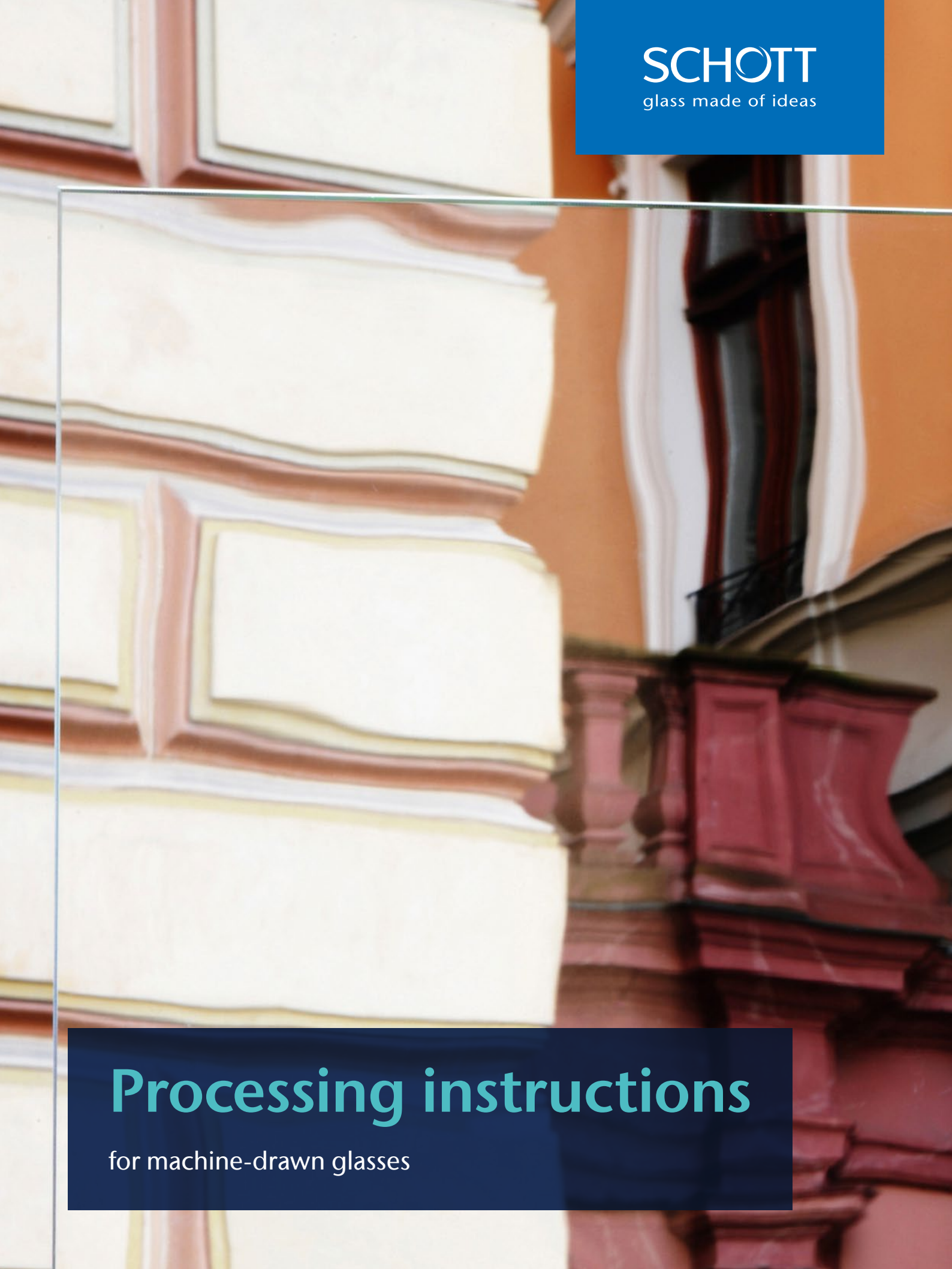
SCHOTT
glass made of ideas



Processing instructions

for machine-drawn glasses

Processing instructions for machine-drawn glasses

The SCHOTT glass for restoration variants (GOETHEGLAS, RESTOVER®, RESTOVER® light, RESTOVER® plus, TIKANA®) reproduce historical glass from past eras. They naturally include thickness variations, flatness deviations and residual cooling stresses. These glass features are characteristic of machine-drawn glass and do not constitute defects. Similar also applies to the decorative glasses ARTISTA® and RIVULETTA®. Compared to floated flat glass, they require adapted process parameters during processing. Therefore, please observe the following instructions!

1. Cutting

a) Basic information

Machine-drawn flat glass can be cut both by hand and by machine.

Please note the following basic settings for machine cutting:

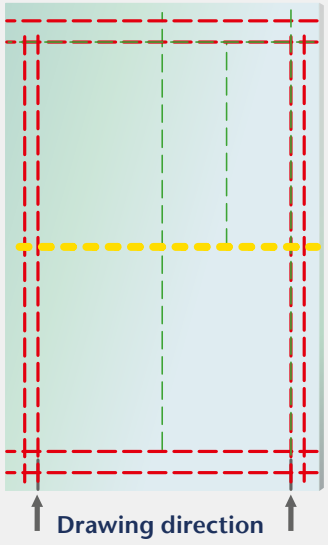
- reduced scoring speed (max. 50 m/min.)
- low cutting pressure (approx. 0.8 bar)
- select the cutting wheel 1 – 2 steps „sharper“ than recommended by the machine manufacturer for float glass. Good results are also achieved with microstructured cutting wheels, as the cutting pressure can be set lower due to the structure.
- Use cutting fluid.

When cutting by hand, the same specifications apply as for machine cutting.

For one-sided structured glass (RIVULETTA®, ARTISTA®), please always carry out the scribing process on the unstructured side if possible.

The appropriate parameters must be determined individually depending on the cutting system, the glass thickness and the glass format.

A



The distance between the relief cuts all round is approx. 30 mm.

Contour cuts and relief cuts can be cut in one step.

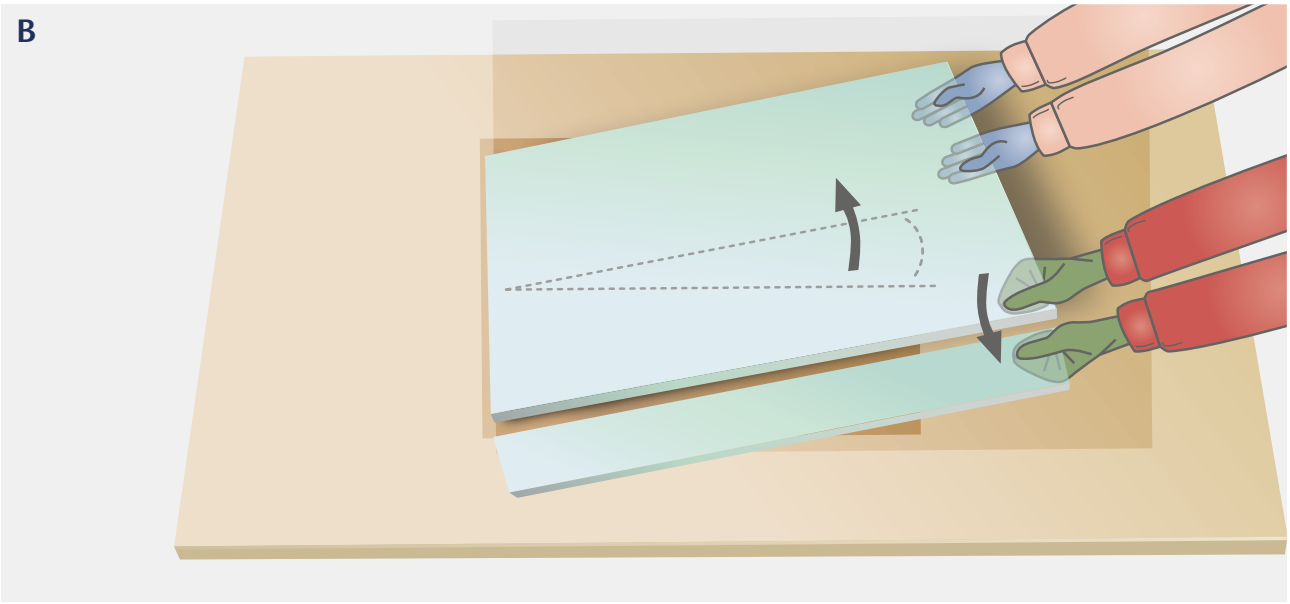
First break the relief cuts from the outside to the inside. Then the contour cuts.

If the cutting plan allows it, it is helpful to divide the board in the middle first.

b) Cutting of rectangular formats from large glass sheets

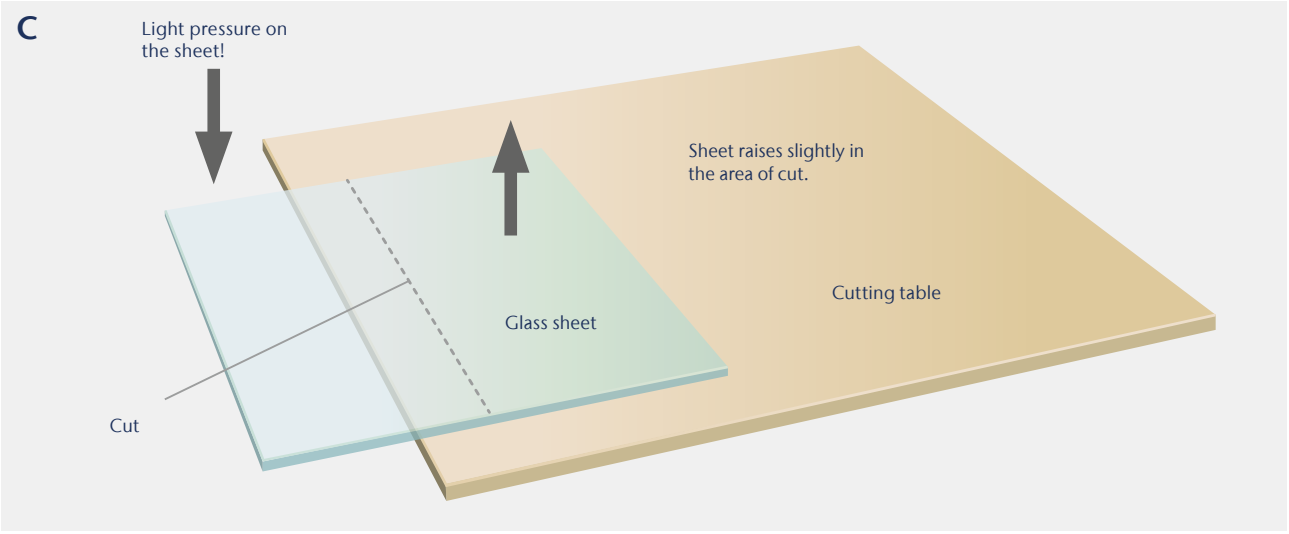
Fourcault glass has a clear, visible drawing direction. The width and height of rectangular formats should always be cut in the same orientation to the drawing direction in order to avoid changes in the orientation of the drawing direction within window fronts.

Due to the manufacturing process, machine-drawn glass has a higher residual cooling stress than float glass. To avoid uncontrolled breakage, relief cuts (graphic A, red dotted lines) are helpful.



Always make these relief cuts continuously up to the glass edge! First break the relief cuts parallel to the drawing direction, then crosswise to the drawing direction. The long and narrow strips in particular are easier to break if a second person assists with breaking by lifting the sheet approx. 5 – 10 cm from the cutting table and the cutter breaks off the narrow strip (graphic B).

If the cutting plan allows, it is helpful to divide the panel in the middle first (graphic A, yellow line). The break must be made “over the edge”.

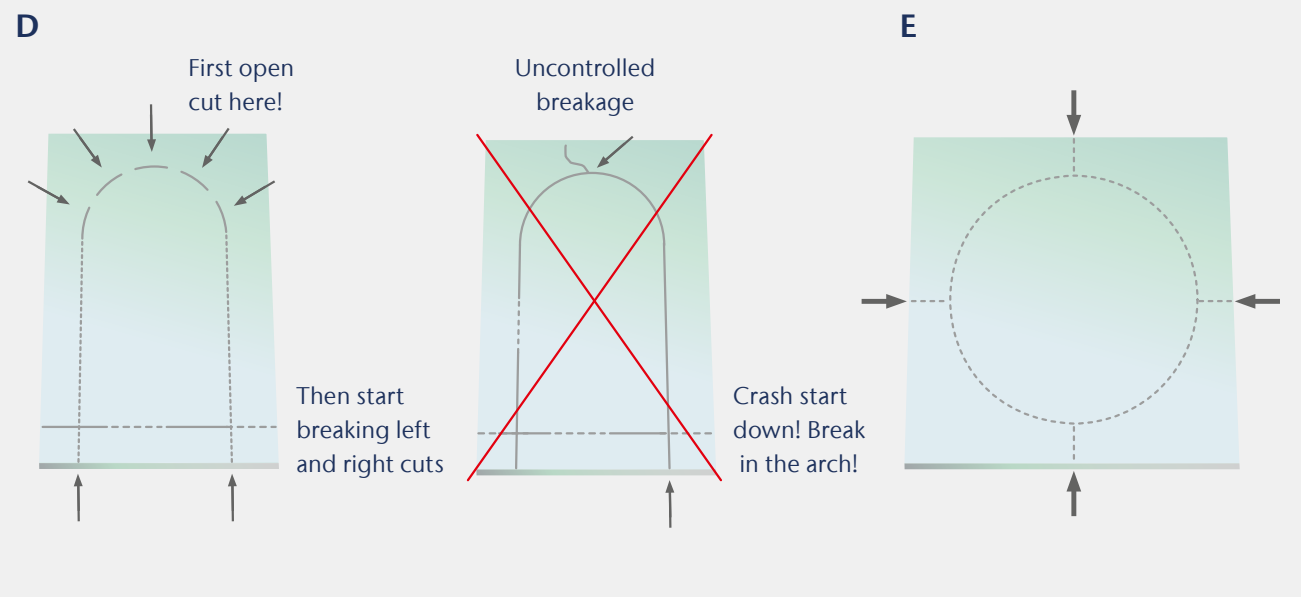


Where the glass format and cutting plan allow, breaking the glass “over the edge” will provide a better result than breaking on the cutting table. Please proceed as follows: Turn the flat glass with the cut parallel to the edge of the table (graphic C). The distance between the cut and the edge of the table depends on the thickness of the glass and the size of the cut. Let the protruding part of the flat glass hang over the edge of the table. Never let go of the pane!

For thin glass (up to 3 mm), a distance of up to 20 cm between the edge of the table and the cutting line is recommended.

Now press gently on the protruding part of the pane. The part lying on the table now lifts slightly and the cut pops open.

For thicker glass, the cutting line must be positioned closer to the edge of the table. If the procedure described above no longer works as the thickness increases, lift the protruding part of the sheet slightly and then carefully drop it onto the edge of the table. Do not let go of the sheet! If the cut does not break immediately, repeat the process. Try to increase the falling speed.



c) Cutting model glasses

Important when cutting model glasses:

1. Cut a rectangle from the flat glass that is slightly larger than the desired model glass.
2. Always open the cut on the arch first, then press it along the arc again and again, slightly offset, until the cutting line in the entire semicircle is open (graphic D).
3. Next crack the strips running straight from the edge.
4. If the model glass is a circle, for example, auxiliary cuts must be made before breaking (graphic E).

2. Thermal toughening

The following recommendations can be used individually or in combination to improve the prestressing quality and reduce the risk of breakage.

In principle, SCHOTT Fourcault glass can be thermally toughened* from a glass thickness of 4 mm. Due to the glass composition of SCHOTT Fourcault glasses, they have a glass transition temperature (Tg) that is approx. 20 °C lower than that of floated white glass. In order to minimize medium pressure lines and surface damage (orange peel), it is recommended to maximize convection from above during the heating process and to reduce glass temperatures during tempering. Most tempering furnaces have a pyrometer at the end of the heating zone before the glass enters the quench zone. At this point, the temperature of the SCHOTT Fourcault glass should be approx. 20 °C below the temperature specified by your furnace's standard recipe for soda-lime/white glass. The reduction in temperature can be achieved by a shorter heating time or reduced furnace temperatures.

Tempering of our glasses after a "standby" of the oven also improves the surface quality, as the ceramic rollers are "colder" in this state and therefore radiate less heat onto the glass. If tempering is carried out with "hot" rollers, try running dummies after lowering the oven temperature in order to lower the temperature of the rollers. Only then should you start the test with our Fourcault glass.

If ESG quality* is not required, a TVG fracture pattern can be created by reducing the cooling rate, which reduces the risk of breakage.

We are always happy to offer advice from our application technology department to discuss the cutting and thermal tempering of our machine-drawn glass.

This information applies in general and is of a recommendatory nature. The responsibility for product processing and the production facilities always lies with the processing company.

* According to ETA-12/0159 dated June 15, 2018, the ESG (toughened glass) standard EN 12150-2 (ESG) and EN 14179-2 (ESG-H) apply. The characteristic flexural strength of the thermally toughened SCHOTT Fourcault glass is $f_{t,k}$ = 105.0 N/mm².

schott.com

SCHOTT AG, Hattenbergstrasse 10, 55122 Mainz, Germany
Phone +49 (0)6131/66-2678, info.architecture@schott.com

140443 ENGLISH 01/2025 kn/nino Printed in Germany