

Glider Flying Handbook



U.S. Department
of Transportation
Federal Aviation
Administration



Towing

Tow planes are the most common way that a glider obtains altitude. [Figure 12-1] Winch or automobile tows are being used less and less as they require more crew, are more difficult to set up, and the altitude gain for the glider is just a fraction of what a tow plane can offer. Pilots of gliders and powered aircraft must abide by all federal air regulations listed in the appropriate Code of Federal Regulations (CFR) governing flight. The CFRs that are applicable to pilot certification for towing gliders is covered by Title 14 of the Code of Federal Regulations (14 CFR) part 61, Certification: Pilots, Flight Instructors, and Ground Instructors,”and 14 CFR Part 91, General Operating and Flight Rules. The following sections are also applicable:

- 14 CFR Part 61, section 61.23—Medical Certificates: Requirements and Duration
- 14 CFR Part 61, section 61.56—Flight Review
- 14 CFR Part 61, section 61.69—Gliders and Unpowered Ultralight Vehicle Towing: Experience and Training Requirements. *[Figure 12-2]*
- 14 CFR Part 91, section 91.15—Dropping Objects
- 14 CFR Part 91, section 91.309—Towing: Gliders and Unpowered Ultralight Vehicles *[Figure 12-3]*

Guidance and towing procedures can also be found in the Aeronautical Information Manual (AIM) and pertain to flight in the National Airspace (NAS).



How does a private pilot obtain towing privileges?
CFR, part 61, section 61.69, outlines the requirements for towing privileges.

You must

1. Hold at least a private pilot certificate with the appropriate category rating;
 2. Have logged a minimum of 100 hours as pilot in command in the same category aircraft used for the flight;
 3. Have a logbook endorsement from an authorized instructor certifying you have received ground school instruction in the areas listed in part 61.69(a)(3)(i)(ii)(iii) and are proficient in those areas;
 4. Have a logbook endorsement from a pilot that already meets the requirements of part 61.69 (c) stating that you have completed at least three flights in the category aircraft used for the flight, or while simulating towing flight procedures; and In the preceding three actual or simulated tows accompanied by a qualified pilot or has been towed for three flights in the category aircraft used for the flight.
- For flights under an ultralight exemption may require additional experience and endorsements.

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in flight

...ast a private pilot certificate with the appropriate category rating;
...ed a minimum of 100 hours as pilot in command in the same category aircraft used for towi
...endorsement from an authorized instructor who has reviewed their logged ultralight towing e
...ero tug pilot endorsement card received from USHPA, verifying they have received the
...ot of gliders and/or unpowered ultralight vehicles; and In the preced
...accompanied by a qualified pilot, or has been

To meet the rule below, the tow plane safety link strength requirement must be greater than 1,000 lbs. and not more than 1,250 lbs.

The 1,400 lbs. strength requirement is not a player since 1,250 lbs. is the maximum.

$$\begin{array}{r} 1000 \text{ lbs.} \times 25\% = 250 \text{ lbs.} \\ 1000 \text{ lbs.} + 250 \text{ lbs.} = 1250 \text{ lbs.} \\ \hline 700 \text{ lbs.} \times 2 = 1400 \text{ lbs.} \end{array}$$

Glider safety link
breaking strength
1,000 lbs.

700 lbs. MGW

RULE Greater, but not more than 25 percent greater than that of the safety link at the glider end, and not greater than twice the glider MGW.

Maximum Aero Tow Speed	MPH	Knots
Blanik L-23	93 mph	81 knots
Blanik L-13	87 mph	76 knots
SGS 2-33	98 mph	85 knots
SGS 1-26	95 mph	83 knots
ASK 21	108 mph	94 knots



Figure 12-1. *Gliders use tow planes to launch and obtain altitude.*

Equipment Inspections and Operational Checks

Tow Hook

There are typically two types of tow hooks used in the United States: Tost or Schweizer. The tow hook must be inspected for proper operation daily and prior to any tow activity. [Figure 12-4]

Prior to use, the tow hook and release arm should be inspected for damage, cracks, deformation, and freedom of movement on the pivot bolt. Visually check the tow hook and ensure that the hook properly engages the release arm. Inspect the rubber spacer for general condition and check the condition of the release cable. Inside the cockpit, check to see that the manual release lever is not rubbing against the aircraft seat or any other obstructions, and check the security of the release handle assembly and the cable attachment.

The following operation checks should be performed to the tow hook:

- Attach the tow line to the tow hook and apply tension on the line in the direction of tow.
- With tension on the tow line, have another person pull the release control in the tow plane cockpit and check for proper release of the tow line.
- If the tow line does not properly release, restrict the tow plane from towing duties until repairs can be made.
- Reattach the tow line and apply a moderate tug in the direction of tow.
- Inspect the release assembly to ensure it has remained completely closed.
- If the release assembly has opened, even partially, restrict the tow plane from towing duties and repair the tow assembly.

Tost Tow Hook

Before use, ensure that the release hook opens completely when the cockpit release is pulled to its fullest extent. The release hooks should touch the tow hook ring. If the release mechanism is not working correctly, it should not be repaired by anyone other than the Tost Factory. Inside the cockpit, check to see that the manual release lever is not rubbing against the aircraft seat or any other obstructions, and check the security of the release handle assembly and the cable attachment. When the cockpit manual release lever is released, the tow hook should return to the fully closed position. Before each use, check the tow hook and ensure that

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3. Have a logbook endorsement from an authorized instructor certifying you have received ground and flight training in gliders or unpowered ultralight vehicles, and is proficient in the areas listed in part 61.69(a)(3)(i)(ii)(iii) and (iv);
4. Have a logbook endorsement from a pilot that already meets the requirements of part 61.69 (c) and (d), who has accompanied the pilot on three flights which has certified them to have accomplished at least three flights in an aircraft while towing a glider or unpowered ultralight vehicle, or while simulating towing flight procedures; and In the preceding 12 months has performed three actual or simulated tows accompanied by a qualified pilot or has been towed for three flights in a glider or unpowered ultralight vehicle. In accordance with part 61.52, pilots towing under an ultralight exemption may credit experience obtained in ultralight vehicles for their towing experience and endorsements.

You must

1. Hold at least a private pilot certificate with the appropriate category rating;
2. Have logged a minimum of 100 hours as pilot in command in the same category aircraft used for towing;
3. A logbook endorsement from an authorized instructor who has reviewed their logged ultralight towing experience and who has verified their aero tug pilot endorsement card received from USHPA, verifying they have received the authorized training to become a tow pilot of gliders and/or unpowered ultralight vehicles; and In the preceding 12 months has performed three actual or simulated tows accompanied by a qualified pilot, or has been towed for three flights in a glider or unpowered ultralight vehicle.

Figure 12-2. *Excerpt from the Code of Federal Regulations, part 61, section 61.69.*

Figure 12-3. *Excerpt from the Code of Federal Regulations, part 91, section 91.309.*

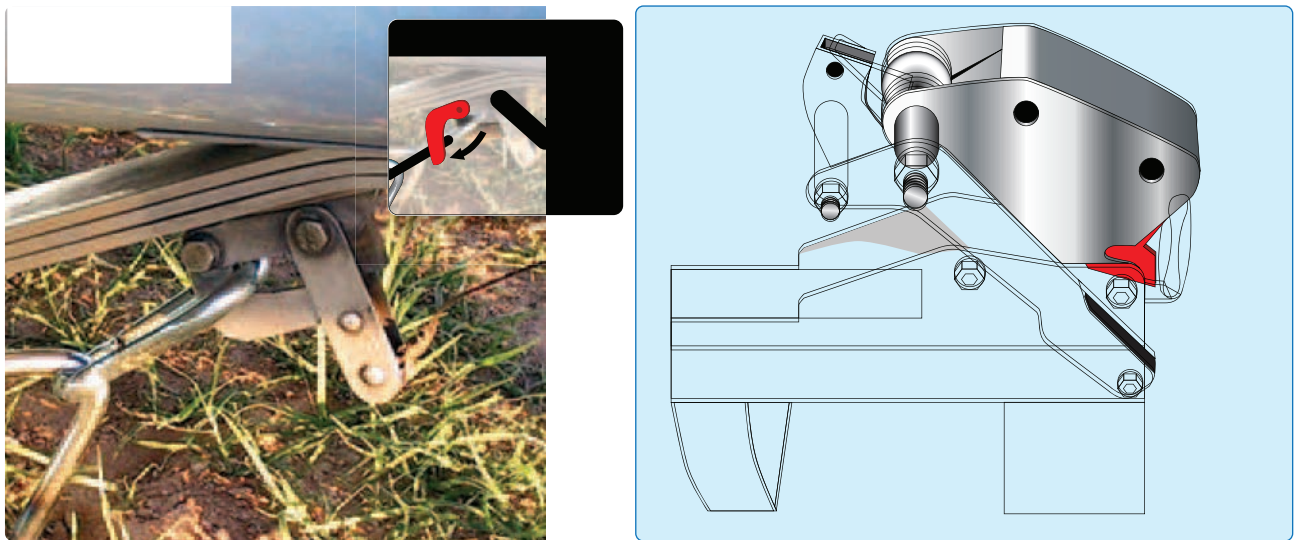


Figure 12-4. *Schweizer tow hook (left) and a Tost tow hook (right).*

- Inspect the release assembly to ensure it has remained completely closed.
- If the release assembly has opened, even partially, restrict the tow plane from towing duties and repair the tow assembly.

Tow Ring Inspection

Tow ring inspection should begin with checking for wear and tear. The rings should not be used if they have deep scratches or dents. Like the tow hitch assembly, there are two types of tow rings: Schweizer and Tost. [Figure 12-5] The Schweizer tow ring is two inches in diameter and made of high grade, one-quarter inch steel that has been magnafluxed with good weld. The Tost tow ring is also made of high grade steel and available through most glider supply companies.



Figure 12-5. *Schweizer tow ring and a Tost tow ring.*

Always ensure that the tow line is configured for the proper type of hitch being used. For example, a Schweizer tow ring will not fit into a Tost tow hitch, but a Tost tow ring can be placed on a Schweizer type tow hitch (with the great possibility that the Tost tow ring will become stuck in the hitch mechanism making tow rope release impossible).

Tow Rope Inspection

Although the pilot of the glider is primarily responsible for the selection and inspection of the proper tow line, it is also the duty of the tow pilot to confirm that the tow line selected meets the requirements of the Federal Aviation Administration (FAA) Regulations and is acceptable for use. [Figure 12-6] The tow line should be inspected as follows:



Figure 12-6. *It is both the tow pilot and glider pilots responsibility to check the condition of the tow rope before flight.*

- Check the entire length of the tow line for abrasions, security of splices, and general condition.
- The tow line should be free from excess wear; all strands should be intact, and the line should be free from knots (knots in the tow line reduces its strength by up to 50 percent and causes a high spot in the rope that is more susceptible to wear).
- Pay particular attention to the ring area to which the glider attaches because this is also a high-wear area.
- Consideration should be given in replacing the tow rope after a period of time due to usage and ultraviolet (UV) exposure from being in the sun and exposed to the elements.
- Ensure tow line strength is appropriate for the glider being towed.

Tow Rope Strength Requirements

Stated in the 14 CFR part 91, section 91.309, the minimum tow rope strength is eighty percent of the gliders maximum certificated operating weight. The maximum strength is twice the maximum certificated operating weight. The maximum certificated operating weight can be found in the specific pilot's operating handbook (POH) for the glider and may be the maximum certificated gross weight at takeoff. Figure 12-7 shows the strength of some ropes that are typically used. If the tow rope has a breaking strength more than twice the maximum certificated operating weight of the glider being towed, a safety link (weak link) has to be installed at the point of attachment of the glider and the tow plane with the following breaking strength requirements: