



**Harkness Screens UK**  
Tel +44 (0) 1438 725200  
Fax +44 (0) 1438 344400

E-Mail [sales@harkness-screens.com](mailto:sales@harkness-screens.com)  
[www.harkness-screens.com](http://www.harkness-screens.com)

**Harkness Screens USA**  
Tel +1 (540) 370 1590  
Fax +1 (540) 370 1592

**GENERAL GUIDANCE  
CINEMA SURFACE INSTALLATION  
DATA SHEET**

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**The following principles should be followed when installing Harkness projection surfaces:**

- The auditorium should be dust free with no building works taking place or contractors working.
- Ideally, install the surface when the ambient room temperature is 20/24°C (68/75°F).
- Look out for sharp objects, which might rip or tear the surface.
- Do not put excessive loads on the surface as it may tear or puncture.
- Personnel should wear cotton gloves when handling the surface.
- Do not touch the viewing surface (the product label is on the rear side).
- The surface should not be creased during installation. (This is less critical with matt white or foldable Perlux screens but these should not be excessively creased).

**There are two principal methods to position the surface:**

- Flying the surface by attaching several lines to the top of the surface (first unrolling the surface on a plastic sheet or laying on top of the seats), passing the lines over the frame top and using them to lift the surface into place.
- Unrolling the surface vertically across the front of the frame.

Using either of these methods, loosely attach the surface to the top lacing bar<sup>1</sup> with the sisal tie lines provided. Check that the surface is centred in the frame left to right and that the viewing surface faces the projector. (Product label is on rear side.)

**To "lace" the surface into the frame:**

- First secure the top of the screen surface. Using either lacing sisal or suitable substitute<sup>2</sup>, work from the centre out to the sides, permanently attaching the surface to the top lacing bar using every eyelet (grommet). Remove the temporary sisal ties, as you work along. The surface should be about 6" (150mm) from the frame.
- Then, working down the frame sides, temporarily tie the surface to the side lacing bar to keep it from pulling in ("hour glassing") past the side masking.
- Next, lace the bottom surface edge to the lacing bar with either lacing sisal or suitable substitute. Start from the centre and work to the sides using every eyelet. Pass the sisal through each eyelet then around the lacing bar. Since Harkness surfaces stretch and must be pulled tightly to the frame, they are manufactured less than the overall height. It may require several passes to pull the bottom surface edge to within about 6" (150mm) of the bottom lacing rail, depending on the ambient temperature.
- Finally, return to the sides and permanently lace the screen sides utilizing as many eyelets as needed to pull the image area in line with side masking. With curved frames, do not lace the sides tight as this may cause the surface to "belly" towards the projector. (This may put the image area outside the projector depth of field and cause an out of focus picture).

Harkness does NOT recommend springs or "bungee" (elastic) cord installation, since they do not keep the surface properly tensioned<sup>3</sup> during its life.

<sup>1</sup> LACING BAR is the frame part where the surface attaches. It can be made of angle iron, unistrut, etc. The lacing bar must allow for sisal to go around it and move, as the surface is tightened into place.

<sup>2</sup> LACING SISAL is a natural product which does not expand or contract when the temperature or humidity changes. Other string-like products can be used, but ensure they will not deteriorate over time or expand or contract. Sisal available from Harkness Screens.

<sup>3</sup> PROPER TENSION refers to keeping the surface inflexible, so if temperature or humidity changes the surface can move, but the lacing remains rigid. Springs and bungees stretch the surface but may later relax, so the surface loses tension. **Note: other manufacturers do NOT use Harkness Screens' manufacturing method, so in their case springs may be appropriate.**