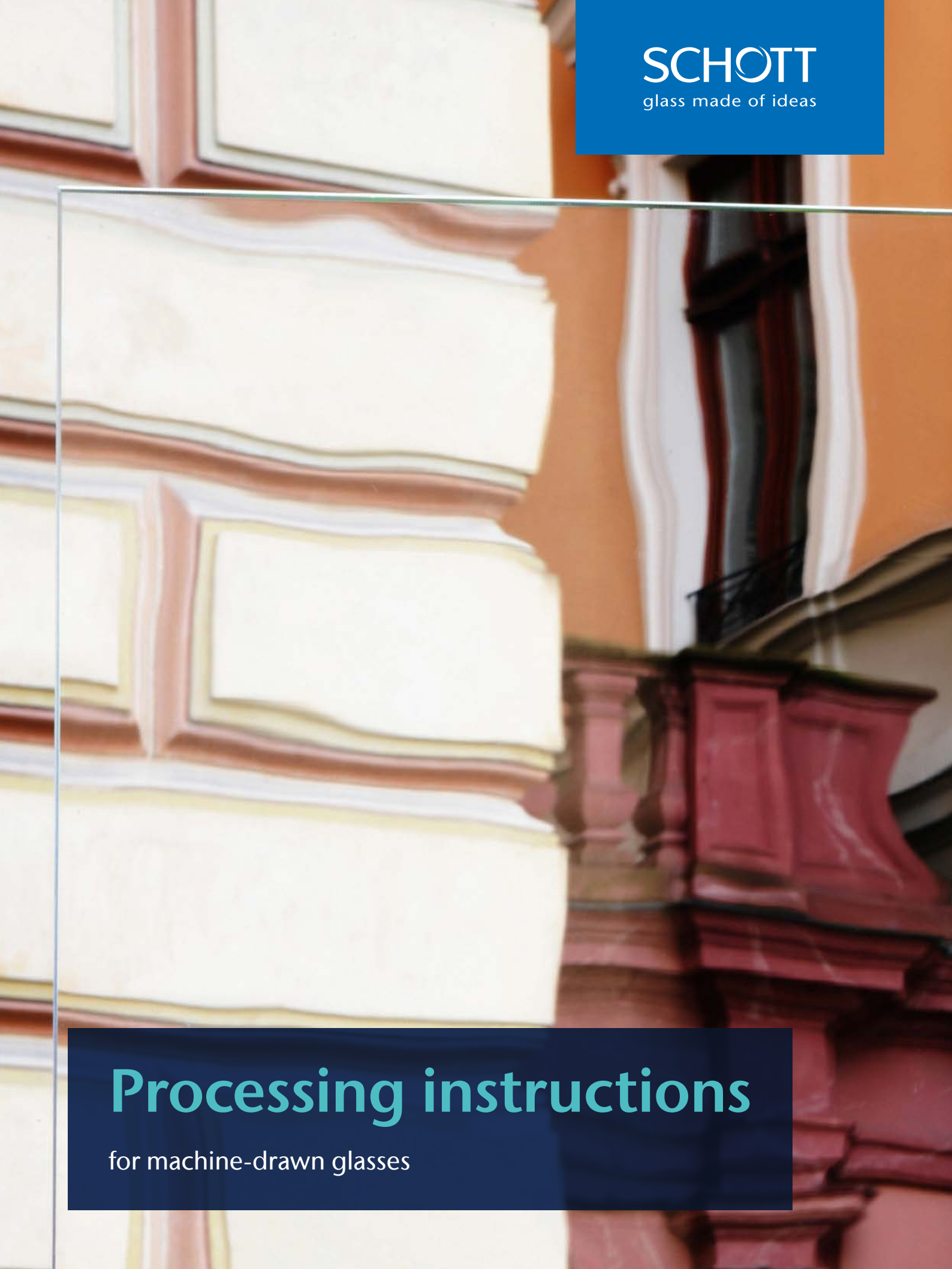
SCHOTT
glass made of ideas



Processing instructions

for machine-drawn glasses

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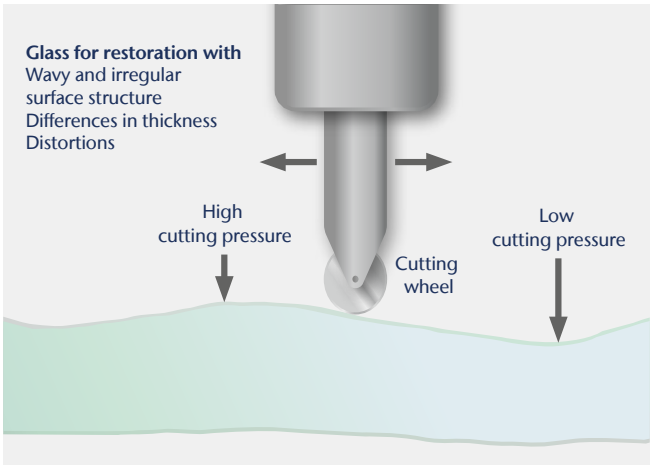
The SCHOTT restoration glasses (GOETHEGLAS, RESTOVER®, RESTOVER® light, RESTOVER® plus, TIKANA®) reproduce historical glass from past eras and naturally include differences in thickness and flatness. The differences in thickness are up to ±0.5 mm! In addition, there are internal stresses (so-called residual cooling stresses) as a result of the historical Fourcault process as well as seeds, inclusions, and bubbles from the melting process. Similar also applies to the decorative glasses ARTISTA® and RIVULETTA®, which are also produced in the Fourcault process. The character of this glass requires adapted process parameters in comparison to flat glass manufactured in the float process. Therefore, please consider the following processing instructions!

1. Cutting

a) Basic information

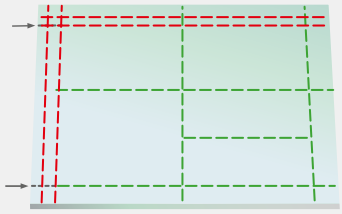
- Observe the following cutting recommendations and/or cut the glasses manually by hand. Ensure that the cutting pressure is as uniform as possible due to the differences in thickness in the glass.
- Observe the drawing direction! Due to the production process there is a clear drawing direction that should be observed when cutting and for yield optimization.
- In the case of glass structure on one side (RIVULETTA®, ARTISTA®), always cut the glass on the unstructured side.
- Bring the glasses to room temperature in time before cutting.



Schematic illustration of the surface structure of a machine-drawn glass.

b) Cutting of rectangular formats from large glass sheets

A



Always cut the width and height in the same direction as the drawing direction.

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

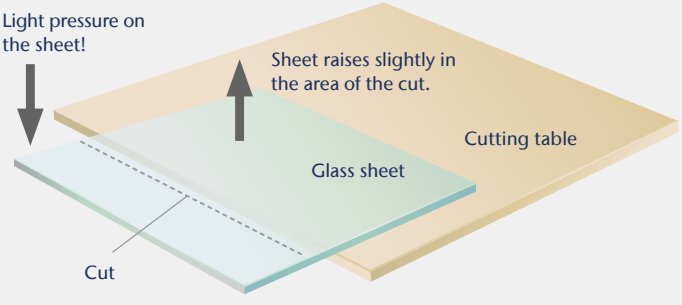
In CNC-controlled cutting, the cutting result can be improved by reducing the cutting pressure and cutting speed. The suitable parameters must be determined individually depending on the cutting system, glass thickness and glass format.

The distance between the relief cuts at the sides and at the top is approx. 30 mm.

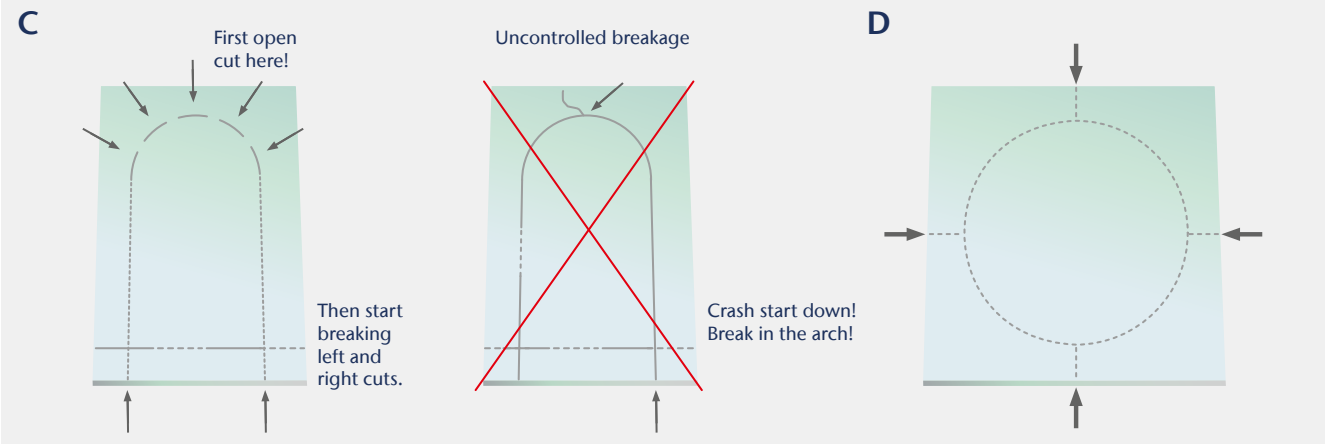
Contour cuts and relief cuts can be cut in one step.

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

B

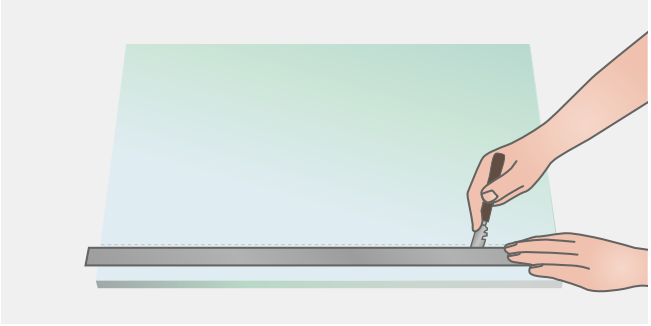


c) Cutting of model glasses



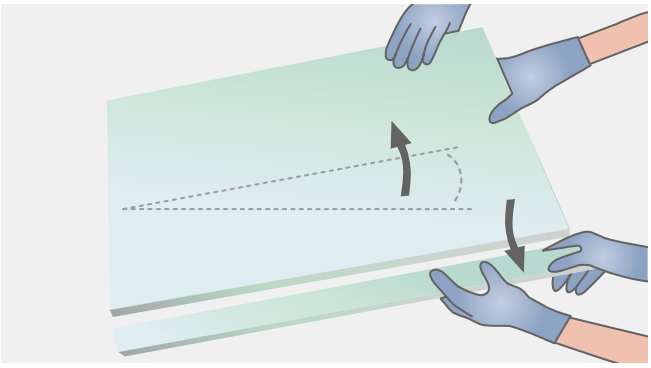
Important when cutting model glasses:

1. Cut a rectangle from the flat glass that is slightly larger than the desired model glass.
2. Always open the cut on the arc first, then press it along the arc again and again, slightly offset, until the cutting line in the entire semicircle is open (picture C).
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.



Information on breaking glasses

Machine-drawn glass has slightly higher internal stresses (so-called residual cooling stresses) than float glass due to the manufacturing process. In individual cases, this can cause the crack edge to look unclean, shell out or the crack to run. To ensure a clean crack edge, the scratched glass sheet can be lifted slightly on one side while a second person breaks the glass.



2. Thermal toughening

The following recommendations, individually or in combination with one another, can improve the toughening quality and reduce the risk of breakage.

In principle, SCHOTT Fourcault glasses can be thermally toughened using the same recipe* as commercially available white glass as float glass. Due to the waviness and irregular surface, mean pressure lines can arise. In order to minimize this, it is advisable to maximize the convection from above at the beginning of the heating process.

Increase of the glass transition temperature by up to 15 °C/27 °F at the end of the heating time in the area of the transition to the quench. The higher temperature is achieved by extending the heating time, **not** by increasing the oven temperature!

If a toughened glass quality* is not required, a semi toughened glass fracture pattern can be generated by reducing the cooling rate, which reduces the risk of fracture.

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 from June 15, 2018, the ESG (thoughened glass) standard EN 12150-2 and the bending strenght and fracture pattern defined therein apply.

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