matrix plate using a permanent marker.

Remove the adhesive backing, and stick the plate onto the magazine shell.

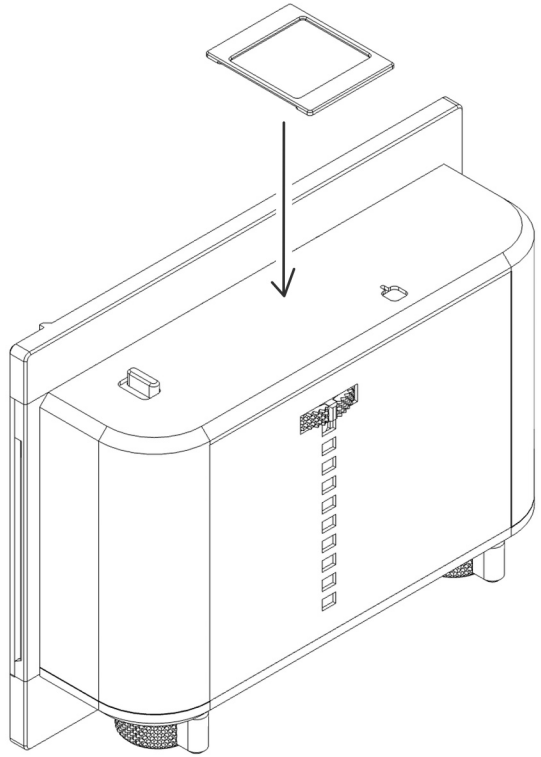
Check that the counter drum rotates freely without snagging.



3-20 .
Slide the two assembled halves of the magazine together, and secure with the thumbscrew.

Do not tighten the thumbscrew hard, otherwise it can press on the counter drum and prevent the mechanism from working, or could even break through printed parts.

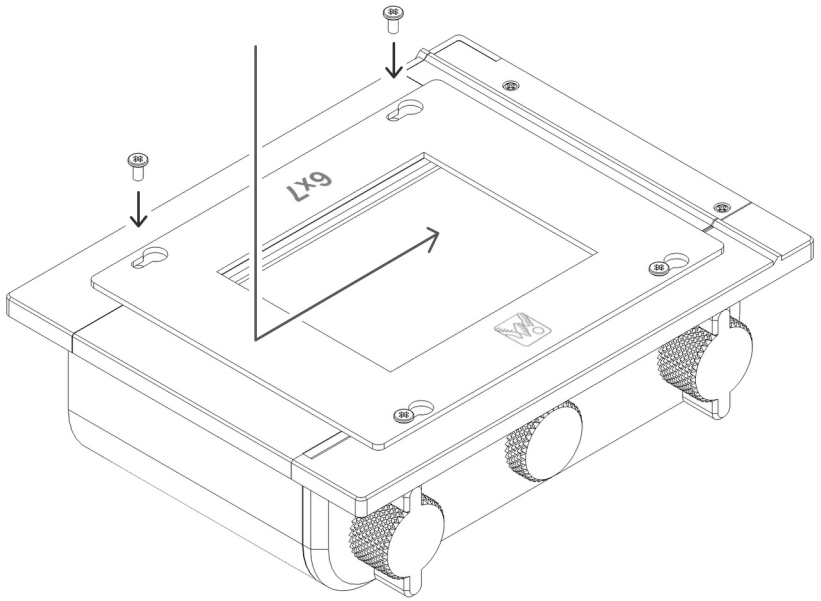
To ensure the halves meet fully, you may need to turn the advance knob and also the counter drum while the toggle is unlocked, which will rotate the input gear so it aligns with the counter roller (✷).



3-21.
Remove the double-sided tape backing and attach the film box window to the bottom of the magazine shell, roughly in the center.

Optionally, you could stick the film box window in another convenient place, or not use it at all.

2. Assembly



4-1.

Fit 4x M2.5 screws into the Graflok wings.

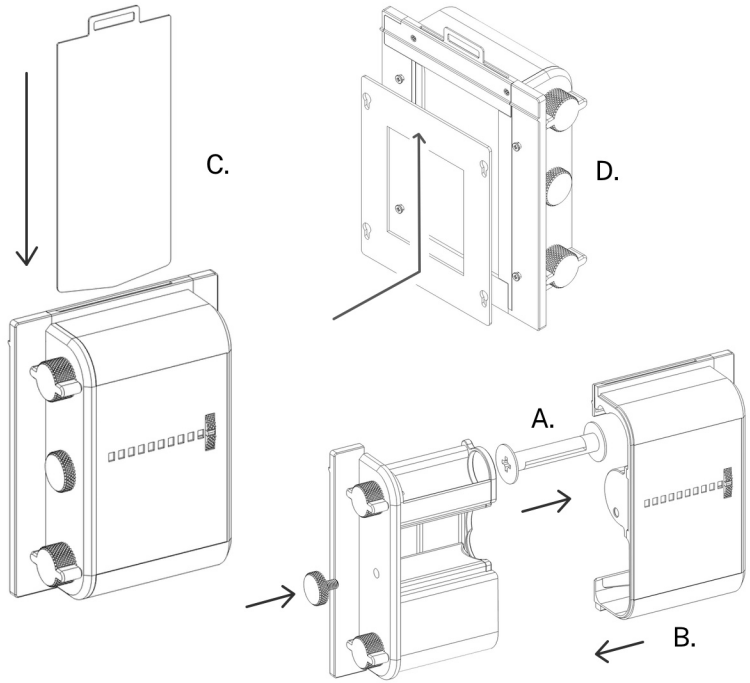
These screws are in the small bag of hardware, and have blunt ends.

Turn them only a few rotations, and then attach one of the frame masks. Tighten the screws until the mask is secure, then slightly back the screws off by a quarter of a turn.

The masks attach by dropping on and sliding up towards the light lip, with the Intrepid logo towards the locking nut.

The masks should lock and unlock smoothly, but not feel loose.

Overall Assembly



4-2.

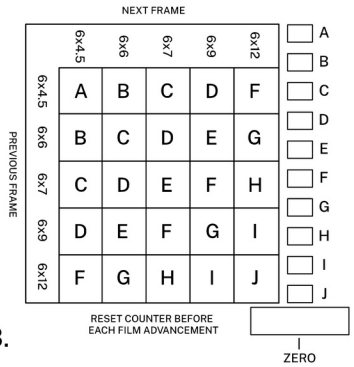
A. Insert a 120 spool into the the spool block

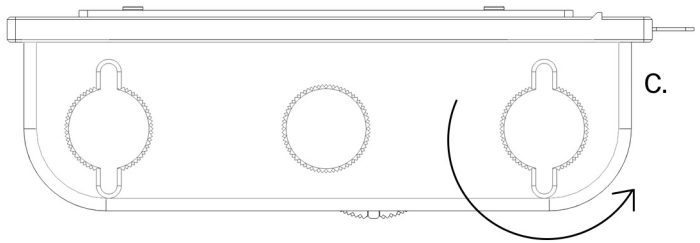
B. Fit the spool block into the magazine shell. Use the M6 thumb nut to lock the two parts together.

C. Insert the darkslide. Check that it runs smoothly without snagging, when first assembled the darkslide may need moving back and forth a few times to settle the velvet light trap.

D. Fit each frame mask to check they lock and unlock securely.

3. Pre-Flight Checks





Check the two counter mechanisms work as expected.
The counter disc will count the entire film length, but gives no data about frame sizes. (A.)

The counter drum helps calculate frame advancements, but gives no data about total film length. (B.)

The advancement dial moves in the same direction as most camera advancement levers, anti-clockwise. (C.)
One full turn of the thumbwheel moves the counter drum ~0.4 revolutions, and the counter disc ~0.04 revolutions.

In a darkened room, remove the darkslide and run a torch along the darkslide slot. There should be no light leaks through the gap.
If there are light leaks, disassemble the crown panel and bend the light trap spring forward a little to increase the contact with the crown panel. Additional velvet strips are supplied if you need them.

As the spring remains compressed by the darkslide over time, you may need to add another strip of foam to retain enough tension on the spring. While the magazine is not in use **(with no film)**, remove the darkslide to extend the life of the light trap.

Check the counter mechanism works as expected by turning the input gear using the assembly tool. Engage the toggle lock and confirm that the mechanism does not move.
If the mechanism turns while locked, disassemble the gear train cover and check the toggle lock is snapping into place correctly.

During normal use, the input gear will only rotate when film is wrapped around the counter roller and the two magazine halves are joined.

Make sure your film sits underneath the film runners, not the darkslide runners.
Never force the mechanism, as you could break parts: disassemble and double check against the instructions as necessary.
A lightweight synthetic grease, such as lithium grease, can be used in the gear train and magnetic damper if you like (not supplied).

4. Frequently Asked Questions

What lenses will work with the Super 120 System?
We recommend sticking to large format lenses, but some Polaroid, Mamiya and other press camera lenses will also work. Make sure they have a shutter, look online, and experiment.

The minimum image circle needed for 6x12 is ~133mm, but smaller ratios like 6x6 (79.2mm image circle) will give you more options.

Will the Super 120 System fit non-Intrepid cameras?
As long as your camera is Graflok-compatible (also known as "universal back" or "International Standard"), the Super 120 will work. The frame masks are designed to fit inside a 4x5 gate.

How many shots can I get out of a roll?
If you're sticking to one format:
6x4.5: 16, 6x6: 12, 6x7: 10, 6x8 and 6x9: 8, 6x12: 6
If you're mixing up formats, the average is around 8 to 10 shots. 120 film has a useable length of approximately 800mm, but this can vary between manufacturers.

Will 220 film work in the Super 120?
We haven't tested 220 film so we can't guarantee the frame spacings will be correct, and the counter disc will be wrong.

The counter roller is calibrated for 120 film with a paper backing. However, you can always experiment and see what works for you.

My frame margins are inconsistent, overlapping, or wrong.
Make sure to always reset the counter drum just before advancing a new frame. Follow the matrix plate closely, and ensure the relevant value window is full.
Failing that, check that the counter mechanism moves freely; and that no O-rings have slipped out of position on the counter roller. Also ensure the film is sitting under the film runners and not over the darkslide runners.

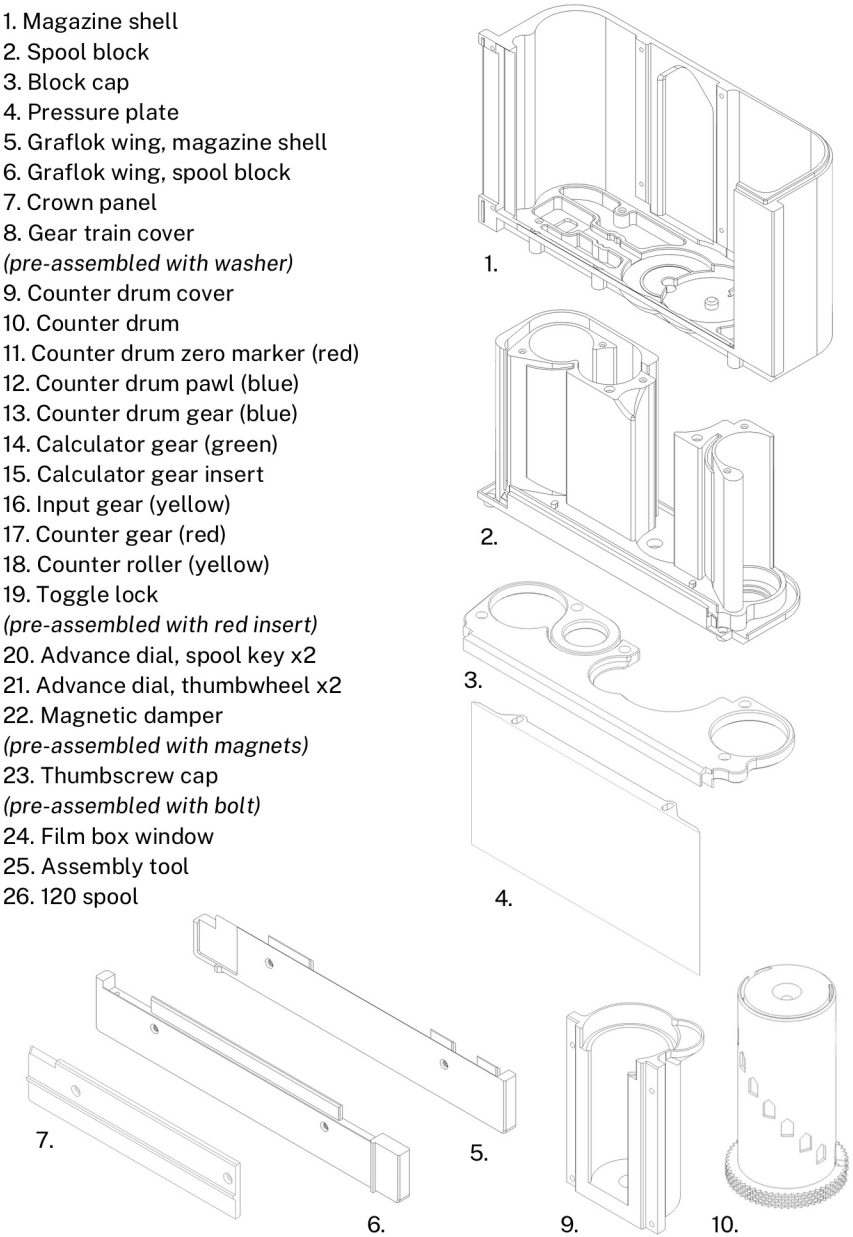
I'm worried about pulling out the whole leader when loading film.
The leader and film path have been tested to be the correct length when pulled out and aligned with the start arrow.
Make sure to hold the spool to stop it from unrolling when loading film.

Can I service my Super 120 System Magazine?
Yes, certain components like the light trap may need replacing through normal use.
Since this product is a kit, you can disassemble as much as you need in order to replace parts. However, modifications beyond those recommended by Intrepid will void your kit's warranty.

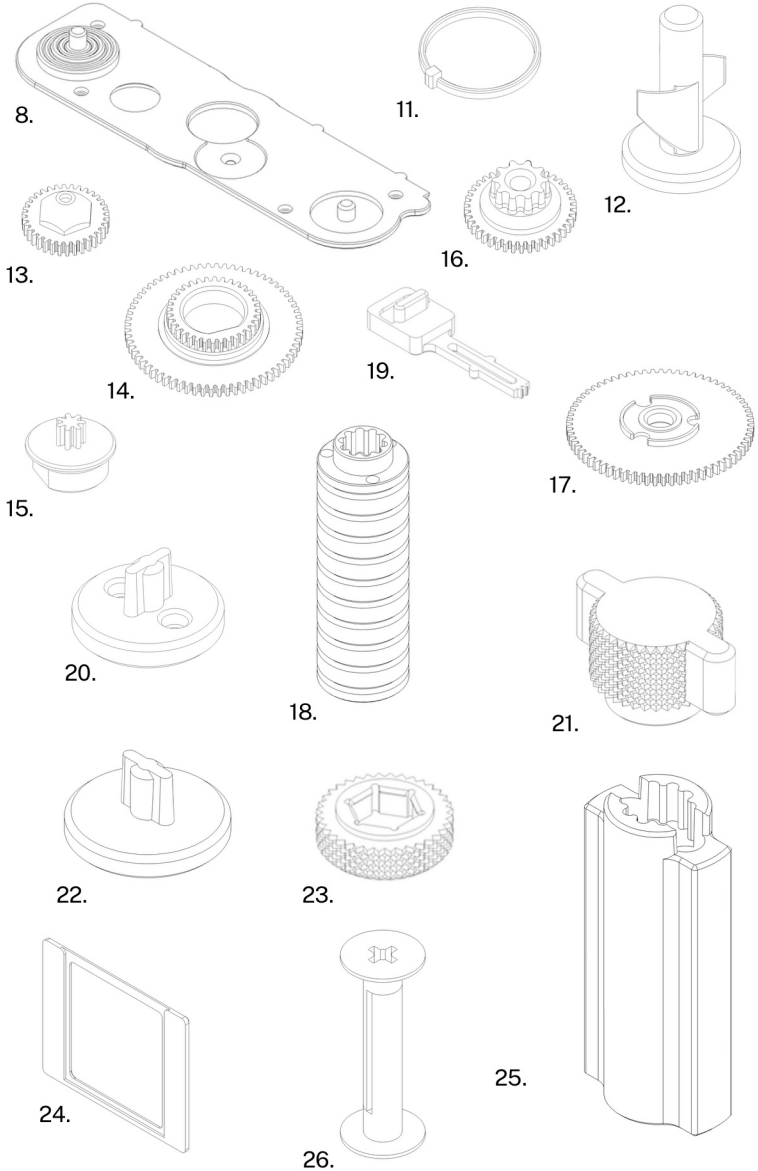
Can I buy replacement parts from Intrepid?
We always recommend contacting us for replacement parts or unusual questions.
Details can be found at the back of this booklet.

5. Bill of Materials

1. Magazine shell
2. Spool block
3. Block cap
4. Pressure plate
5. Graflok wing, magazine shell
6. Graflok wing, spool block
7. Crown panel
8. Gear train cover
(pre-assembled with washer)
9. Counter drum cover
10. Counter drum
11. Counter drum zero marker (red)
12. Counter drum pawl (blue)
13. Counter drum gear (blue)
14. Calculator gear (green)
15. Calculator gear insert
16. Input gear (yellow)
17. Counter gear (red)
18. Counter roller (yellow)
19. Toggle lock
(pre-assembled with red insert)
20. Advance dial, spool key x2
21. Advance dial, thumbwheel x2
22. Magnetic damper
(pre-assembled with magnets)
23. Thumbscrew cap
(pre-assembled with bolt)
24. Film box window
25. Assembly tool
26. 120 spool

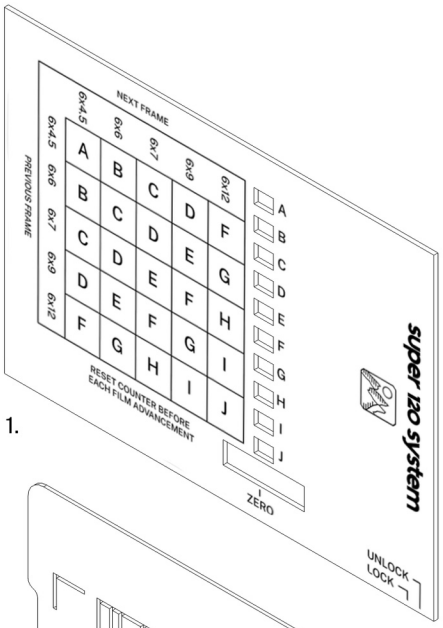


3D Printed Components



5. Bill of Materials

1. Matrix plate
2. Glass stencil
3. Darkslide
4. Counter disc
5. Toggle lock insert
(pre-assembled with toggle lock)
6. Mask, 6x4.5
7. Mask, 6x6
8. Mask, 6x7
9. Mask, 6x8
10. Mask, 6x9
11. Mask, 6x12



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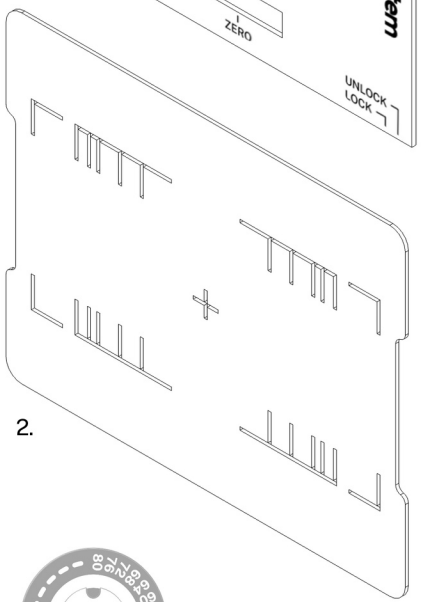
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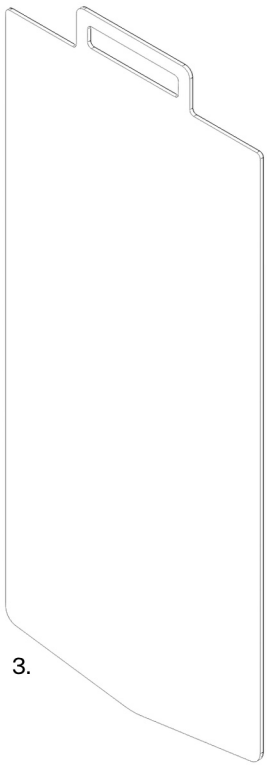
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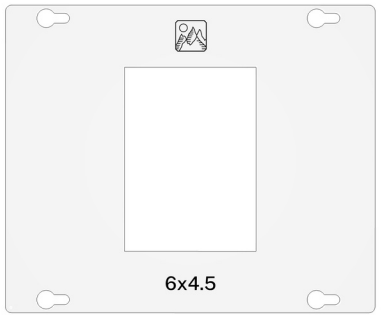
4.


5.

Fibreglass Components



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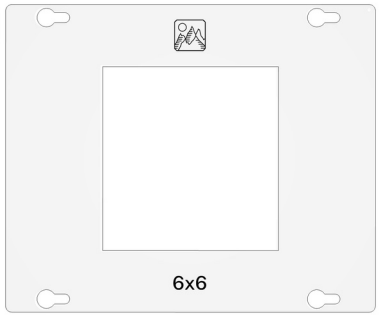

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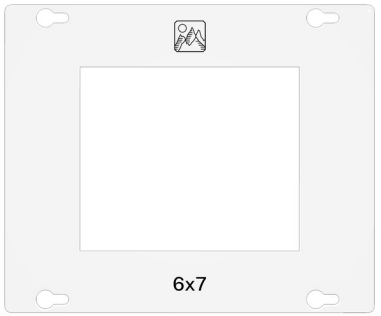

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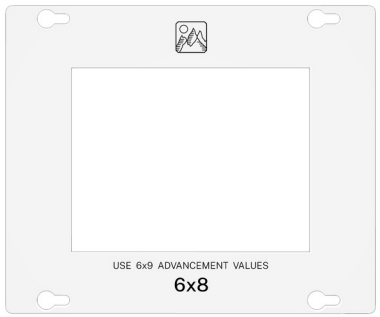

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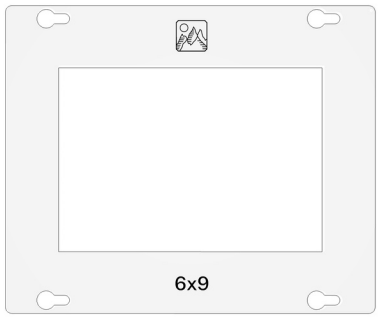
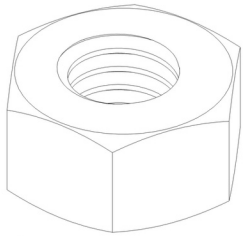


10.

11.

5. Bill of Materials

1. 2mm PH0 screw, x25 (plus spare)
2. M2.5 PH0 screw, x4
3. 19mm silicone O-ring, x10 (plus spare)
4. 6mm magnet, x2
(pre-assembled with magnetic damper)
5. 6.35mm ball bearing, x3
6. 3mm ball bearing, x3 (plus spare)
7. M6 x 12mm bolt
(pre-assembled with thumbscrew cap)
8. M6 nut
9. Nylon shoulder washer, x2
10. Light trap
11. Counter drum window insert
12. PH0 screwdriver
13. Permanent marker
14. Felt carry-case



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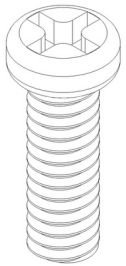

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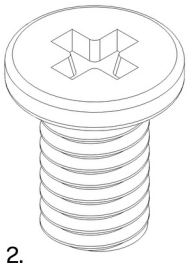

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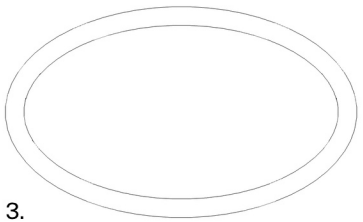

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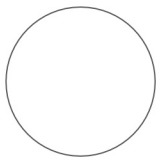

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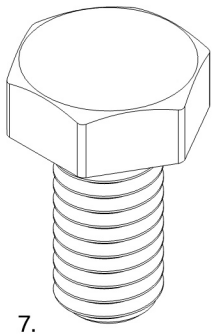
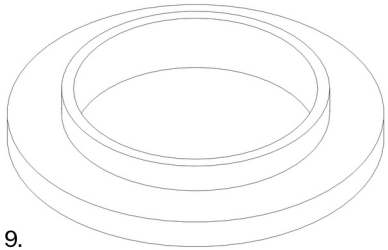


7.

Hardware



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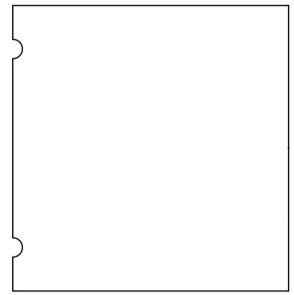

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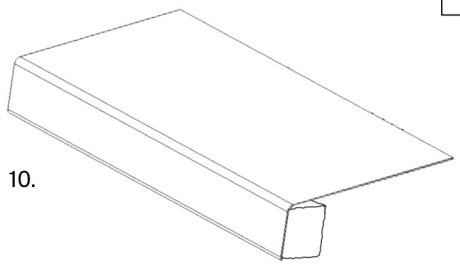

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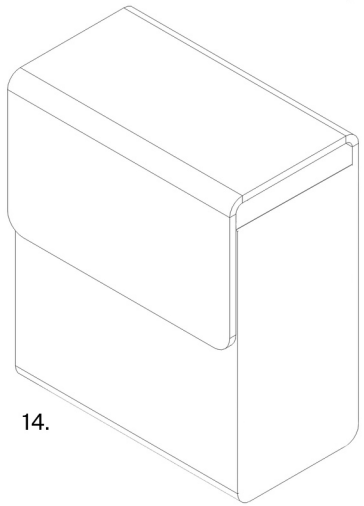

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