

AUTO LAUNCH

(ALTITUDES UP TO 1,500' ATTAINABLE)

Direct

diagrams not shown

Pulley

EQUIPMENT

- SAILPLANE HOOK LOCATION
 - CG HOOK
 - Wing Loading and Stick Pressures Low
 - NOSE (aerotow)
 - Wing Loading and Stick Pressures High
 - Trade-Off Between Nose Forces and Tail Forces
 - Limits Altitude Attainable
 - Possible Porpoising Due To Stalled Tail
 - Care taken not to Exceed V_{max}
- WEAK LINK
 - Breaking Strength 1-2 x Gross Weight of Sailplane
 - Attached to Sailplane
- LINE PARACHUTE
 - Ahead of Weak Link
 - Controls descent of Tow Line
 - Ahead of Weak Link
- RADIOS
 - Communications: Pilot/Ground Crew/Winch and Ground Crew to Winch

NORMAL WINCH LAUNCH

“The tow line will break”

- SPEED = HORIZONTAL SPEED + VERTICAL COMPONENT
- STEEPER = FASTER

diagrams not shown

NORMAL WINCH LAUNCH (cont'd)

'The Tow Line Will Break'

• INITIAL LAUNCH

- SPEED MORE IMPORTANT THAN ALTITUDE
- BRIEF PERIOD OF ACCELERATION WITHOUT CLIMB (few secs.)
- GRADUAL SMOOTH INCREASE OF PITCH ANGLE TO ~ 45 deg. At 200'. (Approx. 15 deg @50'; 30 deg @ 100')
- TAKE CARE NOT TO PITCH UP SUDDENLY OR PREMATURELY
 - Consequences of Broken Tow Line @ Steep Pitch and Low Altitude

• DURING MAX. CLIMB

- ALTIMETER WILL LAG TRUE ALTITUDE
- LOSS OF HORIZON – ESTIMATE ANGLE OF CLIMB
- CONSTANTLY MONITOR AIRSPEED. DO NOT EXCEED V_{max}

• ROUND-OUT/RELEASE

- CLIMB DIMINISHES
- LEVEL OFF TO RELEASE TENSION, THEN RELEASE
- (NO NEED TO TURN RIGHT)

LAUNCH PROCEDURE

“The tow line will break”

- RELEASE CHECK
 - LAUNCH INTO WIND (X-WIND DISCUSSED LATER)
 - ONLY HOOK UP WHEN PILOT IS READY
 - CLEAR PATTERN
 - TAKE UP SLACK
 - VERIFY PILOT READY
 - WINGS LEVEL – LAUNCH
- *****
- MONITOR ALTITUDE AND SPEED. (*Too fast/too slow addressed in “Emergencies”*)
 - SMOOTH GRADUAL CLIMB TO CLIMB ANGLE ~45 deg. @ 200’
 - Loss of horizon – estimate angle of climb, outside references
 - AS MAX. ALTITUDE IS APPROACHED RATE OF CLIMB DECREASES
 - LOWER NOSE TO REDUCE TENSION – RELEASE (*PULL TWICE*)
 - OBSERVE FALLING TOW LINE
 - IF WINCH IS OVERTAKEN, BACKRELEASE WILL OPERATE
 - LEAVE AREA ABOVE LAUNCH IMMEDIATELY

CROSS-WIND LAUNCH

“The tow line will break”

- Crab into Wind
- Correct Tendency
to Drift Downwind
- Drop Towline
Over Field

EMERGENCIES

“The Tow Line Will Break”

- ROPE BREAK

- CRITICAL FACTORS:

- AIRSPEED

- ALTITUDE

- ACTION:

- IMMEDIATE FORWARD STICK

- DROP LOOSE TOW LINE

- LAND STRAIGHT AHEAD IF POSSIBLE – OTHERWISE SUITABLE ACTION (S-Turns; Abbreviated Pattern)

- RELEASE FAILS

- FLY AWAY @ > BEST L/D, ALLOW BACK RELEASE TO OPERATE – OR

- CIRCLE ABOVE WINCH UNTIL TOW LINE IS CUT. *Take care landing with tow line attached*

OTHER CONSIDERATIONS

- WIND GRADIENT
 - RESULTS IN INCREASED AIRSPEED
 - DO NOT EXCEED V_{\max}
 - REDUCE ANGLE OF CLIMB TO REDUCE AIRSPEED
 - SIGNAL “TOO FAST”
- AT LAUNCH
 - TAIL MIGHT NEED TO BE HELD DOWN TO PREVENT SLAMMING
 - USE RADIOS TO FACILITATE COMMUNICATION
- SIGNALS
 - TOO FAST: FISHTAIL
 - TOO SLOW: ROCK WINGS