



Loan Box

120mm Camera



Museum
Gallery
Archive

The Box is Plymouth's new multi-million pound museum, gallery and archive. With brand new exhibition spaces alongside state-of-the-art facilities for research and learning, it's the perfect place to teach, inspire and engage students of all ages.

Loan Box Contents

1 x 1960s Yashica Yashica-Mat camera

1 x Leather case

1 x Original camera box

1 x Original cardboard box

Risk Assessment

Please conduct a risk assessment of these objects before using them with your class. Some of the objects included within this box could be harmful, including small metal levers and buttons. The door mechanism could trap little fingers if not closed properly.

Lost/ Damaged Items

If you have lost or damaged any items, please inform us as soon as possible, using this email: theboxlearning@plymouth.gov.uk

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About this resource

Good news or bad news first? The good news is - this camera is brilliant! The bad news - it's slightly tricky and will take a bit of patience for you and your pupils to get the best out of it.

As you will see from our own efforts on page 27, it is possible for rank amateur photographers to take photos that are in focus and that generally depict what was intended.

Most young people today will have never used a film-based camera and possibly never handled one before. Their experiences of photography are likely to be the fast-paced, instant and easily shareable images through mobile phones and apps such as Instagram. This camera is the opposite of this approach - slow, methodical and mechanical.

This resource offers a brief introduction on how to load and unload film from the camera and prepare it for shooting. Rather helpfully, various people have added excellent content about this camera and other similar Yashica's online, including pdf manuals and filmed tutorials. To find these manuals or tutorials, simply search online for 'Yashica-Mat manual' or 'Yashica-Mat tutorial'.

Despite 35mm film generally being more widely used than 120mm, apps such as Instagram have taken the square image from medium format film as their default format of choice.

Why not start your own school Instagram feed and upload your photographs taken with our camera?

Don't forget to link to us using @theboxplymouth and #theboxplymouth.



Yashica Yashica-Mat

The Yashica-Mat was manufactured in Japan by Yashica. It was introduced in 1957 and discontinued in the 1970s.

The Yashica-Mat was the first twin-lens reflex camera by Yashica to feature a crank film advance handle. A twin-lens reflex, or TLR, use two lens - one to take the image (the 'taking' lens) and one to view the image (the 'viewing' lens).

The Yashica-Mat uses medium format 120mm film and takes 12 pictures per roll. You can use either colour or black and white film.



How to: Yashica Yashica-Mat

To open the back cover, turn the tripod socket on the bottom in the direction marked 'O'. Then open the cover by swinging it out.

To load the film, remove the take-up spool in the lower film chamber by pulling out the lower film spool locking spring on the side of the camera.

Place this take-up spool into the upper film chamber by pulling out the upper film spool locking spring. Place a new roll of 120mm film in the lower film chamber.

Use the film transport crank to slowly wind it clockwise so that the winder slot of the take-up spool faces upwards. Gently draw out the film leader and thread it firmly and evenly into the slot.



How to: Yashica Yashica-Mat

Gently wind the crank clockwise until the an arrow on the film points to the triangles on either side of the camera body.

Close the back cover and lock it by turing the tripod socket in the direction marked 'C'. The letter 'S' will appear in the film counter window. Wind the crank until a 1 appears.

Wind the crank counter-clockwise until it stops. You are now ready to take a photograph.

The crank should be used in a smooth, clockwise manner, first downwards to advance the film, then upwards to prepare the shutter. It should flip back int its rest when your photos have been taken.



How to: Yashica Yashica-Mat

To remove the lens cap, raise the lower cap and then turn the upper cap counter-clockwise to remove. Keep this safe.

To take a photo, lift the focusing hood from the back of the camera. Rotate the focusing knob until the subject on the glass screen is sharp.

To remove the film, wind the film transport crank around 6 times to take-up the remaining film. Sometimes the crank may catch when the film comes to the end of the spool. Don't worry, don't force it any further - just open the camera and remove the film. Be sure to stick down the tail of your film, and remove by releasing the spring on the side.



120mm Film

120mm or medium format film is a flexible, nitrocellulose strip coated in photographic emulsion, attached to a piece of backing paper.

The emulsion includes millions of light-sensitive silver halide crystals. Each crystal is a compound of silver plus a halogen (such as bromine, iodine or chlorine) held together in a cubical arrangement by electrical attraction.

When the crystal is struck with light, free-moving silver ions build up a small collection of uncharged atoms. These small bits of silver are the beginning of a latent image. Developing chemicals use this latent image to build up density, gradually accumulating enough metallic silver to create a visible image.

Colour films have multiple layers of silver halide to separately record the red, green and blue thirds of the spectrum, with a matching colour coupler grain to add a colour dye along with the metallic silver.

120mm film produces 6x6cm format images. Despite being overtaken in popularity by 35mm film, this square format is now synonymous with Instagram and other social media apps.

Processing

After using the cameras, rewinding your films and removing them from the camera, the next step is to get them processed.

There are a few options for processing: either process them yourself in a darkroom, buy yourself a home-processing machine, or take them to a shop with a lab that processes film. We don't have a darkroom and can't afford a home-processing machine, so we took our roll to Sara, Chris and Adam at MyPhoto.

Over the next few pages we'll show you some of what happens to your film when they are being processed, scanned and printed.



Processing

First, all rolls brought into the shop are double-checked and numbered to ensure that they don't get mixed up.

The lab often process up to fifty films a day, so if they are not handled properly, someone might end up with the wrong photos.

In the photo above, the machine is used to draw the film leader out from inside the film cassette. It is then manually wound to prepare it for printing.

These photos were taken during processing of our 35mm films, but the process is almost identical for 120mm film.

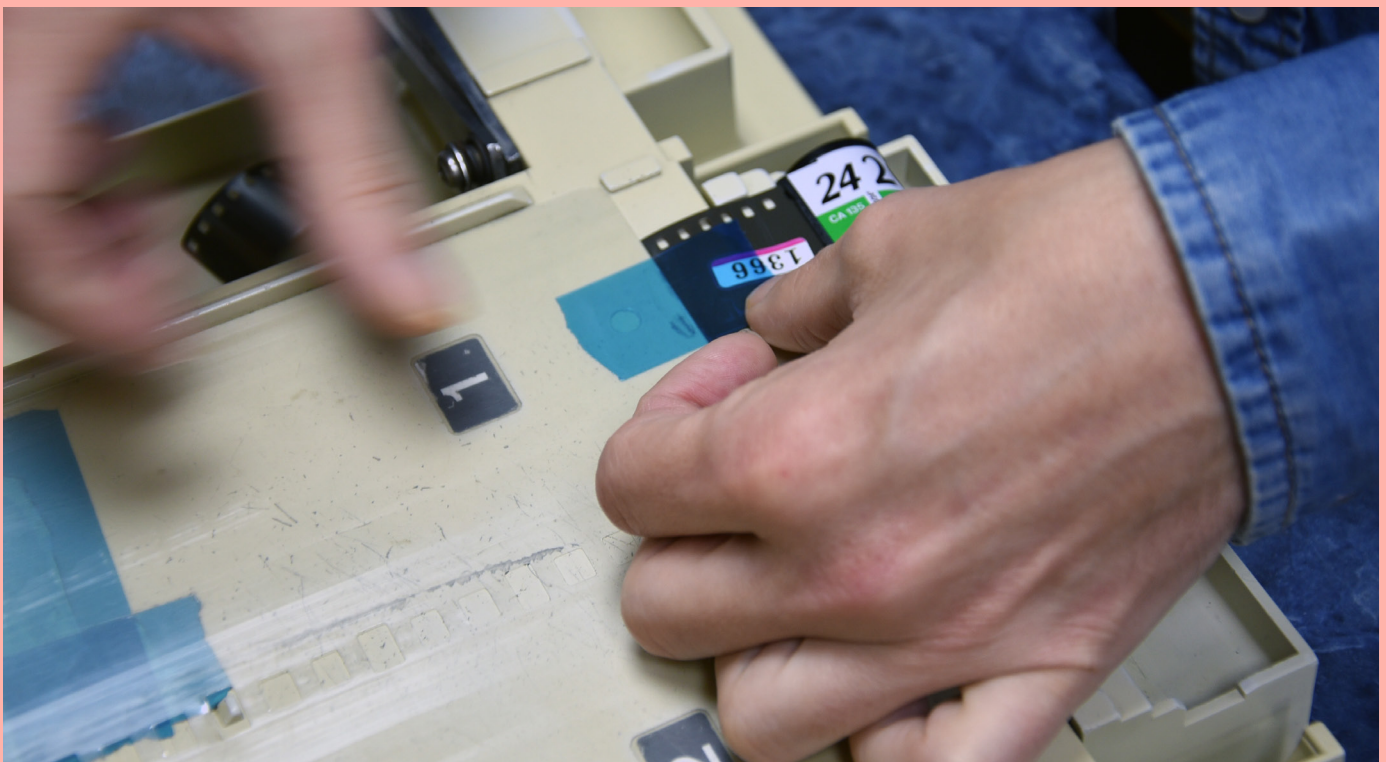


Processing

Once the film leader has been drawn out of the cassette, it is removed by slicing the end off.

The film has already been numbered with a sticker and is then securely fastened to a plastic leader card.

This needs to be stuck down securely on both sides to ensure that the film doesn't come loose in the processing machine. If it comes loose in the machine, its unlikely that you'll be able to process the film.



Processing

The plastic leader and the film cassette are then carefully loaded into the processing machine.

Two films can be put through the machine at the same time.

Because of the decline of traditional film use over the last few years, these machines are becoming harder to find and increasingly expensive to maintain.



Processing

The internal mechanism of the processing machine draws the leader card through a series of rollers into different types of 'chemistry'.

This chemistry comes pre-mixed for the processing machines, including solutions for bleaching and building image density.

The solutions used in this process are sent away after use for 'silver-recovery' - silver is obviously a valuable element and can be reused in the film-processing industry.



Processing

During the processing, the chemistry in the printing machine needed to be replaced.

The machines use pre-mixed chemistry that can be easily slotted in without any need to mix chemicals by hand.

In fact, the machines draw exactly what chemicals are required, mixes them automatically and even rinses the containers once they are empty.



Processing

Another important element is to calibrate the machines.

If they are not checked and calibrated daily, there is a chance the colour balance and contrast will not be correct.

Each morning a calibration test is run through the machines so that they can be tested against the manufacturers specifications. This would also need to be run with every change in photographic paper batch, so if you change your paper to a different batch part way through a day, another calibration test will need to take place.



Processing

Our film has now passed through all of the chemistry and is being fed out of the end of the machine to dry.

At this stage you can see if the images taken with the camera have made it onto film.

Amazingly, ours did!

The roll in this photo was taken with the Agfa Optima III from our 35mm Cameras loan box (so 120mm film would look slightly different). Have a look on page 27 for our photos from the Yashica.



Processing

You can see our film slowly appearing from the machine alongside other films that have been processed and hung, ready to be hand-finished.

These films are sent from across the country and batch-processed in the lab.

MyPhoto receives a sack of these films to process and send back each day.



Processing

Now the film has been processed, the next stage is to scan the negatives into the computer.

This computer allows staff to choose from a huge number of size and print options, from keyrings to canvas-bonded prints.

A suite of computers are used to manage the complete printing process.

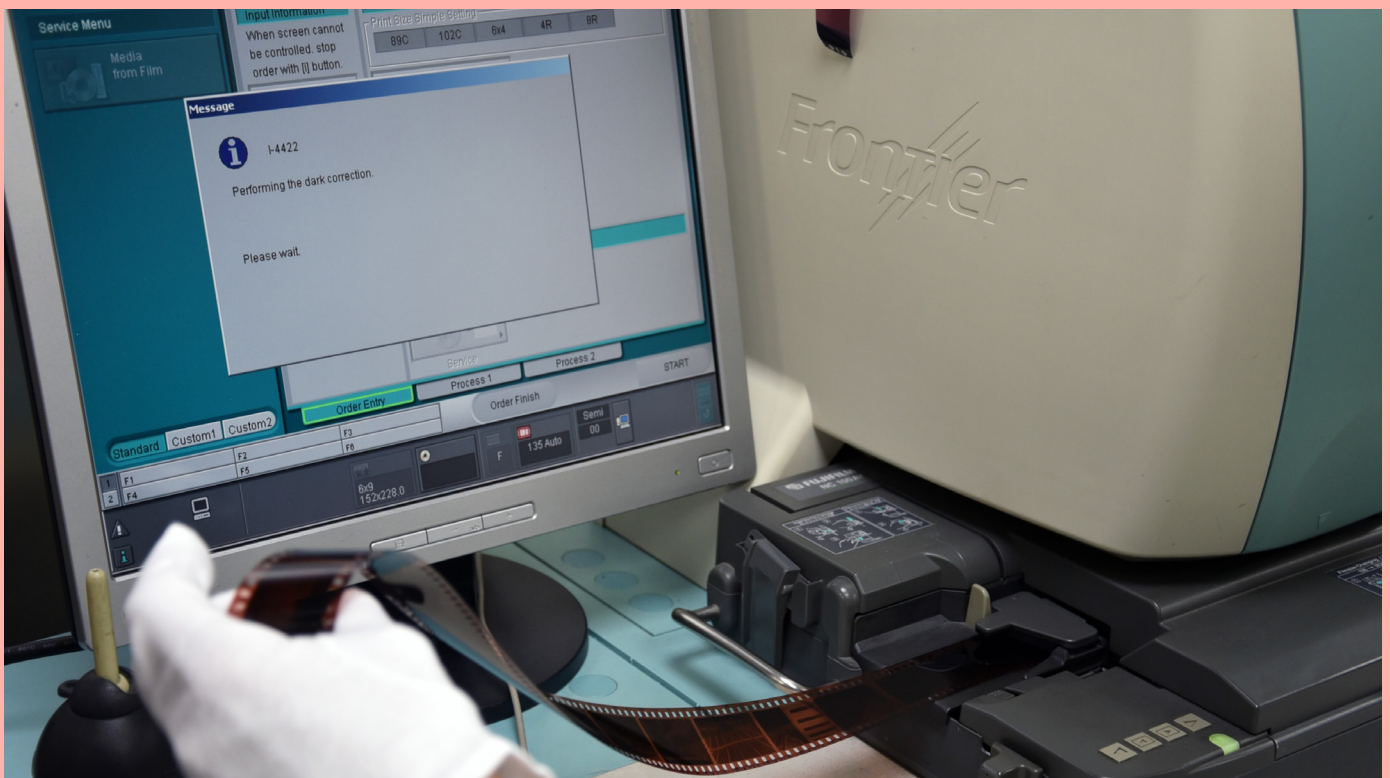


Processing

The negative strip is manually fed into the scanner and then mechanically drawn through the machine.

Each image is scanned individually and can be edited on the computer. For example, most of our photos needed to be darkened (they were a little underexposed) and all had a small amount trimmed off each edge for printing.

If you elect to just have your photos scanned, at this point they could be burned to CD and would be ready for collection.



Processing

The negative strip is then cut and automatically placed into the negative bag by the negative cutting machine.

This is to ensure that the negatives are safe and ready to store. Negatives can be reprinted if required, so ensuring they are safely stored is important.

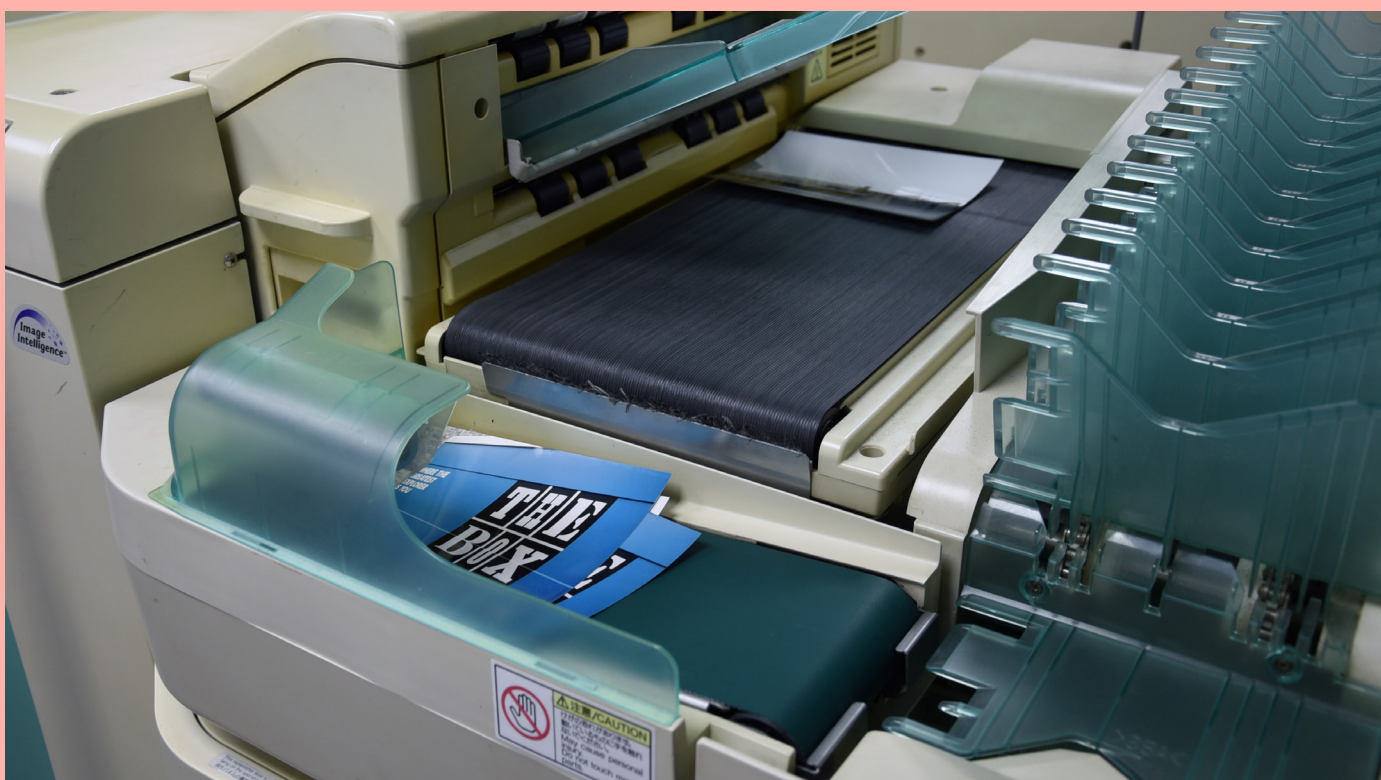
Our collections contain thousands of negatives, including glass-plate negatives, paper negatives and film negatives. They have to be very carefully stored and catalogued to ensure we can identify them easily and reprint or scan them when required.



Processing

Once the scanned images have been prepared by the computer and checked by a member of staff, they are sent to the printing machine.

You can see our images being ejected from the machine onto a small conveyor belt and then collected safely together.



Processing

Our finished photographs. In all, the process takes around 45 minutes to an hour to process one film cassette.

This photo wallet contains our negative strips cut and placed into a negative bag, a CD of scanned images including a printed contact sheet, another printed contact sheet, our receipt and most importantly, our photographs.

You will find all of these (except the receipt and CD) in the loan box, so you can marvel at our ‘interesting’ photographs.

For more information on processing your films at MyPhoto, why not visit their website - www.myphoto.co.uk



Examples - City Engineers Collection

Our collections include roughly 100,000 medium format photographs.

These are from a variety of sources, from individual photographers to Plymouth City Council departments, including around 20,000 taken by the City Engineers.

The City Engineers documented the changing face of the city through architecture, engineering and city planning and offer a glimpse back to another time. Although they are likely to have been using a high-end camera - possibly a Hasselblad or Rolleiflex - the images still offer both highly formal, 'posed' photographs and informal 'action' shots of people at work on the city schemes we see today.



Examples - Roy Westlake Collection

Around 20,000 images in our collection were taken by Roy Westlake.

Roy Westlake began his experimentation with photography before World War II with a cheap camera he bought in Woolworths. He then moved onto a Kodak Box Brownie before moving on again to medium format cameras, such as Hasselblad.

His images are varied, but include photographs of the city being rebuilt after the destruction of the Blitz through to landscape photographs of Devon and Cornwall.

These images have been reproduced with thanks to The Plymouth Barbican Trust and the South West Image Bank.



Examples - Test Roll

On this page you will see some test shots using the Yashica-Mat, taken when The Box was being built. Now it's over to you!



Visit our website for the latest offers, news and projects for schools, and to book your experience with us:
theboxplymouth.com



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