FLSC Winch Operation Procedures 2023 JDM

General observations

Ground launch is not inherently more dangerous, and if done correctly, is significantly easier than aero tow. The launch does occur much more rapidly upon startup and accelerations are significantly more severe. On some training gliders, with a properly located center of gravity hook, and trim set correctly, they will literally fly themselves to release altitude.

Take extra care in preparing the glider to include stowing all loose items, including operating hand books, radios, water bottles, and cameras. The most critical phase of the ground launch is at the initial rotation. If the pitch up is done too quickly or too aggressively, you can exceed the critical angle of attack and stall or spin. If the rope broke at this point, the pitch attitude has to be made nose down immediately. Also it is very important to the pitch attitude is significantly below the horizon due to the loss of momentum in the forward direction. If executed too abruptly, this nose down pitching can throw all those items around the cockpit.

A very significant illusion, occurs as you pitch the nose down for landing straight ahead. Typically, you will have to establish a steeper than normal glide path to land within the remaining landing area. While doing so, for those few seconds, you have the sensation of falling, and the sense, that you have no flying speed. Initially you will resist the deployment of spoilers, and establishing that steeper glide path. Yet the increased pitch attitude and steeper glide path, airspeed will increase very rapidly. It will amaze you what little area you need to land. Yet you need to get the aircraft on the ground immediately, and wheel brake or skid may need to be used aggressively.

It is not necessarily obvious to someone who has not done this launch before, that increasing tension on the rope actually increases the airspeed of the glider. This is not true of all winches. On winches with electronic controllers that automatically reduce the tension of the rope, they actually slow down the drum which actually reduces the airspeed. If tension is increased, and airspeed is not increasing, immediately radio that if the winch to increase speed.

Notes About Our Winch;

It is located in Rick Lafford's Hangar. We are Insured. Our winch was refurbished in 2018 by Joe Rizzo. It uses Spectra rope which is lighter and more durable than cable. The winch is a constant tension (CT) clutched drum with a translating wind up mechanism and a drop block guillotine. The engine is a 350 cubic inch rebuild. The transmission was rebuilt in 2018 and is locked into second gear. There is approximately 4000 feet overall on the drum. Routine launches have been made to 1500 or 1600 feet. A lighter glider and stronger winds may allow for even higher launches. Our runway is 3500 feet. The preferred launch direction is northwest using runway 32.

Emergencies

Pull the Release TWICE / Reestablish ATTITUDE and AIRSPEED / Land in known Safe Area

• If you have difficulty in keeping the wings level before take-off, release before the wing touches the ground.

• After take-off, maintain a shallow climb until adequate speed is seen with continued acceleration. Then allow the glider to rotate at a controlled pace. If power is lost near the ground, immediately lower the nose to the appropriate recovery attitude.

• After power loss in mid-launch, adopt the recovery attitude, wait until the glider regains a safe approach speed, and land ahead or anywhere it is safe to do so.

Winch Setup:

1. Before leaving: Check all radios operating. Winch, Glider, Ops, and Wing Runner. Ensure the winch is fueled. Rope is in good condition, and all necessary hardware is stationed at the glider launch area. Brief ground crew, winch operator, ops personnel, and pilots on these procedures, weather limitations, and safety.

2. Secure and anchor the winch at upwind end of the field. Drive the rope back down the grass to the waiting glider avoiding runway and taxi lights. Enough rope should be paid-out to leave a small amount of slack. Shackle/Strop should NOT be hooked up to the glider or the rope.

3. Ensure the winch is out of gear and warm up the Winch sufficiently that there is no hesitation. Call OPS when the Winch is ready.

Glider Positioning and Setup:

1. Always Launch into a headwind. Be especially aware of crosswinds and the necessity to crab into the wind and how the rope will drift after released.

2. The glider should be preflighted, pretakeoff checks complete, release checked and in position before attaching the strop. Check appropriate weak link for the weight of the glider attached.

3. The ASK-21 must have the strop offset to the left side of the front wheel and angled slightly to the right to avoid burning the rope upon roll. The 2-33 should be hooked to the CG hook and offset to the left to avoid the skid.

Crew Duties:

1. The Wing Runner must be thoroughly aware of their duties. Everything should be conducted in an orderly manner and be reminded everything happens very quickly. Since the winch is operated by a winch operator at the other end of the airport. The operator communicates with the pilot through a radio. The wing runner becomes the primary safety link checking for airplanes in the air (hanging rope danger until on the ground again), keeping people away from in front of the glider and no one near the rope.

2. When the rope comes back from the winch, remove it from the car after the car reverses to loosen the rope. Lay it on the ground about 20 feet in front of the glider, and present the pilot with the parachute and strop (if the pilot has not already secured it). It should be laid from the strop to the glider. Do not hook either end into the system until the pilot hooks up the glider (it's his neck) and enters the glider. Attach to the CG (center of Gravity) Hook (if glider has one)

3. When the pilot(s) are strapped in, the canopies closed and latched, checklist completed, and just before he radios the winch that he is preparing to launch, make a final check of configuration with a reminder to close and lock dive brakes or spoilers…as the last thing - hook the winch end

of the parachute to the winch line. At this point absolutely no one in front of, or near the front of the launching glider.

4. **Very Important:** Check the entire Pattern for conflicting Traffic and any people in the operating area before raising the wing. You are the last link for clearing the launch area, including, downwind condition, exercise judgment and other responsibilities as with aero-tow are the same. Don't raise the wing if there are any conflicts!

5. Everyone should exit the launch area once launch is completed and prepare for the glider landing. Glider may end up landing straight ahead or reverse direction and land toward the takeoff point so everyone should clear the launch area.

Communication Procedures:

1. Pilot to winch **"ASK 21 two aboard preparing for launch"**, the winch operator will repeat. He then prepares the winch.

2. When Winch is ready for Launch: **"Winch is ready"**

3. Pilot: **"21 is ready"**. If the pilot is ready (He can still say "standby!" but should be ready to go at this point), Canopies closed, Checks Complete, Hooked Up

4. Winch: on Unicom (123.000) **"Dansville Traffic, winch launch in progress runway XX grass at Dansville",** then informs the glider that the **"winch is ready to launch**".

5. Pilot: **"take up slack**", and after the glider starts to roll issues the command **"Slack is out, Go Go Go**!".

6. Pilot: **"Abort"** if needed. **"Faster"** or **"Slower"** to increase or decrease launch speed. The Winch should acknowledge all calls.

7. Winch can reel in the rope until it is grounded.

8. Winch after chute has grounded**: "Dansville Traffic Winch Launch complete"**

9. **DO NOT** dispatch anyone to retrieve the rope until it is certain where the glider will be landing… especially if a rope break occurred. Once safe to retrieve: announce **"Cleared to Retrieve"**

Winch Driver Checkout;

1. Driver should be safety conscious at all times. Maturity and ability to react to emergency or unsafe situations is more important than age. If not done correctly, and reactions timely, realize this operation can become dangerous very quickly.

2. Ideally, driver will have soloed, participated in several winch launches, and is familiar with the aircraft being launched.

3. Checkout will consist of;

   a. Winch Setup

   b. Preflight checkout / Fueling / Rope Condition / Chute / Strop

   c. Starting / Warmup

d. Observation of Multiple Normal Launches from Winch

e. Operations in varied wind conditions

f. Emergency Procedures - Severing the rope / Simulated rope breaks / Stalls / Failure to Release Procedures

Ground crew considerations:

1. **Lookout:** Ground Launches are not routine operations for powered traffic. Concern is for other power traffic "sneaking in" not being familiar with our operations. Devote extra care to check for conflicting aircraft before starting a launch. After release, the rope can drift over the active runway. Retrieve carts and retrieve vehicles must not conflict with any airport or glider traffic.

2. **Pedestrians:** It is essential to keep everyone away from the front of the launching glider.

3. **Observers:** Must be protected by being aft of the winch operator cage in case a rope breaks or malfunction. Vehicles should be behind the winch.

4. **Hookup of the glider:** it is even more important because things happen more quickly during the ground launch, that you execute your responsibilities thoroughly. Recheck the tow hook is attached to the center of gravity hook. Ensure all belts are secured. Canopy is locked. Spoilers are closed. And the entire traffic area is clear, before looking for the thumbs up signal, and the takeoff path is clear prior to the raising the wing for takeoff.

Running the wing: remember, you should be on the upwind wing, and support the wing, do not hold the wing back or throw the wing. Acceleration -- once slack is out, will be much more rapid than an aero tow.

Ground Launch Syllabus

- ☐ Ground Launch Procedures and Documents Read
- ☐ Ground School Completed
- ☐ Review of all procedures / Signals / and Emergencies / Landing Pattern Considerations

Demonstrations

- ☐ Normal Launch to Max altitude with routine radio calls / directing winch speed
- ☐ Crosswind Launch
- ☐ Ropebreak at Min Altitude / Max Attitude – Landing straight ahead / Alternate directions

Checkout

- ☐ Normal Launches to altitude until Comfortable and Proficient without prompting
- ☐ Wind Considerations: Glider positioning / During Launch / Landings / Abnormals
- ☐ Ropebreaks / Winch Power Loss at progressively lower altitudes
- ☐ Emergencies / Abnormal Operations:
    - Immediate Release Reactions
    - Adjusting winch speed
    - Winch Power Losses
    - Porpoising – How to correct
    - Improper Trim considerations
    - Passenger Reactions
    - Failure to Release Procedures
- ☐ Maneuvering at low altitude
- ☐ Alternate Landing Zones

Daily Operations

- ☐ Ground School and/or Crew Briefing
    - Equipment Layout / Preflight
    - Procedures Review: Communications
    - Weather Considerations
    - Personnel Experience(s)
    - Safety Brief
        - Clearing Launch & Recovery Zone
        - Abort Considerations / Rehearsal
        - Emergency Reactions
- ☐ Ops Coordination
    - Aerotow Operations?
    - Power Traffic