# Compact 35

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Fig 1. Compact 35 design

**Abstract**

*This paper presents an extremely compact depth-of-field adapter, fitted for the new generation of camcorder.*

## 1. Introduction and related works

Depth-of-field adapter is a trick to simulate 24x36mm sensors even with the small sensors of camcorders [1]. The principle is to use a ground glass as projection surface for a 35mm lens, and film that ground-surface with the camcorder. The advantage of doing so if to have the same shallow depth-of-field as 35mm. A common name for theses adapters is Mini 35 [2].

## 2. The idea behind Compact 35

Since 2007, compact HD camcorders are available (like Canon HF100 [3]).
This generation of camcorder is so compact that it can easily fit in a pocket.
As a consequence, the sensor and optic is smaller and closer to the camcorder envelope.
The 35mm DOF adapter can be redesigned to take advantage of the size (Fig 1.).

Light enter the lens, it's reflected on a first right-angle prism. A ground-glass is attached to this prism and is used to project the light. Then a second right-angle prism send the image to the camcorder. Theses camcorders have flippable LCD, so the screen can be oriented to match the lens direction.

The 3 center optics (prism/ground-glass/prim) can be attached together to form one optic bloc, reducing optical imperfections.

## 3. Results

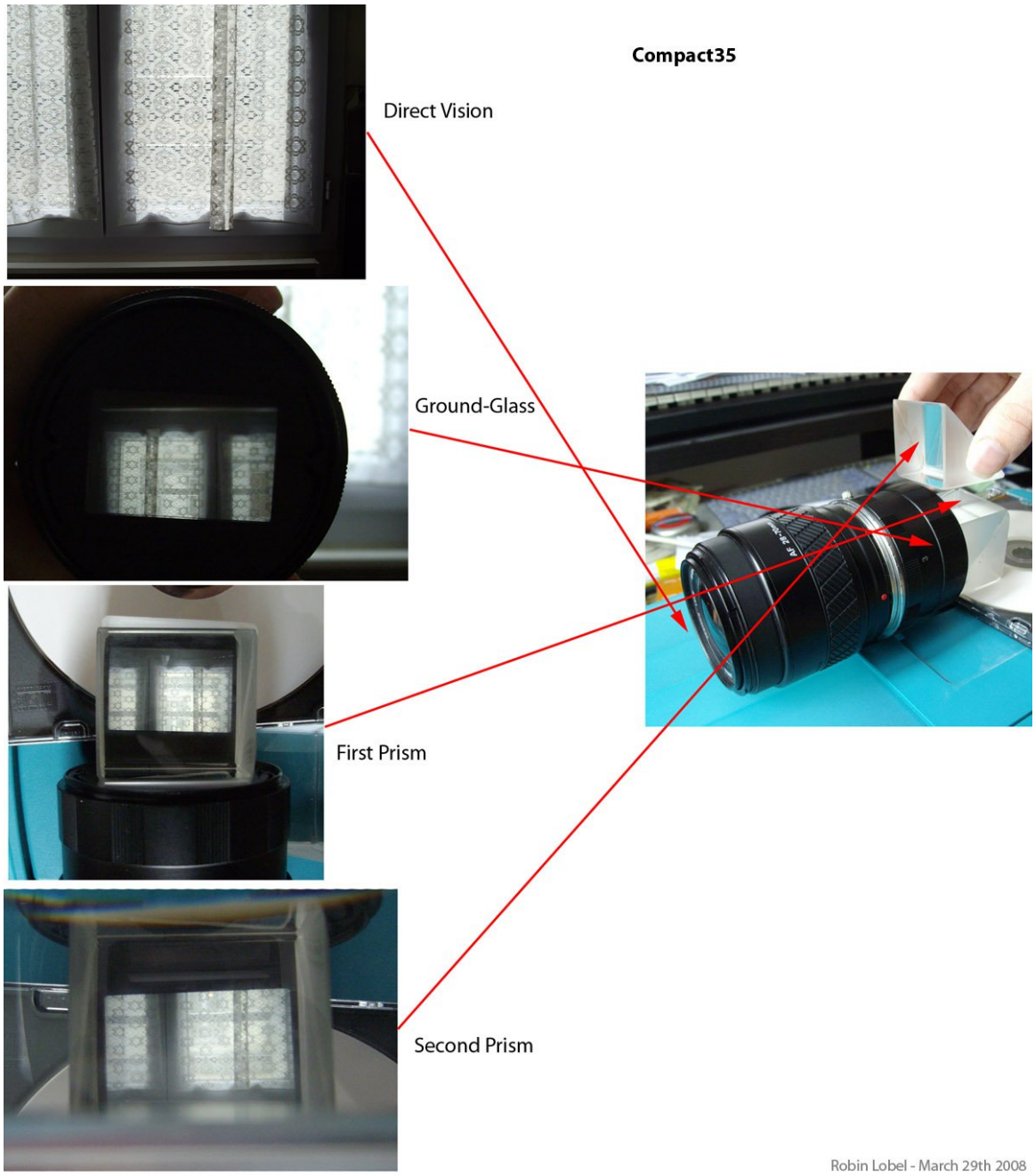


Fig 2. How light is transformed through the different optics

Fig 2. shows the different stages of the picture before it reach the camcorder.
Compact 35 produce correctly oriented (non-flipped) pictures.
Fig 1 and Fig 2 show a vertical Compact 35, but it can also be mounted on left/right/down side if the camcorder is small enough.

## 4. Limitations and future development

As with other depth-of-field adapters, Compact 35 suffers some light loss. It's all about the ground-glass quality here.
Here's another design which do not use ground-glass, but a white surface for projection (Fig 3).
It also needs only one right-angle prism, which reduce light loss.
A slightly reflective screen (such as those used for polarized projections) will also reduce light loss.

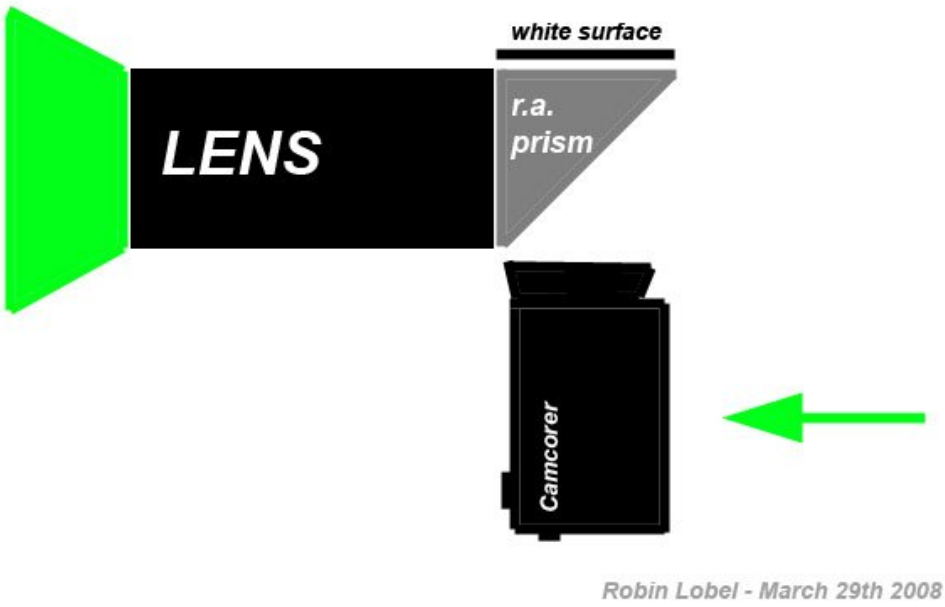


Fig 3. Possible evolution for Compact 35, with only one right-angle prism and white surface for projection.

## References

[1] http://en.wikipedia.org/wiki/Depth-of-field_adapter
[2] http://www.pstechnik.de/en/digitalfilm-mini35.php
[3] http://en.wikipedia.org/wiki/List_of_Canon_camcorders#Canon_HF100