Cypress Soaring Tow Pilot Manual

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Cypress Soaring Tow Pilot Requirements

1. Must be a member of Cypress Soaring, Inc.; i. e.: Club
2. Must have the following presented to the Chief Tow Pilot:
   - Copy of Driver's license or other form of I.D. acceptable to the Chief Tow Pilot
   - Private Pilot or Commercial Pilot certificate - copied on both sides
   - Current medical (Basic Med or higher). Medical certification based on standards outlined in the Pilot's Bill of Rights contingent on approval from the agency insuring towing operations.
   - Copy of logbook endorsement for most recent flight review
   - Copy of logbook showing high performance endorsement
   - Copy of logbook endorsement satisfying 14 CFR 61.69 (can be satisfied through procedures outlined below)
   - Copy of logbook record accomplishing required tows as outlined below
3. Minimum **200 hours** PIC in powered aircraft
4. High performance endorsement
5. Minimum of **25** hours in High Performance Aircraft, subject to acceptance by the Chief Tow Pilot
6. Must satisfy all requirements as stipulated in 14 CFR 61.69
7. Must remain current in requirements as outlined in 14 CFR 61.69
8. Must have ten (10) take-off and landings in a C-182 or in another high performance aircraft, 3 in the previous 90 days
9. Must have at least three (3) glider flights which includes boxing the wake and demonstration of non-verbal communication signals between glider/tow plane. Tow fees paid by prospective tow pilot
10. Must orally demonstrate an understanding of non-verbal communication signals between gliders and tow plane pilot
11. Must orally demonstrate a thorough knowledge of emergency tow procedures
12. Must have a logbook endorsement by a Cypress Soaring instructor outlining ground and flight training in the safe operation of glider towing including 12 mentoring flights and ground instruction on various aspects of towing
13. Must have received ground and flight training/evaluation and a logbook. endorsement from the Chief Tow Pilot or his designee on club towing procedures
14. Must complete at least three (3) tows accompanied by the Chief Tow Pilot or designee in the club's Cessna 182 or equivalent. The glider being towed must have an instructor in the glider
15. The first five (5) solo tows must be with an instructor in the glider
16. All requirements may be modified on an individual basis with the approval of the Cypress Soaring Board of Directors and the Chief Tow Pilot
17. Must complete the online Soaring Safety Foundation's Tow Pilot Course:

    www.soaringsafety.org

Cypress Soaring Tow Pilot Operations

General

This document is intended as a guideline for safe towing operations and the main purpose of this document is to provide pilots towing with Cypress Soaring Glider Club basic information relative to what is expected of you when operating Cypress Soaring tow planes. Cypress Soaring By-Laws, SOPs, Federal Aviation Regulations and insurance requirements are not to be superseded in any way by this document. When in doubt about anything related to towing or gliding operations, please feel free to ask the Chief Tow Pilot, a Cypress CFIG, or a Cypress Board member for clarification. Remember that your goal as a tow pilot is to conduct operations in a safe manner, follow all club procedures, adhere to all Federal Aviation Regulations, and follow all operations procedures of the airport. The goal is to provide efficient towing operations while also operating in a safe manner with attention to aircraft operations that minimize the stress placed on the aircraft and engine.

While this is a club operation, it is expected that the tow pilot act in a professional manner. This means that the towing operation should be up and ready at the time of the first scheduled tow. Consequently, the tow pilot is expected to be at the airport early enough to do a complete preflight of the tow plane in a timely manner.

Currency

14 CFR 61.69 requires you to maintain annual currency as a tow pilot in one of two methods. It is your responsibility to ensure that you are current and legal to tow before conducting tow operations.

Cypress Soaring may require additional currency standards beyond those specified above. Any and all additional requirements can be found in the club SOPs.

Record Keeping

As a tow pilot, you will be responsible to record all information pertaining to each glider towed. This information is to be maintained using the tow pilot log made available to you. You will also be required to document the tach time at the beginning and the end of each tow and the tow altitude obtained.

As the tow pilot, you are the final authority in the operation of gliding activities.

Should you determine that it is not safe for a glider to be launched, you have the authority to refuse the tow. If conditions on the field are determined to be unsafe, i.e. adverse weather conditions, you are fully authorized to cease operations.

Any tow pilot conducting operations in an unsafe manner is subject to immediate grounding and must have a review conducted by the Cypress Soaring Board of Directors and the Chief Tow Pilot.

Operations on days other than those officially sanctioned by the Cypress Soaring Board of Directors is prohibited. Any “Off Day” operations must be approved by the Board unless specifically approved through the club SOPs.

Towing operations are only to be conducted at the airport authorized by the Cypress Soaring Board of Directors unless specifically approved through the club SOPs.

Tow Turnaround Time

Your primary goal as tow pilot is SAFETY! Your secondary goal is to avoid damage to the tow plane, especially in reference to shock cooling. Your next goal is to follow the airport operations manual. The next goal after that is to move the glider launch line in an efficient manner as possible. Remember that the glider pilots are your customers and should be treated accordingly.

When operations are performed at Hemet Airport it is important to remember that we will usually be handling both take offs and landings on Runway 22/04. Should you need to land on 23/05 main runway, it's important to remember that you are trailing the tow rope. Depending on safety concerns, it would usually be prudent to overfly the area between runways and drop the rope there before landing on 23/05, However, remember that the rope can be considered a lethal weapon, so it is the responsibility of the tow pilot to be extremely careful in operations to ensure that every effort is made to keep the tow rope away from any person or object that could be caused harm.

The tow plane will typically land on Runway 22. If wind conditions allow, Runway 4 is also an option. Also remember that gliders have the right-of-way. While the tow pilot should not orbit needlessly, at the same time safe operations must be observed. It is Important to point out that the tow pilot is not to take advantage of traffic issues just to build flight time. The purpose is to tow gliders safely, not to fill your log book.

The Hemet Operations Manual for the glider side requires that only one runway may be used at a time. If an aircraft on the power side (23/05) is on short final or taking off, the tow plane must halt glider take offs until those power operations are completed. If, while on the runway preparing for launch, a glider is heard via radio or observed in the pattern, the Safety Officer should make the call for the tow plane and glider to move immediately off the runway to allow the glider to land. If the tow can be launched well in advance of the landing glider, then the tow can proceed. All takeoffs and landings shall be announced on the radio on the airport frequency (Hemet - 123.00). During landings the tow pilot should announce downwind, base, and final legs with additional calls if deemed necessary for safety. In a like manner, just prior to power up on takeoff, the tow pilot must announce:

"Hemet traffic, Tow plane departing Runway 22 or 04, glider in tow, Hemet".

Communications are critical!

Upon landing, if the glider is immediately stationed for takeoff and a quick departure is possible, the tow plane should be kept running. If it looks like it will take a while for the glider to be ready, the tow plane should be moved off the runway and shut down. Whether

the tow plane should be shut down or not is something that is hard to quantify, so the tow pilot's decision shall be accepted as long as it appears within reason.

Towing Procedures

Make sure to discuss the operational plans for the day with the CFI. You are working as a team, and good communication is paramount. For instance, the instructor may be planning a first solo or a sign-off for a single seat glider. Or boxing the wake may be planned. Knowing this kind of thing in advance can make a big difference on how you will conduct a tow.

The tow plane should be off the runway unless a glider is staged and ready to go. Otherwise, the tow plane should remain clear of the runway to make it available to landing gliders.

The line-person or the pilot will signal when ready for the tow plane. In the case of a line-person, the glider pilot will signal to the line-person with a thumbs up that he/she is ready for the tow. The line-person and the glider pilot should scan the area for traffic. Then the line-person will signal the tow pilot to enter the runway and take up slack. Once the slack is taken up and the glider pilot is ready, the glider pilot will wag the rudder signifying to the tow pilot that he/she is ready for takeoff. During this time, the tow pilot must also be looking for glider traffic, monitor traffic on the main runway, and listen on the radio for any conflicts. If all is well, the tow pilot will wag the rudder in response and announce over the radio that a glider launch is beginning. The throttle should be advanced smoothly and, in a manner, commensurate with the glider being towed (i.e. single place [SGS 1-34, PW-5, Discus or another single vs two place i.e.; Krosno, PW-6, G-103, etc.). The tow pilot should keep his hand/foot on the release handle until a safe altitude is reached. Remember that the glider is attached to your tail and so can put you in a very dangerous position if out of tow position. If the tow pilot finds the situation to be too dangerous to continue, he is to pull the release and give the glider the rope. Obviously, this action is not done unless the condition demands it, but, if necessary, it may make the difference between a safe abort and a serious incident.

The tow pilot should maintain a speed appropriate for the glider being towed. The best way to hold a consistent speed is by keeping a constant pitch attitude. Remember what we, as power pilots, call turbulence, glider pilots call lift. As such, you do not want to chase the airspeed needle. Pitch attitude will be a much better cue to managing airspeed. While an efficient tow is desirable, it is critical to monitor CHT, EGT, oil pressure and oil temperature throughout the flight. Takeoff and tow can be done with flaps - 20 degrees at takeoff and 20 degrees on tow. As soon as possible mixture should be used to manage EGT numbers. If overheating, a slower rate of climb may be required and/or a richer mixture selected. If the numbers become excessive, the glider should be waved off tow.

Once the glider has released, a descending left turn should be initiated, RPM reduced to 2200 by dropping the manifold pressure slowly until entering the pattern and, actually both throughout the tow and letdown, the prop should be kept at high RPM. Remember

that you just parted with another aircraft, so you need to be aware of the position of the glider. A mid-air collision is always a possibility if vigilance is not maintained. Speed should be kept up as high as reasonable while maintaining RPM, but should not exceed V_{no}. 100 -120 miles per hour is reasonable. The mixture should remain at the tow setting during release and moved to full rich when in the pattern, unless instructed otherwise. **The greatest danger to the engine on tow is overheating**. That's why we monitor the instruments described above. The greatest danger to the engine during letdown is shock cooling. That's why we keep the RPMs up during letdown. As a rule of thumb, a drop of 60 degrees per minute CHT or less is safe.

From the time you start the engine until the time the engine is shut down, it's critical that you maintain situational awareness. Remember, that on the ground there are people moving around the aircraft, some of which are not air-minded. Additionally, at Hemet-Ryan Airport, there are operations taking place on the power side as well as in both the left pattern for power and the right pattern for gliders. All are opportunities for bad things to happen if you do not keep aware of your surroundings.

In the air, there is traffic on the power runway to keep an eye on. Hemet is often used by student pilots on their cross-country flights. These pilots are new to flying and unpredictable. Anything can and will happen. Additionally, you will be towing in the same area and at the same altitude as the gliders entering patterns. Any area close to the glider pattern, from the I.P. on is a major area of concern. Vigilance is of paramount importance! As you continue the tow, it is very possible that gliders will be working lift in the area. These gliders are of value in determining a good place to set up the glider for release, but also a target rich area, so, once again, use proper scanning techniques to see and avoid. Situational awareness is critical to safe operations.

It is recommended that both the Safety Officer and the Tow Pilot make a radio announcement at least every 30 minutes stating:

"Hemet Traffic, be advised Glider Operations in effect to the Northeast of airport, Hemet"

Also, remember that you will be making a right pattern for landing on Runway 22. So will the gliders. Your pattern will usually be much wider than the gliders, but it's also possible that gliders will be making base leg or even straight in landings. Remember, they cannot do go-arounds. This means that you need to keep an eye on all sides when you are landing, not just on the pattern and runway.

Add to all of this that you need to be keeping an eye on the glider being towed and it should become obvious that you will not have time to daydream during towing operations. Towing can be a lot of fun. It must also be safe. Vigilance must be maintained at all times. No exceptions!

Don't forget that Hemet Airport is close to March Airport. Two things to keep in mind: first, the Class C airspace is just north and west of Hemet and gliders, most of which do not

have transponders, cannot fly into or above that airspace. Secondly, remember that, on occasion, heavy traffic will be in the area preparing to land at March Airport. Tow planes, and especially gliders, are hard, even impossible, for them to see.

Never take a glider beyond its final glide range back to the airport. Obviously that range varies with both altitude and winds. Always err on the side of caution! Be careful when towing close to a ridge or in a canyon. These areas can be very dangerous to both tow plane and glider. This especially true when there is a lot of turbulence and/or high winds.

Student pilots must be treated with caution. At all times keep turns shallow and avoid abrupt actions. This is especially important with student pilots. First flights must be coordinated with the instructor. Remember that it is your responsibility to see that the tow experience is safe. Probably the most dangerous glider pilots are not students, even first flight students, or student with instructor, though they may end up pulling you around a lot. The most dangerous pilots are the ones you don't recognize. Remember that, per the CFRs, a private pilot with his own glider can be away from flying for almost two years and then legally get into a glider and take a flight. Would you consider that to be safe? Just be advised that strange things can happen, and strange things close to the ground can result in a very bad day. ***BE PREPARED TO RELEASE THE GLIDER FOR THE FIRST THOUSAND FEET, ESPECIALLY IF YOU DON'T RECOGNIZE THE GLIDER PILOT!!!***

When preparing to enter the runway to stretch out the tow rope, make sure that the area around the glider is sterile. Often times there are non-pilots around the gliders. Don't let them stand around the glider when you are preparing for a launch. Take the slack out of the line slowly. You do not want to jerk the glider when the tow rope becomes taut.
Remember, you are providing a service to the glider pilot. You should adhere to their requests so long as they are within safety guidelines and Cypress Soaring policies. However, you have the ultimate authority in towing operations. If you decide that it is not safe to accommodate glider requests or, for that matter, if you decide that it is too dangerous to fly at all, the club will back you up 100%. At the same time, you need to address personal minimums of both you and the glider pilots. Once again, we err on the side of caution. Even if you feel that you are comfortable with a given condition, that may not be the case for the glider pilot, especially if that pilot is a solo student. Safety, safety, safety.

Towing Schedule

TBD - See Club website.

Cancellation

Sometimes life gets in the way of having fun. If, for some reason, you have to cancel a day you have signed up for towing the procedure is as follows:

- If you need to cancel with over a weeks' notice, please contact the Chief Tow Pilot and the club President to let them know. If an instructor is scheduled on that day, please let them know too.
- If you need to cancel with less than a weeks' notice, contact the same people as described above and please start making calls to other tow pilots to try to find a replacement. Remember that there may be a number of glider pilots who are depending on you to be there to tow, and it is a true disservice to abandon your responsibilities to them. If you are having trouble finding a replacement (that's your responsibility) then contact the Chief Tow Pilot, club President, and CFI so that, if nothing else, they can let everyone know that towing operations will be cancelled.
- If you sign up to tow, and no glider pilots sign up for the day, you do not need to show up. Once again, give the President and the Chief Tow Pilot a call/text/e-mail to let us know what's happening.
- The club will have available to you, through our website, a list of members who are certified to act as tow pilots. You can use that list to aid you in your search for a replacement, should one be required.

Pre-Flight, Fueling, and Securing

A proper pre-flight is essential for safe operation. In the left lower pocket by the rudder pedals should be a checklist for pre-flight, start-up, pre-taxi, run-up, etc. Copies are also kept behind the pilot's seat. Use the checklist for these activities. Do not let others interrupt you during pre-flight. It is your responsibility to determine if the airplane is safe to fly (i.e. a small scratch in the skin is probably not an issue. A substantial gouge in the leading edge of the prop is). While the entire pre-flight is important, keep in mind that the following are absolutely critical:

- Oil in the engine; 9-10 quarts.
- Fuel; unless otherwise indicated (i.e. flying out of a high density airport) tanks should start out and end up full.
- Control surfaces; must be free and clear. Make sure gust locks are removed.

All oil and fuel added to the tow plane must be documented in the tow log. Top off the fuel at the end of the towing. If you are the last pilot, take the tow plane back to the Cypress hangar. Once inside install the wooden blocks under the main wheel axle extension and blocking the main wheels with the black metal chocks.

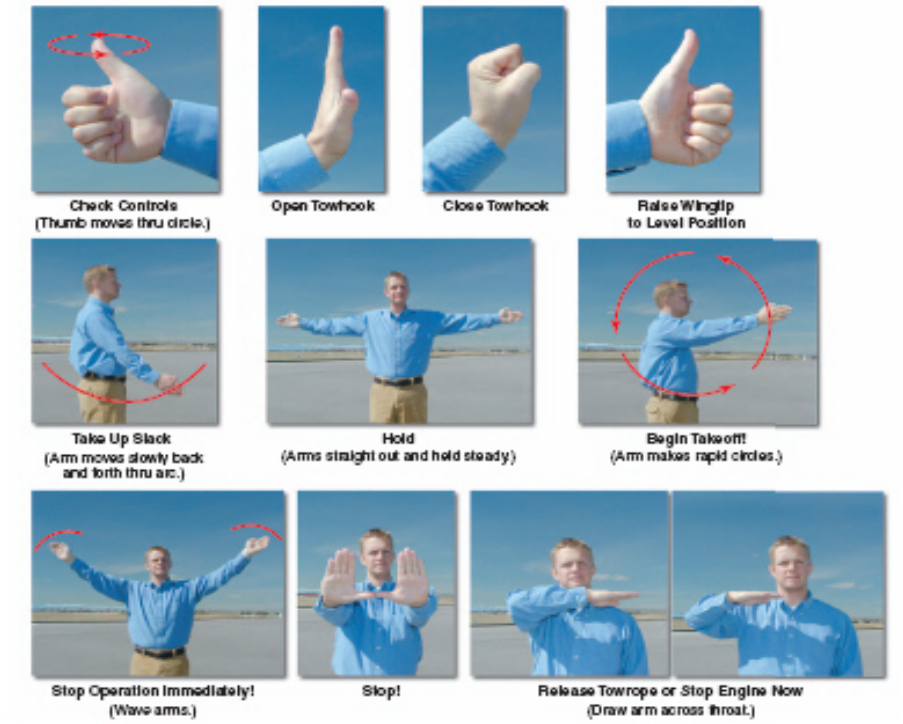
Do not trust fuel gauges. Start out with a known quantity of fuel. The Continental O-470 consumes around 13 gph. Assume 15 gph for safety. While the tow plane has a 55 gal usable capacity, it's prudent to stay well away from the one-hour minimum reserve that the club (and any intelligent pilot) requires. 55 minus 15 is 40 gallons. Let's err on the side of caution - around 2 hours maximum flight time before refueling. Remember that

mid-day is often the time when you are likely to have a line of gliders. Once the trigger temperature has been reached, you will often find that you will go from no line to a long line of gliders wanting to be towed, so an early fill-up is a very good idea. In any case, ***NO MORE THAN 2 HOURS BEFORE A REFUEL***.

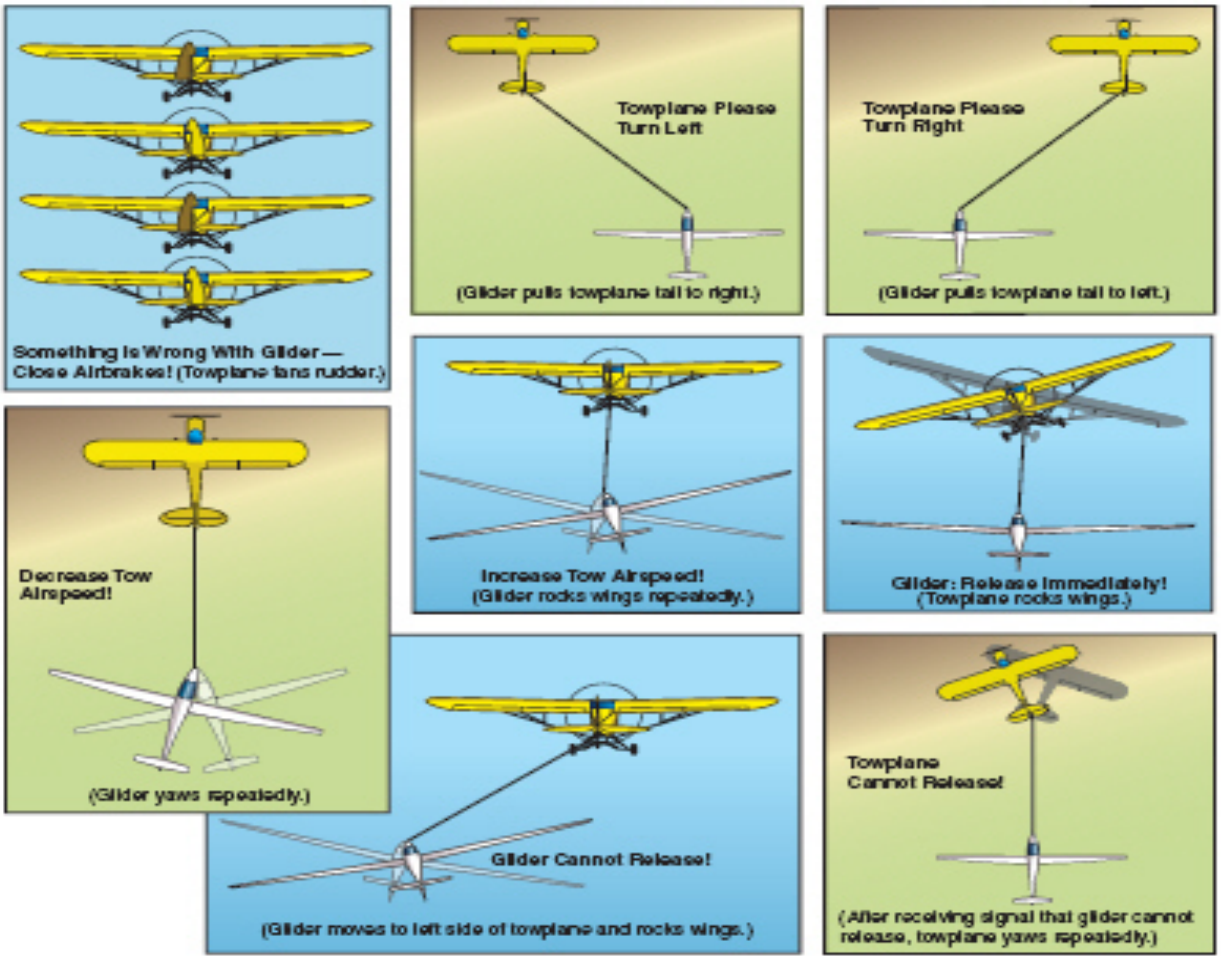
Standard Signals

- Ground to tow pilot
- Start engine
- Cut engine
- Take up slack
- Ready for takeoff
- Don't take off yet
- Glider pilot to tow pilot
- Speed up
- Slow down
- Turn left/right
- Going to box the wake
- Can't release
- Tow pilot to glider pilot - Wake up
- Get off tow now! I can't release either

Ground Signals:



Air Signals:


Something Is Wrong With Glider—
Close Airbrakes! (Towplane fans rudder.)
Towplane Please
Turn Left
(Glider pulls towplane tail to right.)
Towplane Please
Turn Right
(Glider pulls towplane tail to left.)
Decrease Tow
Airspeed!
(Glider yaws repeatedly.)
Increase Tow Airspeed!
(Glider rocks wings repeatedly.)
Glider: Release Immediately!
(Towplane rocks wings.)
Glider Cannot Release!
(Glider moves to left side of towplane and rocks wings.)
Towplane
Cannot Release!
(After receiving signal that glider cannot
release, towplane yaws repeatedly.)

Addendum 1

Tow Pilot Membership and Compensation

- Prospective tow pilots must become Cypress Soaring Club members. SSA dues must be paid by prospective member.

- Tow pilots shall not be compensated in any way, either directly or indirectly, except as described below.

- Prospective tow pilots must be interviewed and approved by the Chief Tow Pilot, Flight Committee and by at least (4) Directors.

- Prospective tow pilots shall read and agree to the Cypress Soaring Standard Operating Procedures and Flight Rules and the Tow Pilot Manual.

- Prospective tow pilots shall meet the minimum requirements and perform instructional and check flights per FAR 61.69. Tow pilots shall also meet the requirements set forth in the Cypress Tow Pilot Manual.

- As active club members, tow pilots may receive flight instruction in gliders and may fly club gliders as authorized by Club Instructors.

- A tow pilot who resigns his obligation as a Club Tow Pilot must maintain club dues to remain an active member. Otherwise, the tow pilot must either become an inactive member or resign from the Club.

- The tow plane is to only be used for towing, towing training/signoffs, and towing proficiency checks.

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