

Expandable Cavity and Striker Insert Design

The Expandable Cavity can mold a full 360 degrees around. The most common configuration is four (4) segments that mold 90 degrees each. The Expandable Cavity can also be designed as asymmetrical, such as two segments that mold 90 degrees each and three segments that mold 60 degrees each. (Contact D-M-E Applications Engineering for details.) The amount of expansion varies according to the part requirements and clearances needed.

The general calculations for total expansion necessary are:

1. Calculate the critical expansion per side

The critical expansion (CE) needed to release the undercut is not the radial difference between major diameter (D) and minor diameter (d). For a typical four segment Expandable Cavity, the formula for calculating critical expansion is (see Fig. 4):

$$CE = \frac{\sqrt{D^2 - (d^2/2)}}{2} - \frac{\sqrt{2} \times d}{4}$$

2. Calculate the loss of expansion

$$\text{Loss of expansion} = \text{molding length} \times .050\text{in}$$

The loss of expansion is the amount of expansion the tool loses as you move back from the cavity's face. This is due to the fact that the segments expand radially outward from fixed points on the common base. The outward bend of a typical segment is about 2 to 3 degrees. The tool typically loses 0.050 inch per inch as you move into the Expandable Cavity from the tool's face (see Fig. 5).

3. Calculate the total expansion

$$\begin{aligned} \text{Total expansion} &= \text{critical expansion per side} \\ &+ \text{loss of expansion} + 0.005 \text{ clearance} \end{aligned}$$

When the mold is closed, the exterior of the Expandable Cavity must be supported by the Striker Insert at least 7/8 of the molding length plus the shut-off, to ensure no flash conditions. Allow for 0.200 inch of shut-off length below the molding length — any more is excessive (see Fig. 6).

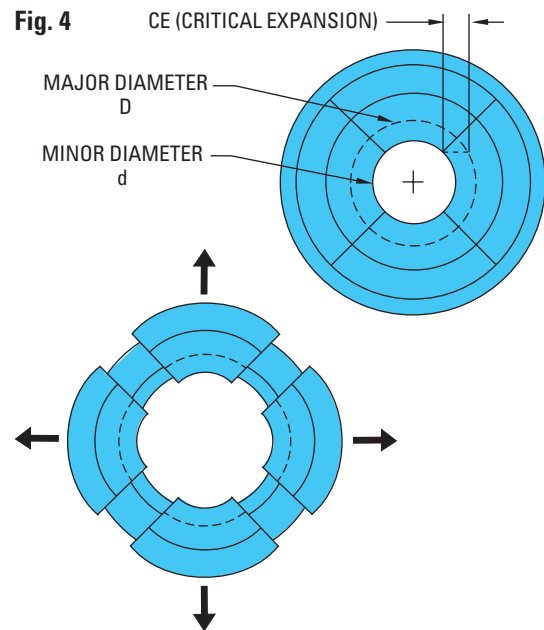


Fig. 5

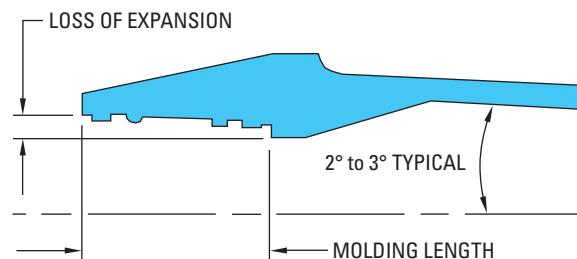


Fig. 6

