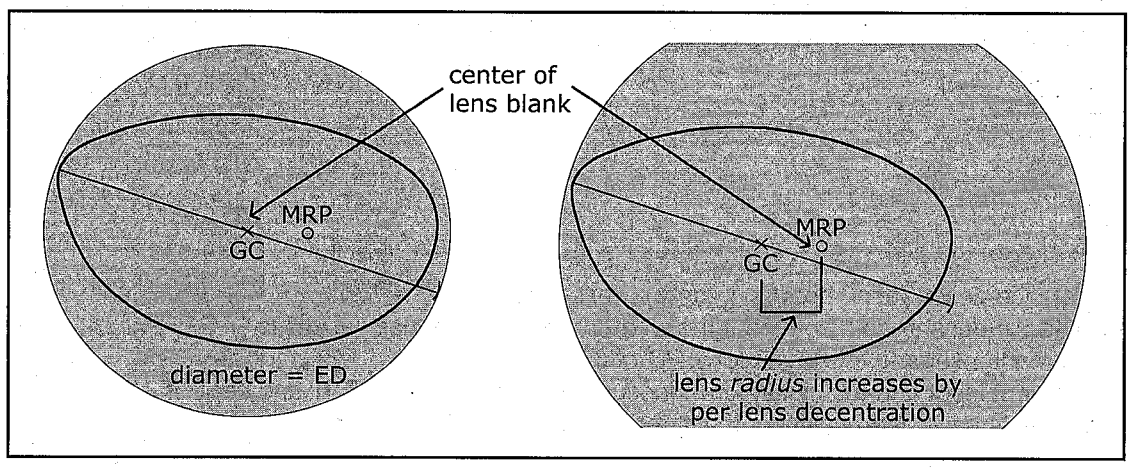
MINIMUM BLANK SIZE

We use the ***minimum blank size*** (MBS) when cutting out single vision lenses to help us determine whether the lens must be surfaced or can be cut from a stock lens.



If there is no decentration of the optical center, the minimum blank size is equal to the ED of the frame. This occurs in the following situations:

- The lens is a plano power lens, or has plano power on the 180th meridian.
- No decentration is needed for the PRP from the geometric enter of the final cut lens. (The wearer's PD = DBC.)
- The lens is ground with the PRP decentered from the geometric center of the uncut lens blank. In this case the decentration has already been done, so the whole lens blank will be used for the finished, cut lens.

If the lens must be decentered from the GC of the lens blank by 1 mm, we need 1 mm in *each direction* on the lens, so we will add 2 mm to the ED. Similarly, if the decentration is 3 mm, we need 3 mm in both directions, or 6 mm plus the ED.

Since the lens moved by the amount of decentration, the *radius* of the necessary uncut lens increased by the amount of decentration and the *diameter* increased by twice the amount of decentration.

The very edge of the lens blank may have a nick or a mold seam, so for practical purposes some people add 1 to 2 mm to the amount needed for the minimum blank size. Thus

$$\text{MBS} = \text{ED} + (2)(\text{per-lens decentration}) + 2 \text{ mm}$$

Depending on the shape of the lens, the direction of the ED, and the condition of the edge, the lens may cut out of a smaller blank. The formula gives a "safe cutout" measurement, which is the largest size that the blank will need to be for a lens with a given decentration and ED. If the longest radius (used to calculate the ED) is toward the direction of decentration (usually toward the nasal side of the lens), this formula gives the correct minimum blank size.

Minimum blank size for a multifocal depends on the segment drop (or raise), the placement of the distance optical center with respect to the segment, the decentration, and the ED. A chart supplied by the lens manufacturer should be used if one is available. Of particular interest are the charts supplied by most manufacturers of progressive addition lens. A discussion about creating a minimum blank size chart for multifocals may be found in Brooks: *Understanding Lens Surfacing*.

EXAMPLE:

5-6. What is the minimum blank size for a frame with ED of 55 and DBC of 65 if the wearer's PD is 62? What is the minimum blank size for the same frame if the wearer's PD is 53?

If the wearer's PD is 62, the total decentration is 65 – 62 = 3 mm. For one lens we use one half of the total decentration; for minimum blank size we multiply by 2 again. So we can just use the decentration as is.