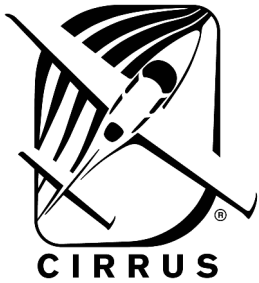
CIRRUS PILOT

WORKBOOK
SR-SERIES AIRCRAFT

PLANE GENIUS™



Workbook

SR-Series

SR20, SR22, SR22 Turbo

Edition 1

May 2008

P/N 1005-103

Record of Revisions

Revision #	Date	Description
Original	May 2008	Initial Release

Table of Contents

Introduction

This workbook is provided in order to introduce Cirrus pilots to the characteristics of the Cirrus aircraft.

Each of the following sections corresponds to a section in the POH that is included at the end of this manual. In each section you will find: quiz questions, supplemental information, and operating tips.

The answers to the questions will be found in the provided generic POH (unless otherwise noted). *These questions are required to be completed prior to the beginning of your training unless you are completing the Jeppesen Online Ground School.* If you have problems with the workbook or would like clarification on a question within it, you may use the forum titled "Q & A Forum" on eZ LMS.

Unless otherwise noted, all questions apply to the model of aircraft that you will be flying. If a question only applies to a certain model, it will be noted with:

- **(20)** for SR20
  - SR20 G3 questions will come from the appropriate section of the G3 Wing Supplement in Section 9 of your POH.

- **(22)** for SR22
  - SR22 G3 questions will come from the appropriate section of the G3 Wing Supplement in Section 9 of your POH.

- **(T)** for SR22 Turbo
  - All turbo questions will come from the Tornado Alley Turbonormalizing System Supplement in Section 9 of your POH.

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1. General

This section will cover Section 1 (General) of your Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. What is the wing span of your aircraft?
   ***Tip**: Consider this when hangering your aircraft.*

2. What is the certified max gross weight of the aircraft?

3. In what ways does the weight of the aircraft affect aircraft performance?

4. How much clearance is between the tip of the propeller and the ground?

5. What is your engine model?

6. What is the definition of reference datum?

7. What is the definition of arm?

8. What is Moment?

9. How does center of gravity affect aircraft performance?

2. Limitations

This section will cover Section 2 (Limitations) of your Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. Fill in the speeds and definitions of the following:

V_{NE}		_____KIAS	_____	up to 17,500 ft
V_{NE}	**(T)**	_____KIAS	_____	25,000 ft
V_{NO}		_____KIAS	_____	up to 17,500 ft
V_{NO}	**(T)**	_____KIAS	_____	25,000 ft
V_O		_____KIAS	_____	Max Gross Weight
V_{FE}		_____KIAS	_____	50% flaps
V_{FE}		_____KIAS	_____	100% flaps
V_{PD}		_____KIAS	_____	
V_{SO}		_____KIAS	_____	
V_S		_____KIAS	_____	

2. What is the significance of V_{NO} and how does it differ from V_{NE}?

3. What is the significance of V_O?

4. What is the significance of the green arc on the airspeed indicator?

5. What two speeds define the top and bottom of the green arc?

6. What two speeds define the top and bottom of the white arc?

7. During the engine break-in period what type of oil should be used?

8. What is the maximum takeoff altitude for the aircraft?

9. What is the max operating altitude of the aircraft?

10. Can you operate the aircraft at the max operating altitude without oxygen? (FAR 91.211)

11. Can you operate this aircraft out of un-paved runway surfaces?

12. Can you fly VFR with ALT 2 INOP?

13. Can you fly IFR with ALT 2 INOP?

14. Can you fly VFR with one of the strobe lights out?

15. What is the significance of V_{PD} and why do you not see this in other aircraft?

16. Can you fly IFR with the NAV lights inoperative?

17. Can you fly with any of the engine instruments inoperative?

18. Is the aircraft approved for aerobatics/spins?

19. Can you operate your aircraft without removing the CAPS safety pin? (FAR 91.9)

20. Indicate the following Fuel Limits:

Approved Fuel Type	_____
Total Fuel Capacity	_____ gallons
Total Fuel Each Tank	_____ gallons
Total Usable Fuel	_____ gallons
Unusable Fuel	_____ gallons
Maximum Allowable Fuel Imbalance	_____ gallons

21. When does the BOOST pump need to be in operation?

22. Can you fly with the autopilot inoperative?

23. How does an inoperative autopilot affect your personal minimums or go/no-go decision for an IFR flight?

3. Emergency Procedures

This section will cover Section 3 (Emergency Procedures) from your Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. Fill in the speeds and definitions of the following:

(22)	V_G	_____ KIAS	_____	Max Gross Weight
	V_G	_____ KIAS	_____	2900 lbs
(20)	V_G	_____ KIAS	_____	Max Gross Weight
	V_G	_____ KIAS	_____	2500 lbs

2. Emergency Landing Speeds:

Flaps Up	_____ KIAS
50% Flaps	_____ KIAS
100% Flaps	_____ KIAS

3. In any emergency situation, what is the most important thing to remember and perform?

4. What is the procedure for a fire on engine start?

5. How many circuit breakers would you pull with runaway trim? What are these circuit breakers labeled?

6. What indicates the failure of an alternator?

7. Would you lose any equipment if you lost ALT 1? (Electrical Distribution Diagram in Section 3) If yes, what?

8. Would you lose any equipment if you lost ALT 2? If yes, what? (Electrical Distribution Diagram in Section 3)

9. What is your aircraft's glide ratio?

10. What is your best glide distance if you were at 6,000' AGL?

11. A propeller governor failure can be the cause of what two situations?

12. Is it advisable to unlatch the cabin doors with smoke or fumes in the cabin?

13. **(T)** What are 2 causes of an unexplained loss of manifold pressure?

14. **(T)** Is an unexplained loss of manifold pressure an emergency?

15. What is the procedure for an emergency descent?

16. In what situation would you use an emergency descent?

17. What is the procedure if you have an engine failure in flight?

18. Is flight into known icing conditions approved?

19. What is the procedure for an inadvertent icing encounter?

20. The temperature at sea level is 30 degrees Celsius. Assuming the standard temperature lapse rate of 2 degrees / 1000', where do you expect the freezing level to be?

21. In an engine failure situation with the prop windmilling, how can you gain additional glide distance?

22. What is the only approved and demonstrated method for spin recovery?

23. If only the airspeed indicator is giving erroneous information, what kind of malfunction can you expect?

24. What is the corrective action for erroneous airspeed indications?

25. Will the auxiliary fuel pump provide enough fuel to power the engine in the event of an engine driven fuel pump failure?

26. What 2 conditions will turn the oil annunciator light on?

27. What is the procedure for a propeller overspeed?

28. What is the procedure for a cabin fire in flight?

29. What procedure would you use to try to get ALT 1 back online in the case of an ALT 1 failure? What would your next step be if you could not get the alternator back online?

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30. What is the approximate expected impact from a parachute drop?

31. If activation of the CAPS system is necessary, what kind of motion do you want to use when pulling the handle?

32. With an engine out will full flaps increase or decrease your glide distance?

33. If you lose the audio panel, will you lose the ability to communicate with ATC?

34. When landing without elevator control what speed should you trim the aircraft for?

35. Your ALT 1 annunciator light illuminates 30 minutes from your destination at night. What equipment would you turn off to reduce the load on Battery 1?

36. What is the procedure for a brake failure during taxi?
    1)
    2)
    3)

37. What is the procedure for single and dual brake failures in flight?

Single Failure *Dual Failure*

38. If you suspect a brake failure, how wide and long should the landing runway be? (What are your personal minimums?)

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Questions 40-48 relate to high altitude physiology. Please reference the *Resource Center for Cirrus Training* on eZ LMS, the *Pilot's Handbook of Aeronautical Knowledge*, or the *Aeronautical Information Manual (AIM)* for guidance.

39. List 5 possible symptoms of hypoxia.

40. What are 3 possible causes for hypoxia?

41. (True / False) The onset of hypoxia is easy to identify.

42. (True / False) Symptoms of hypoxia are identical for everybody.

43. What is the proper treatment for hypoxia?

44. **(T)** At 22,000' MSL, you recognize symptoms of hypoxia. The oxygen system flow meter indicates no flow of oxygen from the oxygen tank to your mask. The quantity indicator on the oxygen indicates zero PSI.

    What is the proper way to treat hypoxia for the given scenario?

    Is the above scenario an emergency?

    What is the possible result if no action is taken?

45. What is the recommended altitude for use of oxygen for day and night time? (AIM Chapter 8)

46. When are pilots required to use oxygen? (FAR 91.211)

47. When must oxygen be made available to passengers? (FAR 91.211)

4. Normal Procedures

This section will cover Section 4 (Normal Procedures) from your Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. Fill in the speeds and definitions of the following:

V_R		_____KIAS	_____	Normal
V_Y		_____KIAS	_____	SL
V_Y		_____KIAS	_____	10,000’
V_X		_____KIAS	_____	SL
V_X		_____KIAS	_____	10,000’
V_O	**(22)**	_____KIAS	_____	Max Gross Weight
V_O	**(22)**	_____KIAS	_____	2900 lbs
V_O	**(20)**	_____KIAS	_____	Max Gross Weight
V_O	**(20)**	_____KIAS	_____	2600 lbs
V_O	**(20)**	_____KIAS	_____	2200 lbs

Normal Approach, Flaps Up	_____KIAS
Normal Approach, Flaps 50%	_____KIAS
Normal Approach, Flaps 100%	_____KIAS
Short Field Approach, Flaps 100% (V_{REF})	_____KIAS
Max Demonstrated X-Wind	_____Knots

2. During the cabin preflight, what should be the normal voltage indication?

3. How many points are you able to drain fuel from?

4. What items would you brief your passengers on during a passenger briefing?

5. (True / False) You will start the engine with both batteries and both alternators on.

6. After start up, how soon should you see a change in oil pressure?

7. What are the max cranking intervals for the starter?

8. The Taxiing Checklist has you check three pieces of equipment while taxiing. What are these three pieces of equipment and what are you checking for?
   1)
   2)
   3)

9. (True / False) Directional control during taxi operations is best achieved by differential braking where full rudder authority is used before brakes are applied.

10. (True / False) Excess use of the brakes can result in overheated brakes which may result in brake failure or system failure.

11. (True / False) You need to maintain at least 1000 RPM while taxing the aircraft.

11. Before doing your run-up, you want the oil temperature to reach what temperature?

12. If no drop in RPM is noted on the magneto check, what is the probable cause?

13. What is the procedure for setting the mixture for maximum power when taking off from high altitude airports?

14. Normal takeoffs can be performed with which flap setting(s)? Short and soft field takeoffs?

15. Flap retraction after takeoff from 50% to 0% is done at or above what minimum speed?

16. What is the recommended cruise climb airspeed?

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P/N 1005-103

17. **(T)** What is the corrective action if the manifold pressure exceeds 32 inches during takeoff?

18. **(T)** List the procedures for a Rich of Peak (ROP) climb.

19. **(T)** List the procedure for a Lean of Peak (LOP) climb.

20. **(T)** (True / False) Leaning the mixture control when operating lean of peak EGT will cause the CHT's to increase.

21. **(T)** What is the corrective action of CHT's exceed 380° F during a LOP climb?

22. **(T)** What is the maximum altitude a Lean of Peak (LOP) climb can be used?

23. The climb checklist should be completed no lower than what altitude? (Flight Operations Manual)

24. **(T)** List the procedure for setting cruise power to 85%.
    Throttle _____
    Mixture _____
    Boost pump _____

25. **(T)** When should the boost pump be turned off during cruise?

26. (True / False) The fuel BOOST must be used when switching tanks?

27. **(T)** CHT's should be kept above what temperature during descent?

28. **(T)** List 3 factors that affect CHT cooling during descent?

29. **(T)** What power setting can be used during descent?

30. The descent checklist should be completed by what point? (Flight Operations Manual)

31. What distance from the destination airport should you start a descent from 17,500' MSL to a traffic pattern of 2,500' MSL with a groundspeed of 180 knots when using:

    a. 500 fpm descent _____ NM

    b. 1000 fpm descent _____ NM

32. (True / False) The mixture should be full rich and boost pump on before landing.

33. (True / False) Normal landings are not allowed with 0% or 50% flaps.

34. On a crosswind landing, at what point will you transition from a wings-level crab angle into a sideslip?

35. Power goes to what setting on a balked landing/go-around?

36. When do you perform the after landing checklist? (Flight Operations Manual)

37. (True / False) The mixture should be leaned for taxi.

38. Why is the use of a paper checklist for shutdown necessary?

39. **(T)** (True / False) Turbo cool down is necessary before engine shutdown.

40. At what point should you hear the stall warning horn?

41. How long do you prime the engine for the following starts?
    - o Normal _____ seconds
    - o Cold _____ seconds
    - o Hot _____ seconds

42. Below what temperature should external preheat or external power be used for start?

43. On start up the engine has intermittent firing and small puffs of black smoke rise from under the aircraft. What is the probable cause and corrective action?

44. You have misjudged your approach to landing due to winds, and it appears you will land longer than you anticipated. What is your best course of action?

5. Performance

This section will cover Section 5 (Performance) from your Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

Use the following information to answer the questions:

Route: Rapid City, SD (KRAP) → Duluth, MN (KDLH)
Distance: 487 NM
Magnetic Course: 254 degrees
Weight at Takeoff: Max Gross Weight
Fuel: Full
Cruise Power Setting: **(20, 22)** 75% Best Power
(T) 85% Lean of Peak

Weather Conditions:
KRAP 101250Z 22026KTG35 10SM FEW010 SCT020 30/17 A2975
KDLH 101250Z 33020KT 10SM SCT010 20/10 A2982

Winds aloft:

	3000	6000	9000	12000	18000
DLH	2925	253415	253704	264201	2754-03
GFK	302610	263309	253708	254205	265001
FSD	2923	263214	272907	283502	2841-01
RAP		283417	303309	304003	314900

Airport Information:
KRAP Elevation 3202 ft
Rwy 23/05 3600 ft
Rwy 32/14 8701 ft

KDLH Elevation 1420 ft
Rwy 27/09 10,152 ft
Rwy 03/21 5699 ft

1. What will be your takeoff distance (ground roll) departing KRAP?

2. What is your x-wind component for runway 32 at KRAP?

3. What altitude will you use and why?

4. In addition to winds aloft, what other factors should be considered when selecting a cruise altitude?

5. What will be your average climb rate out of KRAP to your selected cruise altitude?

6. What will be your endurance for today's flight?

7. **(T)** What is the O2 duration for 15,000ft with 3 persons onboard?

8. What will be your calculated KTAS and fuel flow for cruise flight?

9. How much fuel will you have once you reach your destination?

10. Will you be able to make your destination non-stop? SAFELY? (Difference between FAR's and personal minimums)

11. What will be your landing distance (ground roll) at KDLH?

12. What is the KCAS at 100 KIAS with 100% flaps?

13. What will your KIAS stall speed be on departure with 50% flaps and an AFT CG?

14. What is the difference between takeoff rate of climb vs. en route rate of climb?

6. Weight and Balance

This section will cover Section 6 (Weight and Balance) from your Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

Aircraft information:

Basic Empty Weight:	**(22)**	2340 lbs	**(20)**	2135 lbs
Moment:	**(22)**	326.563	**(20)**	301.758

Payload:

Pilot	160 lbs	Front Pax	160 lbs
Rear Pax	200 lbs	Baggage	130 lbs
Fuel	Full Fuel		

NOTE: *You cannot leave anyone or any baggage behind.*

You may use the following table to aid in calculations. For Moment/1000, refer to loading table in POH.

Description	Weight	Moment/1000
1. Empty Weight *Includes unusable fuel & full oil*		
2. Front Seat Occupants *Pilot and Passenger*		
3. Rear Seat Occupants		
4. Baggage Area *130 lb maximum*		
5. Zero Fuel Condition *Sub total items 1 thru 4*		
6. Fuel Load ***(22)*** *92 Gallon @ 6.0 lb/gal maximum* ***(20)*** *56 Gallon @ 6.0 lb/gal maximum*		
7. Ramp Weight *Sub total items 5 and 6*		
8. Fuel for Start, taxi, and runup ***(22)*** *Normally 9 lb at avg moment of 1394* ***(20)*** *Normally 6 lb at avg moment of 922.8*		
9. Takeoff Weight *Subtract Item 8 from item 7*		

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P/N 1005-103

1. What is your ramp weight?

2. What is your aircraft's zero fuel weight?

3. What will be your aircraft's gross takeoff weight?

4. Is this below the certified maximum gross weight?

5. Will your aircraft be within CG limitations?

6. How much fuel will you have on board before takeoff to remain within the weight and GG envelope?

   _____ Gallons _____ Lbs

7. Is unusable fuel and oil included in basic empty weight?

8. Where is the aircraft Datum?

7. Airplane and Systems Description

This section will cover Section 7 (Systems) from your Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. What are the three flap settings?

   _____% _____°
   _____% _____°
   _____% _____°

2. (True / False) The horizontal stabilizer is a two piece unit attached at empennage.

3. (True / False) It is possible to have an asymmetrical flap deployment in a Cirrus aircraft.
***Hint**: Look at the flap control diagram.*

4. Why are Cirrus aircraft not equipped with gust locks?

5. (True / False) The autopilot also uses the electric roll trim.

6. The landing gear struts are made of what?

7. How many master brake cylinders are there?

8. Below what temperature does the oil bypass the oil cooler?

9. What is the recommended extended flight oil level for the engine?

10. Where is the alternate air control knob?

11. What will cause an OIL warning light to illuminate?

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P/N 1005-103

12. Describe when oil is metered into and out of the prop hub.

13. What pulls the fuel from the collector tanks?

14. How much fuel is held in each collector tank? (eZ LMS)

15. What situation will cause the FUEL QTY caution light to illuminate?

16. (True / False) If one tank is at 4 gallons and the other tank is at 17 gallons, the FUEL caution light will illuminate.

17. Alternator #1 is rated for:
    _____ Amps
    _____ Volts

18. Alternator #2 is rated for:
    _____ Amps
    _____ Volts

19. Battery #1 is rated for:
    _____ Amp-hours
    _____ Volts

20. Battery #2 is rated for:
    _____ Amp-hours
    _____ Volts

21. Output from alternator #1 is connected to which bus(es)?

22. Output from alternator #2 is connected to which bus(es)?

23. How are the main distribution bus(es) and essential distribution bus connected?

24. What is the purpose of the diode between the distribution buses?

25. You are on the ground with only BAT 2 on. What indication do you get if the isolation diode has failed?

26. When only battery #1 is turned on, which buses are energized?

27. When only battery #2 is turned on, which buses are energized?

28. What does an ALT annunciator mean?

29. The back seat passengers are cold. How do you go about setting the heat and ventilation knobs to direct the maximum amount of warm air to your passengers?
***Hint**: Look at the heating & ventilation diagram.*

30. What kind of stall warning system is installed on Cirrus Aircraft?

31. When practicing power off stalls with full flaps, at what IAS would you expect to hear the stall horn?

32. What causes the 'Pitot Heat' annunciation light to illuminate?

33. How many square feet is the CAPS parachute?

34. What kind of pull on the handle works best when activating the CAPS system?

35. What kind of descent rate can you expect with a parachute deployment?

8. Handling Service & Maintenance

This section will cover Section 8 (Service and Handling) from your Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. What are the five documents required by the FAA to be onboard the aircraft at all times?
   1)
   2)
   3)
   4)
   5)

2. What are the two recommended procedures for you to verify if your airplane conforms to all Airworthiness Directives?
   Hint*: It is also possible to get this information from http://www.faa.gov on the web.*

3. If an annual inspection was done on your aircraft May 16, 2005, when will the next inspection will be due?

4. After completing any of the work described as preventative maintenance in the POH, what are the required logbook entries you must make?

5. Should you use external power to start the airplane if it has a "dead" battery?
   Tip*: In most cases you can't even connect external power to the airplane unless there are enough volts and amps remaining in battery 1 to energize the relay in the MCU.*

6. How often should the brake fluid be inspected and replenished?

7. How often should the brake linings be inspected and replaced?

8. While taxiing, how is steering is accomplished?

   ***Tip**: In the event of a brake failure it is possible to use rudder for directional control, however, this procedure will only work if you are carrying enough power on the engine to produce enough induced airflow over the rudder. This procedure should only be used in an emergency! When applying power you may gain directional control but you will also gain a considerable amount of groundspeed.*

9. When moving your Cirrus around on the ground you should ALWAYS use a _____.

   ***Tip**: When flying into an unfamiliar FBO that wants to move your aircraft with mechanical tow bars, be sure to check if the tow hook fits your aircraft. Some tow bars appear to fit, but once pressure is applied they may slip out of position. This may result in the pressure being applied to the nose wheel fairing instead, possibly damaging it.*

   Mechanical dollies that lift the nose wheel off the ground should also be avoided due to the clearance of the nose wheel fairing. Also, the strap used to secure the aircraft on these types of systems wraps around the nose wheel strut fairing and will crack or possibly destroy the fairing.

10. Where is the hydraulic brake fluid reservoir located?

11. What is the proper tire pressure?

    Nose Gear _____ psi

    Main Gear _____ psi

12. After the engine break-in period, what is the recommended time between oil changes?

13. The fuel filtration screen in the gascolator must be cleaned every _____ hours of operation.

***Tip**: In order to get the most accurate fuel readings, when flying a Cirrus with engine monitoring, make sure that the fuel tanks are "topped off." Many times, FBO's will leave fuel levels an inch or two from the top and in the Cirrus that could equate to several gallons that may be used for reserve purposes.*

Filling the tanks at a high flow rate may also result in under-fueling the aircraft. The main tanks may appear full but fuel may still be flowing into the inboard collector tanks. To avoid this, limit the flow rate to allow the collector tanks to completely fill. Rocking the wings can also help. Additionally, the operator should re-check the fuel quantity 5 minutes after fueling to ensure the fuel quantity is at the desired level. (SA 07-21)

14. (True / False) A fuel sample is required to be taken prior to each flight.

15. (True / False) Battery 1 is located aft of the baggage compartment.

16. What should you use when washing the exterior of the aircraft?

17. When cleaning any of the windows, what do you *not* want to use?

9. Supplements

This section will cover Section 9 (Supplements) from your Pilots Operating Handbook, unless otherwise noted.

Note: *Specific avionics usage will be discussed in other training material and during training with your Cirrus Instructor.*

Note: *We recommend that you download the specific information manual for each piece of equipment because of the diversity and complexity of the various avionics utilized in Cirrus aircraft. Some will be included in your training kit and all will be included with your airplane.*

9.1 Internet Hyperlinks

Pilots Operating Handbooks and supplements can be downloaded from the following websites:

- **UND Aerospace: Cirrus Factory Training**
  (Follow links to eZ LMS)
  - *http://cirrus.aero.und.edu*
- **Cirrus Design Corporation**
  - *http://www.cirrusdesign.com*
- **Avidyne Avionics**
  - *http://www.avidyne.com*
- **Garmin Avionics**
  - *http://www.garmin.com*
- **L-3 Avionics Systems**
  - *http://www.as.l-3com.com*
- **S-Tec / Meggit**
  - *http://www.s-tec.com*
- **Turbonormalizing System**
  - *http://www.taturbo.com*
- **Oxygen System**
  - *http://www.preciseflight.com*

Note: *Only answer the questions for the systems that are in your aircraft.*

9.2 Tornado Alley Turbonormalizing System

Before conducting training you will need to be familiar with the following:

- Limitations of the system
- Basic operating principles of turbonormalizing systems

Note: *The answers to these questions can be found in your supplement and the turbo presentation found on eZ LMS.*

1. What is the pressure of the upper deck before and after the intercooler?

2. What are two key components of the upper deck?

3. What is the purpose of the intercooler?

4. What could cause an over-boost situation?

5. What is the maximum Turbo Inlet Temperature (TIT)?

6. What is the maximum certification altitude?

7. (True / False) A closed wastegate sends more exhaust through the turbo.

8. (True / False) An open wastegate allows exhaust to bypass the turbo and be dumped overboard.

9. Why are the fuel injectors, engine driven fuel pump, and magnetos pressurized?

10. While the engine is idling on the ground, is the wastegate open or closed? Why?

11. (True / False) The mixture should be leaned for take off at higher density altitudes to compensate for the decreased pressure.

12. As the aircraft climbs to 25,000' from SL, what happens to the wastegate? Will the wastegate be fully closed at 25,000' MSL?

13. For increased engine life, CHT's should be kept below _____ °F

14. Avoid continuous operations with the fuel flow set between _____ GPH and _____ GPH with MP above _____ in. Hg.

15. After completing the cruise checklist, the boost pump should remain on for _____ min. Why?

16. (True / False) Leaning the mixture will cause the CHT's to rise when operating lean of peak.

17. While climbing at 130 KIAS during a lean of peak climb, the CHT's exceed 380° F. What is the appropriate response?

18. What if the CHT's cool below 380° F but the climb performance is not acceptable? What is the appropriate action?

19. After setting cruise power at 85% (2500 RPM / Max MP / 17.6 GPH) the CHT's remain at 395° F. What is the correct action?

20. What is the appropriate course of action in the event of an unexplained loss of manifold pressure?

21. Shortly after leveling off at 22,000' you set cruise power, lean the mixture, and turn your boost pump off. Your engine fails.

    - What do you do?
    - Why did the engine fail?

9.3 Precise Flight Fixed Oxygen System

http://www.preciseflight.com

Before conducting your training you will need to know how to accomplish the following basic functions.

- Calculate oxygen duration using the table in the supplement.

Note: *It is recommended that you utilize a Pulse Oximeter for high altitude operations to ensure the proper blood oxygen saturation and to prevent hypoxia.*

1. The O_2 *required* light will come on if the system is not selected on by what altitude?

2. What does a steady fault light indicate?

3. What does a flashing fault light indicate?

4. (True / False) The system will continue to operate normally when a steady fault light is observed.

5. The oxygen quantity display indicator will flash red when bottle pressure falls below what psi?

6. (True / False) If you have an ALT 1 Failure, you will need to conserve battery power for continued operation of the oxygen system.

7. Cannulas are certified for flight up to what altitude?

8. (True / False) Emergency procedures (i.e. Cabin Fire in flight) are not affected by the use of oxygen.

9. How many hours of oxygen use can you expect cruising at 17,000 ft with 3 people on board and a full oxygen tank?

9.4 Ice Protection System

Before conducting training you will need to be familiar with the following:

- Limitations of the system
- Knowledge of effects of airframe icing

1. Is flight into known icing approved for your aircraft?

2. Describe how and when to use the appropriate modes of the ice protection system.

3. What should be your airspeed during an icing encounter?
   Hint: *During certain flight conditions, such as at higher operating altitudes and/or higher airspeeds, the stagnation point on the leading edge of the wing (the point where the airflow splits) will move up and aft enough to hinder the deicing fluid from flowing adequately along the top surface of the wing. Airspeed for optimum system performance is 95-139 KIAS. Do not exceed 175 KTAS above 14000 ft. (TPOH 07-13)*

4. How often should the system be run to prevent the porous panel membranes from drying out?
   Hint*: Pre-flight procedures for the ice protection system are not listed on the standard paper or MFD checklists, but are in the supplements section of the POH. Additional attention should be given to operation and pre-flight of the system ensuring it is primed, especially when flying into instrument conditions or precipitation.*

5. What is the definition of “known icing”?
   Note: *This answer is not in the POH. This is an important issue; Cirrus recommends that you do further reading about icing at the following websites:*
   - **AOPA: Safety Advisors**
     - *http://www.aopa.org/asf/publications/advisors.html*
   - **NASA GRC Icing Branch**
     - *http://aircrafticing.grc.nasa.gov*
   - **AVweb: Aviation Magazine and News Service**
     - *http://www.avweb.com/news/airman/181877-1.html*

10. Safety Information

This section will cover Section 10 (Safety Information) from your Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

Regarding the Cirrus Airframe Parachute System (CAPS):

1. What is the significance of the V_{PD} (max parachute deployment speed) and what is the numerical value?

2. What factors do you need to take into account if the parachute is to be deployed?

3. List scenarios when activation of the CAPS might be appropriate?

Tip: *There is no minimum deployment altitude. This is because the actual altitude loss during a particular deployment depends upon the airplane's speed, altitude and attitude at deployment as well as other environmental factors. As a guideline, the demonstrated altitude loss from entry into a one-turn spin until under a stabilized parachute is 920 ft. Altitude loss from level flight deployments has been demonstrated at less than 400 ft. The recommended cut-off decision altitude is 2,000' AGL.*

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