

# **FLAME STABILIZATION**

## **flashback**

flame enters and propagates through the burner tube or port without quenching;

## **liftoff.**

flame is not attached to the burner tube or port but, rather, is stabilized at some distance from the port.

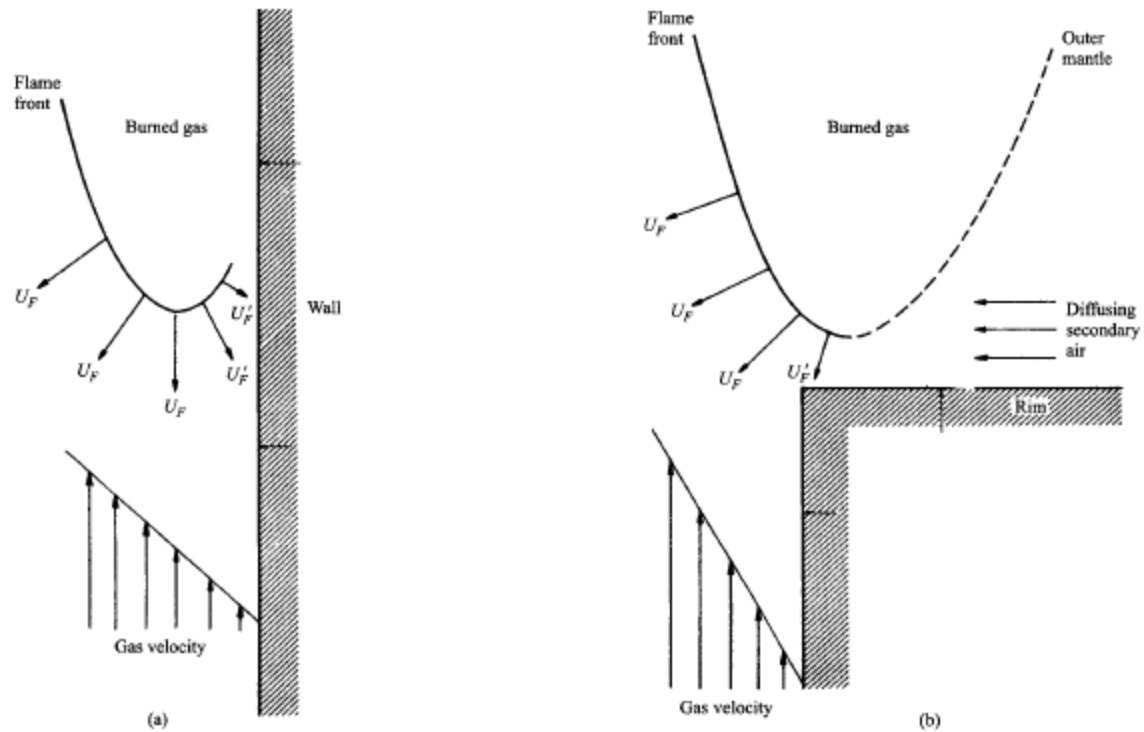
Flame lifting depends on local flame and flow properties near the edges

**attached.**

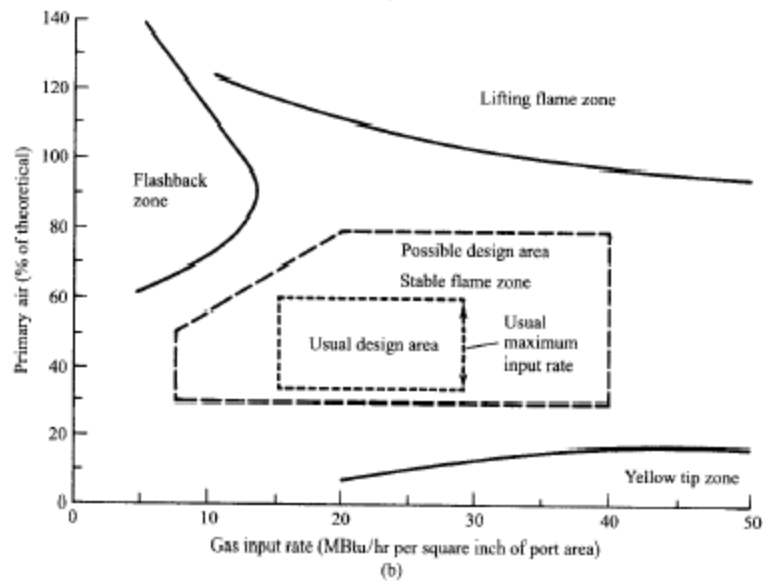
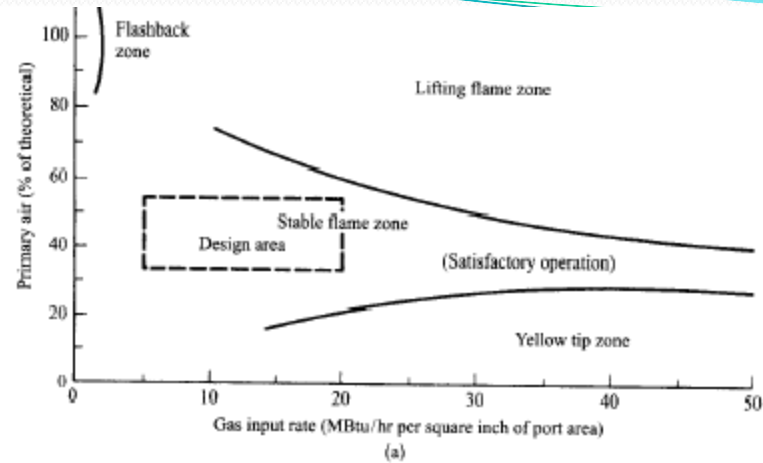
the edge of the flame lies quite close to the burner lip :

blows off

Increasing the velocity beyond the liftoff value results in increasing the liftoff distance until the flame abruptly blows off



**Figure 8.22** Velocity vectors showing flow velocities and local flame velocity for (a) flashback and (b) liftoff.  
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**Figure 8.23** Stability diagrams for flashback, liftoff, and yellow-tipping for (a) natural gas and (b) manufactured gas for a burner with a single row of 2.7-mm-diameter ports with 6.35-mm spacing. Yellow-tipping indicates soot formation within the flame.  
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