



FIGURE 8. DOUBLE TOW

sailplane in one-half the runway available for the towed take-off. This procedure should be limited to exceptional circumstances and should not be standard practice.

### 8 a DOUBLE TOW

With adequate extra power in the towplane and with EXPERIENCED PILOTS, towing two sailplanes at once is not too difficult. With a large performance margin in the towplane, double tow makes more economical use of the towplane for local operations. With only moderate performance margins, double tow is a practical way to move two sailplanes cross-country.

### 8 b DOUBLE TOW — Tow Arrangements

Two towlines, the shortest at least 250 feet long and the longest at least 75 feet longer than the short one, should be joined to a single ring for the towplane release. The SHORTER towline for the sailplane riding on the LEFT or the HIGH tow position should be assigned to the sailplane with the LOWER GLIDE RATIO. The LONGER towline, for the RIGHT or LOW tow sailplane, should be assigned to the HIGHER PERFORMANCE ship. The pattern is shown in Figure 8A.

Briefing of all three pilots for double tow operations should cover every planned course of action and every emergency condition.

Double tow in moderate to heavy turbulence is hazardous and should not be undertaken. If this condition is encountered during a cross-country tow the flight should be terminated at a previously chosen alternate airport.

### 8 c DOUBLE TOW — Techniques

The take-off in double tow is similar to that in single tow in all respects except that each sailplane pilot must maintain his position quite precisely with the longitudinal axis of his sailplane just outside the wingtip of the towplane. The need for a longer take-off run must be anticipated and a wider runway is required.

8d *DOUBLE TOW — Towed Turns*

With the two sailplanes in the normal or high tow position, only shallow banked turns should be made. Differentials in airspeed in moderate to steep turns with sailplanes in high tow can be 7 or 8 percent above the towplane speed for the outside sailplane and the same percentage below the towplane speed for the inside sailplane. These differentials can cause difficulty in maintaining proper tow positions.

Two methods of making the towed turns are possible. In one, shown in Figure 8B, the sailplanes maintain the same wingtip references as in level tow, the inside sailplane riding low and the outside one high, both outside the curved path of the propwash. Pilots with formation flying experience will probably prefer this method of turning because the positions are like those held during a formation turn. Another method of turning in double tow is shown in Figure 8C. Both sailplanes maintain the same level, but each pilot must assume a new reference point on his side of the banked towplane.

8e *DOUBLE TOW — High-Low Tow Position*

For greater accuracy in maintaining tow position, more efficiency in towing and reduction of fatigue (from aileron and/or rudder pressures to hold side position) the double tow may be flown with one sailplane over and one under the propwash. The reason for placing the most efficient sailplane in the long-tow or low position is now clear; there is less tendency for oscillation in the low tow position.

The high-low tow positions should be entered above 1000 feet and after clearing airport traffic. The long-tow sailplane moves around the propwash on the right side to enter the low tow position; then the short-tow sailplane may move into the center in the normal high tow position over the propwash. The long-tow sailplane pilot, whose tow rope is the more vulnerable, can see the short-tow sailplane from an excellent vantage point. See Figure 8D.

During double tow small pieces of cloth tied on the ropes at 20 to 30-foot intervals will make it easier for the pilots to watch both ropes.

8f *DOUBLE TOW — Release*

Release from double tow should be made with a technique similar to that used in single tow. The short-tow man on the left always releases first and makes an immediate climbing turn to the left; the long-tow man releases next in a climbing turn to the right. The towplane continues straight until clear of the release area.

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