

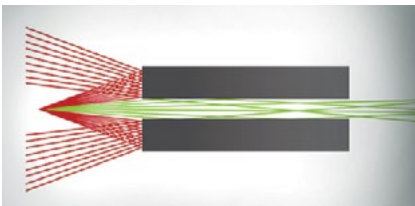
Long throw collimator



For some applications, it is desirable to project light in a narrow beam or column. This can be accomplished by a variety of devices, such as projecting light through a series of long narrow slits. The problem then is that much of the light is lost due to reflection off the face of the slits, as seen in the diagram below.



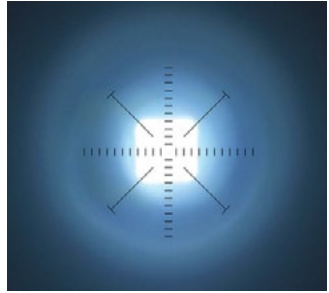
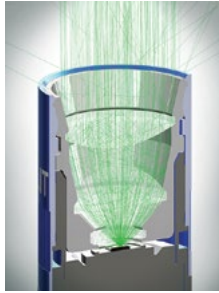
Unlike the slit method, the long throw collimator assembly works by using a series of Aspheric lenses to focus the light into the desired path. Individually, the lenses in this design focus the incoming light and, by combining the three lenses, the light rays are merged into roughly parallel beams or columns.



The three lenses are mounted in a reflective housing that further increases the efficiency of the assembly. As a result, the light is projected in a very narrow beam with little stray light escaping the front of the assembly.

Points to note:

- There are three unique optical lenses utilized.
- Moldable optical silicones enabled complex, yet flexible shapes with undercuts and trapped rings inside the part.
- The complex shape of the reflector results in the mandrel being trapped in material during molding. The material flexibility allows it to be removed from the mold as one part, unlike incumbent materials which may need to be welded together.
- This example combines two materials; the SILASTIC™ MS-1002 Moldable Optical Silicone lenses ‘snap’ into a SILASTIC™ MS-2002 Moldable Reflective Silicone holder, which snaps into the retaining cap of the flashlight.
- The extremely tight beam projects the image of the LED die.



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