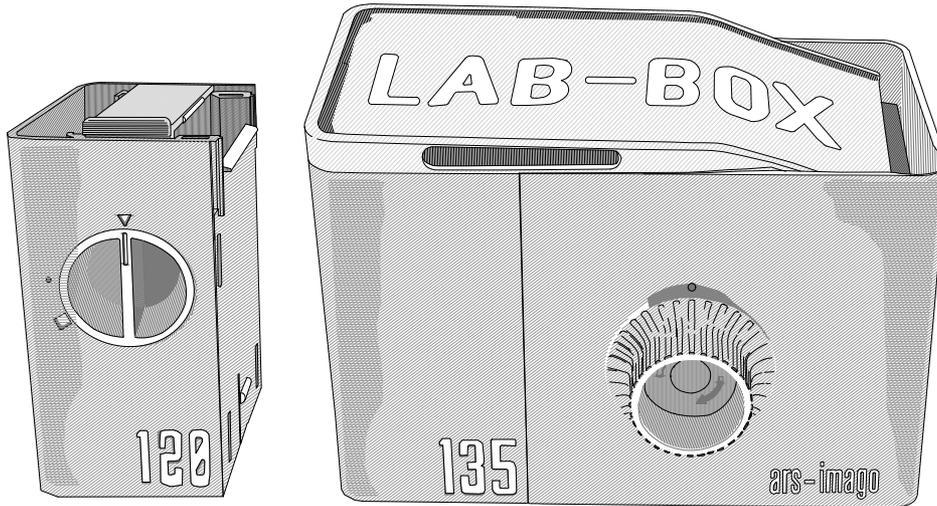


# USER MANUAL



## LAB-BOX

[lab-box.it/tutorials](http://lab-box.it/tutorials)

### **WHY LAB-BOX**

Interest in analogue photography is growing. New generations of digital natives are rediscovering the analogue process as something new to experiment with.

This is why we have decided to create a product that would easily allow anyone to develop film rolls in full daylight, indoor or outdoors. Lab-Box addresses the needs of those just getting started with film photography and, at the same time, it is a tool with great potential for professionals and advanced users.

### **WHAT IS LAB-BOX**

Lab-Box is a multi-format tank and can be used for both 35mm and 120 films, thanks to the two interchangeable modules and adjustable reels. The films are loaded in full daylight and are wound onto the reel using the outer knob without the need to be in a darkroom. Lab-Box is the easiest and quickest tool to develop your own films in full day light anywhere and at anytime, bypassing the need to load the rolls in the dark. Lab-Box is the result of years of research and development, paired with an effective and beautiful design.

### **CROWDFUNDED**

Lab-box is a crowdfunded project that became reality thanks to the Kickstarter platform and to all the 4791 backers that contributed and supported us from all over the world.

*Lab-Box is a project by*

**ars-*imago***

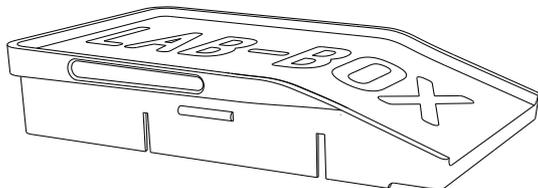
*Design and prototyping done by VIVO Design Studio, in Rome, Italy*

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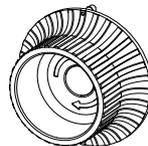
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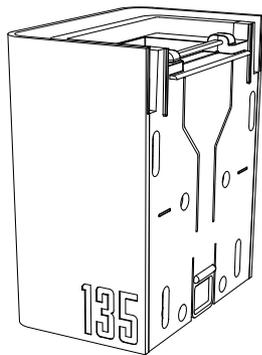
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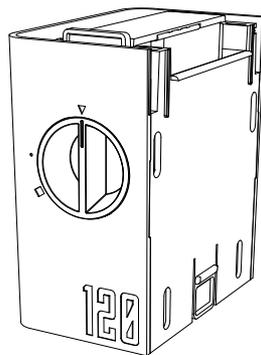
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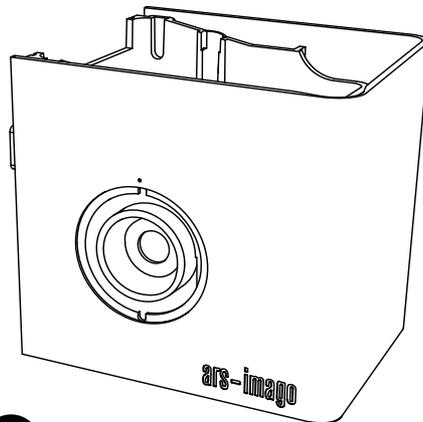
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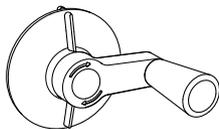


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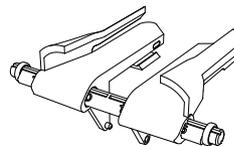




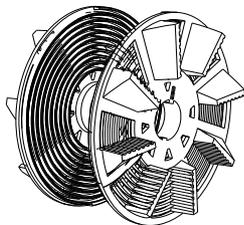
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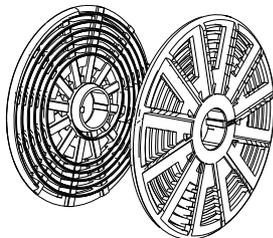
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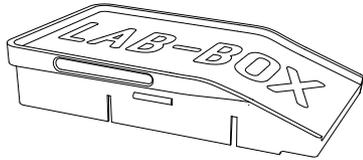
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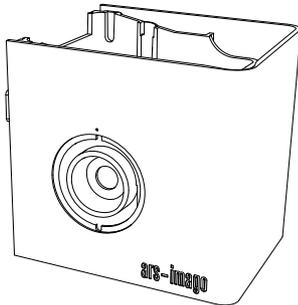
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3. MODULE 120
4. TANK
5. KNOB
6. CRANK (*Accessory*)
7. HUB
8. FILM GUIDE
9. 135 REEL
10. 120 REEL



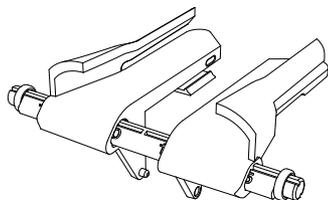
## LID

The Lid was designed to let liquids in and out while still being lightproof. Thanks to the side dentels, once in place, the Lid stably latches onto the tank to keep the light from leaking in. To remove the Lid, you need to pull it upwards perpendicularly to the tank: avoid oblique movements. Before starting a new process, make sure that the lid is completely dry, so as to avoid moisture, which can compromise the correct loading of the film.



## TANK

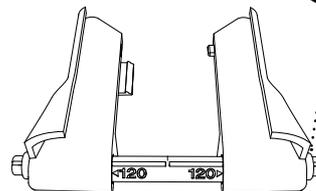
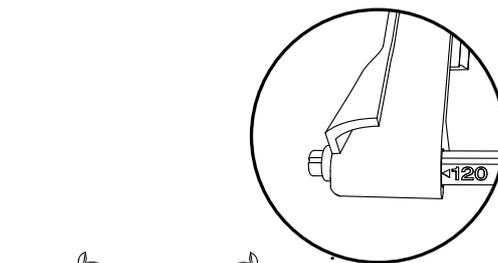
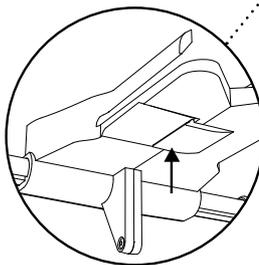
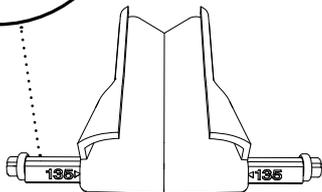
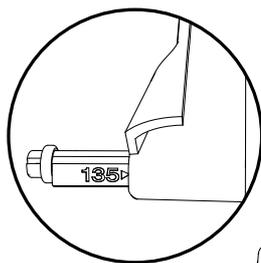
The Tank is where the actual developing process happens. The film reel comes into contact with chemicals inside the tank. The side hole holds a rounded gasket set out to prevent leaks during agitation through the external handle: it is necessary to make sure that the gasket stays clean and undamaged. Working solution quantities and instructions are listed on the back of the Tank; 300ml to fill half the tank and proceed with continuous agitation or 490ml to fill the Tank completely and proceed with intermittent agitation

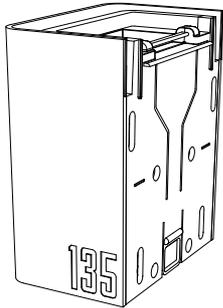


## FILM GUIDE

The film guide is a multi-format guide that enables film to be correctly wound onto the reel. One may set the guide for 135 format and 120 format. 135 format has a security lock to keep the slide in place.

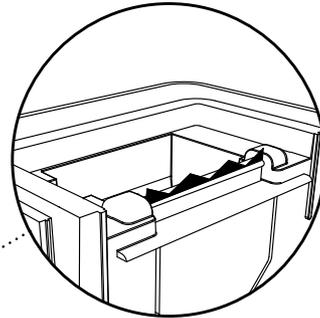
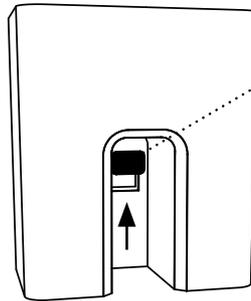
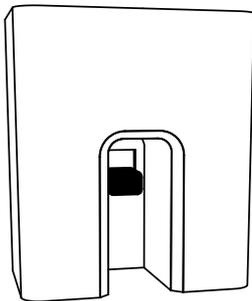
To unlock the film guide and set it to 120 position, you need to pry the locking dentel below the slide while pushing sideways, until the two slides separate. It is important to be careful with this clip to avoid any damage.

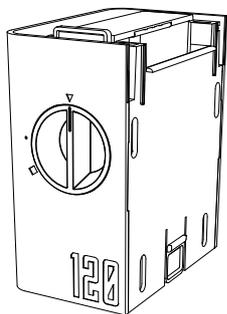




### MODULE 135

The 135 Module turns Lab-Box into a developing tank for 35mm films. Pushing the gray lever on the back activates a cutting blade that cuts off the film from the spool. The film must be guided under the two metal tubes that will act as a counter-blade for cutting.

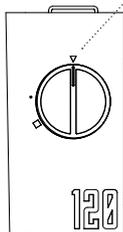
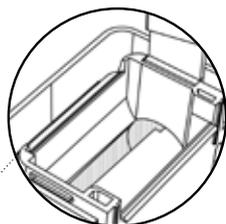




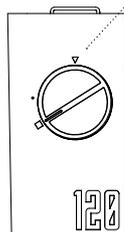
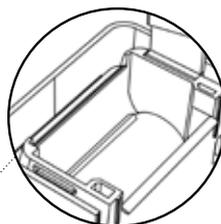
## MODULE 120

The 120 module turns Lab-Box into a developing tank for 120 films. The module has a film chamber inside and a split on the outside to extract the black backing paper while the film is wrapped inside. The gray film block is used to press the 120 film roll against the film chamber and ensure that the film is wrapped correctly.

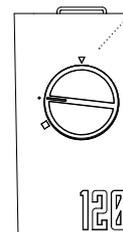
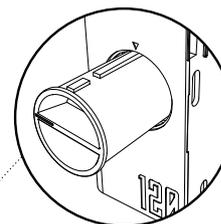
The external knob allows you to open (triangle position) or close (square position) the film chamber. Placing the knob at the point allows you to extract the piece. It is important that the film chamber be completely dry before using the module, otherwise the film loading can be compromised.



**TRIANGLE POSITION**  
Film chamber open to load the film



**SQUARE POSITION**  
Film chamber closed to clip the film before loading



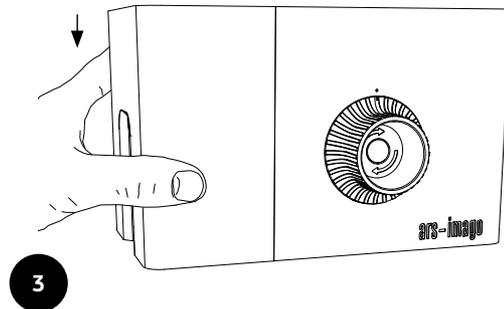
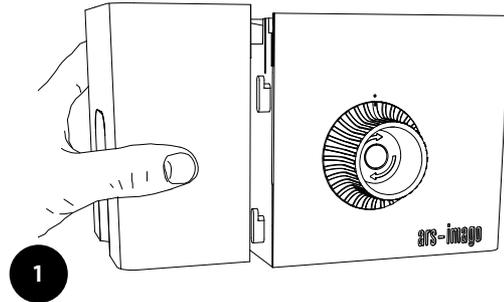
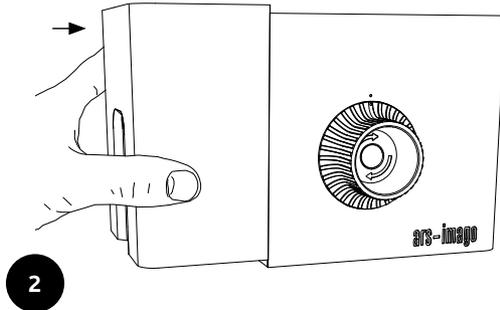
**POINT POSITION**  
Film chamber removal



## CHANGING MODULES

### Locking

Bring the module close to the tank by matching the holes of the module to the hooks on the back of the tank. At this point, while holding the tank firmly, push the module simultaneously towards the tank wall and down until you hear a click.

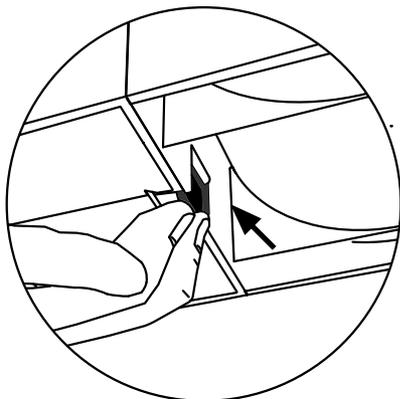




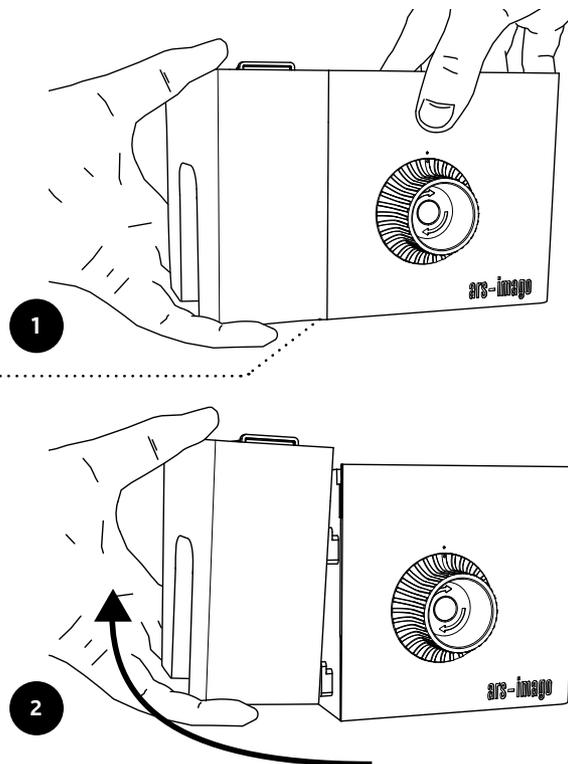
## CHANGING MODULES

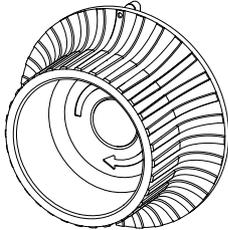
### Unlocking

To unhook the module press the small flexible tab present on the bottom between module and tank. While holding the tab pressed against the module, push the module simultaneously upwards and away from the tank, meanwhile, push the tank downwards with the other hand until they unhook.



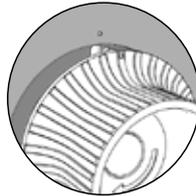
Module 120 can be slightly harder to unhook. Watch the video to check alternative methods to unhook more easily 120 modules.



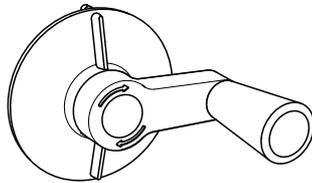


### KNOB

The Knob allows you to externally control the rotation of the internal reel. Before you insert the knob in place you must always make sure that the internal cylinder is clean so as not to damage the gasket. The Knob can only be inserted or removed by aligning the small symbol on the knob with the one on the tank.

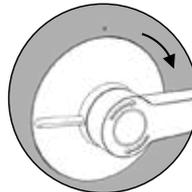
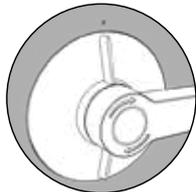


Match the point on the tank with the point on the knob to insert or remove it



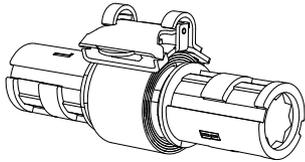
### CRANK (accessory)

The Crank accessory eases the external control of the internal reel. It consists of two pieces: a fixed one and a movable one. Once you have inserted the disc aligning the plastic line with the symbol on the tank, turn the disc by 90 degrees to keep it locked. To remove the Crank, realign the line with the symbol and pull outwards. Before you use the Crank, check that the internal cylinder is clean in order not to cause damage to the gasket.



Insert the crank into the tank hole.  
Turn the crank base by 90° until locked.

## REEL HUB



The multiformat hub allows you to mount reels 135 or 120 depending on the film format you want to develop. The 135 reels will lock on the inmost grooves. The 120 reels in the outmost grooves. On both sides there are an "L" (left) and an "R" (right) and two arrows that will match those on the reels in order to mount correctly. The R side of the hub, where a star shape in the hole is, must appear to match the side of the tank knob.

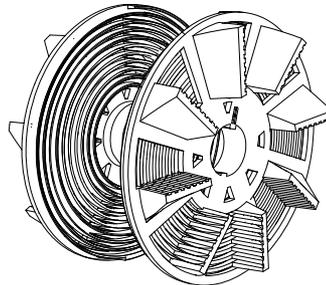
At the center of the hub there are two slits to facilitate the flow of chemicals. In the smaller slot the strip is hooked with the clip that will wrap around the hub when the films are loaded into the spirals.

## REELS 135 & 120

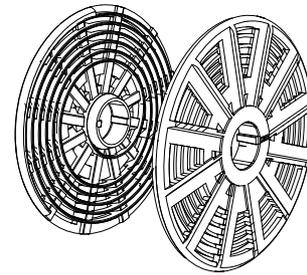
The Reels allow winding of the film inside the Tank. The design of the reels allows the flow of fluids throughout the developing process.

The 135 Reels feature external wings to aid agitation of liquids.

The 120 Reels are optimised to leave as much room as possible for the film.



**REELS 135**

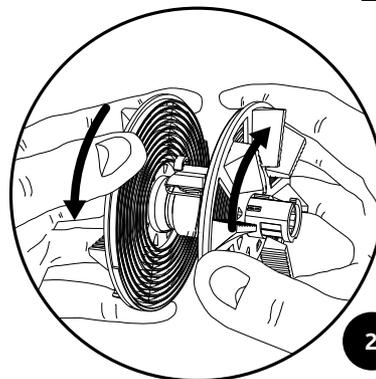
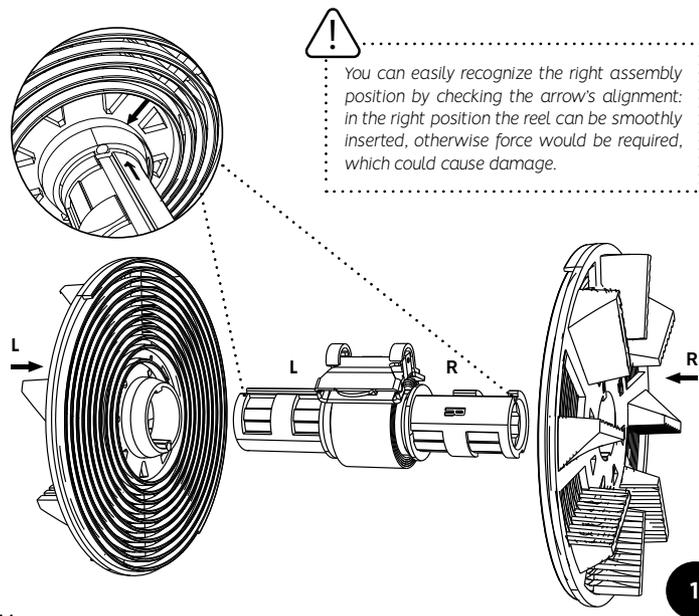


**REELS 120**

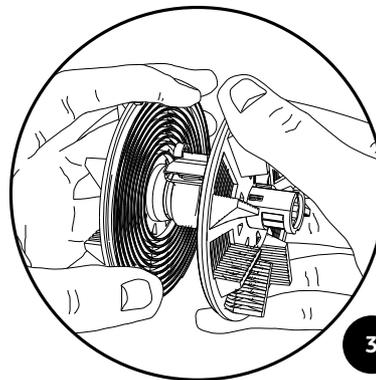


## Assembling the 135 Reels

To assemble the 135 Reels, L and R symbols on the back of the reels must be aligned with the ones on the hub. Once you have inserted the reel from the correct side, the arrow on the reel and the arrow on the hub must be aligned. Now, push the reel to the end, until it touches the hub's central pivot. Finally, you must lock the reel by rotating the two reels in the opposite direction as shown in the picture. You will hear the reel locking after clicking one dentel. To disassemble the reels, proceed backwards.



2

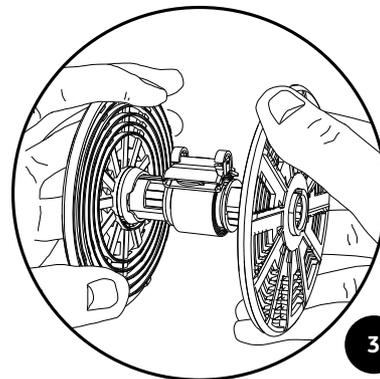
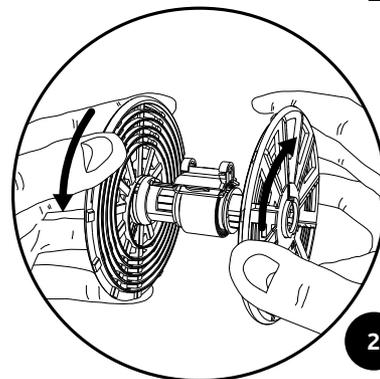
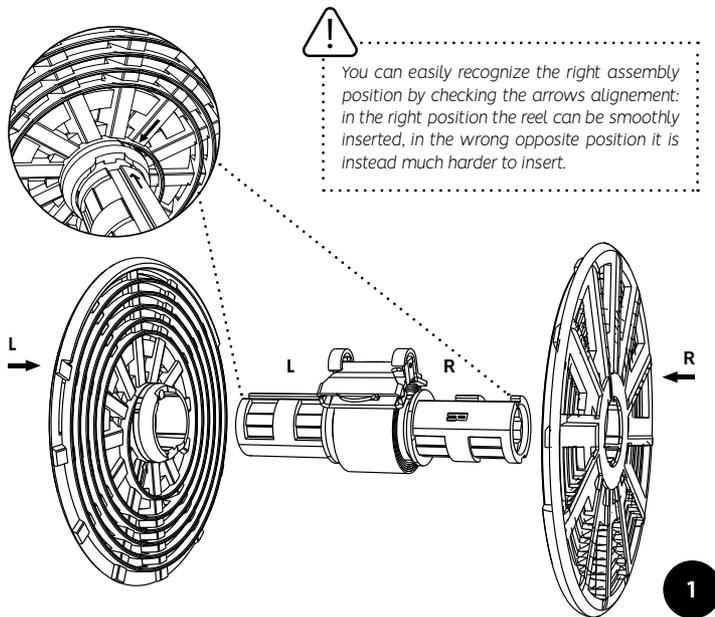


3



## Assembling the 120 Reels

To assemble the 120 Reels, the L and R symbols on the back of the reels must be aligned with those on the hub. Once you have inserted the reel from the correct side, the arrow on the reel and the arrow on the hub must be aligned. Now, push until it coincides with the first slot; to lock it, rotate the two reels in the opposite direction as shown in the picture. You will hear the reel locking after clicking. To disassemble the reels, proceed backwards.

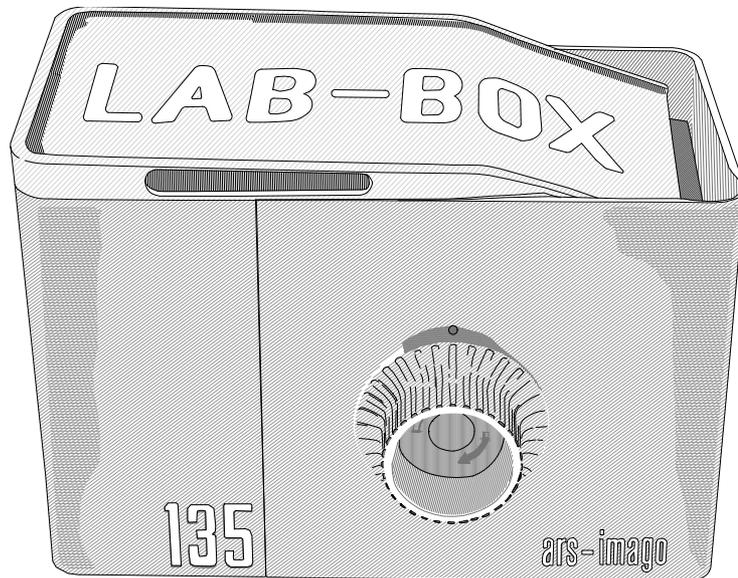
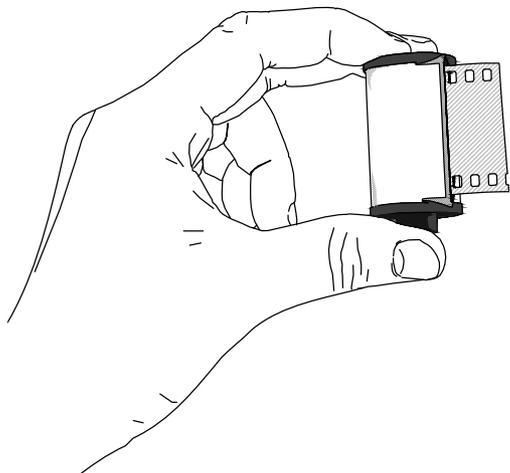


# HOW TO LOAD YOUR 35MM FILM

[www.lab-box.it/tutorials](http://www.lab-box.it/tutorials)



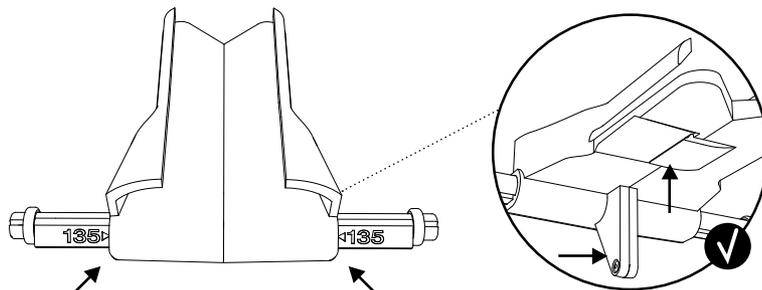
Scan the QR Code with your phone  
to watch the video tutorial



## CHECK LIST before you start

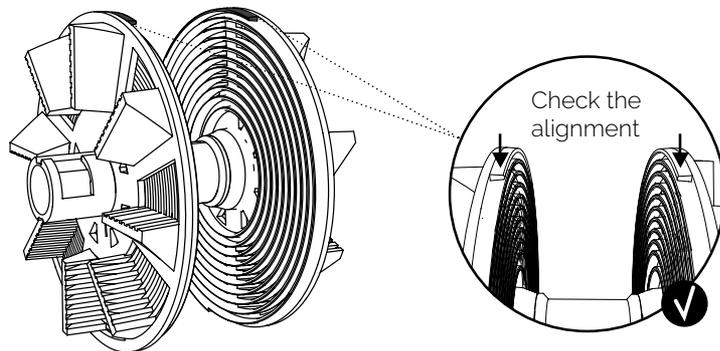
1

Check the film guide is in the correct position 135, properly closed and dry



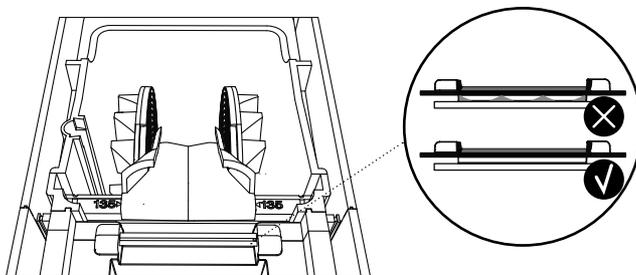
2

Check that the 135 reels are in the correct position and properly aligned. Follow L, R and the arrow indicators on the reels and the hub as a reference.



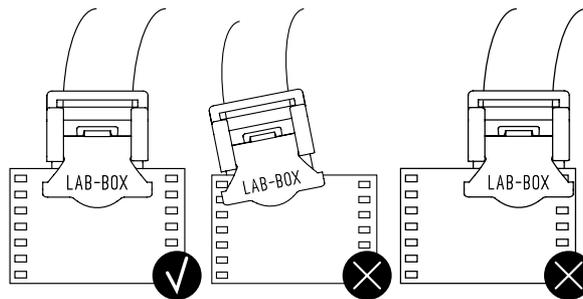
3

Check again that all the elements are properly aligned and that the blade is not visible.



4

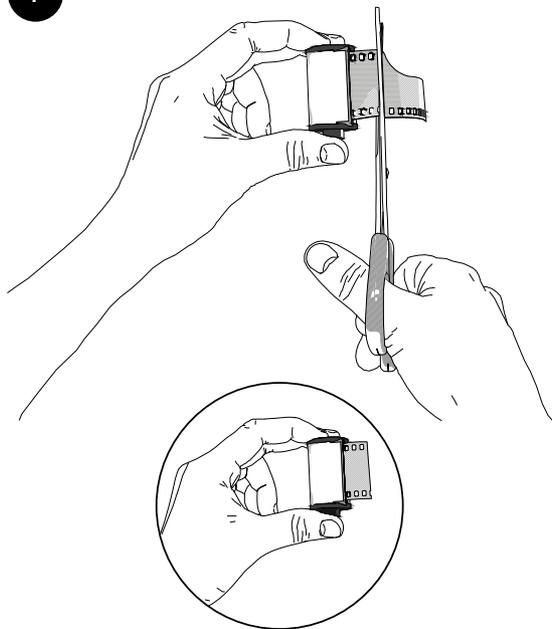
Pay attention to center the film in the clip as much as possible.



Films with P.E.T. base are much harder to clip and to cut.  
An updated list of P.E.T based films can be found here: [www.lab-box.it/petfilmlist](http://www.lab-box.it/petfilmlist)

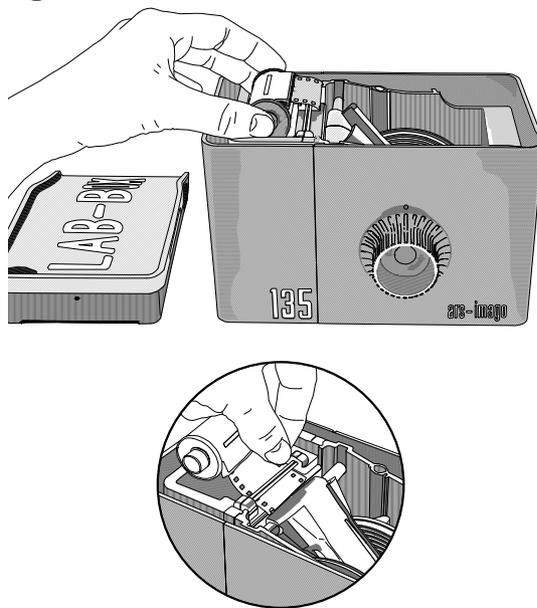
## INSTRUCTIONS

1

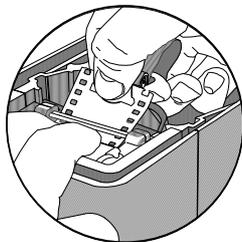
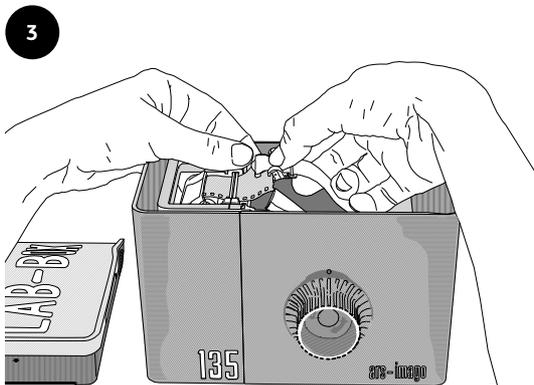


Take your exposed 35mm film and cut the film tail.

2

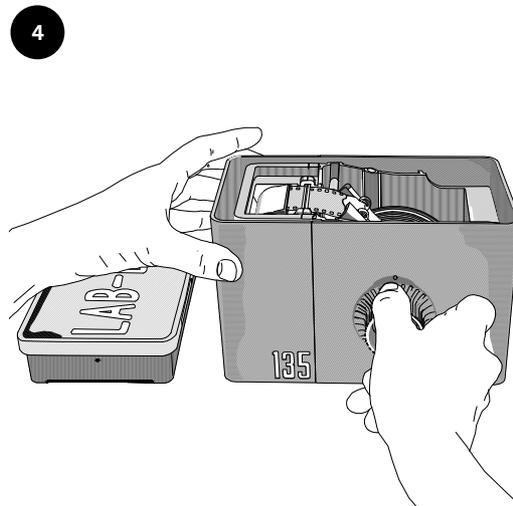


Open the lid and place the roll in the film slot. Then slide the film under the two metal pins.



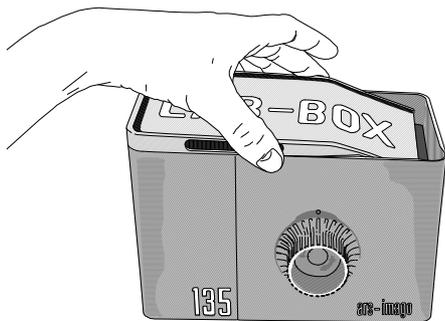
Take the metal clip and hook the film: press the clip with your fingers until you hear a click.

*Pay attention to clipping the film as much as possible in the center.*



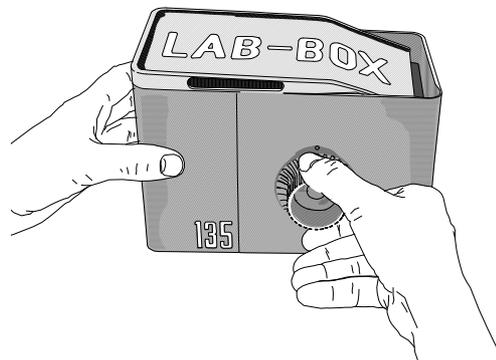
Turn the outer knob until the hooked film starts to slide correctly through the film guide.

5



Close the lid and turn the outer knob in order to wind the film onto the reel.

6



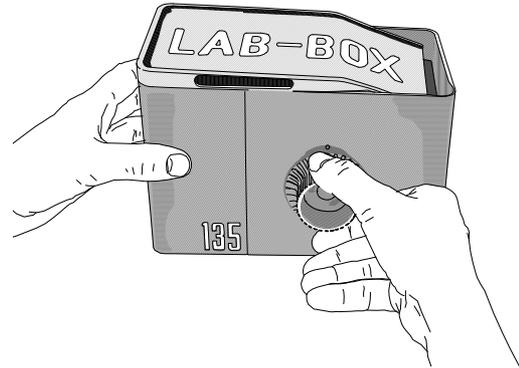
The film is fully wound when the knob tops turning.

7



Push the grey lever upwards on the back to release the film from the cartridge.

8



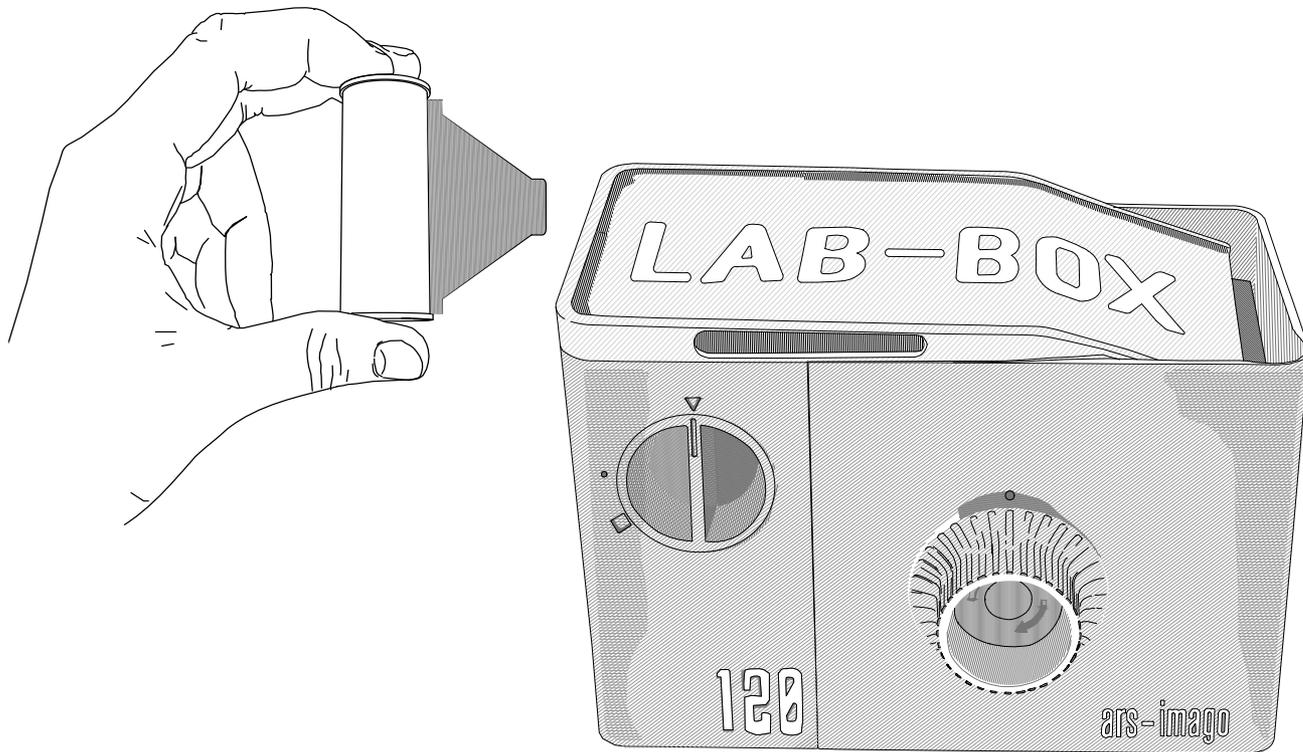
Once you have cut the film, turn the knob gently to wind the last part of the film onto the reel. Now you can start processing your film.

# HOW TO LOAD YOUR 120 FILM

[www.lab-box.it/tutorials](http://www.lab-box.it/tutorials)



Scan the QR Code with your phone  
to watch the video tutorial



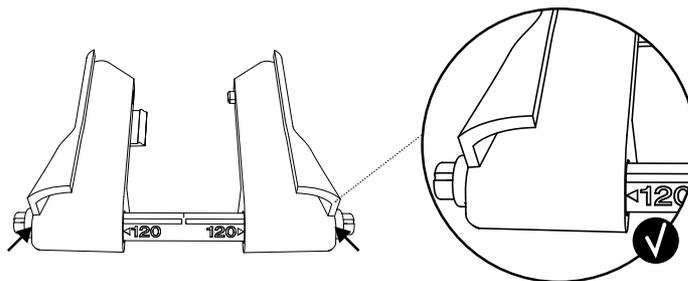
## CHECK LIST before you start



Partly exposed films which are in the camera for more than one week lose their curling properties. To regain the film curl, which can aid threading, the exposed film must remain rolled up tightly for at least one day.

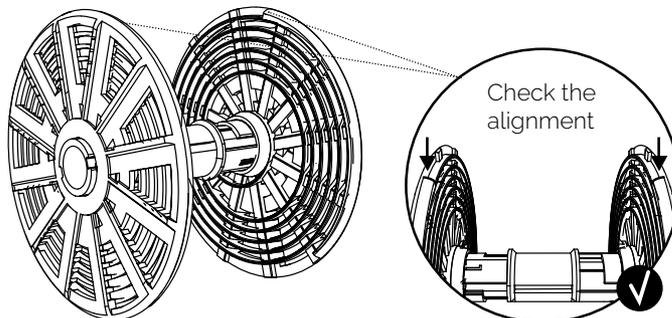
1

Check the film guide is in the correct 120 position, properly opened, touching the external rings and dry.



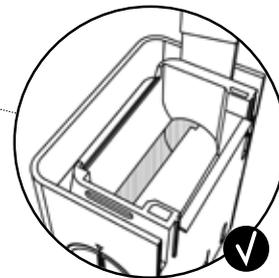
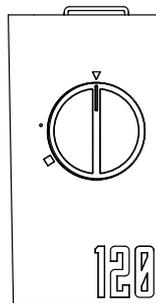
2

Check the 120 reels are in correct position and properly aligned. Follow L, R and arrows reference on the reels and the hub.



3

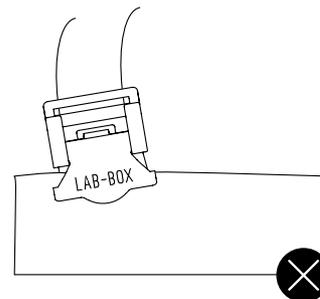
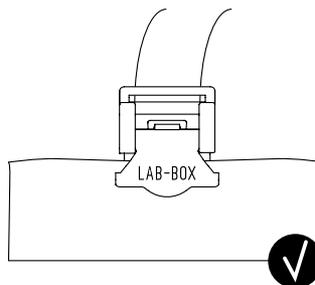
Check the 120 knob is on "▽" symbol to open the film chamber.



Module and film chamber must be dry

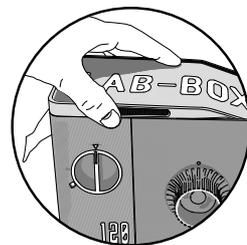
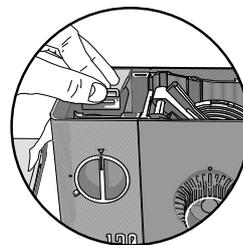
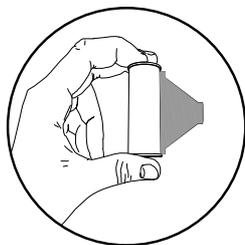
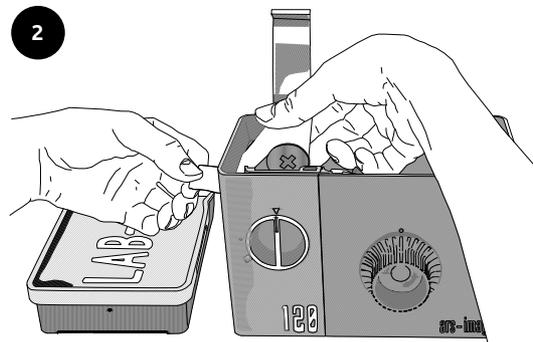
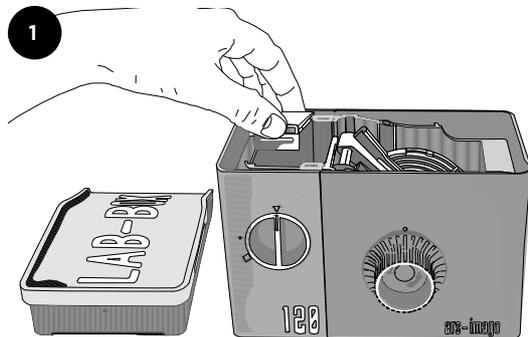
4

Pay attention to center the film in the clip as much as possible.



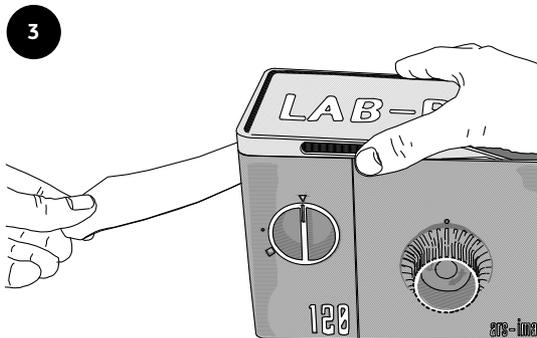
Films with P.E.T. base can't be used with Lab-box.  
Here you can find an updated list of P.E.T. base films: [www.lab-box.it/petfilmslist](http://www.lab-box.it/petfilmslist)

## INSTRUCTIONS



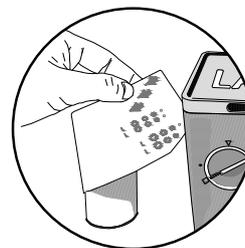
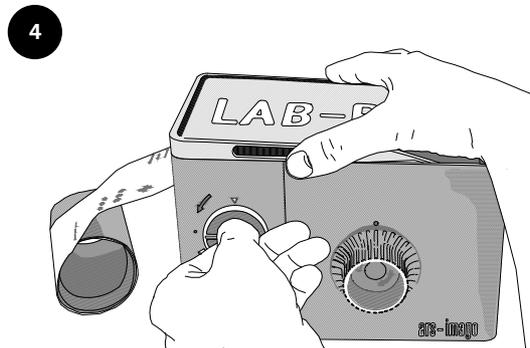
Take your 120 exposed film, open the lid and open the module grey lock. Be sure the 120 knob is in open position (triangle symbol).

Feed the black backing paper through the rear slit and place the roll in the film slot. Close the grey lock as well as the lid.

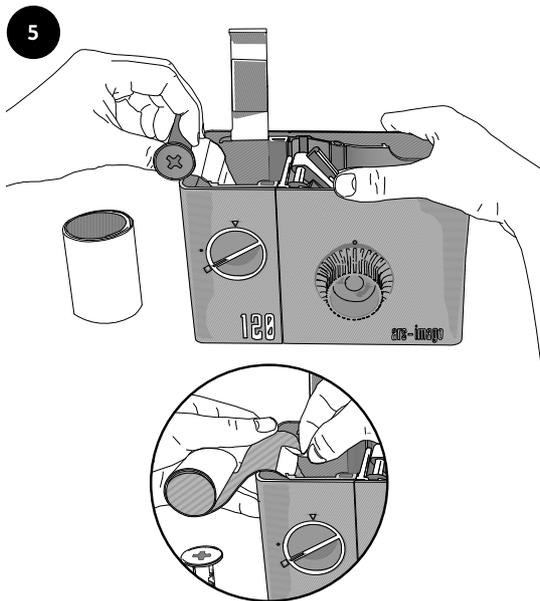


*The film will be automatically wound into the lower lightproof chamber behind the 120 knob.*

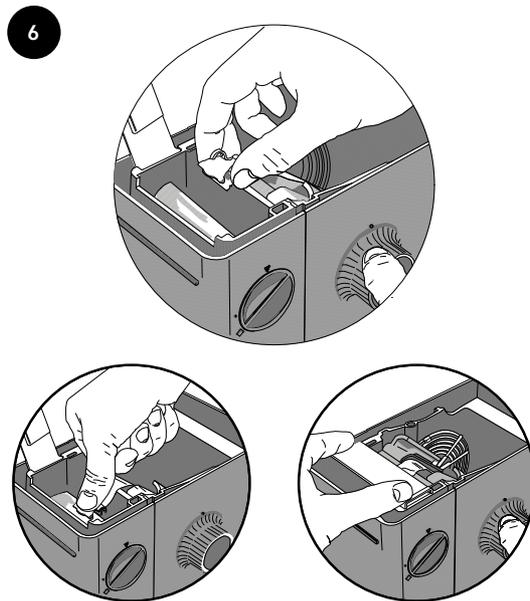
Pull the paper out through the slit. When it has come to the end, you will feel resistance and you will see three arrows and "1" on the paper.



Turn the 120 knob counter-clockwise into closed position (square symbol). Now you can tear away the paper.



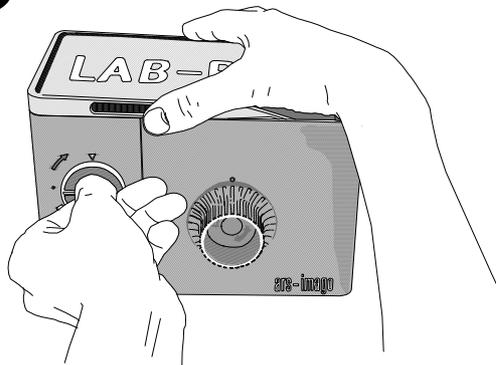
Open the lid and carefully remove the spool. Pay attention to not pull out the film. Remove the excess backing paper and the adhesive from the film.



Take the metal clip and hook the film: press the clip with your fingers until you hear a click, then close the grey block.

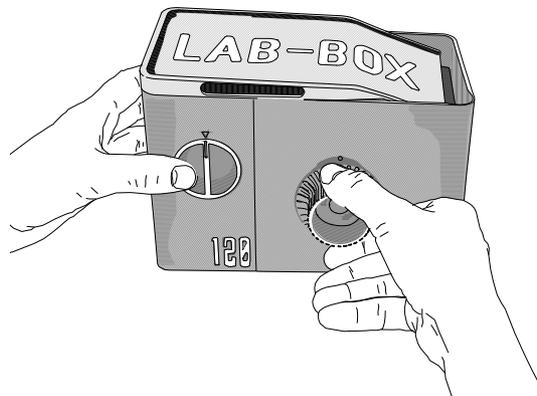
*Pay attention to clipping the film as much as possible in the center.*

7



Close the lid and turn the 120 knob (triangle position) to open the lightproof chamber and release the film.

8



Turn the tank knob gently in order to wind the film onto the reel. Now you can start processing your film.

## CHEMICALS PROCESSES

### Monobath

Monobath process allows to develop black and white film quickly and easily with only one solution and in a few minutes.



### Black and White

The standard Black and white process consists of 4 baths: Developer, Stop, Fixer and Wetting Agent.

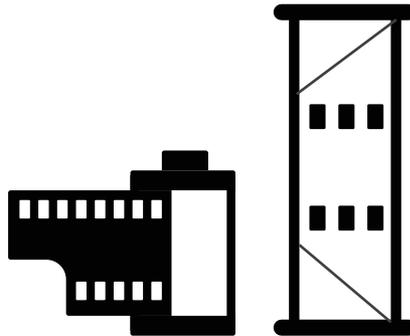


### Color Negative – C41

The C-41 process allows to develop color negative films. It requires a precise temperature control.

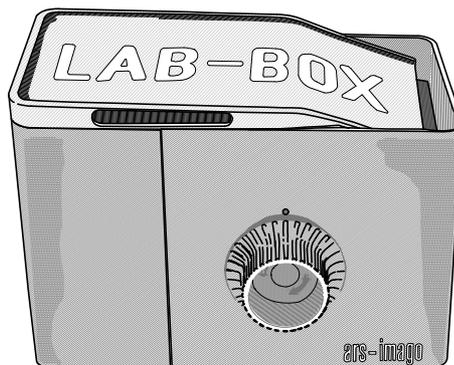
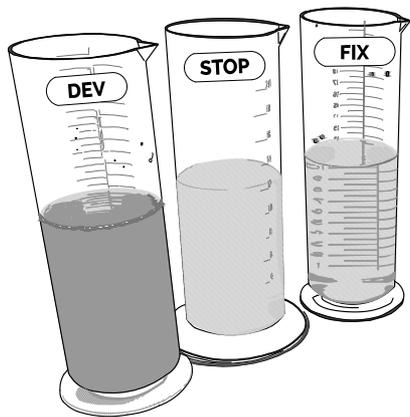


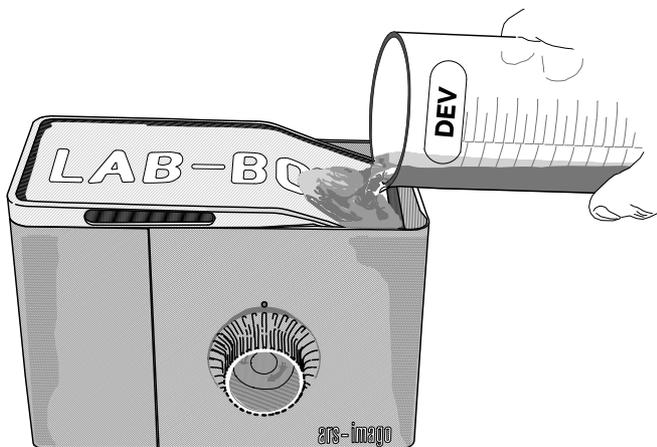
# Process your film



## Preparation of liquids

Liquids must be prepared and brought to temperature before starting the process. For black and white, the recommended standard temperature is 20°C (68°F). If you decide to use continuous agitation, prepare 300ml of chemistry. In case of intermittent agitation, prepare 490ml and be very careful not to pour more than 500ml, otherwise liquid can leak out of the tank.





## Pouring and emptying chemicals

Once the lid is closed the chemicals can be inserted into the tank by pouring them in at the front of the lid. Place the cylinder in the center of the tank's edge to speed up pouring as much as possible, being careful not to let the liquid flow out from the edges of the filling space. Do not tilt the tank while pouring as this can cause fluid to leak out of the back of the chamber. In the event of this happening, the process remains unaffected.

## DEVELOPING

Development is the most important part of the process as it will determine the characteristics of your negative: density, rendering of light and shadow, and contrast can largely depend on the chosen development time and type, the dilution and the chosen agitation method.

Once your diluted chemistry solution has been brought to the correct temperature, pour it into the tank. With intermittent agitation, it is very important to stir continuously for the first 45 seconds. At the end of your chosen development time, you can pour out the solution from the tank. We suggest to start rotating the knob or crank at the same time as when pouring the chemistry.

*Temperature: if your current room temperature is much higher or lower than the temperature required by the developer, make a 2-minute pre-bath with a water solution brought to a higher or lower temperature in order to correct the developer temperature.*

## STOPPING

The Stop bath must be carried out immediately after the Developer. Although it is also possible to use a simple water solution, we recommend using a dedicated chemical solution (in particular an odourless citric-acid based one). The duration of the Stop bath should be 45–60 seconds with constant agitation for the first 30 seconds.

*It is important that the difference in temperature between the Developer and Stop Bath is minimized as significant differences in temperature can compromise the integrity of the film.*

## FIXING

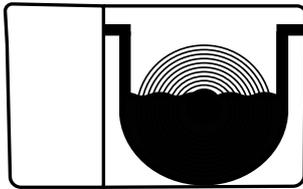
The fixing bath is the last step of the process before opening the lid. Follow the time and dilution indications of your chosen chemical. Usually the fixing time can last from 5 to 10 minutes depending on the product and the freshness of the solution. If when opening the lid the film looks still very purple, prolong the fixing bath by a few minutes. It is important that the temperature of the fixing solution is as close as possible to the developer and stop temperature. Major stress and temperature changes can ruin the film.

## AGITATION

Lab-Box can be used with two types of agitation: continuous or intermittent. Agitation happens by rotating the knob or the crank in a clockwise direction only, as indicated by the arrows.

### Continuous agitation – 300ml chemical

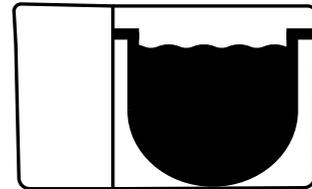
This is the recommended method to obtain consistent developing and contrast. Agitation must be continuous by rotating the knob or crank throughout the entire process. Alternating the regularity and speed of agitation is recommended. The development process can be further optimised by tilting the tank from side to side every 30 seconds. Continuous agitation is particularly important and recommended for the developing phase. Continuous agitation is particularly important and recommended over the developing phase.



**300ml - Half filled**  
*Continuous agitation*

### Intermittent agitation – 490ml chemical

This mode allows the film to be stirred intermittently, however Lab-Box still requires more frequent agitation compared to normal tanks. It is therefore advisable to continuously agitate for the first 45 seconds and then for 10 seconds every 30 seconds. The agitation must be as vigorous and fast as possible; approximately 3 half turns of knob every 2 seconds. To avoid leaking, keep the amount of chemistry under 500ml. If the tank is full, be careful not to move or tilt it in such a way as to cause leakage.



**490ml - Full filled**  
*Intermittent agitation*



## WASHING

After fixing it is important to wash the film. Washing is possible both inside and outside the tank.

### Washing inside

After having disconnected the module, fill and empty the tank a few times using fresh water. Then fill the tank approximately halfway and turn the knob constantly for about 20–30 seconds. Repeat the process about 10 times and alternate with rinses under running water.



### Washing outside

To wash the film outside of the tank, removing the knob and film reel and place them in a container under gently running water for 15 minutes. Discard and refresh the water from time to time.

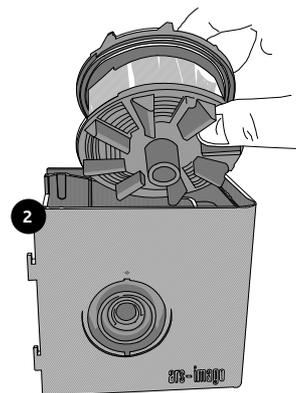
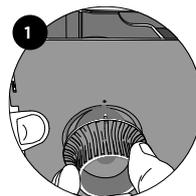
## WETTING AGENT

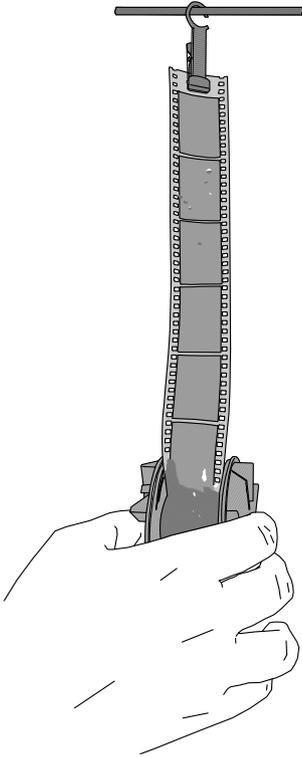
The wetting solution is the last step of the development process before drying the film. It is a very important step as it improves the final cleaning of the film by removing streaks on the negative.

Depending on the dilution and the indications recommended by the chosen product, immerse the film in the solution and make a slight agitation being careful to avoid the formation of too much foam.

We suggest to do it outside the tank in a separate container, just before hanging and drying the film. If you want to do it inside the tank just after the washing, remember to clean and rinse it very well afterwards. After the wetting bath do not rinse the film but manually shake the reel to remove excess liquid.

*How to remove the reel from the tank:*





## **DRYING THE FILM**

Using a clip, hook the first piece of film on top of the reel. Once the film is hooked and the clip hanging, you can gently unroll the tank by rotating the reel in the opposite direction. When you have reached the end you can either release the film from the reel, or leave it attached as a weight to aid the film drying flat. We recommend removing the excess liquid remaining on the film by gently sliding the negative between the index and the middle finger, from top to bottom along its entire length. It is important to avoid air flow or dust coming into contact with the wet film as the emulsion is still delicate at this time.

## **CLEANING AND DRYING LAB-BOX PARTS**

At the end of the process it is very important to thoroughly wash all parts of the tank and then let them dry in the air. If the modules have not caught chemical splashes or drops, you can simply clean them using a damp cloth. In case you need to wash the modules, be careful to remove all the residual water inside and check very thoroughly that all parts are dry. The tank and all its components must be dried carefully. If the next film is to be developed immediately after, special attention must be paid to the grooves of the spiral reel. If an electric dryer is used, only cold air may be employed because of the plastic material.



# Trouble shooting



## PROBLEM

### Loading 35mm film

The film was wrongly wound into the reel and/or is stuck or ruined

The film does not lock at the end is not cut when the lever is pressed.

The film releases from the clip as soon as I try to load it.

## CAUSES

Incorrectly-assembled reels

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Incorrectly-positioned Film Guide

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Incorrectly-clipped film

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The film was not properly fed through the two metal guides.

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Pet Film Base

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Damaged blade

---

The film was not clipped by sufficiently pressing the clip.

---

## SOLUTIONS

Make sure that the reels were correctly assembled and aligned.

---

Check the position of the film guide for 35mm as mentioned in the checklist

---

Clip the film perfectly in the center

---

Open the tank in the dark or inside a changing bag and manually cut the film

---

Pet base films sometimes are very hard to cut: try to firmly push the blade more times and simultaneously pull the film rotating the knob. If it doesn't work, cut the film manually inside a changing bag and then check if the blade is defected.

---

Check the blade and call for assistance

---

Press the clip between the thumb and forefinger until you hear a "click".

---

## PROBLEM

### Loading 120 film

The film is incorrectly loaded in the spiral and / or jammed and ruined

The film got stuck while the black backing paper was being pulled away and did not wrap properly in the inner slot.

After clipping the film and opening the film chamber, the film gets stuck and the knob does not rotate.

The film releases from the clip as soon as I try to load it.

## CAUSES

Reel incorrectly assembled

Film guide incorrectly positioned

Film Incorrectly clipped

Film Chamber left in closed position

Film left in camera for several days and left unrested

Film with PET support

Clip accidentally stuck with the 120 block spring.

The film was not clipped by sufficiently pressing the clip.

## SOLUTIONS

Make sure that the reels were correctly assembled and aligned.

Check the position of the film guide for 120 as mentioned in the checklist

Clip the film perfectly in the center

Make sure the film chamber is in the open position (triangle).

Films which are in the camera for more than one week lose their curling quality. To film this quality which is necessary for threading, the film must be rolled up tightly for at least one day.

120 films with PET support cannot be used with Lab-Box.

Close and slowly open the 120 Film chamber while at the same time turning the knob until it unlocks. Then reopen the film chamber completely (triangle)

Press the clip between the thumb and refinger until you hear a “click”.

**PROBLEM**

**CAUSES**

**SOLUTIONS**

**Developing 135 Film**

Film borders are white and undeveloped or unfixed

Film borders touching the reel

It does not cause any problems and does not affect the results.

Scratched film

Blade tip edging out

Make sure the blade is not visible before loading the film, if so push the lever on the back of the module downwards

Dust or residues on the roll gasket

Clean the roll externally

Unevenness in developing, dark spots and side halos

Little or scarce agitation

Stir for longer and more vigorously

Ineffective intermittent agitation

Perform development with continuous agitation and half-filled tank

Chemicals leaking from the sides and/or from the back of tank

Tank filled with more than 490–500ml

Do not fill the tank with more than 490ml

Tank tipped and moved during the process

During the process, keep the tank steady on a flat surface

## PROBLEM

## CAUSES

## SOLUTIONS

### Developing 120 Film

First frame partially burned

First chunk of film gets light when opening the lid to hook the clip

---

When loading the roll into the machine, advance the film a few centimetres from the standard position before closing the back

---

Unevenness in developing, dark spots and side halos

Little or scarce agitation

---

Stir for longer and more vigorously

---

Ineffective intermittent agitation

---

Perform development with continuous agitation and half-filled tank

---

Chemicals leaking from the sides and/or from the back of tank

Tank filled with more than 490–500ml

---

Do not fill the tank with more than 490ml

---

Tank tipped and moved during the process

---

During the process, keep the tank steady on a flat surface

---

## Safety information

Keep the device out of reach from children as the moving parts may cause injury.



*This is not a toy*

## Care and Warranty

Your Lab-Box has two -year warranty against any manufacturer defects. In the event of defect, the ars-imago will repair or replace the item at our discretion. For the warranty service, please contact [support@lab-box.it](mailto:support@lab-box.it)

## Technical Specifications

Dimensions: 182x98x124mm (without knob)

Weight: 750g

## Materials

ABS and NYLON plastics. FKM and Silicone rubber.

Stainless Steel (135 & 120 Modules)



**Designed in Italy**, Made in P.R.C.

## Customer Support

Lab-Box Support Team is always more than happy to hear from you. Get in touch using the contact details provided.

[support@lab-box.it](mailto:support@lab-box.it)

[www.lab-box.it](http://www.lab-box.it)

**LAB-BOX**

a project by **ars-imago**



 @labboxfilmtank

 @arsimago

# LAB-BOX

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