

San Antonio Soaring Society Inc



CHECKLISTS FOR WINCH LAUNCHING GLIDERS

These checklists should be reviewed before operating the winch. They are intended as training tools, not as a reference *during* operations. Please don't sit on the winch and attempt to operate it while reading this checklist! Events happen far too fast to read the checklist as you're operating the winch.

Winch Preposition Checklist

- 1) Walk around the winch to insure nothing is loose or hanging off.
- 2) Secure any protruding winch line at the front, so the line is not loose or hanging when towed by the vehicle to position.
- 3) Remove the “guillotine” blade if installed, and secure it in the accessory box.
- 4) Carefully release the guillotine if its in the “cocked” position (use two people if available). If you’re going to test the guillotine hammer, insert a piece of wood above the guillotine mount – to prevent damage to the mount area.
- 5) Install and connect the winch’s battery (if removed previously).
- 6) Check the brake fluid in the master cylinder, add if necessary.
- 7) Check gas level, but don’t add fuel while under the glider shed.
- 8) Start engine and allow to run for a time at high-idle 1,500 RPM. The rebuilt carb has a automatic choke, and you don’t have to operate a choke.
- 9) Check transmission fluid while engine is running, add as necessary.
- 10) Allow engine to run long enough for temperature to reach at least 180 degrees and test cooling by switching on fan at 190 degrees.
- 11) Check the engine oil level within five minutes of shutdown, add as needed.
- 12) Check to insure we have sufficient extra brake fluid, engine oil, transmission fluid, and gasoline for the day’s operations.
- 13) Remove chocks from winch trailer.
- 14) Roll winch trailer to front of glider shed by hand.

Winch Trailer Towing Checklist

- 1) Remove hitch ball from accessory box and install in tow vehicle's receiver,
- 2) Move hitch ball to the top-most position for towing.
- 3) Hook up trailer by cranking trailer jack up high enough to get over and lowering onto trailer ball
- 4) Once on the trailer ball - store the trailer jack by turning 90degrees and insure its locked in position
- 5) Hook safety chain to towing vehicle
- 6) **SLOWLY** tow the winch to end of runway – no faster than 15-20 MPH
- 7) Back trailer into position off the end of the runway, preferably to the side of the runway-end-lights, or over the top of them.

The idea here is to avoid the possibility of snagging one of these lights when reeling in the line and parachute. But the line should still be over the runway when pulled out – so it's not paying out over sharp rocks, concrete, or runway side lights on the side of the runway.

Pre-launch Winch Setup Checklist

- 1) After positioning the winch trailer - disconnect the winch trailer from the towing vehicle, set the tow-ball to lowest setting, and reconnect the trailer to the ball. The winch trailer should remain connected to the vehicle during winch operations.
- 2) Lower the four feet at each corner of the winch solidly on the ground and tighten down both bolts on each foot/leg.
- 3) Release tow line at front of winch, unwrap five or six windings from the reel, and stretch the line out on the end of the runway where the tow-out-vehicle can attach to it.
- 4) Cock and arm the guillotine hammer. Check it carefully to insure it is secure on its latch, but don't do so in a way that could hurt you if it releases!
- 5) Install the guillotine blade on a piece of sacrificial safety wire (or something that will hold the guillotine up until it's hit by the hammer).
- 6) Hook up radios and other communications, and test to be sure its working.
- 7) Add gasoline to the tank now – if needed.
- 8) Connect tow line to tow-out-vehicle and monitor the play out of the reel, checking to be sure that the “level-winder” is moving the line back and forth for a even wind/unwind on the reel.

Glider Launch Checklist

- 1) The first step in each launch is towing the line out to the glider. The tow-out-vehicle should pull out the line at no more than 10 miles per hour (idle in most vehicles). This prevents heat build-up in the tow line which will destroy this expensive asset.
- 2) Once the line is out, the winch operator should receive a phone call from the glider pilot. The glider pilot should advise the winch operator:
 - a. Who is in the glider
 - b. What glider is flying
 - c. What color safety link is installed
 - d. If the slack is out and the glider is ready
 - e. Any special requests/instructions (like early shutdown for training)
- 3) The winch operator should record the information, acknowledge by repeating it back to the glider pilot, advise he is starting the winch, and end the phone call.
- 4) Start the winch and allow to idle in neutral.
- 5) Turn on cooling fan, even if temperature is not high yet (it will be soon!).
- 6) Monitor the radio for other traffic position calls. Winch operations should never begin if other aircraft traffic advises they are crossing over the field, are on the base leg, or on final approach.
- 7) Perform visual check for other traffic.
- 8) Check with your "Safety Observer" to insure he/she doesn't know of any problems, and watch for signals from this second pair of eyes!
- 9) Announce on the radio "Boerne Stage traffic, glider is winch launching off runway 17 in five seconds. Boerne Stage".
- 10) Count to five. Check to make sure the throttle is at idle. Shift the transmission to the first detent (Drive/third gear). Immediately start advancing the throttle in a deliberate movement.
- 11) As you advance the throttle, monitor the engine RPM. It will immediately begin a rapid advance and quickly be at or above 4000. You MUST

carefully adjust the throttle at this point to maintain at least 4000 RPM without going too high (no more than about 4300 RPM).

- 12) Make very small and slow adjustments of the throttle to maintain the RPM. If you make a quick adjustment down at any time, and the glider pilot will perceive it as a winch failure and release early.
- 13) After about 10 or 15 seconds, the glider will be at full pitch-up climb attitude and airspeed. At this point, the winch will start bogging down and RPM will decrease. You should advance the throttle all the way to try to hold RPM.
- 14) The glider may call you during the tow with “Down Five”, “Down Ten”, or possibly “Up Five”. This is requesting you power down just a small amount, power down a larger amount, or power up a bit. A call for “Down Five” should result in about 200 RPM decrease. A call for “Down Ten” should result in approximately a 500 RPM decrease. Similar numbers for “Up” calls – although we typically are at full throttle and can’t do much with UP calls. *Again, make smooth and slow power adjustments so as not to spoil the glider’s flight path and cause the pilot to release early.*
- 15) As the glider starts getting past half-way point down the runway – it will start approaching a 70degree angle overhead which is the maximum angle he can remain on tow. As the glider approaches a 70degree angle overhead, the winch operator should announce over the radio “Winch powering down” and immediately pull the throttle completely back to idle.
- 16) On detecting the release of forward tension – the glider pilot should immediately pitch over to level flight (or even slightly below level flight) and pull the release handle **twice**. After releasing, the glider should continue straight ahead for 10-15 seconds, to allow the automatic back-release to active – in case the tow-line did not release correctly.
- 17) Upon release, the line will go slack and the parachute will open. The winch operator must be ready to immediately throttle up to about 3,000 RPM, keeping tension on the tow-line against the parachute while the winch winds in the line.

- 18) If the parachute is coming down over the runway, or just off the side – power down the winch early and allow the parachute to land on the runway. That means less distance the tow-out-vehicle has to pull the line back out to the glider end.
- 19) But if the parachute is coming down off-runway, keep winding in the line till the parachute is about 100 yards away. **DON'T LET IT GET TOO CLOSE** – the connection ring to the bridle can impact the winch rollers while the parachute is still 70 feet away, damaging the rollers or breaking the line. Close the throttle, shift the transmission to neutral, and apply the brake to land the line and parachute.
- 20) Monitor the engine temperature and once below 190 degrees, you can shutdown the winch engine.
- 21) Allow the tow-out-vehicle to connect to the tow line to start over again. The tow-out-vehicle should use the trailer hitch with the tow-hook on it and slowly drive down the side of the runway. If an aircraft approaches to use the runway, the tow-out-vehicle should pull the release to drop the line while still on the runway, and then exit the runway at least 25-30 feet. After the aircraft clears the runway, the tow vehicle can return to the runway, hook up the line again, and begin towing it out again.
- 22) The tow vehicle should stop BEFORE the nose of the pre-positioned glider. This allows the tow line to be hooked to the glider and the glider pushed back to take out all slack. Otherwise, the winch operator has to carefully engage the transmission in an attempt to remove slack – which can cause the glider to jerk forward dangerously before ready for launch.
- 23) After every four or five tows, check the transmission fluid before shutting down the engine, and check the engine oil after shutdown.
- 24) About every ten tows, the gas level should be checked and gas added if needed.
- 25) Occasionally check the guillotine to insure it is still secure and not riding on the line. And check the winch reel to insure it is winding evenly across its width.

Post-launch Winch Recovery Checklist

- 1) After winch operations are complete, carefully winch in the line until the bridle connection is 15-25 feet away from the front of the winch. Use the brakes carefully during this time to insure the bridle connection ring doesn't impact the front rollers damaging them or breaking the line.
- 2) Shift the transmission into neutral.
- 3) Allow the engine to cool to under 190 degrees before shutting it down.
- 4) Pick up and secure any extra line at the front of the winch so it's not hanging or can't be snagged.
- 5) Remove hand-held radios and headsets.
- 6) Remove the guillotine blade and store in the accessory box.
- 7) Carefully lower the guillotine hammer.
- 8) Release the feet, raising the legs to the top and securing by tightening the bolts. Both bolts on each leg should be tightened so one left loose doesn't vibrate out during the drive to the other end of the runway.
- 9) Raise the trailer hitch off the ball, raise the ball to the top-most position, and reattach the trailer hitch to the ball.
- 10) Raise the trailer jack and store in the 90degree position.
- 11) Tow the winch trailer to the glider shed.
- 12) Push the trailer back into its position and chock the wheels.
- 13) Insure the trailer ball and receiver insert get back in the accessory box.
- 14) Insure the receiver insert for the tow-out-vehicle with the tow-hook/release gets back in the accessory box.
- 15) Disconnect and remove the battery if it will be put on a charger.