

4-4-4 Waveguide Corners, Bends, and Twists

The waveguide corner, bend, and twist are shown in Fig. 4-4-10. These waveguide components are normally used to change the direction of the guide through an arbitrary angle.

In order to minimize reflections from the discontinuities, it is desirable to have the mean length L between continuities equal to an odd number of quarter-wavelengths. That is,

$$L = (2n + 1) \frac{\lambda_g}{4} \quad (4-4-25)$$

where $n = 0, 1, 2, 3, \dots$, and λ_g is the wavelength in the waveguide. If the mean length L is an odd number of quarter wavelengths, the reflected waves from both ends of the waveguide section are completely canceled. For the waveguide bend, the minimum radius of curvature for a small reflection is given by Southworth [2] as

$$R = 1.5b \quad \text{for an } E \text{ bend} \quad (4-4-26)$$

$$R = 1.5a \quad \text{for an } H \text{ bend} \quad (4-4-27)$$

where a and b are the dimensions of the waveguide bend as illustrated in Fig. 4-4-10.

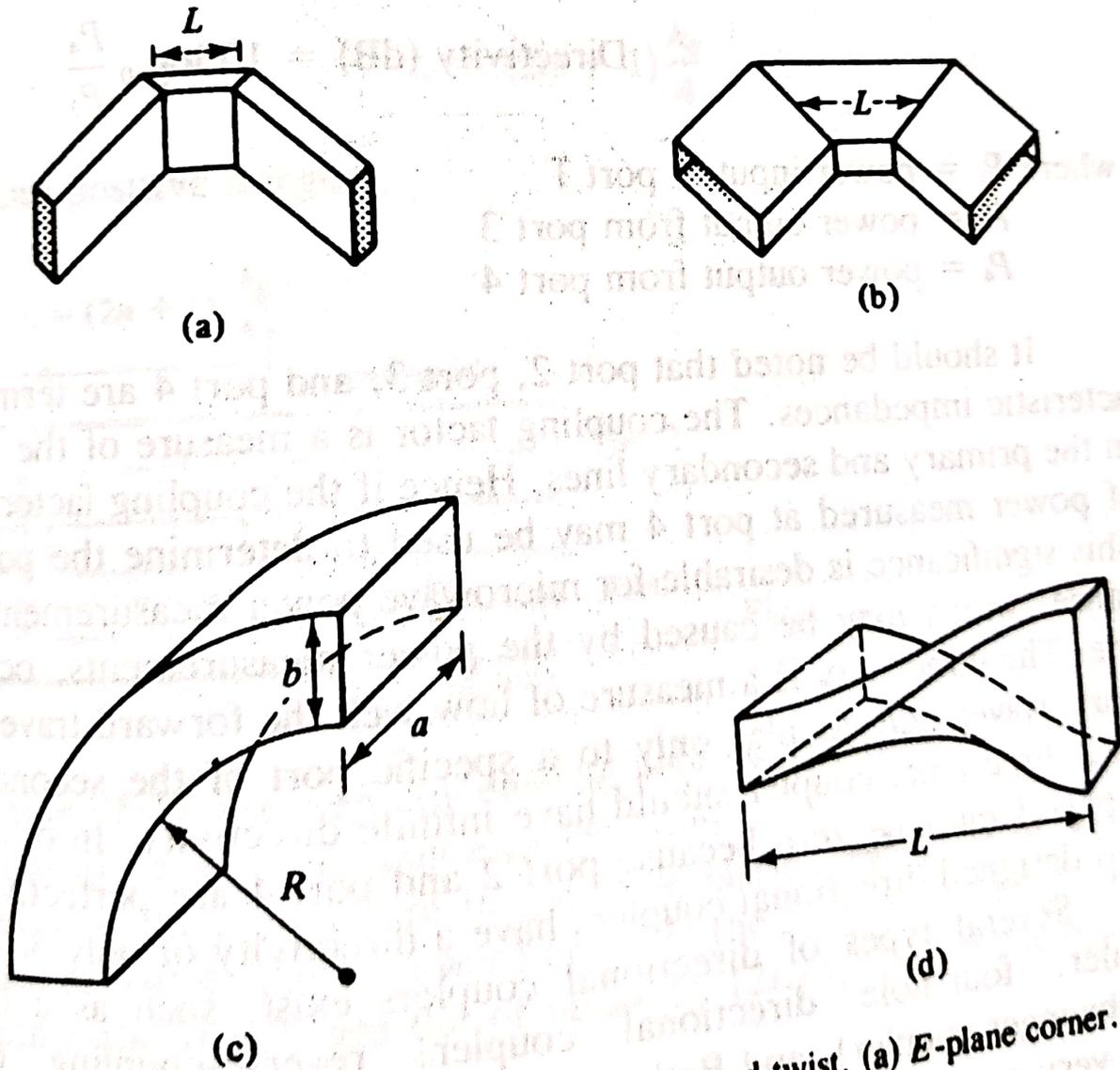


Figure 4-4-10 Waveguide corner, bend, and twist. (a) *E*-plane corner. (b) *H*-plane corner. (c) Bend. (d) Continuous twist.