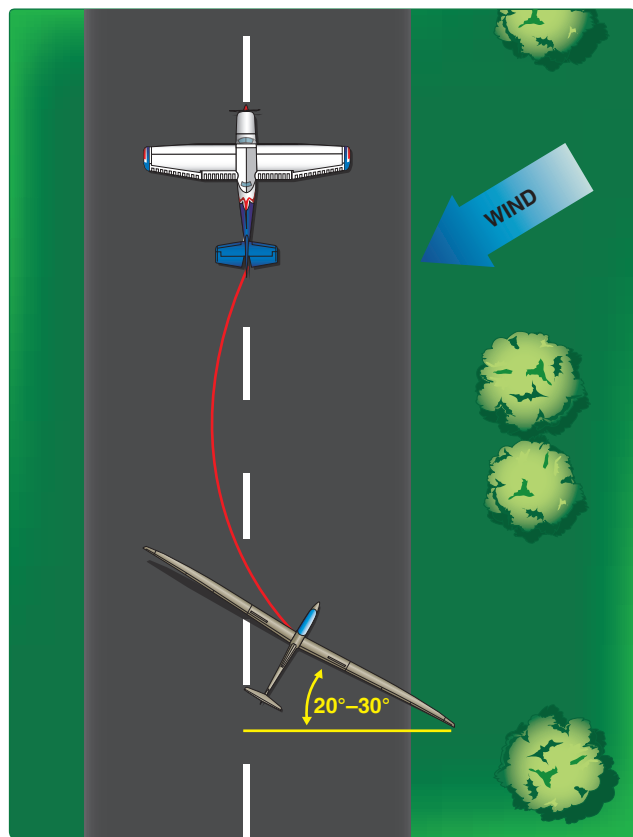


Prior to the towplane becoming airborne, and after the glider lifts off, the glider pilot should turn into the wind and establish a wind correction angle to remain behind the towplane. This is accomplished by using coordinated control inputs to turn the glider. Once the towplane becomes airborne and establishes a wind correction angle, the glider pilot repositions to align behind the towplane.

### Unassisted

Just as in the unassisted takeoff with no wind, the unassisted crosswind takeoff is conducted slightly differently with regard to wing positioning and glider alignment. The glider should be placed on the upwind side of the runway or take area; if unable, the towplane should try to angle into the wind as best as possible to reduce the crosswind component for the glider. Most gliders have a crosswind limit up to approximately 10–12 knots. See the Glider Flight Manual/ Pilot's Operating Handbook (GFM/POH) for information specific to your glider. Again, the unassisted launch should be attempted only by highly experienced pilots.

The glider should be placed with the upwind wing on the ground and the glider angled approximately 20–30° into the wind. [Figure 7-5] If the upwind wing is permitted to be up during the takeoff run, the glider pilot finds it very difficult



**Figure 7-5.** When setting up for a crosswind takeoff, the glider should be placed on the upwind side of the runway.

to level the wings. A ground loop usually results since the downwind wing is being dragged along the ground. With the upwind wing on the ground during the early stages of the takeoff, the glider pilot finds it easier to level the wings early in the takeoff. As in the unassisted takeoff, the upwind wing is swung forward at a faster rate than the downwind wing, aiding the pilot in leveling the wings. The crosswind strikes the fuselage of the glider, tending to push it downwind, making it necessary to place the glider on the upwind side of the runway. Execute a crosswind takeoff from this point after both wings are level.

Common errors in aerotow takeoffs include:

- Improper glider configuration for takeoff,
- Improper initial positioning of flight controls,
- Improper alignment of the glider (unassisted takeoff),
- Improper use of visual launch signals,
- Failure to maintain alignment behind towplane before towplane becomes airborne,
- Improper alignment with the towplane after becoming airborne, and
- Climbing too high after lift-off and causing a towplane upset.

### Aerotow Climb-Out

Once airborne and climbing, the glider can fly one of two tow positions. High tow is aerotow flight with the glider positioned slightly above the wake of the towplane. Low tow is aerotow flight with the glider positioned just below the wake of the towplane. [Figure 7-6] Climbing turns are made with shallow bank angles and the glider in the high tow position. Pilots are trained using these positions to learn coordinated towing procedures and understanding the dynamics of the aerotow. In training, glider pilots are advised to control vertical position relative to the towplane using the horizon.

The glider pilot's sight picture depends on the type of towplane being used for the launch. The instructor, through flight experience, can determine the particular towplane's vertical wake boundaries and describe the positions. Sometimes, the glider may use the picture of the towplane's wings on the horizon. On another type of towplane, maintaining the towplane's rudder centered over the fuselage of the towplane ensures the glide is directly behind the towplane in straight flight. Any excessive deviation from the low or high tow position by the glider requires abnormal control inputs by the tow pilot, which always generates more drag and degrades climb performance during the tow.

The towplane's wake drifts down behind the towing aircraft. Straight ahead climbs are made with the glider in the level or