Introduction to Winch Launching

Marc Ramsey
Hans Van Weersch

PASCO Soaring Seminar 2004

Why Winch Launch?

- Operating costs for 2000 ft launch less than $2
  - Capital costs vary, $1 to $5 per launch
  - 6 to10 launches per gallon of gas or diesel
  - Reduce cost to get license by $1500 or more
- Neighbor-friendly noise footprint
  - Open up noise sensitive sites closer to population centers
- Inject new life into the sport
  - Less driving, waiting, and cost, more fun and excitement
  - Combine with Glider Sport Pilot License for more pilots

Why Not Winch Launch?

- Winch launching is unsafe
  - False. It is as safe as aerotow with modern equipment and proper training
- Winch launching can't replace aerotow
  - True. It's a good alternative for inexpensive training, and for sites that don't need long/high tows
- Winch launching requires a large ground crew
  - False. Safe launches possible with winch driver and one person to run wings and retrieve cable

Typical US Winch

- More of a novelty than a serious launch method
- Single drum
- Under-powered
- Minimal safety equipment
- Cable tangles, kinks, breaks
- Launches a 2-33 to 750 feet on a good day

Typical European Winch

- Club, kit, or factory built
- 2 or more drums
- Gas, propane, or turbo diesel engines, often 300+ HP
- Electronic control systems
- Some now equipped to use lighter, safer Spectra rope
- Will launch a fully loaded ASH-25 to 2000+ ft from a 5000 ft runway

Technology Trends

- What is happening in Europe
  - Fuel costs, noise concerns, and other regulations restrict use of aerotow in many countries
  - Akafliegs in Germany researching electronic control systems and air to ground telemetry
  - Several companies manufacturing components and fully built winches in small numbers

Technology Trends

- Winch power systems
  - High-torque low-RPM turbo diesel winch
  - Electric winch (need 200+ amp 440VAC circuit)
  - Diesel/electric/battery hybrid winch
- UHMWPE rope (Spectra, Dyneema)
  - Low weight, high strength, no snap back, no tangle
- Multiple drums (2 through 8)
  - Increased launch rate
  - Less wear and tear on field and retrieve vehicles

How to Get a Modern Winch in Region 11?

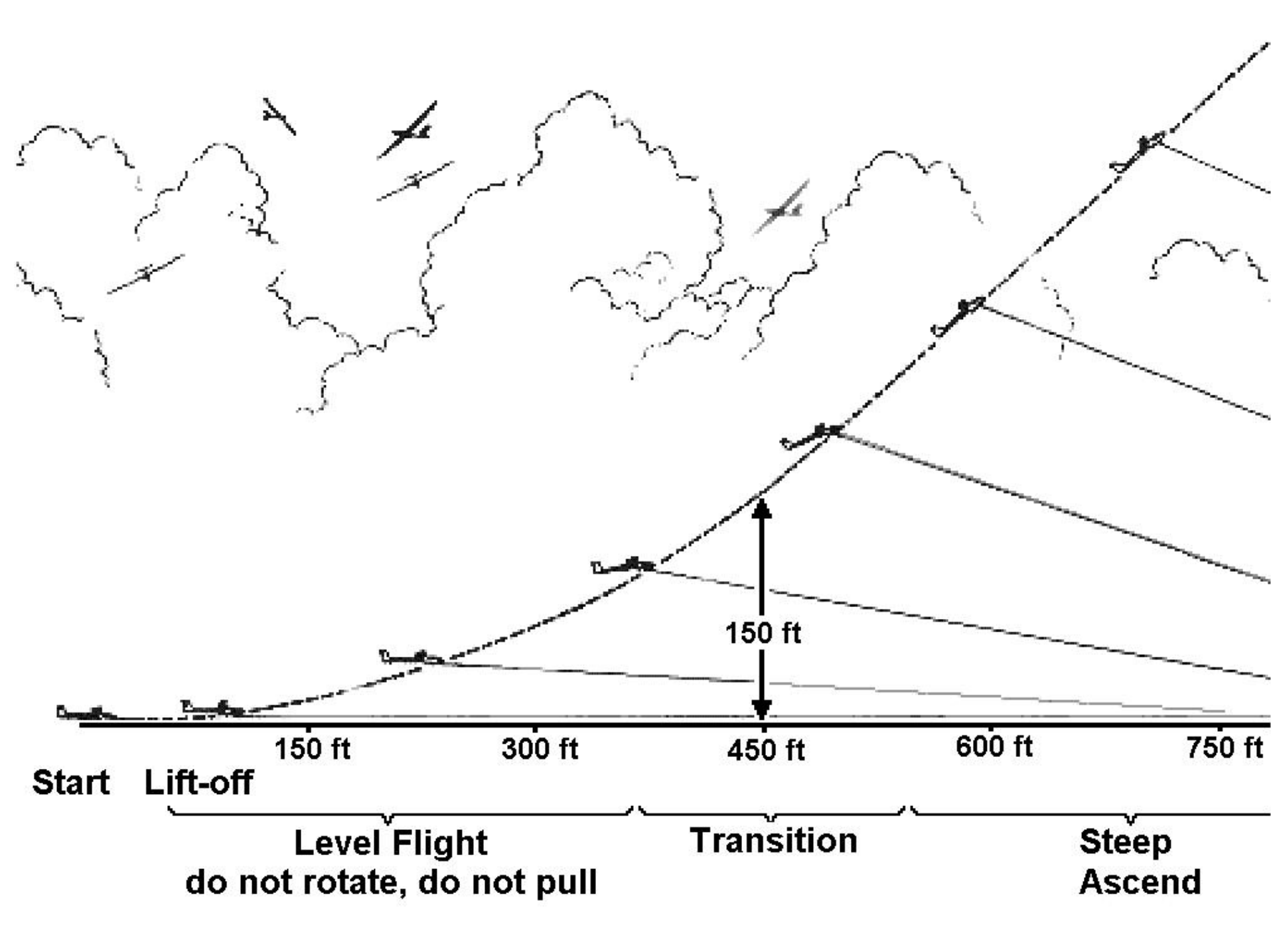
- Import new Skylaunch, Tost, Herkules, etc.
  - $30,000 to well over $100,000 at present exchange rates
- Import older winch and rebuild/replace engine
  - $15,000 to $35,000
- Build winch using new/used domestic components
  - $15,000 to $25,000, plus sweat equity

Winch Launch Club?

- Non-profit club set up explicitly to own/operate modern winch in Region 11
- Training during off-season close to Bay Area
- Provide core group of trained pilots and winch drivers for other clubs and FBOs
- Summer safaris to Great Basin locations without tow planes

Launch Procedure

- Cable pulled straight in front of glider
- Clear launch area and fresh cable area
- Hook up cable and signal driver to pick up slack
- Signal rope tight and ready to launch
- Fast acceleration to flying speed
- Rotate to steep ascent
- Bank / yaw into wind
- Level off at altitude
- Pitch nose down for soft release


150 ft
150 ft
300 ft
450 ft
600 ft
750 ft
Start
Lift-off
Level Flight
do not rotate, do not pull
Transition
Steep
Ascend

Safety in Launch Area

- Spectators **must** be kept away from area
- People can get caught by moving cables
- Driver might engage wrong cable drum
- No glider hookup until ready to launch
- Wing drop can result in major sideways excursions of glider

Safety Near Winch

- Spectators **must** be kept away from winch
- Cable drops on winch from overhead
- Slack causes spaghetti on drums
- Broken steel cable snaps back to winch
- Crosswind causes dropping cable to snag other cables
- Moving steel cable can cut 1/2 inch steel