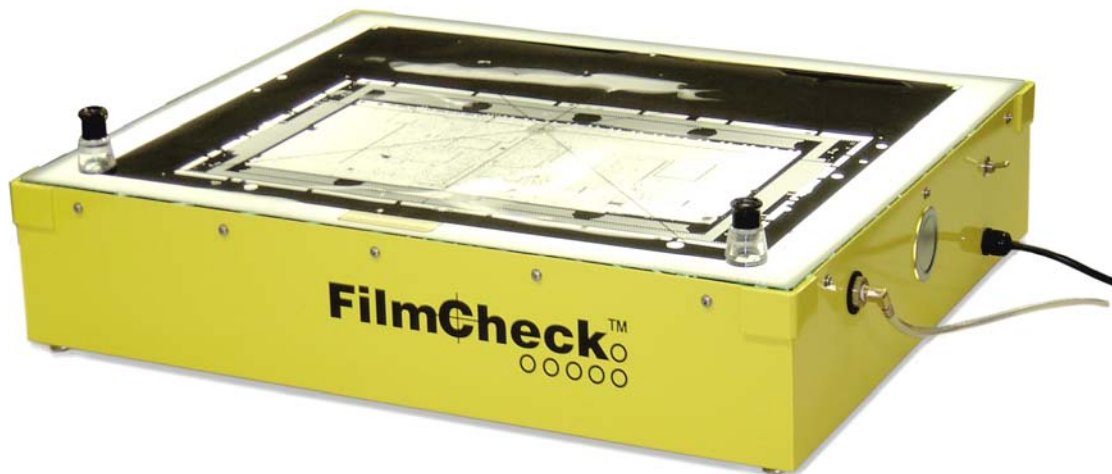


# FilmCheck<sup>μ</sup>

## Master Glass Templates

**Verify Artwork** in only seconds -

- ✓ for *dimensional* accuracy
- ✓ *verify* the accuracy of *artwork* and *post-etch punch* equipment
- ✓ in the *environment* where it is used
- ✓ *when* it is used
- ✓ by *production staff*
- ✓ *expansion* and *shift* errors *calculated* and *reported* to .0001" (2.5μ)



**Another great registration tool from PerfectTest**

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**FilmCheck<sup>TM</sup>**  
OOOOO

## **FilmCheck Master Glass Templates provide the following features:**

- **Master Glass Templates (MGTs) are customized to match the artwork punch and post etch punch in the fabricator's factory.**
- **Registration pins are permanently located on the MGT to match pin/tooling in the factory. Pins are spring-loaded and retractable,**
- **Vernier scales are in locations specified by the customer for each of the panel/artwork sizes. These customer-specified locations become the "0" reference points for all measurements of artwork.**
- **Additional vernier scales are placed on a 2" (5cm) grid over the entire area of the MGT to enable quick, precise checks for local distortion within the artwork.**
- **Images on the MGT are made with a tough, durable, translucent iron oxide material on tempered glass.**

**FilmCheck is especially well suited for use in -**

- ✓ **The plotting department to verify film before its released for production.**
- ✓ **Inner-layer imaging to verify accuracy before use & during use.**
- ✓ **Outer-layer imaging.**
- ✓ **Solder mask.**
- ✓ **Measuring the accuracy and repeatability of the post-etch punch.**

**All image and tooling locations are provided by the customer in Gerber plot file format to assure the MGT matches the tooling in the customer's factory.**

**The FilmCheck MGTs can be ordered with a free-standing cabinet, including the vacuum source and back-lighted top.**

**FilmCheck<sup>T</sup>**  
○○○○○

# How it works...

Y axis indicates '0' deviation at this data-point.

These *amber-colored* vernier lines appear on the MGT. They are .003" wide, and are spaced .025" apart.

These *black* vernier lines appear on the artwork. They are .003" wide, and are spaced .024" apart

Center line

Alignment guide in the FilmCheck viewer

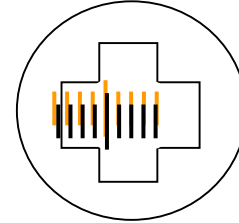
This line, second from the center, is the **narrowest combination** of the **amber lines on the MGT**, and the **black lines on the artwork**, indicating a .002" deviation in the +X axis at this data-point.

Vernier scales are placed in each corner of the artwork, in both X and Y-axis. The artwork is placed over the pins on the master glass template, and vacuum is applied to hold the artwork in place. The operator centers the FilmCheck viewer over the vernier scales, and locates the **narrowest combination** of the **amber** lines on the MGT, and the **black** lines on the artwork. Starting with the longer, center line in the vernier group as '0', the operator counts the number of lines from '0' to the narrowest line combination, as described above to determine the deviation at that data-point.

When there are **2 equally narrow line-combinations**, the **actual data-point is halfway between those 2 lines**, providing better than .0005" positional accuracy. When data is entered into the FilmCheck/Excel program, expansion and shift errors are calculated and reported to 0.0001" (2.5 $\mu$ ).

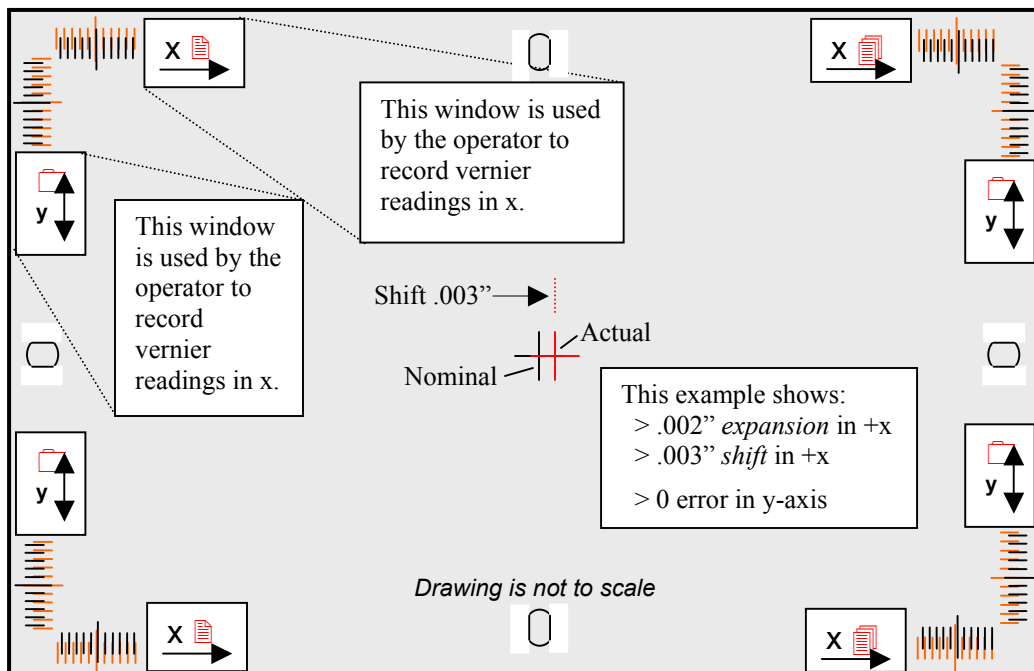
# Four easy steps for measuring artwork *quickly and accurately.*

1. Focus the FilmCheck viewer correctly to your eye.
2. Place the alignment image in the viewer directly over the vernier scale to be measured, as shown.
3. Visually identify the ***narrowest combined line***. That is the line combination of both amber and black lines that appears to be the narrowest. In the illustration, the second line to the right of the center has the ***narrowest combined width***, indicating .002" deviation at this data-point.
4. Vernier scales are placed in each corner of the artwork, providing data on both X and Y-axis for each corner. The illustration below shows how the operator is able to quickly determine that the artwork is:
  - a) shifted .003" in the ***plus*** - X-axis. Shifting the artwork .003" in the ***minus*** - X axis would correct the shift error.
  - b) +.002" expansion (too long) in the X-axis.



Site 1

Site 2



Site 4

Site 3

Standard size of Master Glass Templates (MGT) is 26" x 32" (660 mm x 812 mm)

Maximum artwork size is 26" x 32" (660 mm x 812 mm)

Maximum image size is 22" x 28" (560 mm x 710 mm)

Custom sizes are also available on special order.



