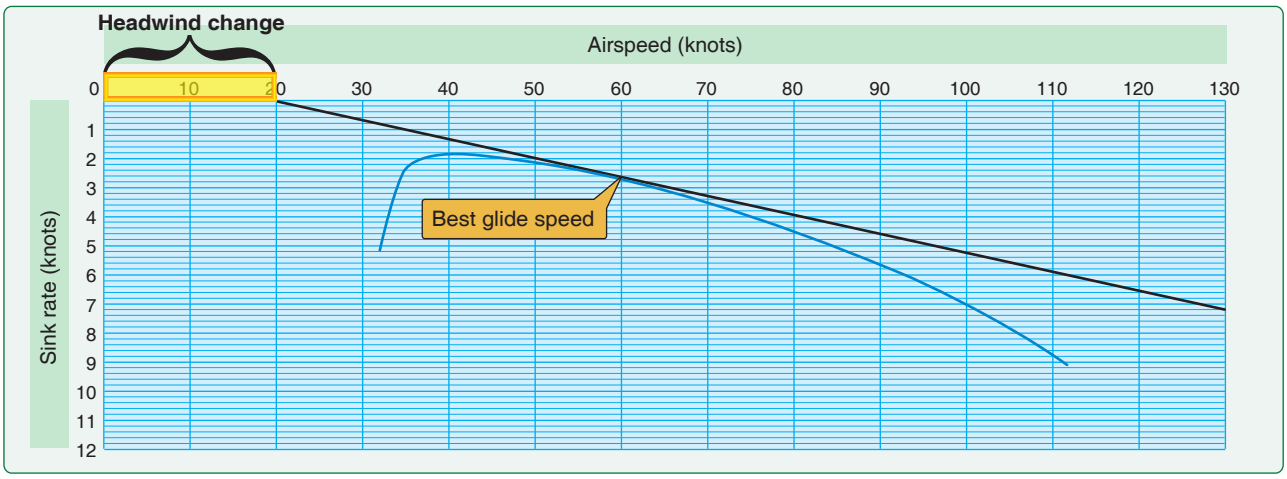

Figure 5-13. *Best speed to fly in a 20-knot headwind.*

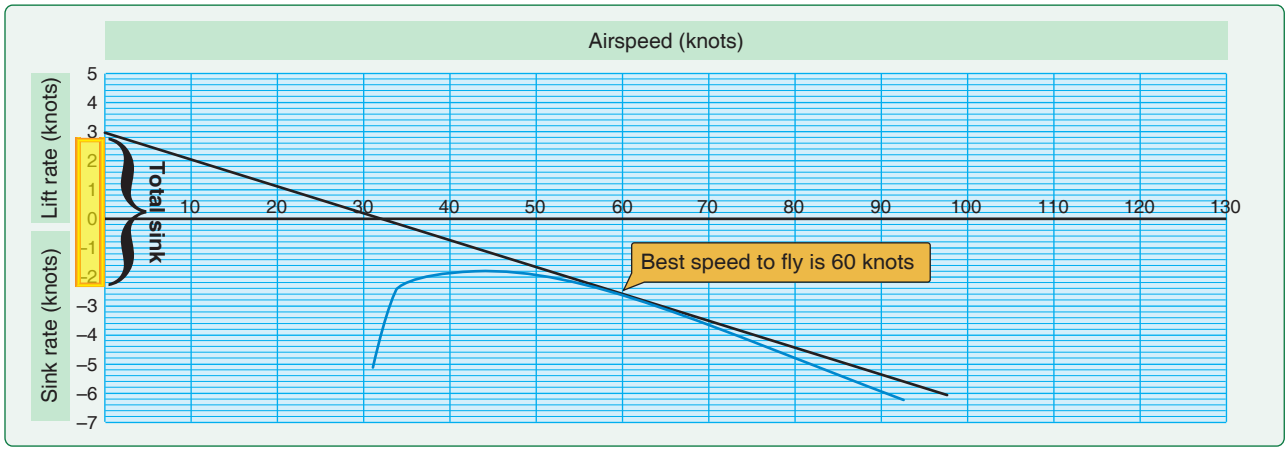

Figure 5-14. *Best speed to fly in sink.*

and occurs at a higher speed. *[Figure 5-15]* With ballast, it would be more difficult to work small, weak thermals. The best glide ratio is the same, but it occurs at a higher speed. In addition, the sink rate at higher speeds is lower with ballast. From the polar, then, ballast should be used under stronger thermal conditions for better speed between thermals. Note that the stall speed is higher with ballast as well.

Flaps with a negative setting as opposed to a 0 degree setting during cruise also reduce the sink rate at higher speeds, as shown in the polar. *[Figure 5-16]* Therefore, when cruising at or above 70 knots, a –8° flap setting would be advantageous for this glider. The polar with flaps set at –8° does not extend to speeds lower than 70 knots since the negative flap setting loses its advantage there.

Wingtip extensions also alter the polar, as shown in *Figure 5-17*. The illustration shows that the additional 3 meters of wingspan is advantageous at all speeds. In some gliders, the low-speed performance is better with the tip extensions, while high-speed performance is slightly diminished by comparison.

Weight and Balance Information

The GFM/POH provides information about the weight and balance of the glider. This information is correct when the glider is new as delivered from the factory. Subsequent maintenance and modifications can alter weight and balance considerably. Changes to the glider that affect weight and balance should be noted in the airframe logbook and on appropriate cockpit placards that might list, for example, “Maximum Fuselage Weight: 460 pounds.”

Weight is a major factor in glider construction and operation; it demands respect from all pilots. The pilot should always be aware of proper weight management and the consequences of overloading the glider.

Limitations

Whether the glider is very simple or very complex, designers and manufacturers provide operating limitations to ensure the safety of flight. The VG diagram provides the pilot with information on the design limitations of the glider, such as limiting airspeeds and load factors (L.F. in *Figure 5-18*).