

# ANSWER KEY

## CHAPTER 1

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### 1.1 Primary Flight Controls

- 1.1.1 *Moving the stick forward will pitch the nose of the glider down and increase the airspeed.*
  - 1.1.2 *Moving the stick to the right will cause the glider to roll to the right. In addition, the glider will yaw to the left due to adverse yaw.*
  - 1.1.3 *Pushing on the right rudder pedal will yaw the glider to the right.*
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### 1.2 Secondary Flight Controls

- 1.2.1 *(glider specific)*
  - 1.2.2 *(glider specific)*
  - 1.2.3 *The trim*
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### 1.3 Using the Flight Instruments

- 1.3.1 *Marked by the red line on the airspeed indicator, on a placard in the glider. (or in the flight manual.)*
  - 1.3.2 *At higher elevations, true airspeed will be greater than indicated airspeed.*
  - 1.3.3 *9,500 feet MSL*
  - 1.3.4 *10,500 feet MSL*
  - 1.3.5 *14,500 feet MSL*
  - 1.3.6 *[A]*
  - 1.3.7 *[C]*
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### 1.4 Ground Handling

- 1.4.1 *[B]*
  - 1.4.2 *[A]*
  - 1.4.3 *[C]*
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### 1.5 Preflight Inspection

- 1.5.1 *[C]*
  - 1.5.2 *[B]*
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### 1.6 Positive Control Check

- 1.6.1 *[B]*
  - 1.6.2 *[B]*
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### 1.7 Towrope Inspection

- 1.7.1 *At the knot where the rope is attached to the tow ring, or where any knots accidentally form in the towrope*
- 1.7.2 *[C]*

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## 1.8 Securing the Glider

- 1.8.1 *You should not tie back the stick in the back seat of a two-place glider because if someone fails to release it before takeoff, it could cause an accident.*
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## 1.9 Area Familiarization

- 1.9.1 *(Site specific)*
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# CHAPTER 2

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## 2.1 Takeoff Checklist

- 2.1.1 *If you do not follow a checklist, you might forget to check an item that could compromise safety.*
- 2.1.2 *If you get interrupted while performing your checklist, you should make sure you do not skip forward, and if unsure, you should start it over from the beginning.*
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## 2.2 Takeoff Procedures and Signals

- 2.2.1 *The line person will present an open palm to signal you to open the tow hook.*
- 2.2.2 *The line persons swings their arm in a low arc, back and forth, while holding one wing high.*
- 2.2.3 [C]
- 2.2.4 [B]
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## 2.3 Takeoff

- 2.3.1 [B]
- 2.3.2 *During a normal (not crosswind) takeoff, the stick should be held aft of neutral so that the glider will rotate off of its nose wheel (or skid) as soon as possible. (If your training glider is a tail-dragger, the stick should be held forward of neutral to raise the tail of the glider off of the ground as soon as possible.)*
- 2.3.3 [A]
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## 2.4 Crosswind Takeoff

- 2.4.1 [C]
- 2.4.2 [B]
- 2.4.3 [A]
- 2.4.4 [C]
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## 2.5 Takeoff Without a Wing Runner

- 2.5.1 [C]
- 2.5.2 [B]
- 2.5.3 *Release.*
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## 2.6 Downwind Takeoff

- 2.6.1 [A]
- 2.6.2 [C]
- 2.6.3 *Release.*
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## 2.7 High Density Altitude Takeoff

- 2.7.1 [C]
- 2.7.2 [B]
- 2.7.3 *Release.*

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# CHAPTER 3

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## 3.1 Introduction to Flying the Aerotow

- 3.1.1 [A]
- 3.1.2 *If you are at the same altitude as the tow plane, the horizon will intersect the tow plane.*
- 3.1.3 *If you are directly behind the tow plane its rudder will appear centered over the fuselage.*

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## 3.2 Flying the Aerotow with Stick and Rudder

- 3.2.1 [C]

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## 3.3 Release from Tow

- 3.3.1 [B]
- 3.3.2 [B]
- 3.3.3 [A]

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## 3.4 “Soft” Release

- 3.4.1 *Acceleration of the glider with respect to the tow plane*
- 3.4.2 [C]

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## 3.5 Shifting Through the Wake

- 3.5.1 [A]
- 3.5.2 [C]

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## 3.6 Steering Turns

- 3.6.1 [C]
- 3.6.2 [C]
- 3.6.3 *When in a steering turn, the glider will try to climb because its airspeed is greater than that of the tow plane.*

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## 3.7 Aerotow Signals

- 3.7.1 [B]
- 3.7.2 [A]
- 3.7.3 [C]

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## 3.8 Boxing the Wake

- 3.8.1 [B]
- 3.8.2 [C]

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### 3.9 Slack Rope on Tow

- 3.9.1 [B]
- 3.9.2 *It is important to stay to the side of the tow plane when there is slack in the towrope so that you can see and avoid the rope and to help absorb the shock when the rope comes tight.*
- 3.9.3 *It is important to stay above the tow plane when there is slack in the towrope so that the glider does not become tangled in the rope. Climbing also reduces the amount of slack in the rope.*
- 3.9.4 *Descending will tend to increase slack in the rope.*
- 3.9.5 *Release.*

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### 3.10 Slack Rope in a Turn

- 3.10.1 *Enter a slip, or open the spoilers.*
- 3.10.2 [A]

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## CHAPTER 4

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### 4.1 Transferring Control of the Glider

- 4.1.1 [B]
- 4.1.2 [B]

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### 4.2 Scanning for Traffic

- 4.2.1 [B]
- 4.2.2 *By looking both directions before initiating a turn you will see any traffic that you might turn into, as well as traffic that might overtake you once you have completed the turn.*
- 4.2.3 [B]
- 4.2.4 *Look at a point on the horizon to the inside of the turn, about 45 to 90° from your heading, and keep looking at that point until the nose of the glider is aimed at that point. Then, glance at the instruments, and repeat.*

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### 4.3 Pitch/Speed Control

- 4.3.1 [A]
- 4.3.2 [C]
- 4.3.3 [B]

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### 4.4 Using the Trim Control

- 4.4.1 [B]
- 4.4.2 [B]
- 4.4.3 [A]

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### 4.5 Shallow/Medium Bank Turns

- 4.5.1 *To initiate a turn, you use coordinated aileron and rudder to establish the desired bank angle.*
- 4.5.2 *To maintain a turn you apply sufficient back pressure on the stick to keep the pitch angle constant, and maintain the desired bank angle with coordinated use of the ailerons and rudder.*
- 4.5.3 *Adverse yaw is not present during the turn.*

- 4.5.4 *You stop a turn by using coordinated aileron and rudder to level the wings, and releasing the back pressure to keep the nose from rising.*
- 4.5.5 *When rolling to the left while holding the rudder neutral, the glider will yaw to the right.*
- 4.5.6 *If you are using the correct amount of rudder when rolling into or out of a turn the nose will not swing with respect to the horizon, but will rotate about a point.*

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#### **4.6 Precision Turns**

- 4.6.1 [C]

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#### **4.7 Airbrakes in Flight**

- 4.7.1 *If you maintain a constant pitch attitude when deploying the airbrakes the airspeed will decrease.*
- 4.7.2 [A]

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#### **4.8 Steep Turns**

- 4.8.1 *The load factor will increase by about 35% when the bank angle is increased from 45° to 55°.*
- 4.8.2 *The load factor will increase by about 100% when the bank angle is increased from 60° to 70°.*
- 4.8.3 [A]
- 4.8.4 *When the glider is banked at 45°, a line connecting a pair of diagonal instrument mounting screws will be parallel with the horizon.*
- 4.8.5 *A 60° bank angle will put a load factor of 2 on the glider. Since the stall speed increases with the square root of the load factor, you would need an airspeed of at least 57 knots to keep from stalling in a 60° turn.*

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#### **4.9 Circling Flight**

- 4.9.1 [B]
- 4.9.2 [C]
- 4.9.3 [A]

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#### **4.10 Crabbing During Cruising Flight**

- 4.10.1 [A]
- 4.10.2 [B]

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#### **4.11 Stall Recognition and Recovery in Level Flight**

- 4.11.1 [C]
- 4.11.2 [A]
- 4.11.3 *Stick back, nose rising, airspeed decreasing, wind noise decreasing, mushy controls, buffeting*
- 4.11.4 *To recover from a stall you must lower the angle of attack.*

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#### **4.12 Stall Recognition and Recovery in a Turn**

- 4.12.1 [C]
- 4.12.2 *Stick back, nose rising, airspeed decreasing, wind noise decreasing, mushy controls, buffeting*

- 4.12.3 *Attempting to raise a wing with the ailerons while the glider is stalled will result in an increase in the angle of attack of the lowered wing, deepening the stall and possibly initiating a spin.*
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#### **4.13 Slow Flight**

- 4.13.1 *You should lower the nose if you feel buffeting while flying at MCA.*  
4.13.2 *More rudder is needed to coordinate the glider at MCA because induced drag, and therefore adverse yaw, are greater at low speeds. Also, the lower airspeed makes the rudder less effective.*  
4.13.3 *The glider will stall if you increase your bank angle when flying at MCA without increasing your airspeed.*
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#### **4.14 Stall Recognition and Recovery with Airbrakes**

- 4.14.1 *Stick back, nose rising, airspeed decreasing, wind noise decreasing, mushy controls, buffeting*  
4.14.2 *The buffeting associated with a stall may be masked by turbulence from the open airbrakes.*  
4.14.3 [B]  
*flying speed the glider can enter a secondary stall.*
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#### **4.15 Side Slip – Correcting for Alignment Errors**

- 4.15.1 *The ailerons are used to initiate a side slip when adjusting for alignment errors.*  
4.15.2 *Your heading should not change when entering a side slip to adjust for alignment with the runway.*  
4.15.3 *Using the ailerons, briefly bank opposite the direction of the slip, then return the wings to level with coordinated aileron and rudder.*
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#### **4.16 Side Slip – Compensating for a Crosswind**

- 4.16.1 *The ailerons and the rudder are used simultaneously (but not coordinated) when transitioning between a crab and a side slip to compensate for a crosswind.*  
4.16.2 *Your heading should be parallel with the runway after transitioning from a crab to a side slip on final.*  
4.16.3 *Your descent angle will increase when using a side slip because of the increase in drag.*
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#### **4.17 Forward Slip**

- 4.17.1 [C]  
4.17.2 [A]
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#### **4.18 Low-G Maneuvers**

- 4.18.1 [C]
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#### **4.19 Selecting a Cruise Airspeed**

- 4.19.1 [C]  
4.19.2 [C]  
4.19.3 [B]