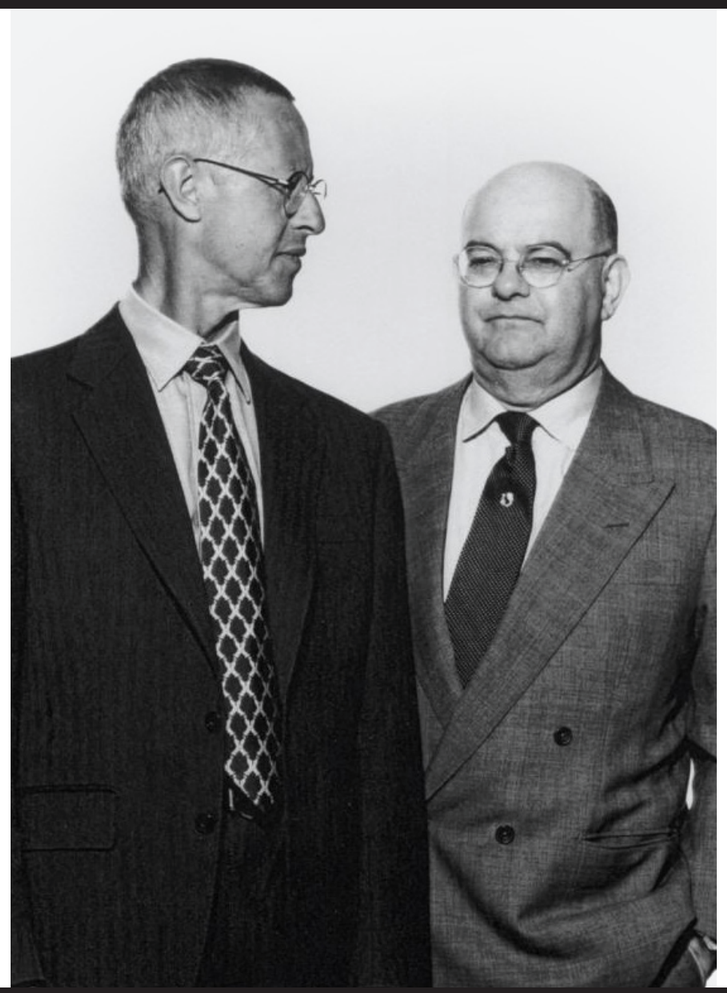
01
CONCEPT



“MY IDEA OF DESIGN
IS A BIT OLD FASHIONED
IT SHOULD BE PRACTICAL,
FUNCTIONAL,
THEN LOOK GOOD
– IN THAT ORDER”.

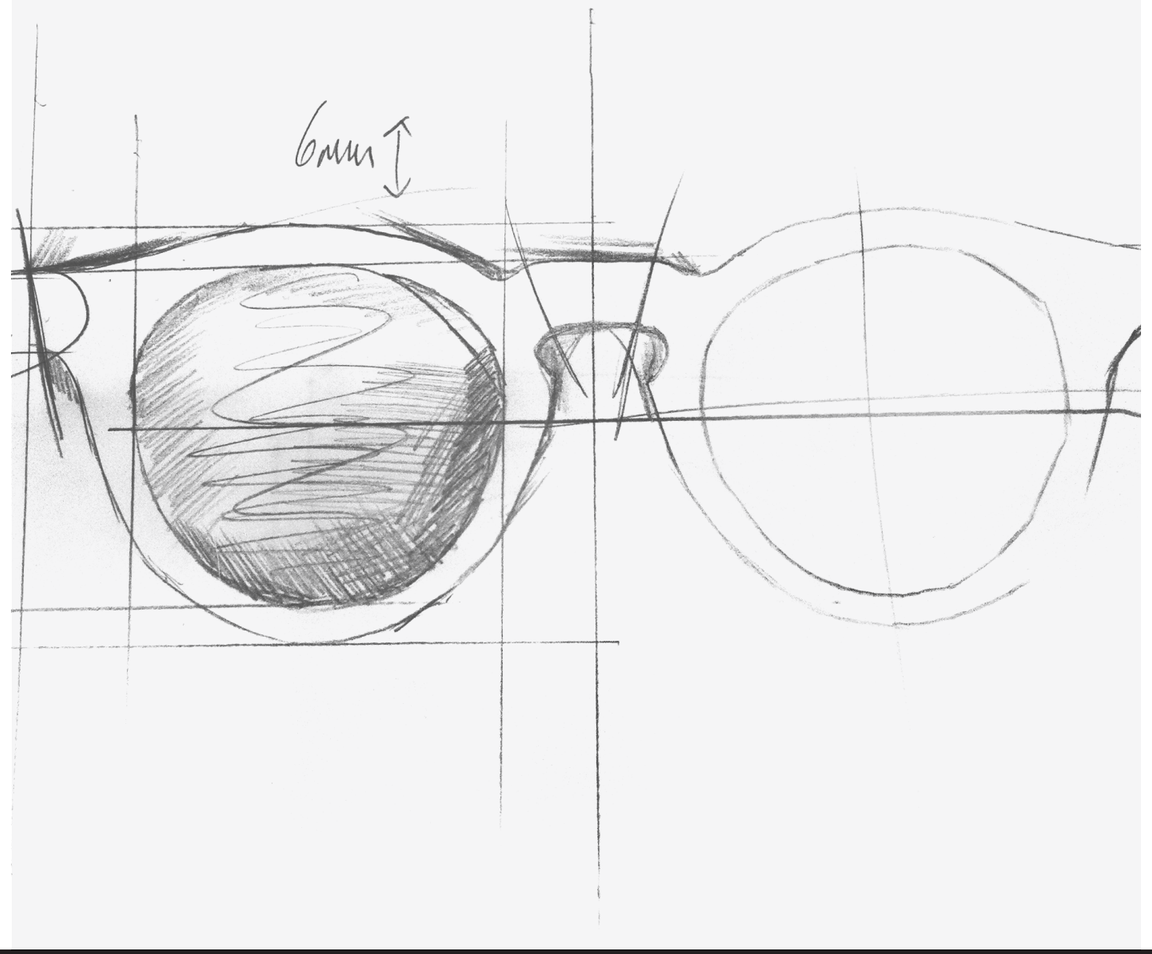
Graham Cutler

“IT’S NICE IF GLASSES
CAN BE SEXY AND
MYSTERIOUS.
PEOPLE WHO NEED GLASSES
DON’T HAVE TO FEEL
SEPARATED FROM
GLAMOUR”.

Tony Gross

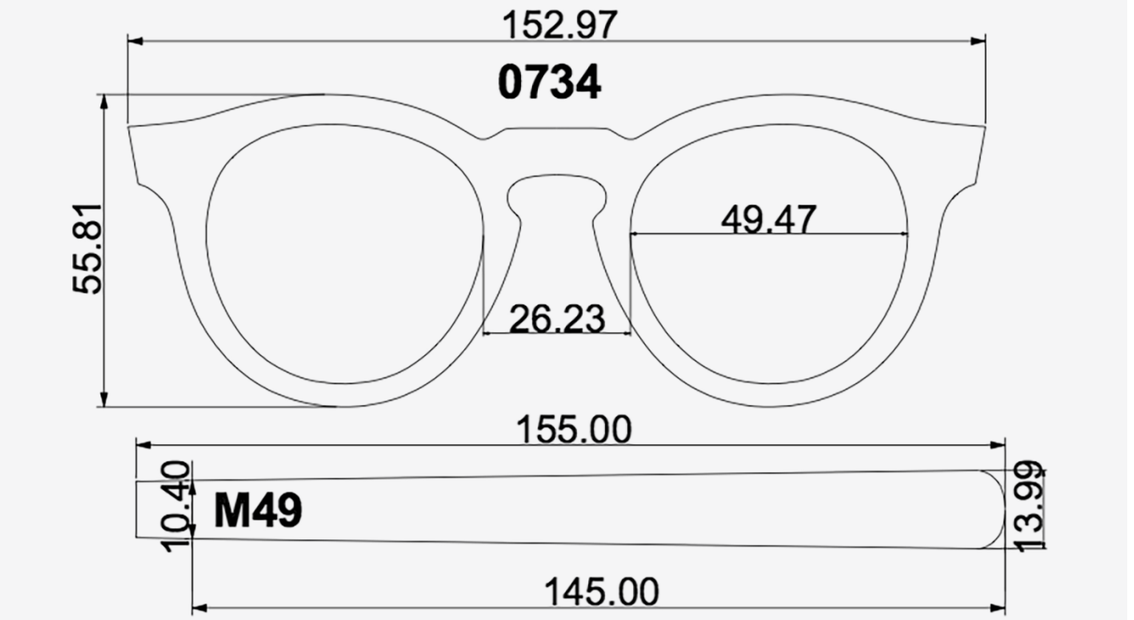
02
DESIGN DEVELOPMENT

Each season the collection is created based on research, trends, sales, and new techniques. Initial ideas are produced, edited, and discussed with all areas of the company. The Cutler and Gross aesthetic is constantly considered.



03
TECHNICAL DRAWING

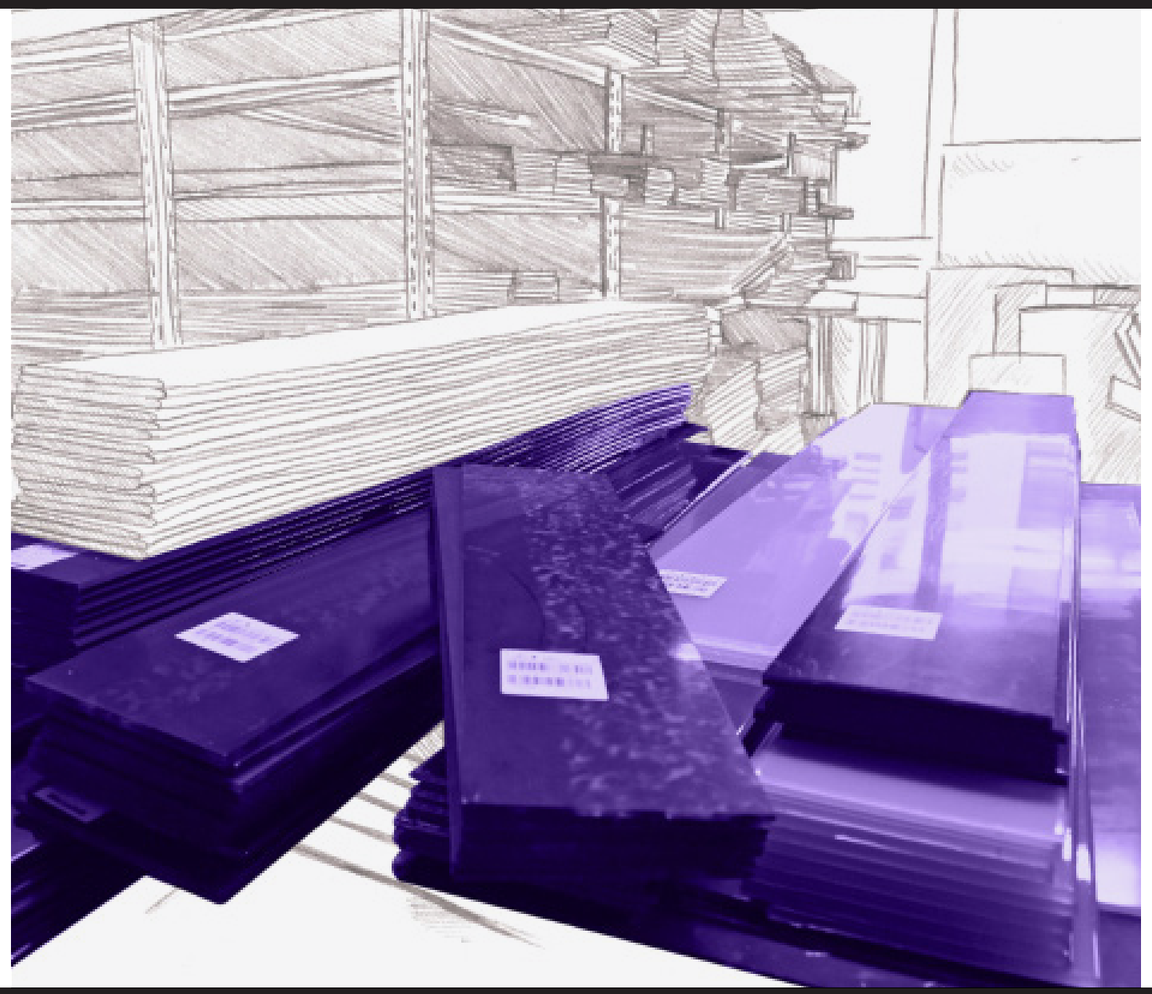
The technical drawings of each collection are created on Rhinoceros, a 3D CAD modelling program. Technical multiple projection view drawings of each frame are produced, which includes top and side views to show thickness and construction details.



04
ORDER ACETATE

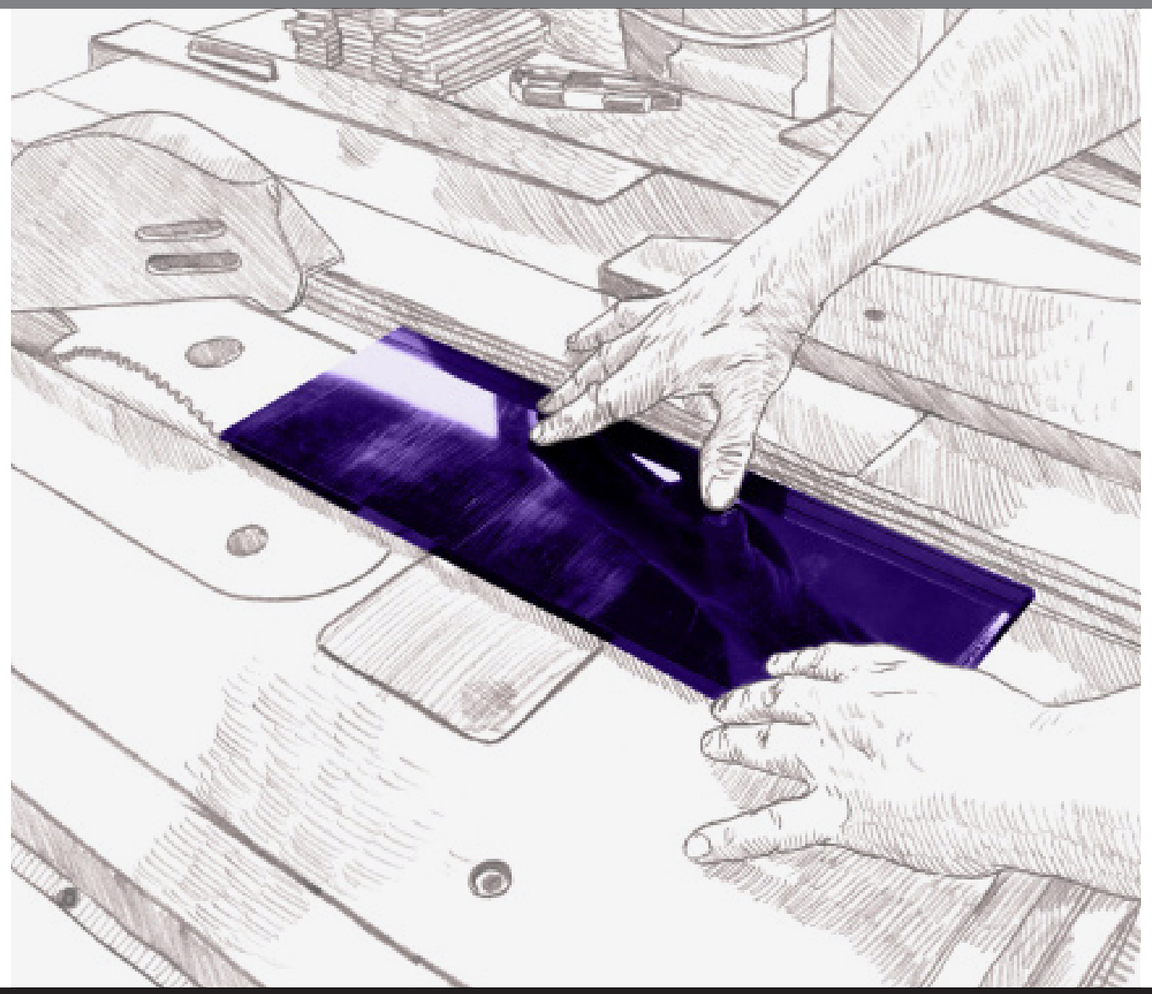
Once a production order has been placed, the factory orders the acetate. Our main suppliers in Italy are Mazzucchelli and Laes.

Generally, we buy in thicknesses of 10mm, 8mm and 6mm for frontals and 4mm for temples. Acetate is produced in a variety of ways depending on the finish. We often require custom acetate created specifically for us, both for colours and thickness to meet our stylistic requirements.



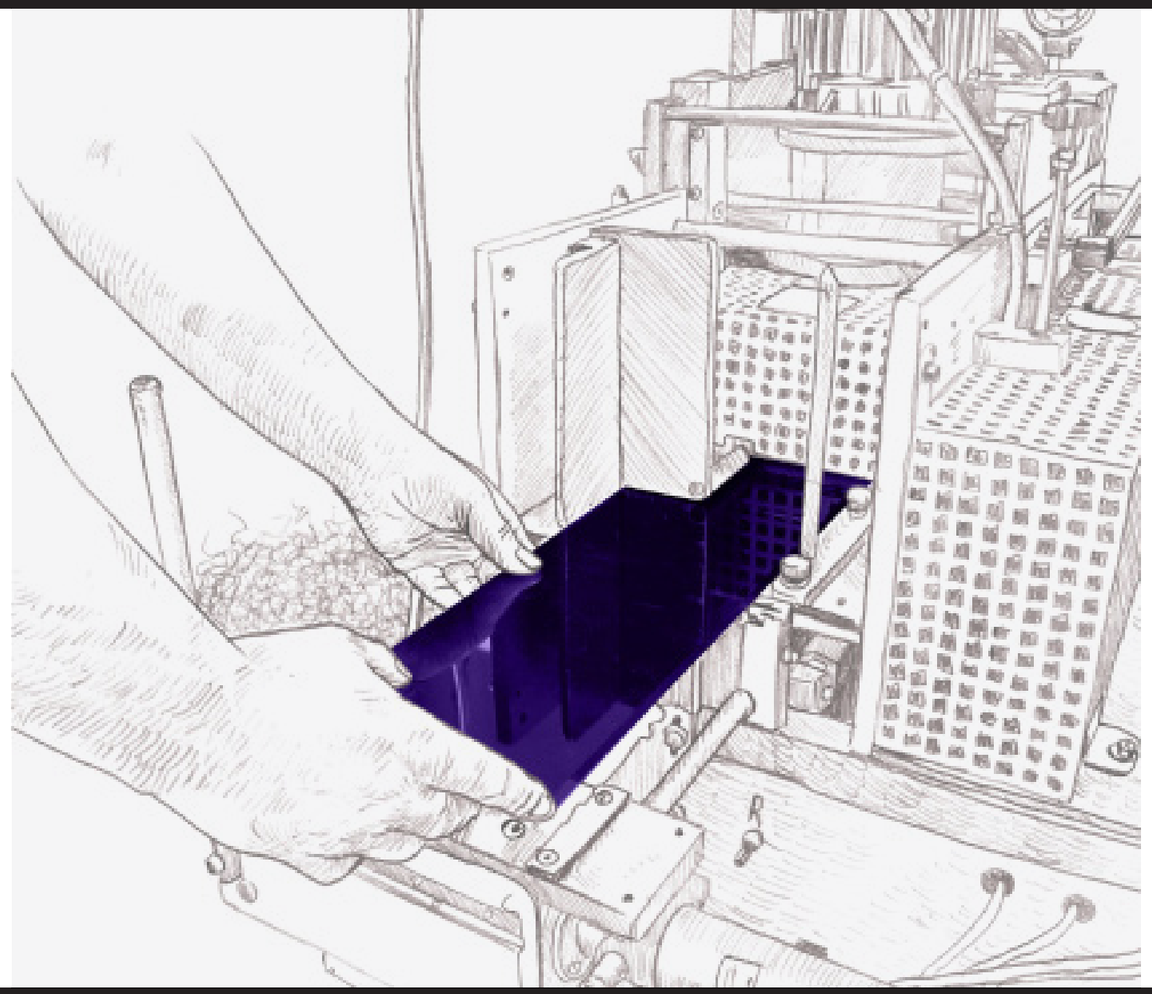
05
CUT ACETATE INTO STRIPS

Once received, the strips are cut down to the specific size needed for the frame. Depending on the layout of the print and the width of the strips, the factory endeavours to minimise waste wherever possible.



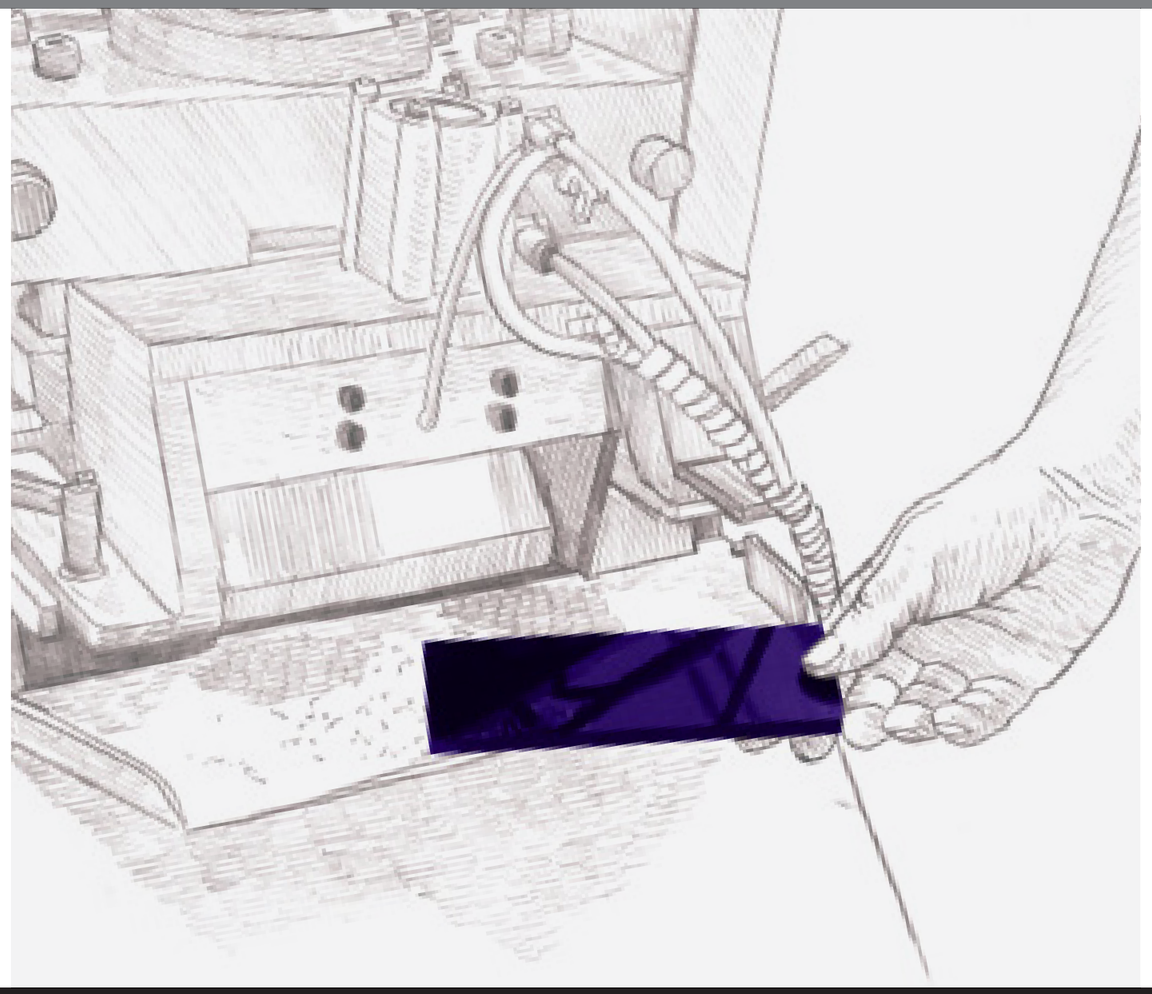
06
REDUCE STRIPS WITH THICKNESS PLAINER

All acetate strips have their thickness reduced on the thickness plainer to reduce the original width according to the technical drawing.



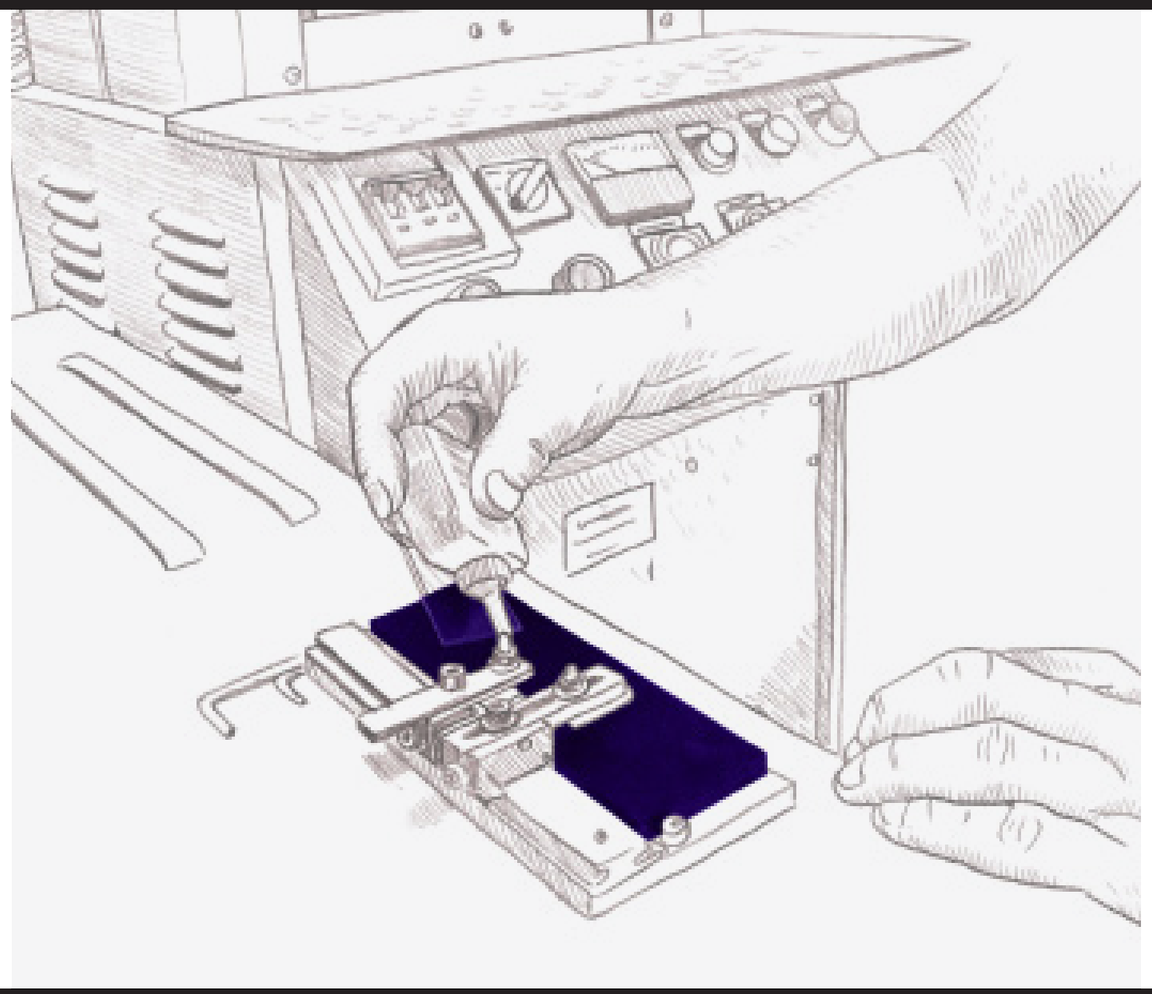
07
CUT STRIPS INTO TABLETS

The strips are then chopped into tablets specifically for the size of the frame.



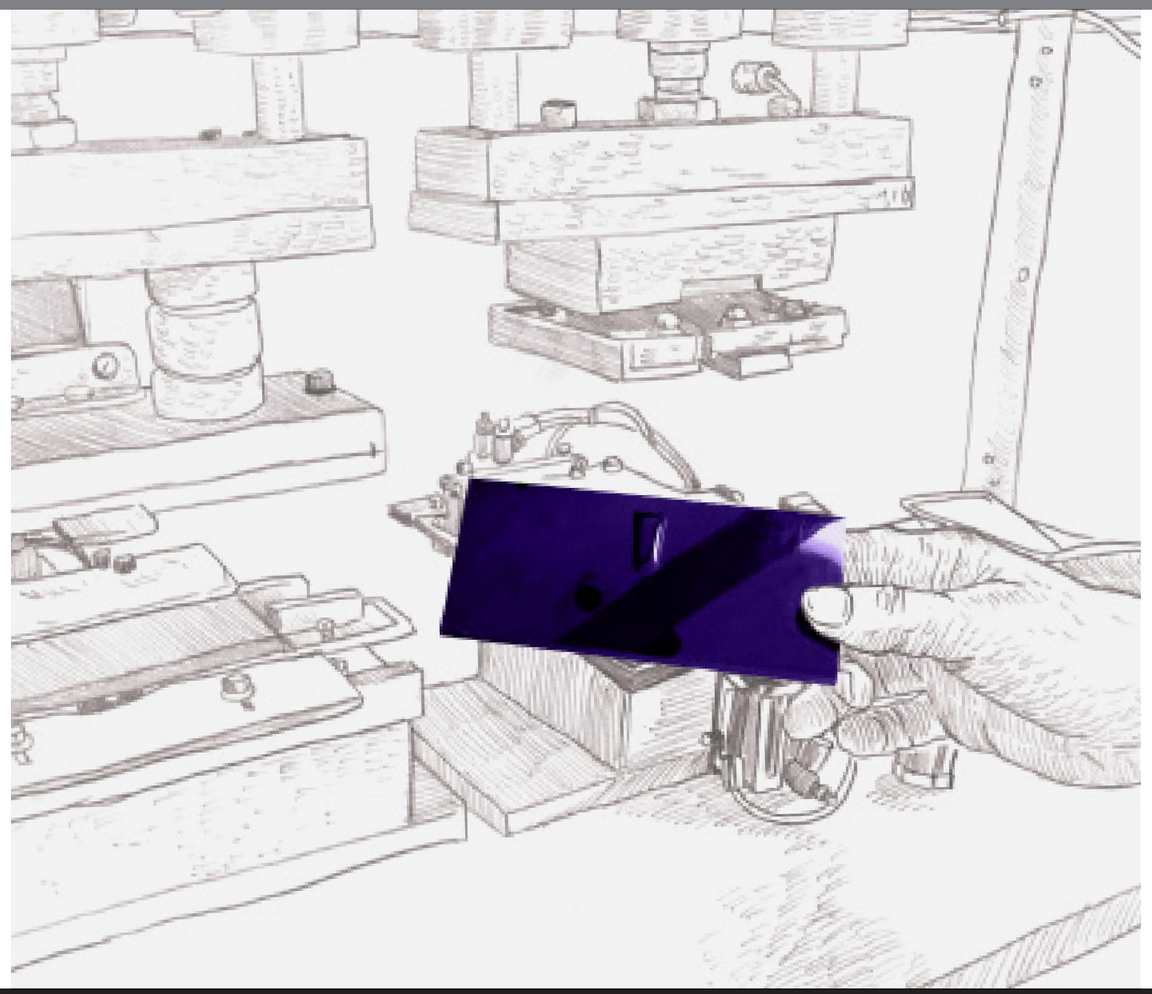
08
GLUING NOSEPADS

An additional acetate piece is glued onto the tablet to increase the depth, ensuring a more comfortable and wearable fit



09
ADD NOSE BUMP TO FRONTALS

The tablets are then loaded into the nose bump machine. There are three different sizes of nose bumps available at our factory which are picked according to the bridge size of each frame. The machine works by first heating the tablet, it is then manually moved to the second step where the chosen shape is heat pressed into the acetate.

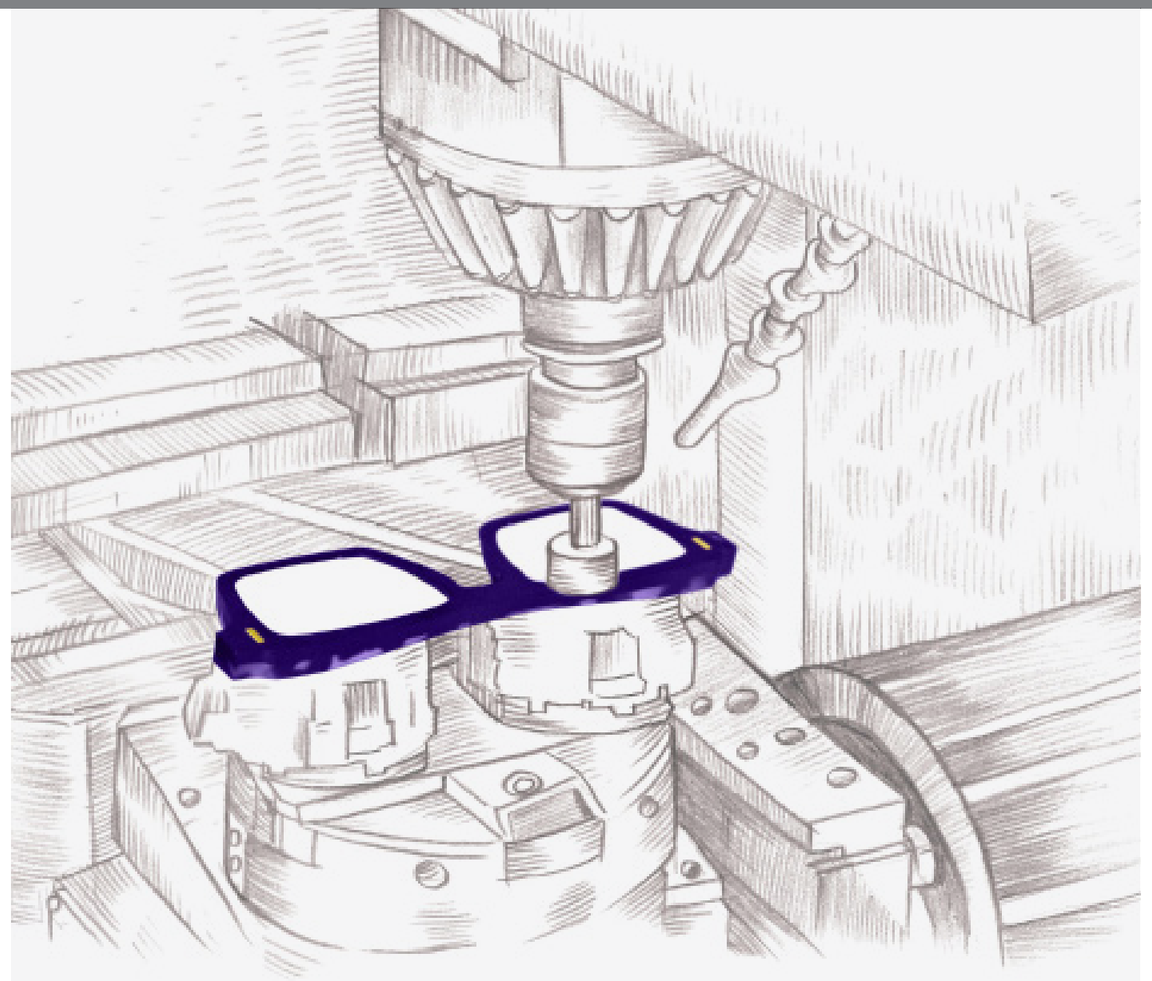


10
PROGRAM CNC MACHINE

Currently we have 10 CNC machines at the factory, each capable of various levels of complexity. Each machine has to be programmed with the Rhino drawing and tool path before it can be used. This is a lengthy and skilled process which has to occur each time a new frame has to be cut. The drawings are then uploaded onto Rhino NC (a CNC programming plug-in for Rhino) where the milling path is set. This is then transferred and programmed onto the CNC machine. There are endless options on tool heads, these are carefully selected and placed into specific tool holders. Once the program has been tested, the machine is loaded with the acetate..

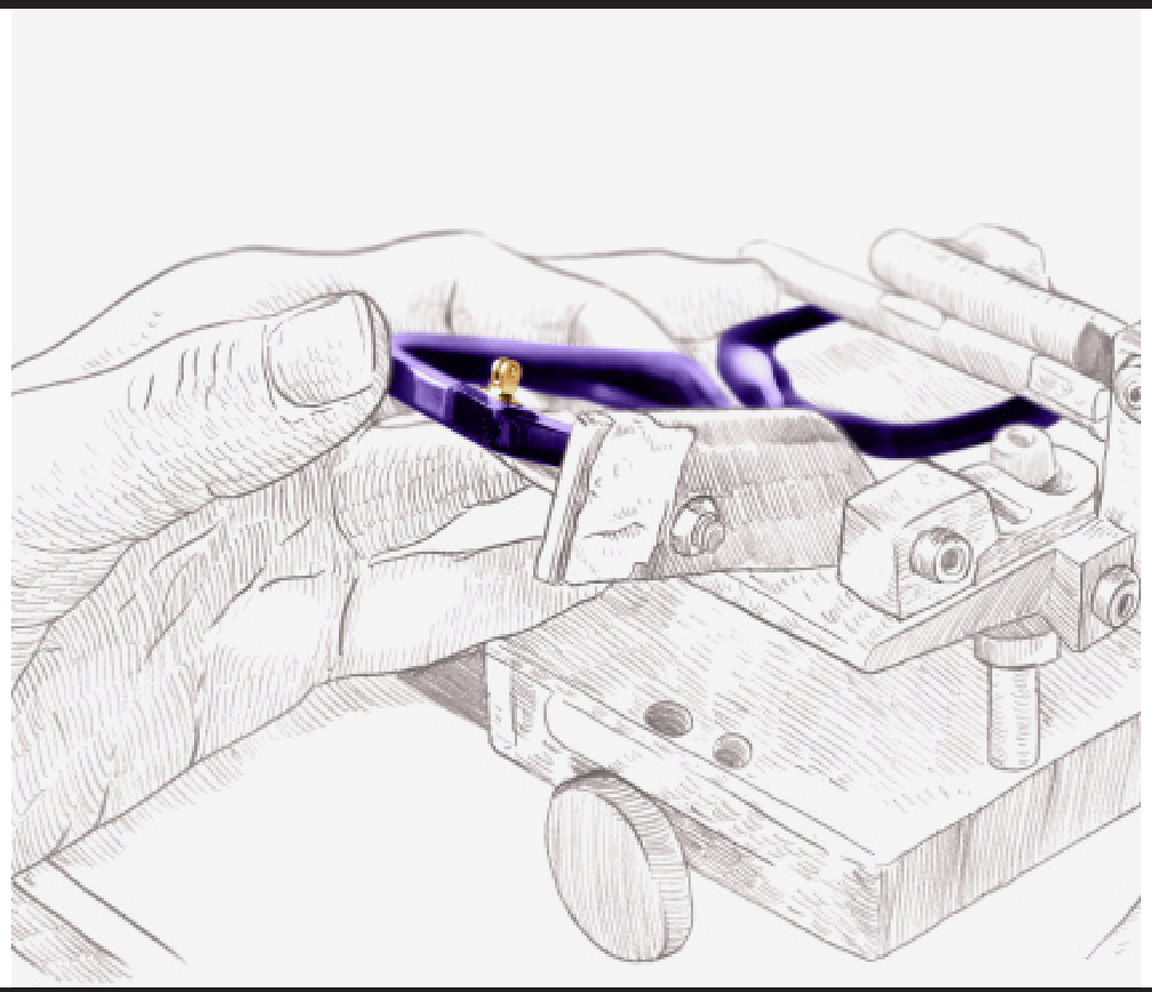
11
CUT EYE HOLES, FRONTALS ON CNC MACHINE AND CLEAN

The first step of the CNC cutting is the eyeholes. Then tailor made “expandable mushroom” grips expand and clamp to the eyeholes to secure the acetate. When the acetate is secured by the “expandable mushroom”, the outside is cut along with any extra milling details. Depending on the detail, this can take a number of minutes per frontal. Once cut, the frontals have their rough edges removed by being barrelled with PVC rhombus shaped chips.



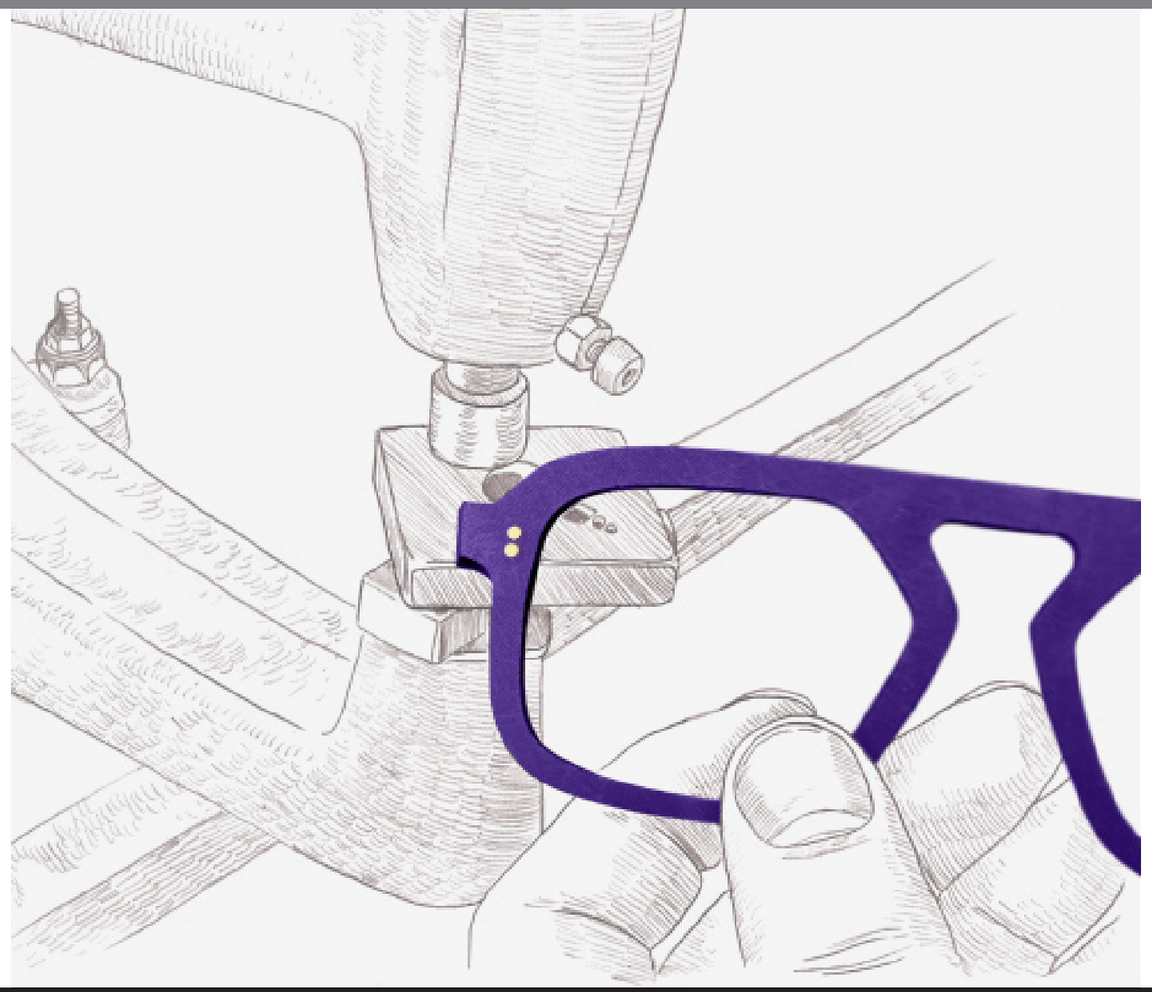
12
INSERT HINGE

We offer two types of hinges, the first is the sunken hinge which does not require pins. The second is the traditional riveted hinge which is fastened using pins.



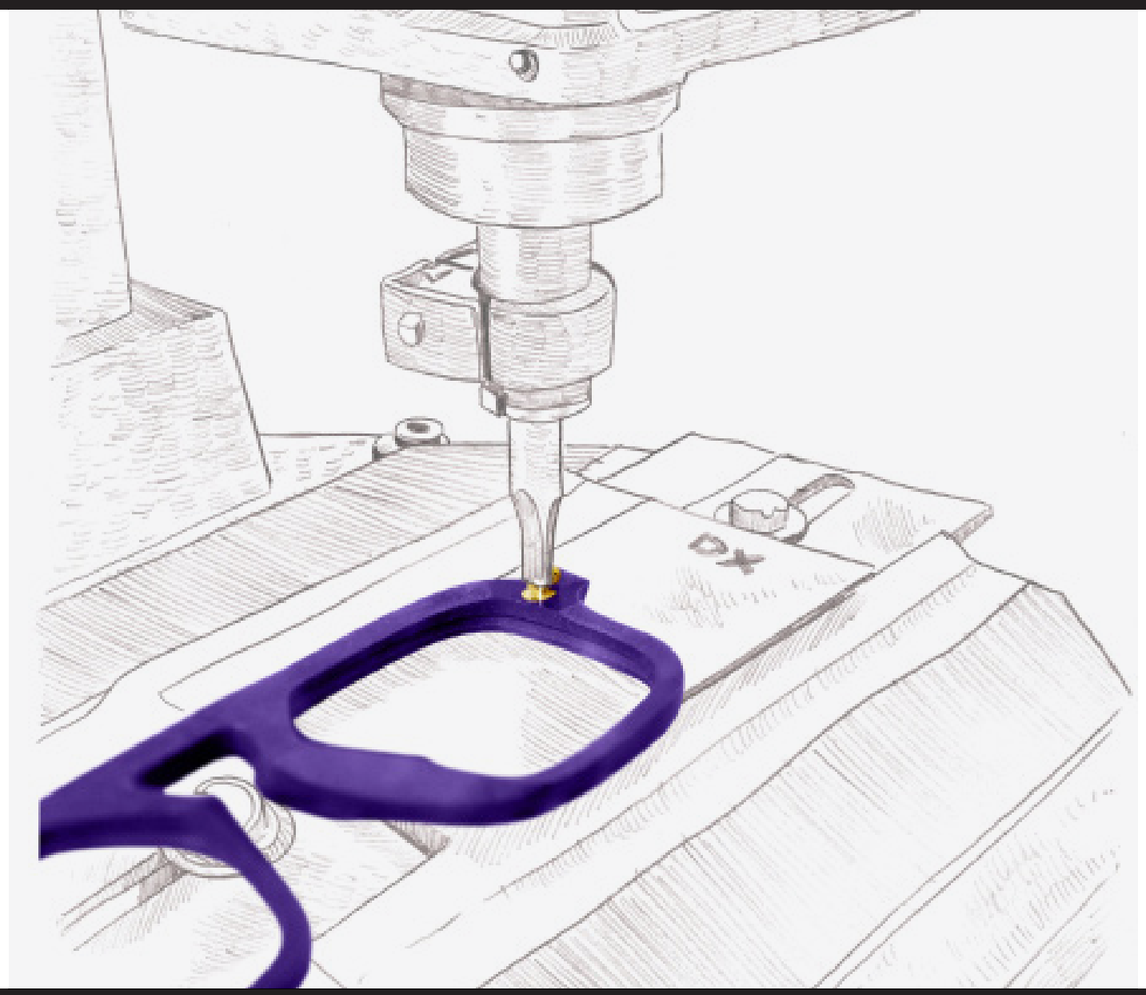
13
INSERT PINS

The sunken hinge is applied by heating and embedding the hinge into the acetate. The riveted hinge will have a grave milled out for it to sit in, then the pin is inserted and domed to seal the hinge.



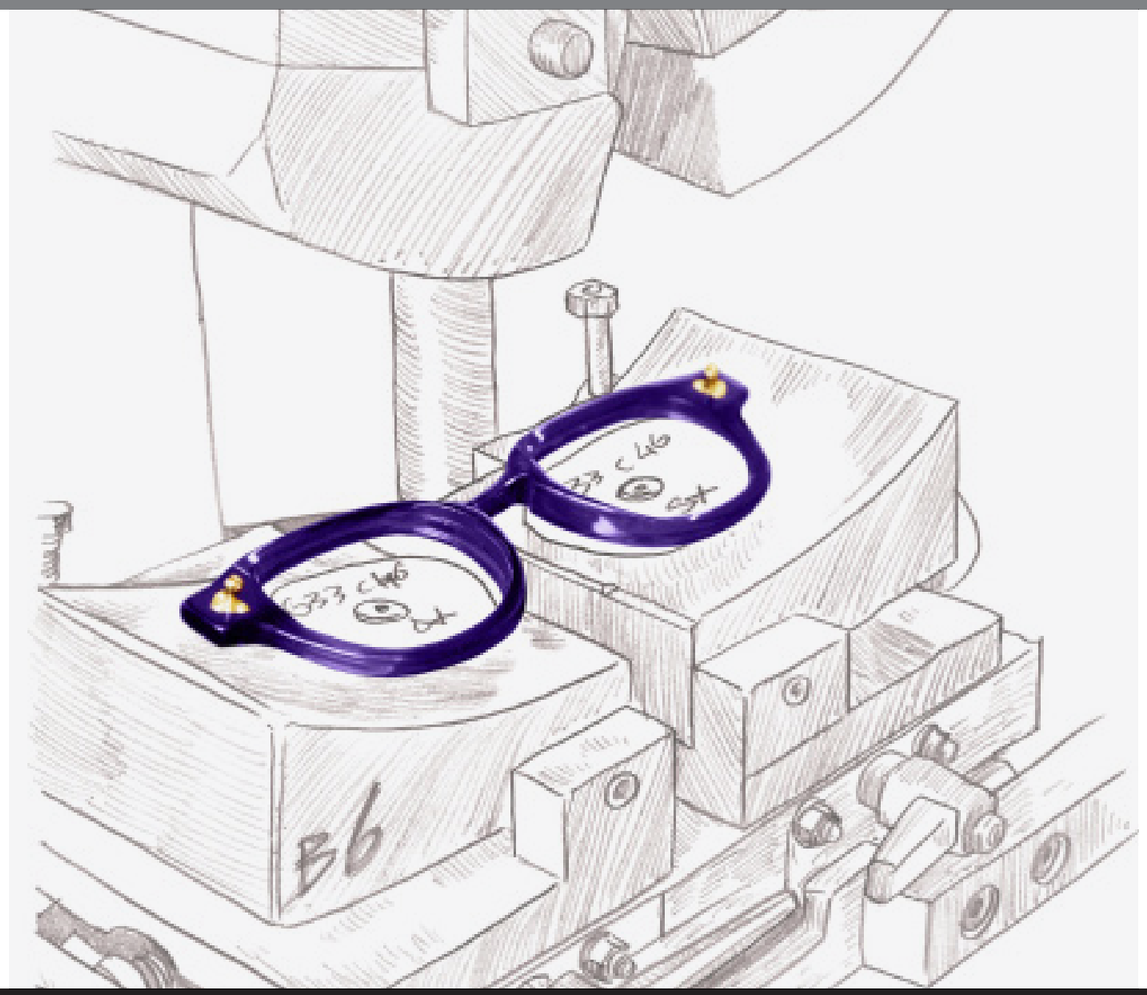
14
FINISH AND DOME PINS

Hinges have a raised finish to allow the temple to close properly. We have around ten pin designs that are unique to Cutler and Gross



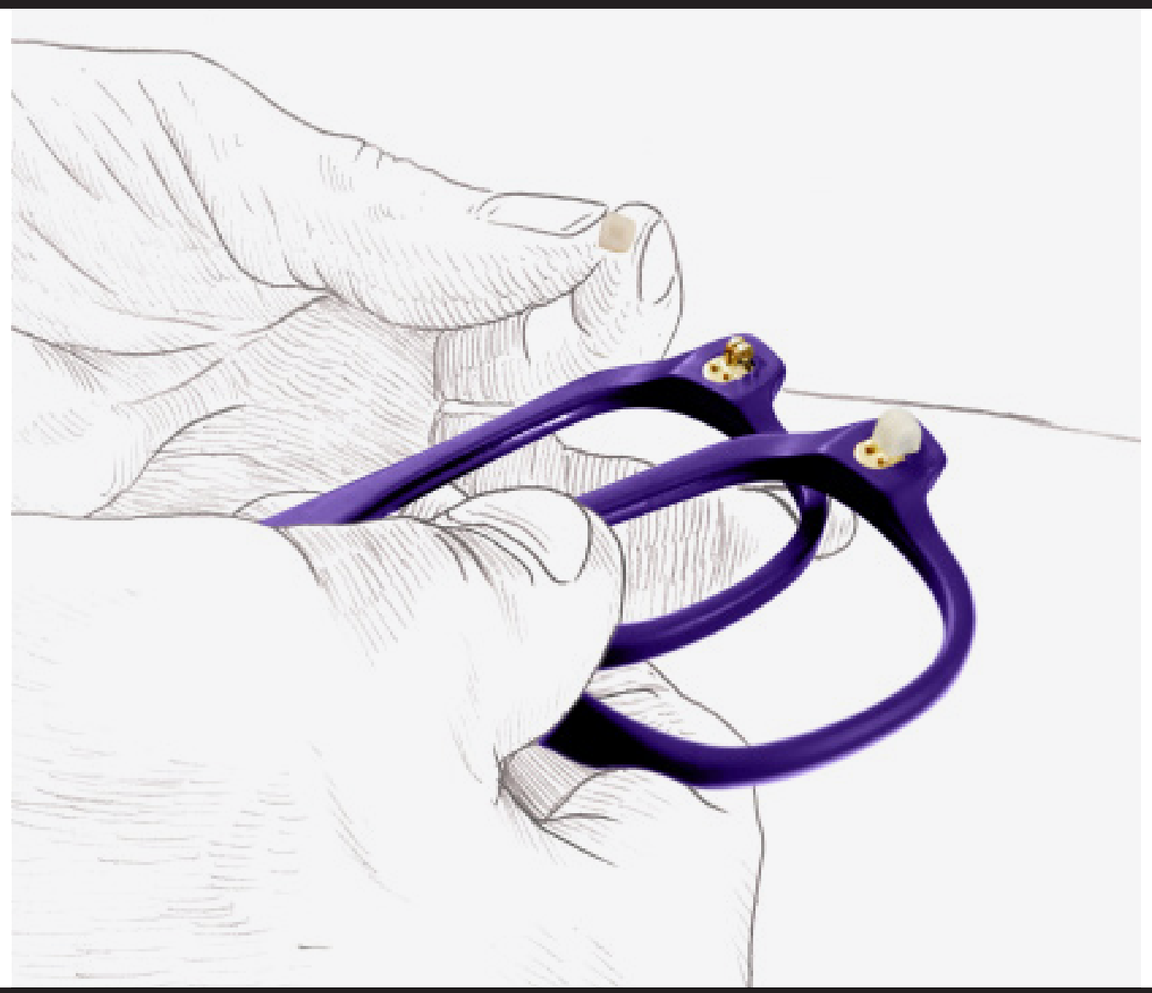
15
BEND FRONTALS

The frontal is heated by high frequency machinery and then placed into the bending machine which creates the frontal shape using weight and pressure. The base radius of the frontals are commonly base 2, base 4 and base 6.



16
CLEAN FRONTAL AND COVER HINGES

Next the frontals are cleaned with a brush drill and an acetone bath. Then, before the tumbling process begins the hinges of each frame are capped with plastic hoods to ensure they are not damaged during the process.



17
BARREL STEP 1
Unique to Cutler and Gross

Our tumbling process is unique to Cutler and Gross. There are four different stages to tumbling which are dependent upon the type of acetate, thickness of acetate and desired effect. The standard process is as follows.

Step 1: Sgrossatura – tumbling for 12 hours with fibreglass rhombi chips, oil and pumice stone powder.

18

BARREL STEP 2&3

Unique to Cutler and Gross

Step 2: Finatura – tumbling for 24 hours in beechwood pieces and oil.
Step 3: Lucidatura – tumbling for 48 hours in beechwood pieces and pink abrasive cream.

19

BARREL STEP 4

Unique to Cutler and Gross

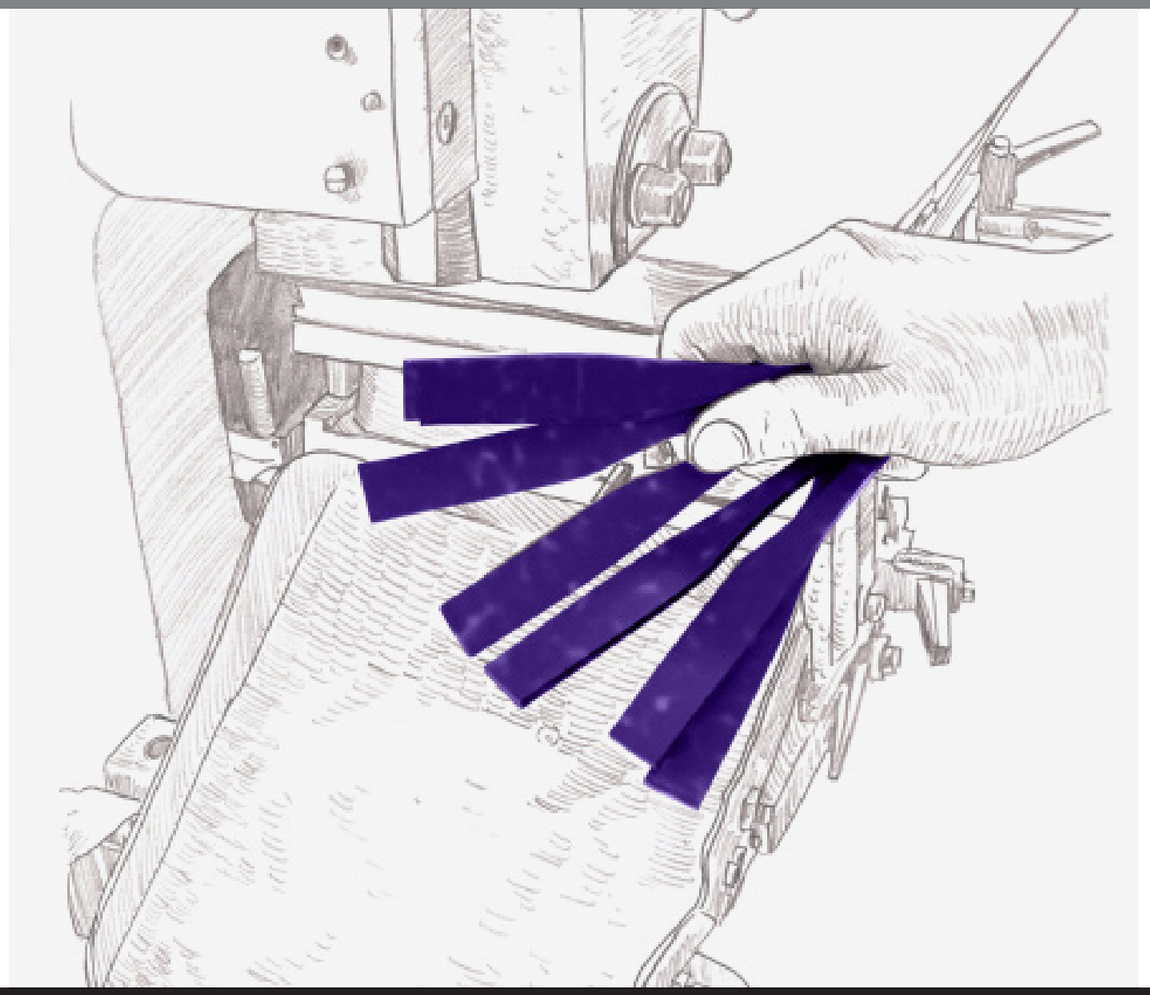
Barrel Step 4: Brilliantura – tumbling for 12 hours in beechwood pieces and white polishing cream.

20
ULTRASONIC CLEANING

Once the third stage of tumbling is complete, the frames are all removed and counted. They are then placed in an ultrasonic bath for three minutes at 30° and then left to air dry.

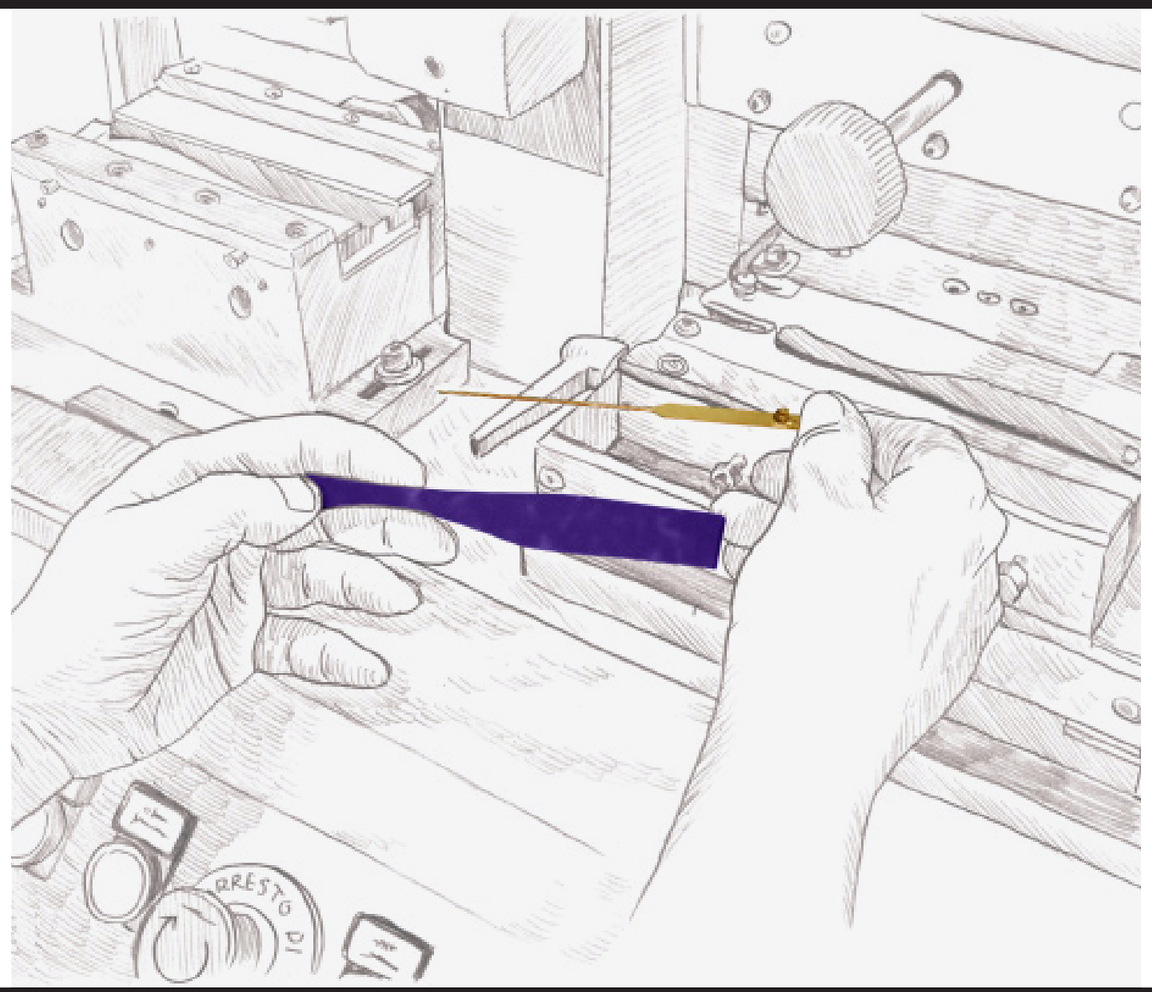
21
STAMP OUT TEMPLES

Using a fustella (a special cutter in multiple shapes) the temples are stamped out from 4mm heated slices of acetate. We currently have over 100 fustellas



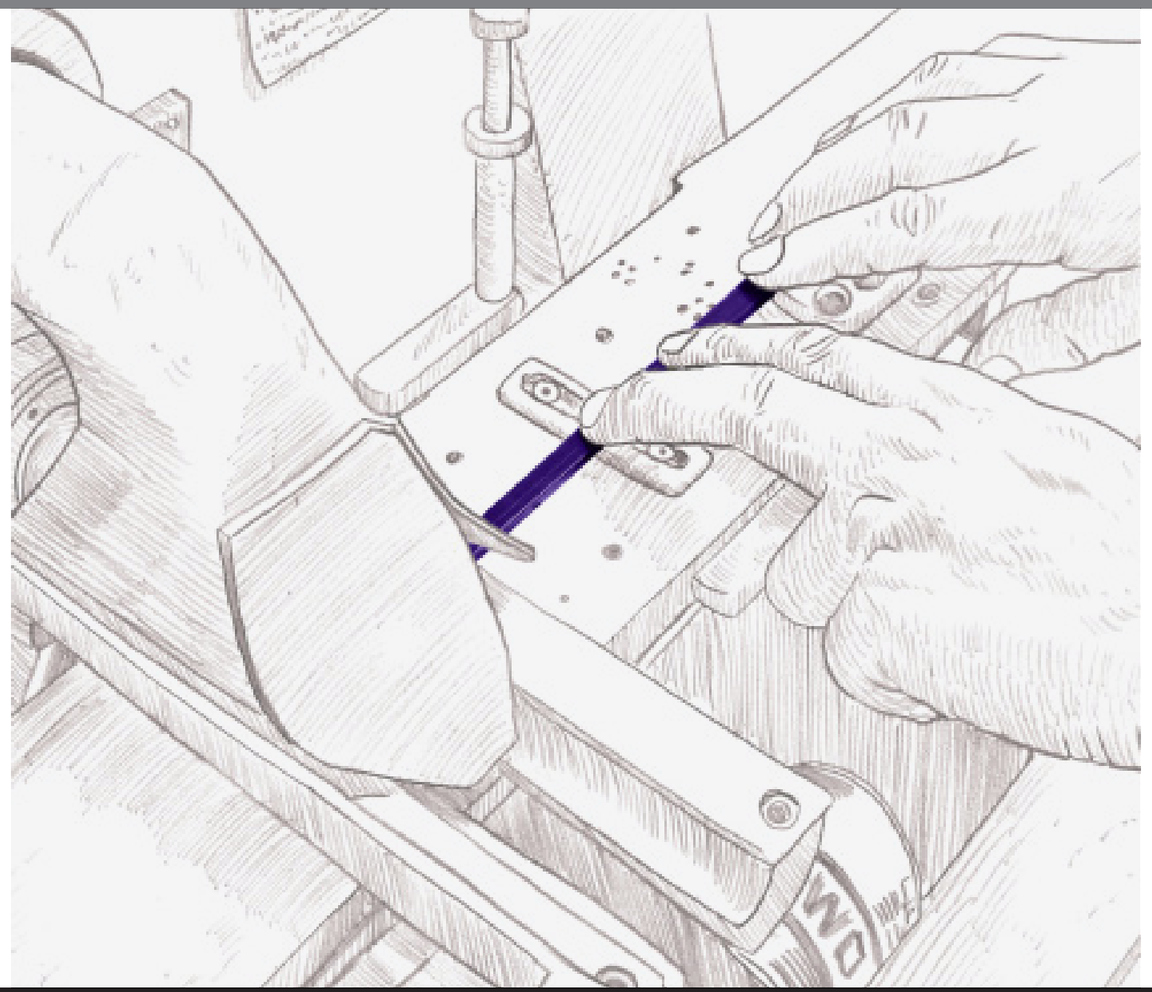
22
SHOOT TEMPLES

The temple is put into a vice to keep fastened in place for the shooting of the metal core. The central section of the temple is heated and then metal anima is shot into place. ‘Anima’ means soul in Italian, so named as it represents the core of the frame.



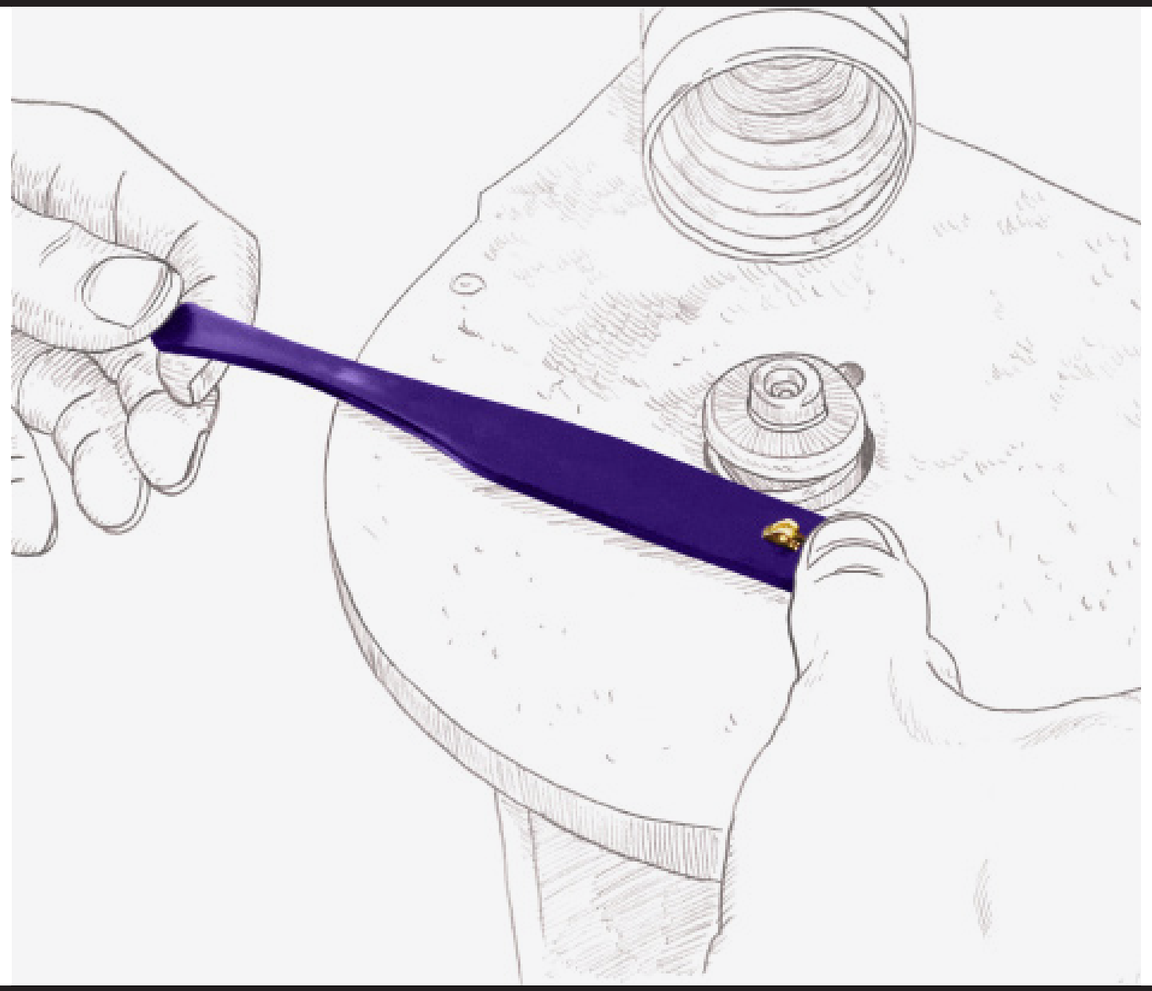
23
REDUCE THICKNESS OF TEMPLE

Once the temple has been shot it then has its thickness reduced.



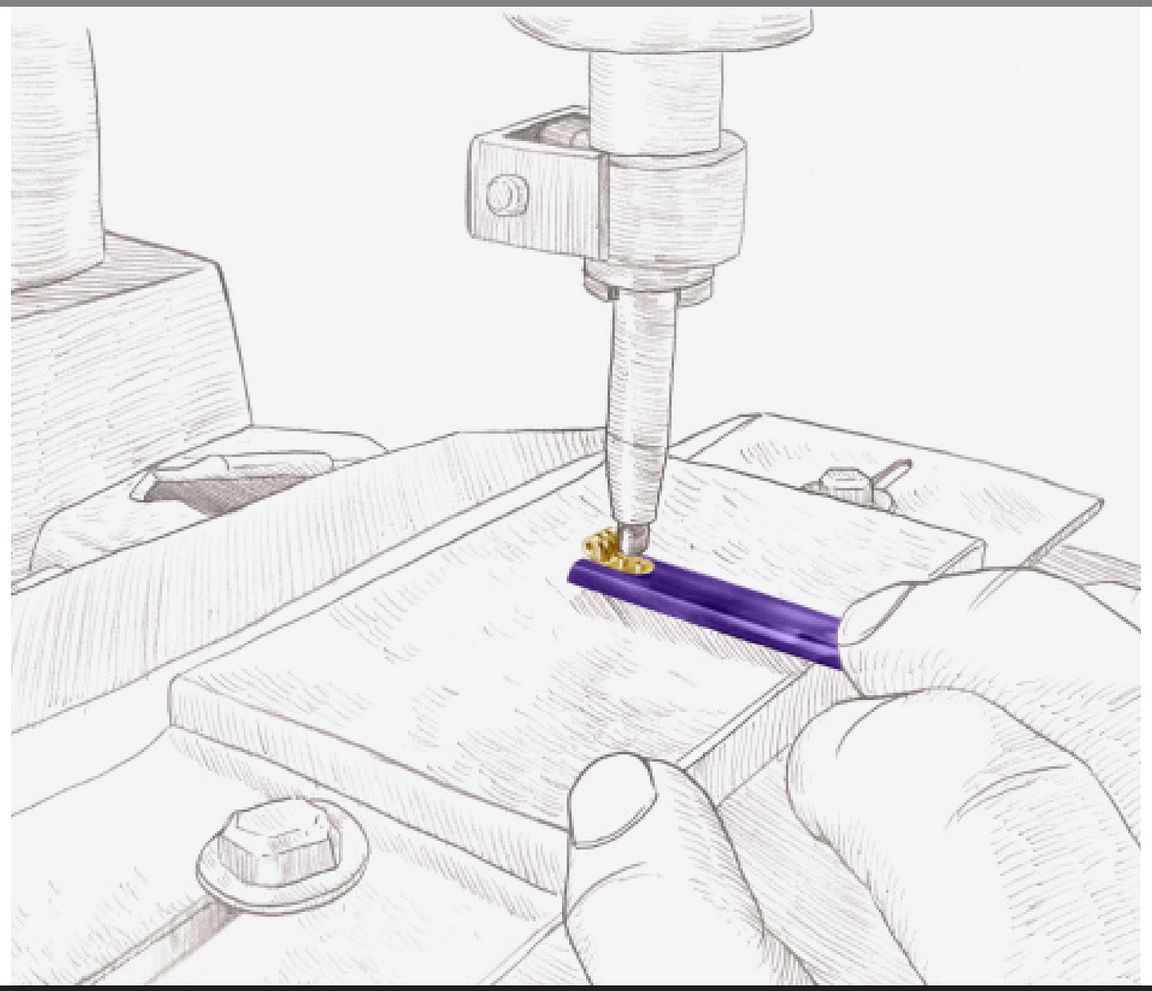
24
SMOOTH EDGES

The edges of the temples are shaved down to remove harsh edges



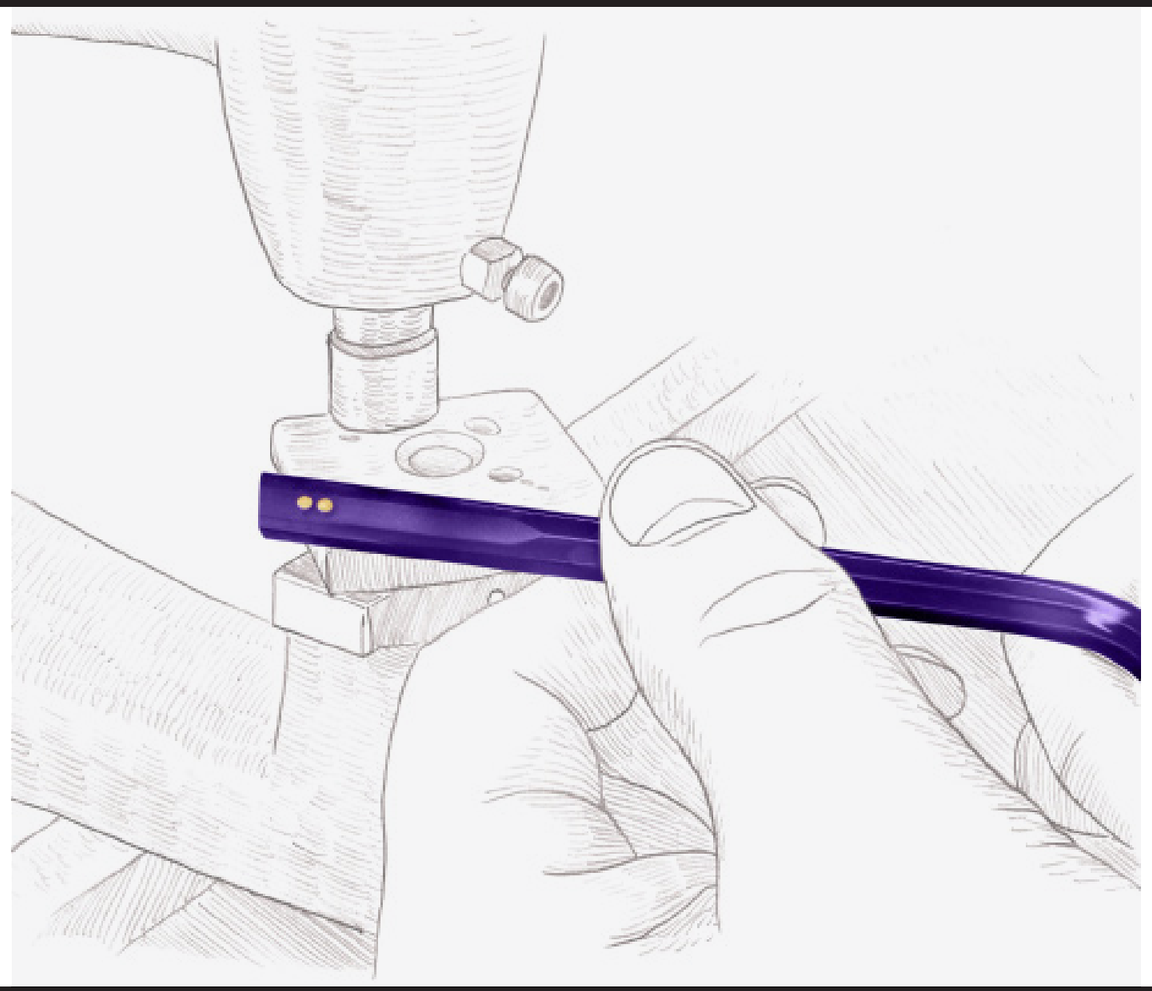
25
INSERT HINGE

If the temple has been designed without pins, a hinge will be attached to the anima. Otherwise, the hinge is placed in a milled grave and secured with a pin like the frontal.



26
INSERT PIN

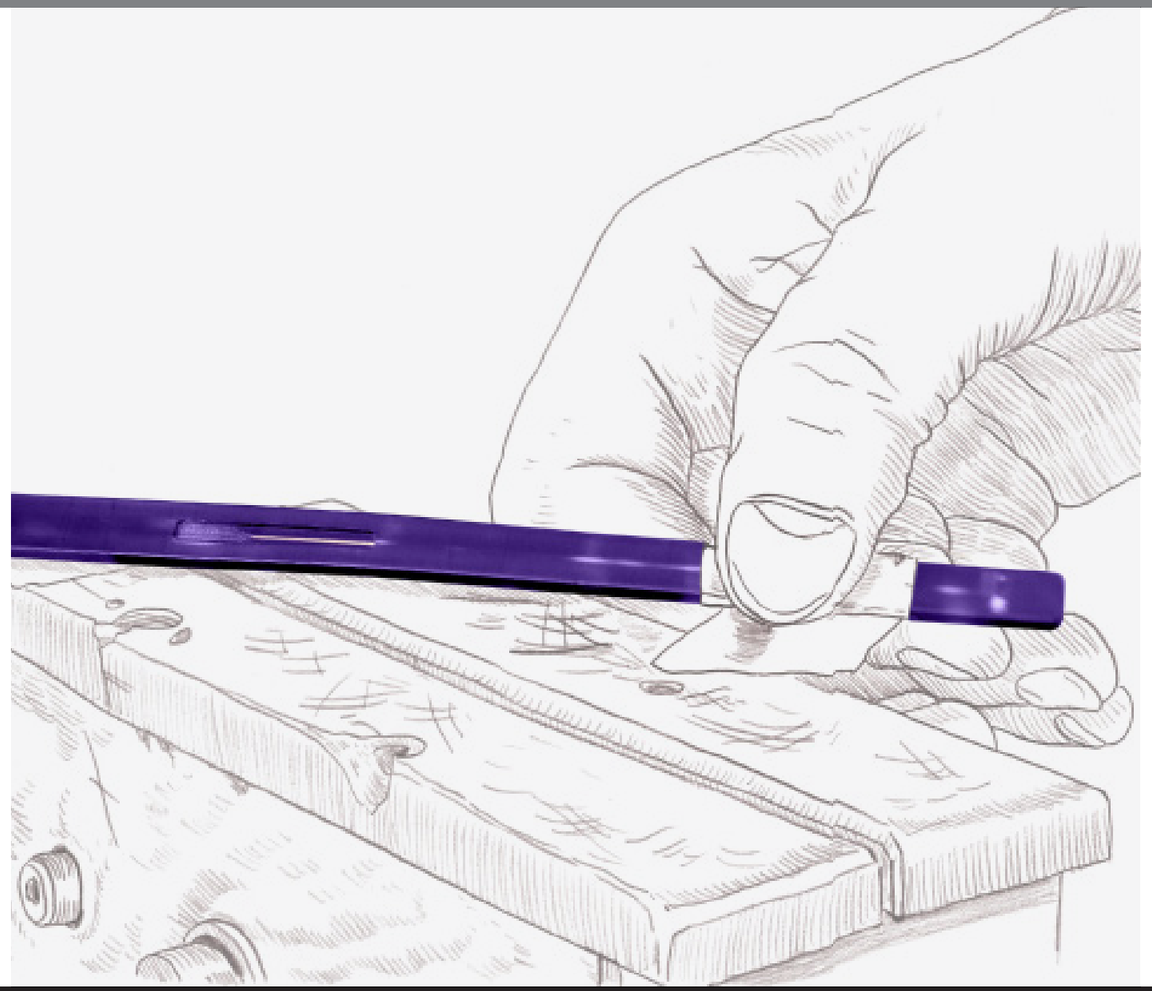
Inserting the pin is a very exact science; if pushed too hard it will cause a ripple effect on the acetate and if not pushed hard enough there will be a gap. It is a delicate balance to ensure it slips perfectly into the drilled hole.



27
MILL GRAVE FOR LOGO

Unique to Cutler and Gross

A grave is milled along the temple of the frame so that the logo can then be placed inside.



28

LASER CUT
CUTLER AND GROSS
IN GOLD FOIL

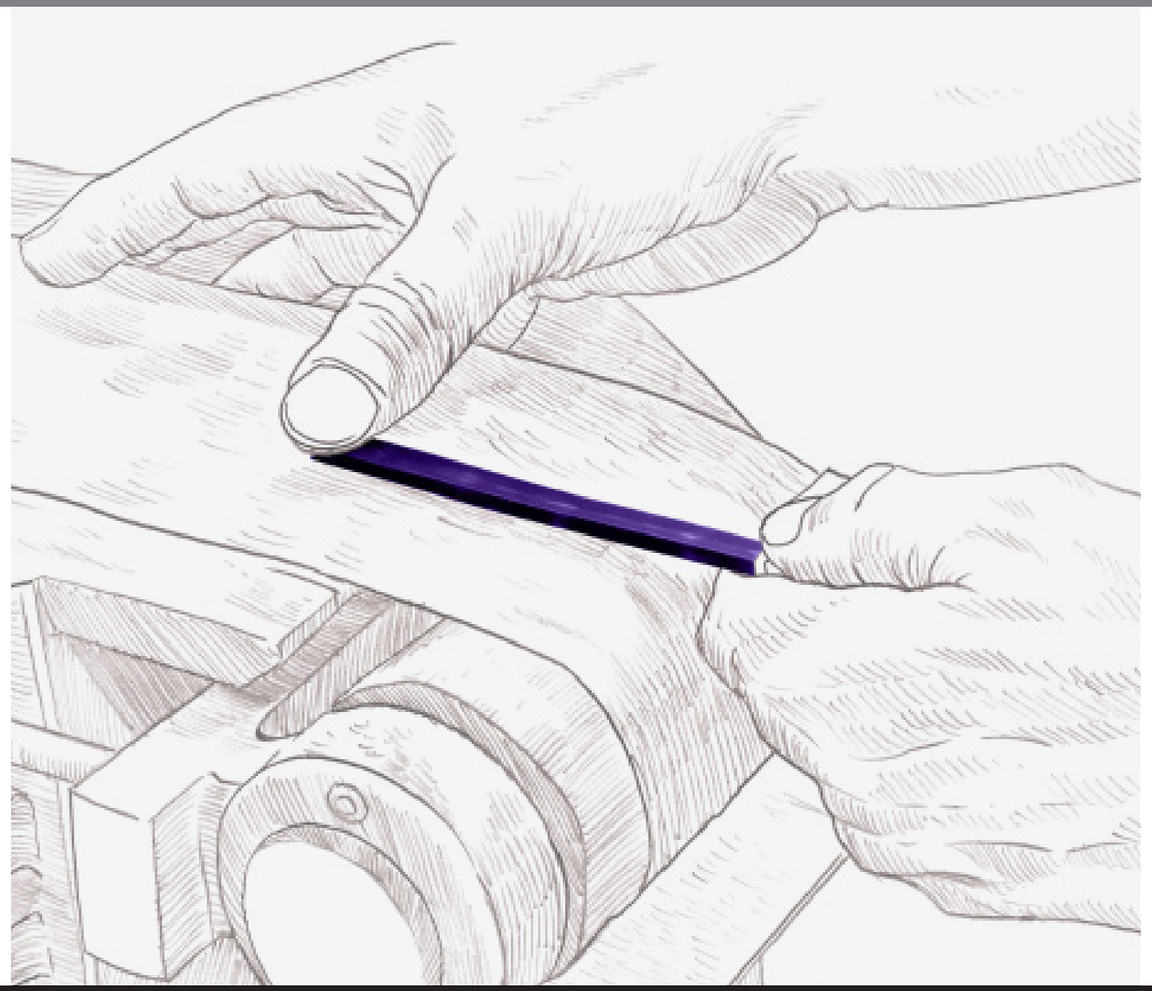
Our gold foil logos are laser cut out of metal and hand placed into the grave of each frame.

29

INSERT FOIL
AND FILL IN GRAVE

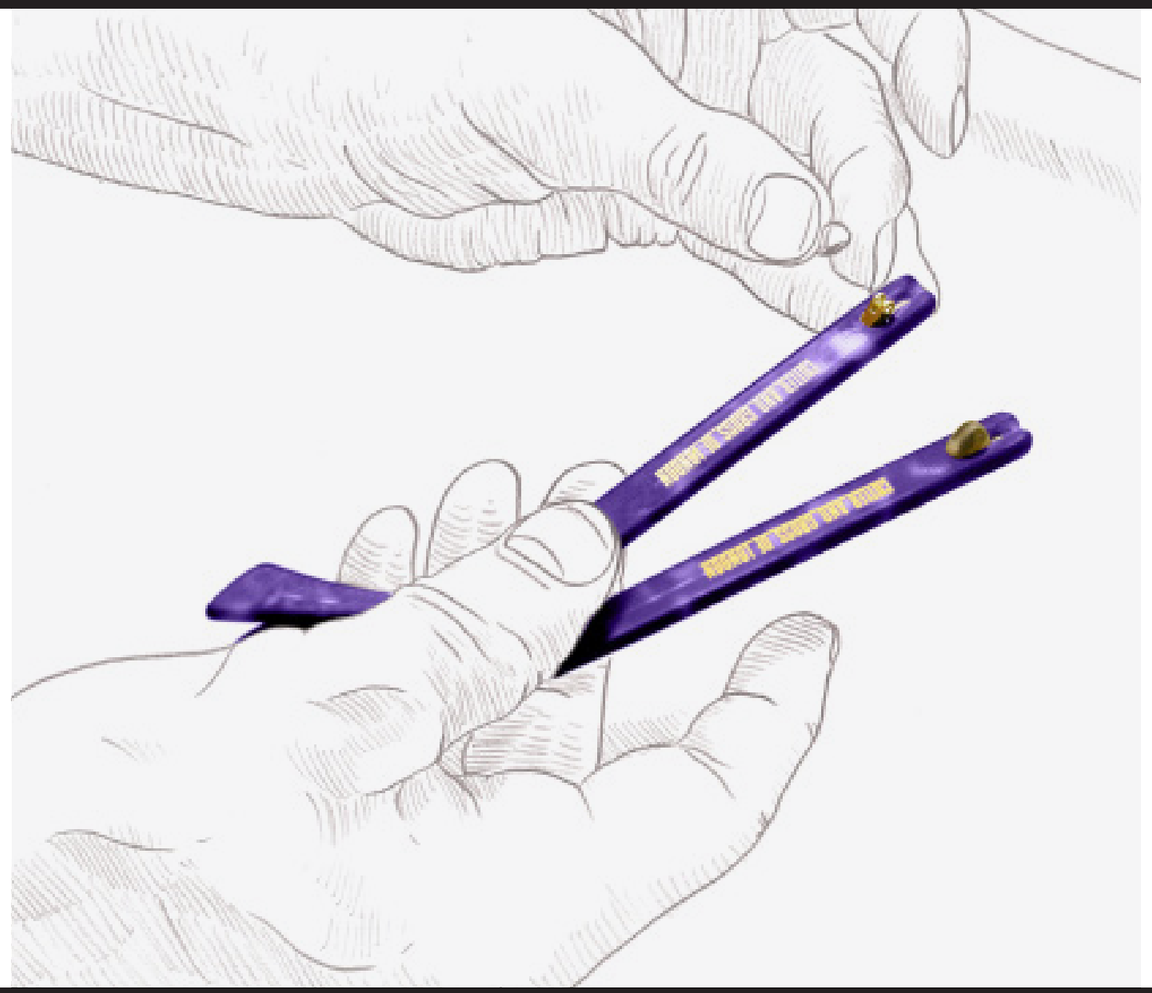
Unique to Cutler and Gross

Resin is used to seal the logo within the grave, and this is then cleaned up by smoothing the excess resin away with a sanding belt.



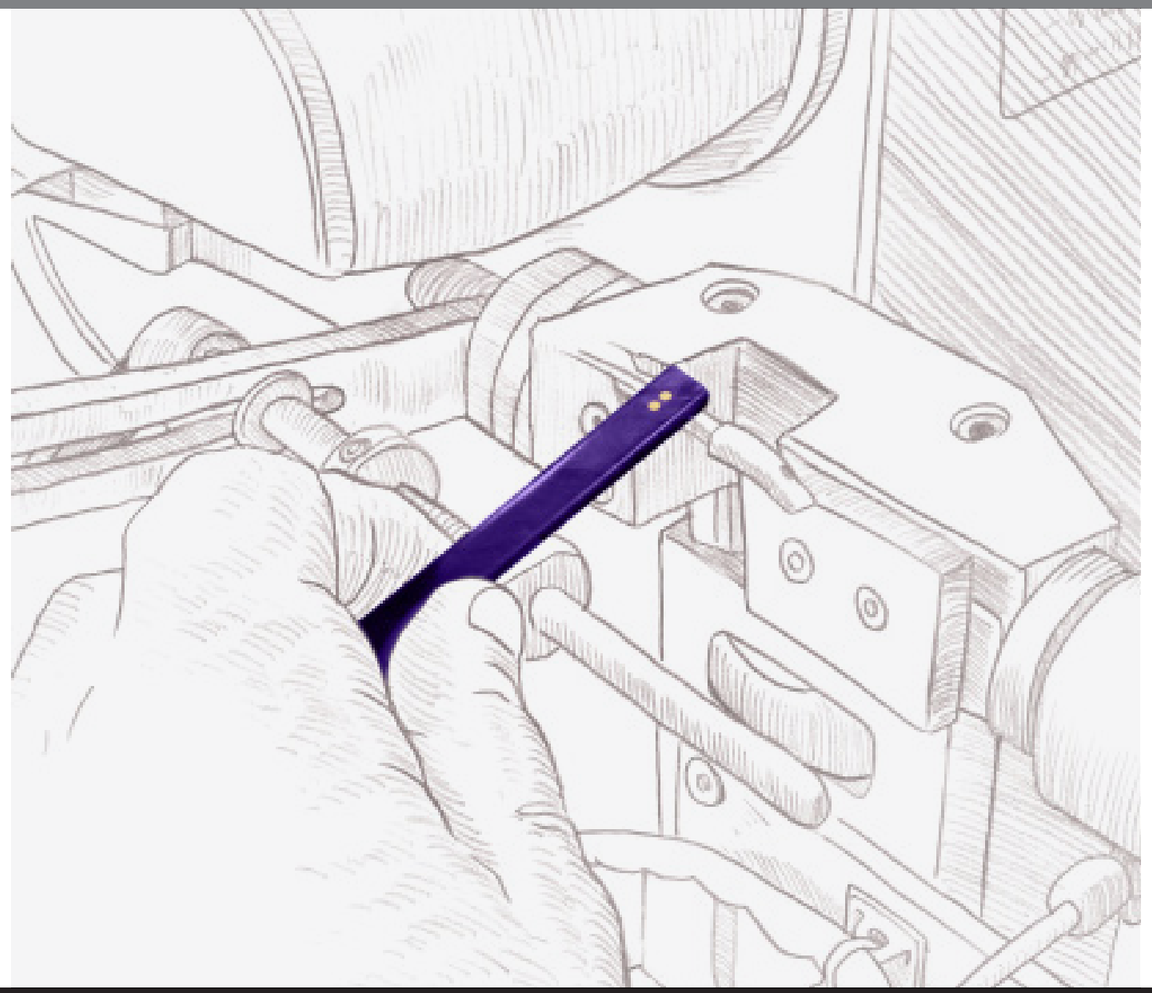
30
POLISH AND TUMBLE

Following the shaving of the edges, the temples then go through the same tumbling process as used on the frontals, with small wax covers applied to the hinges to protect them.



31
CUT MITOR PANTOSCOPIC ANGLE

Before joining the frontal to the temple, an angle called the pantoscopic angle needs to be cut on both so that they perfectly join. This process is done by eye and incredibly skilled, creating the neat finish to the hinge and ensuring the correct angle and fit to the frame.

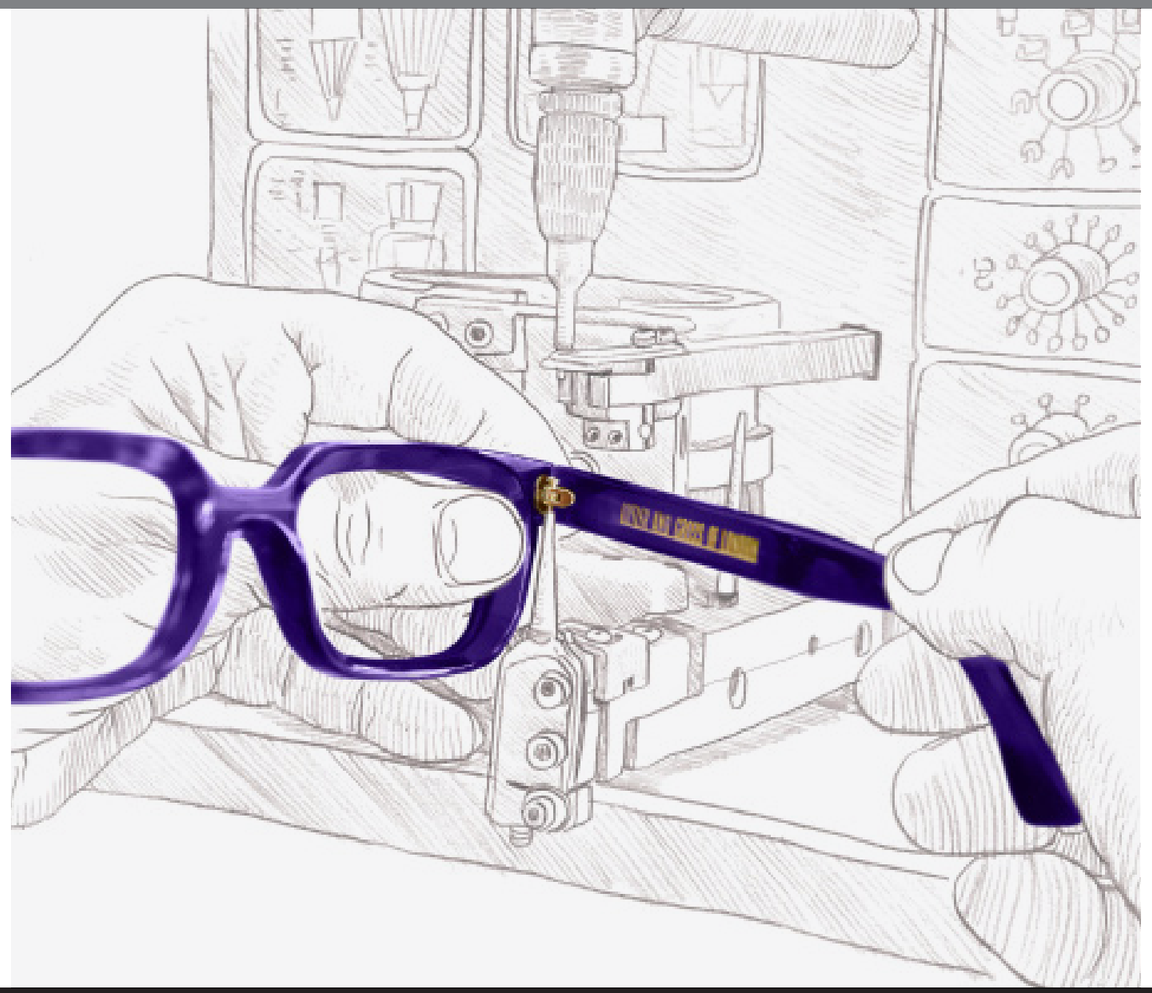


32
TEST PANTOSCOPIC ANGLE

The pantoscopic angle is then tested by inserting a temporary pin to ensure the alignment is perfect before inserting the actual pin.

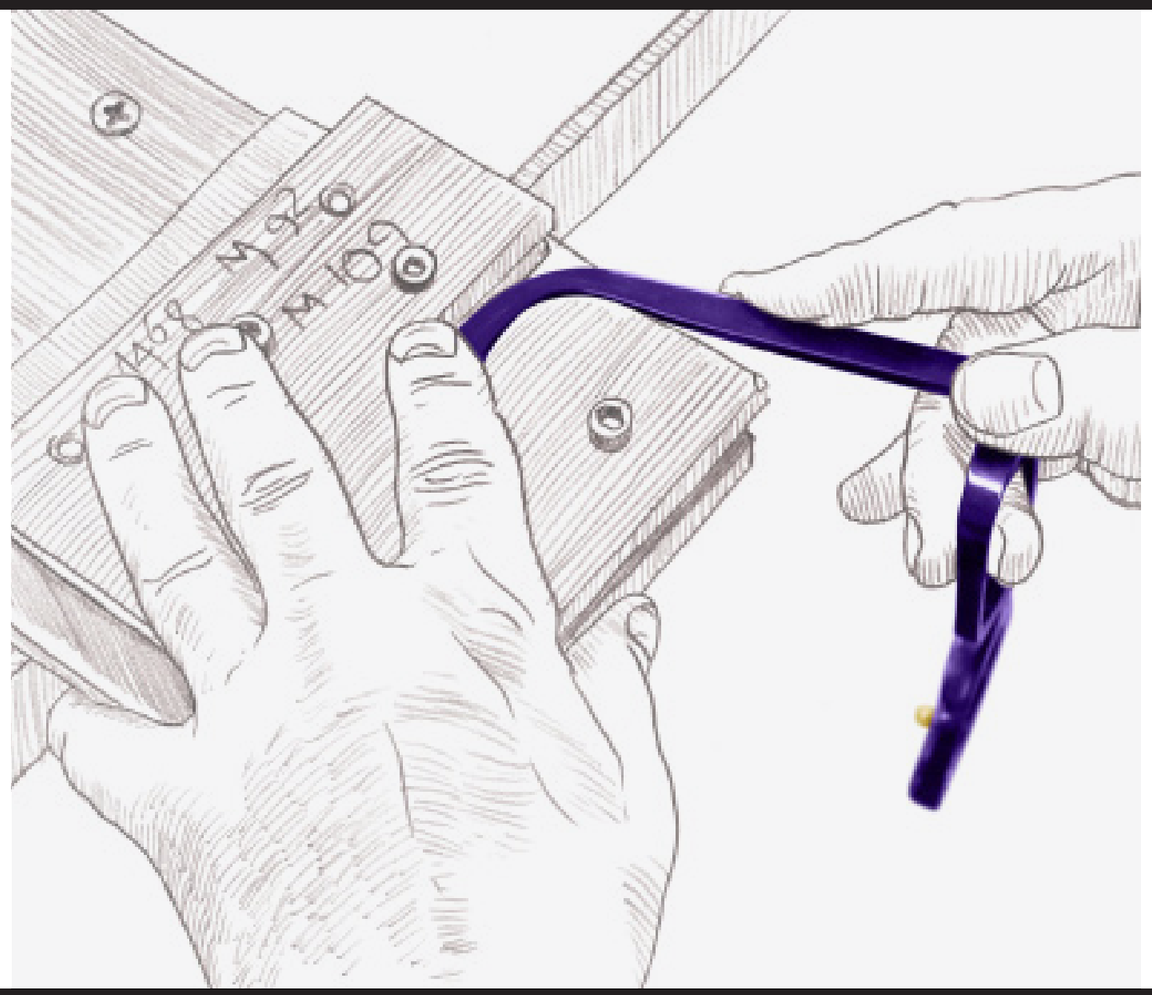
33
JOIN HINGE

Using an electronic drill, the hinges are joined together with specific screws for each model.



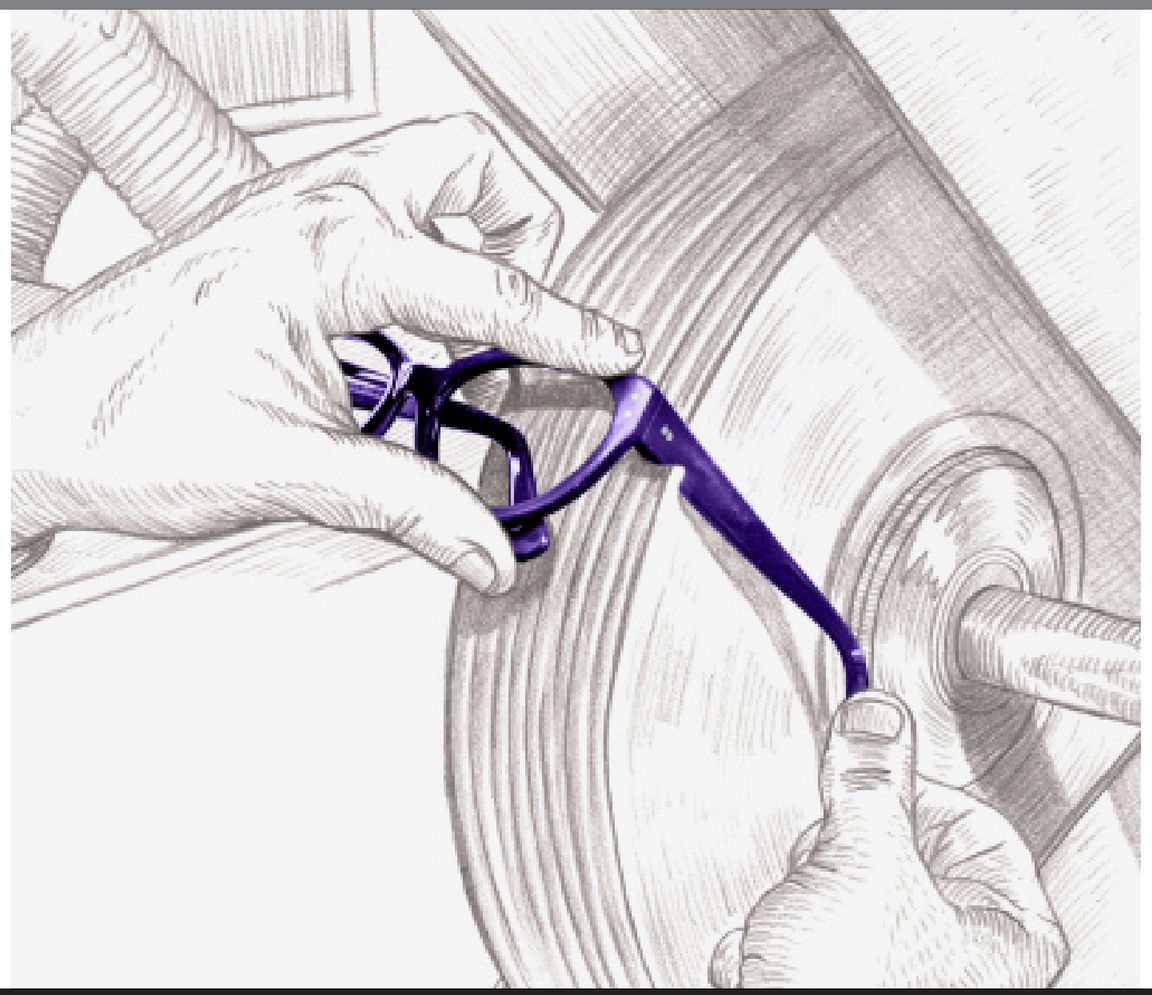
34
BEND TEMPLES

To bend the temple by hand, a mould is created which ensures the correct angle on each temple. The temples are heated to soften the acetate which enables the metal anima to bend. As it cools it takes on the desired curve.



35
POLISHING
Unique to Cutler and Gross

The frames are washed ultrasonically and once dried the frames are taken to the polishing room where a four steps process of polishing begins. The first wheel is used to flatten the temple to the lug, to ensure it's completely flush. The second wheel is to remove any slight scratch or bumps on the acetate, rarely missed by the tumbling process, but as a final insurance. The third wheel is to polish and the final fourth wheel is for shining and finishing. The frame is left shining, with a long-lasting lustre Cutler and Gross is known for.

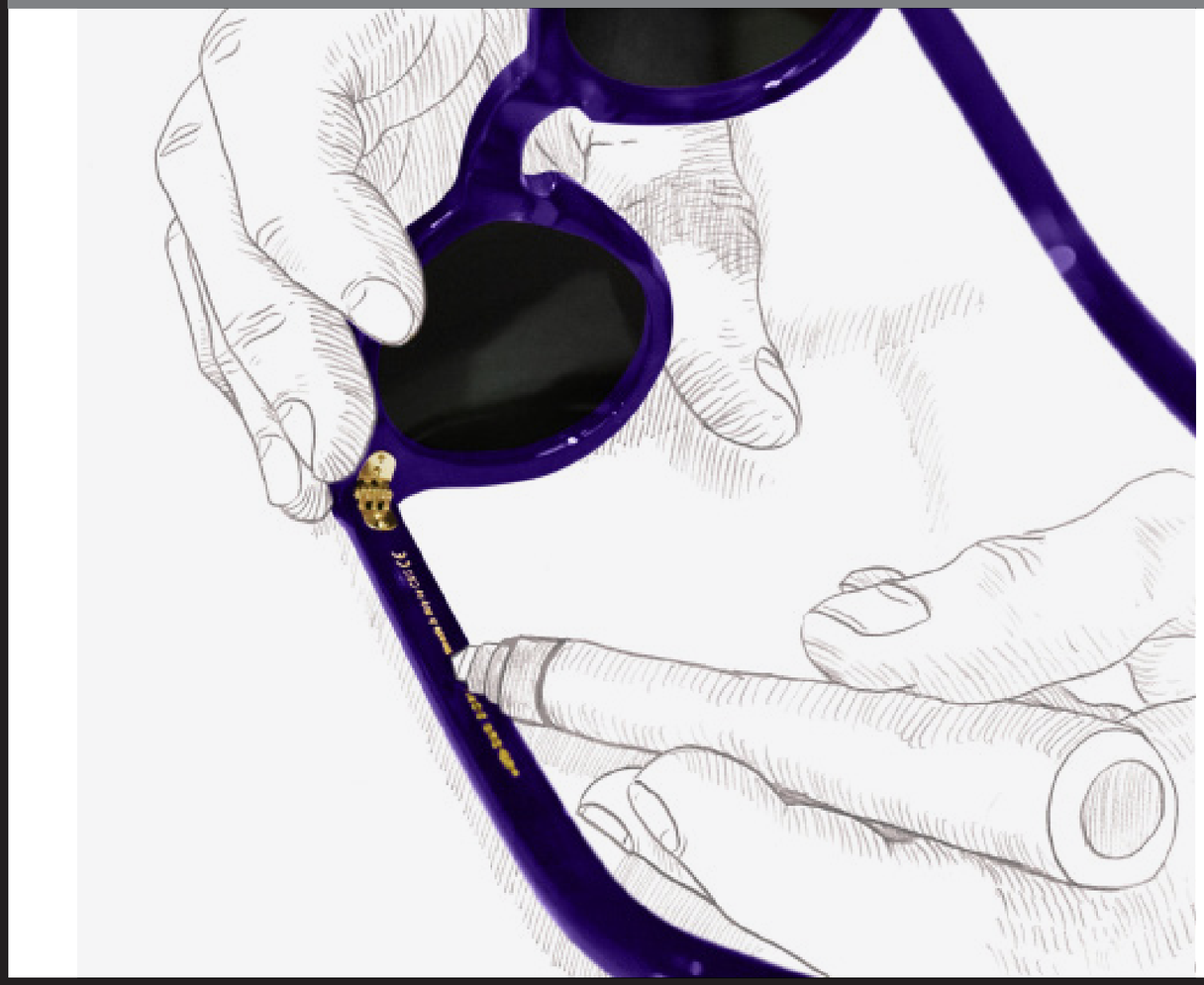


36
LASER FRAME DETAILS

On the left temple of each Cutler and Gross frame the product information is lasered on. This includes frame number, colour code, lens size, distance between lenses, frame width and “Handmade in Italy by C&G”. This is the mark of the genuine Cutler and Gross frame

37
GOLD FILL DETAILS

Once these details have been lasered onto the frame the graves are filled with gold ink and carefully polished to highlight the details.

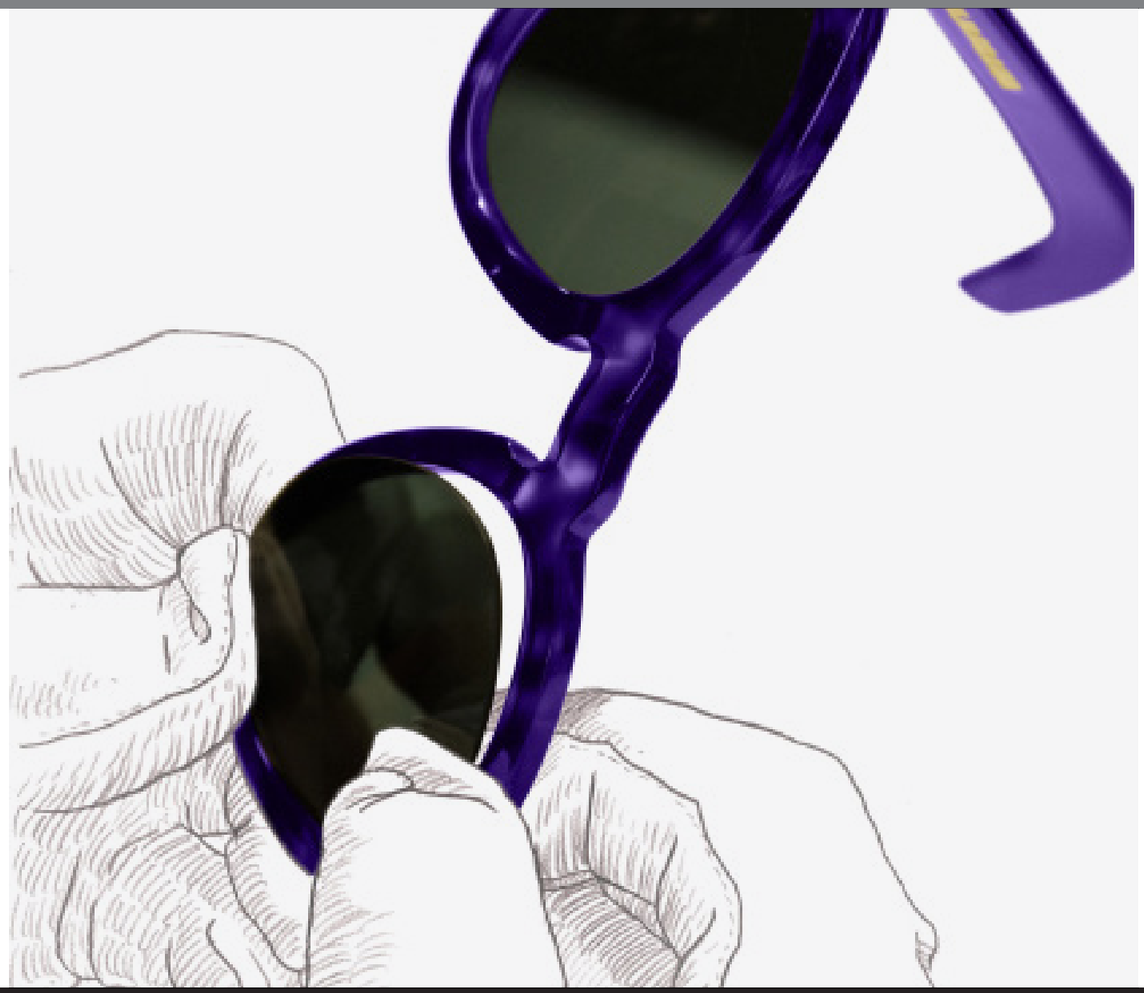


38
CUT AND LASER LENSES

The main companies we currently use to glaze our frames are Zeiss, Dalloz and Essilor. The material of the frame will dictate the type of lens selected.

39
INSERT LENSES

Once cut, each lens is inserted by hand by slowly heating the frame. The frame then constricts as it cools to support the lens.

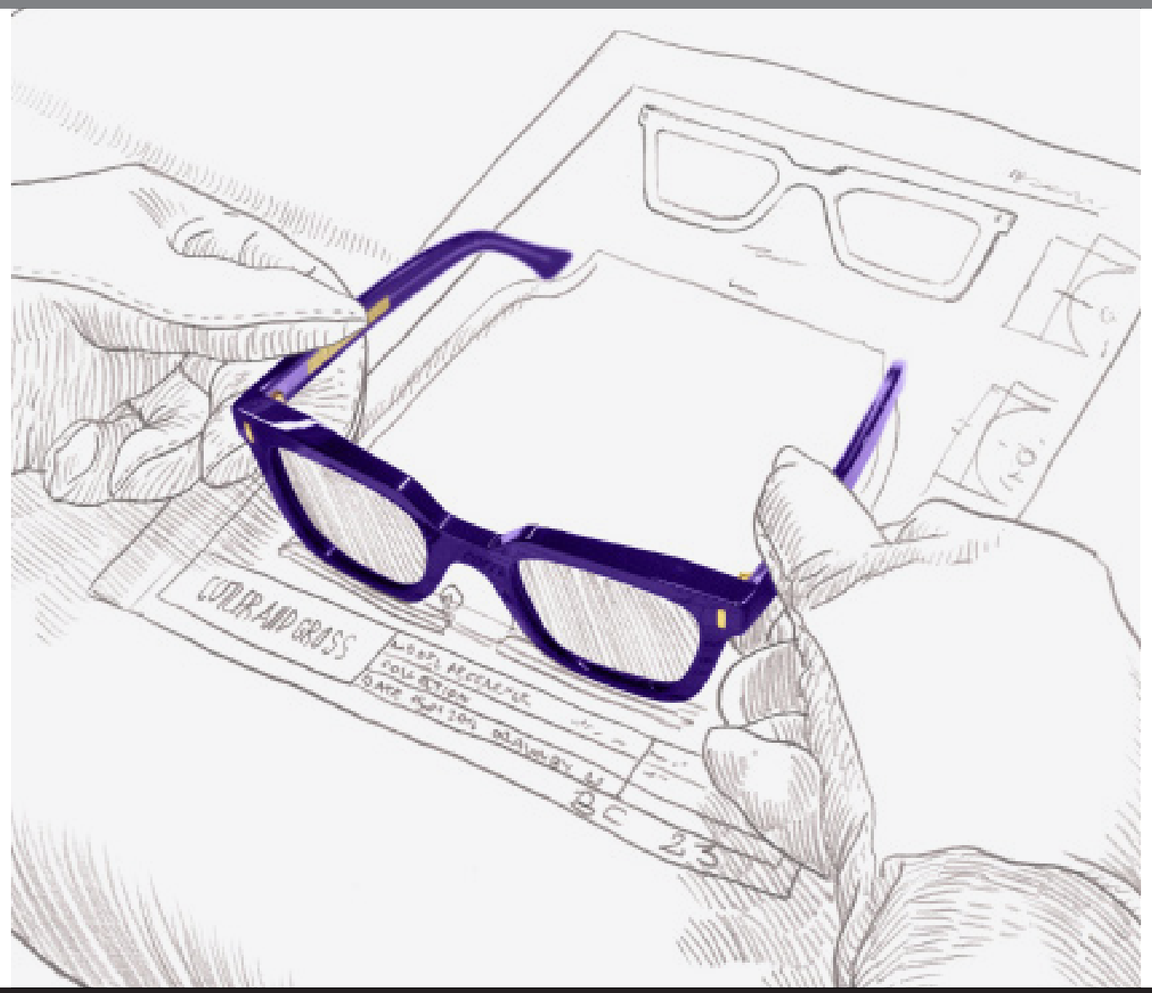


40
CLEAN GLASSES

Once complete the glasses are carefully cleaned to remove any dirt left on them from the factory, using the same microfibre cloths we provide when you buy a pair of Cutler and Gross frames.

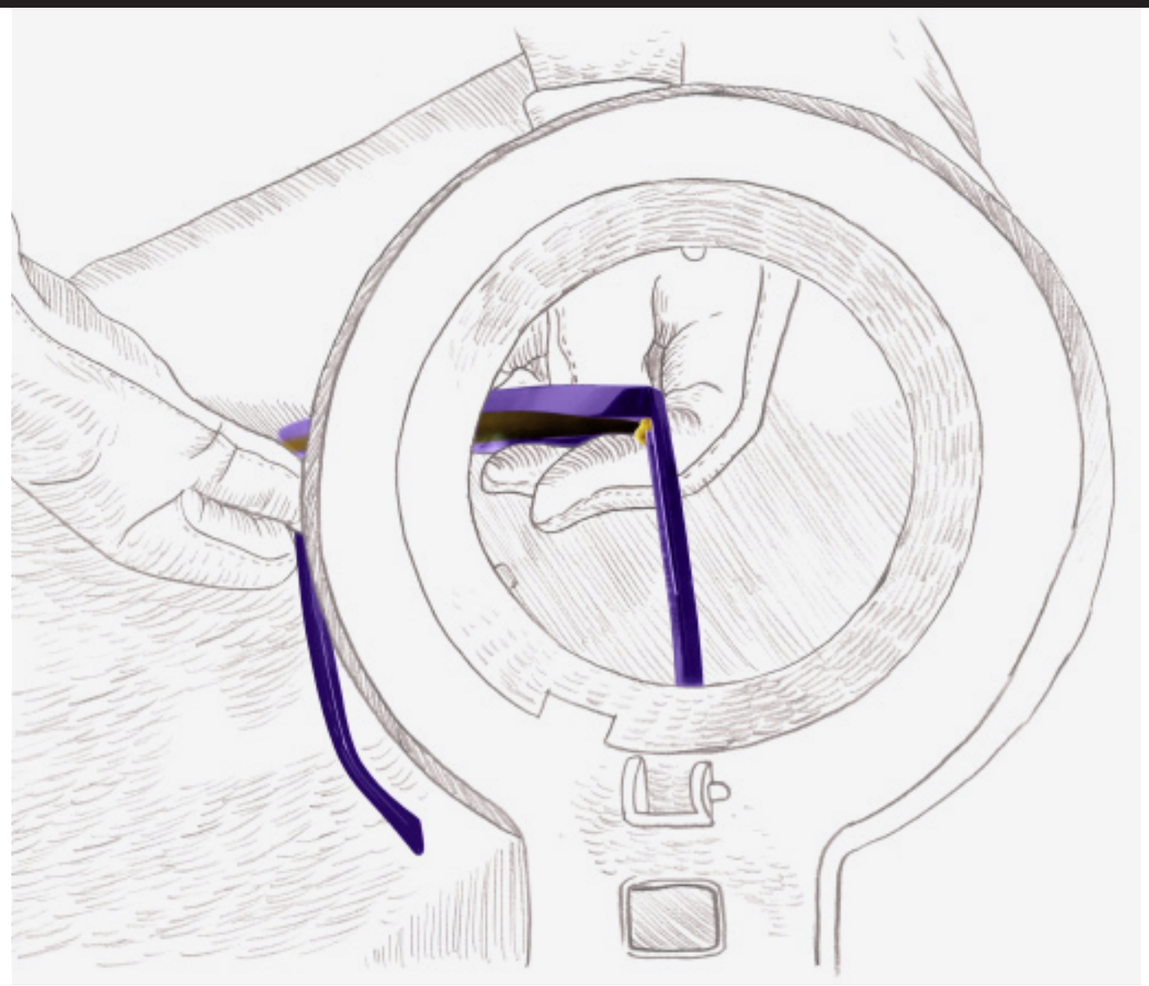
41
BALANCING

Each pair is then carefully and skilfully balanced to ensure they can be displayed and presented properly. This is a final check against the original technical drawing. The skilled staff in our stores or authorised partners of Cutler and Gross are also trained to ensure the frame fits your face perfectly.



42
QUALITY CHECK

Throughout the final stages of production visual checks of each frame take place to ensure no scratches, mistakes or faulty components are present. At the end, there is a final inspection before they are shipped to London, where each order is then handpicked by our team and shipped to our stores or directly to you. .



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