



THE WEEKLY PLOG—TRAINING NEWS FROM HANGAR 4

Required Equipment

05 November 2007

It never fails to occur on End of Course checks. Every student that I ask will give me the same standard book answer and will squirm when I ask my follow-up question. The question is this: "What sort of instruments and equipment are required to be on the Cirrus for a VFR day flight?" Seems like a simple question, but students get it wrong every single time. Everybody gives me the verbatim TOMATO A FLAMES answer. So what is wrong with this answer and how should students be answering this question?

Area of Operation I, for private and commercial candidates in the FAA practical test standard is *Preflight Preparation*. Under Task B, *Airworthiness Requirements*, the candidate must determine the required instruments and equipment for day/night VFR operations. Students are normally taught that the instruments and equipment required for flight is found in FAR 91.205. From this list, some savvy pilot made the TOMATO A FLAMES acronym for day VFR flights and the FLAPS acronym for VFR night. We are off to a good start if the student can reproduce this list, but herein lies the problem. The list is quite generic and does not apply to a specific airplane. Think of 91.205(b) as the FAA's generic list for any airplane. My question is quite specific to the airplane that is used for the End of Course test. So if you are flying a Cirrus SR-20, then 91.205 is only the starting point for answering this question.

My follow-up question goes like this: "Don't we need wheels? How about a seat? Surely we need a yoke?" Students normally respond that we do need these things, but most don't understand how to prove that these are required. Something is missing from their training; *the equipment list*. Look in your Cirrus information manual. As an instructor, you should know that Section 6 of every AFM/POH/IM (made after March 1, 1979) is the Weight & Balance/Equipment List section. Cirrus has noted that the list will be determined after the final equipment has been installed in the aircraft. In other words, the list is not in your information manual. This is the same with Piper. If you look in the Cessna 172R information manual however, you will find a fleet-wide generic equipment list. So now the student needs to know where to find the equipment list. It is only found in the airplane's approved AFM. It would be a good idea to get a copy of an equipment list and provide it to your students.

Looking in the airplane's approved AFM, the page to look for is *Delivered Weight Data & Equipment List*. Three symbols are used to denote the certification status of each item. 'C' is used to denote required items for FAA Certification. 'S' is used for standard equipment. 'O' is optional equipment. The equipment is organized by sections according to the ATA or GAMA chapter reference numbering system. For example, Chapter 25 is *Equipment & Furnishings*. Here we find item 25-02 *Forward Seat and Restraint Installation*. The symbol next to it is 'C', so it is required equipment. Chapter 32 is *Landing Gear*. Item 32-03 *Main Gear Fairings Installation* is a standard item, but is not required for FAA certification. Therefore, the fairings can be removed and the airplane still considered airworthy (provided a new weight & balance sheet is determined by a mechanic).

Some students are confusing the *Equipment List* with *Kinds of Operation Equipment List*. This other list is found in the *Limitations* section (Section 2, but you already knew that). The *Kinds of Operation Equipment List* is specific to different types of operations and should be used in conjunction with the *Equipment List*. Look at item 24-02 *Alternator 2*. It is optional equipment according to the equipment list but the *Kinds of Operation Equipment List* indicates that it is required for IFR day and night operations.

This is how your student can be successful answering my question about what is required for a VFR day flight in the Cirrus. The answer should begin by stating that the FAA has a generic list of equipment (TOMATO A FLAMES), but that the manufacturer has additional items that are required based on its equipment list and kinds of operations equipment list. Avoid referencing the term *Minimum Equipment List* (MEL) since this is an entirely different critter and is used by certain operators with inoperative equipment. Knowing what is required equipment for the airplane will help your student answer questions about inoperative equipment procedures, which will be the subject of the next plog.

Cirrus Design SR20	Weight Equipment List
Delivered Weight Data & Equipment List	
Model SR20	
Serial Number:	1658
Registration Number:	N861SH
Basic Empty Weight:	2148 lb
Total Moment/1000:	300.962
Center of Gravity:	F.S.140.1 or 14.9 MAC
Parachute Canopy Color:	Orange / White
<p>The following pages list required, standard, and optional equipment, as well as gives the weight and arm of each listed item. This listing represents the airplane and all options available at the time of delivery and does not include any equipment installed after delivery.</p> <p>Note: Not all optional equipment in this listing was installed in the above serial number airplane. Equipment listed as optional but not installed in the airplane is indicated by a hyphen (-) in the quantity column for that piece of equipment.</p> <p>ATA - Item: Each item in the listing is provided a unique number. The first two digits of the number represent the ATA or GAMA Chapter reference number. These numbers are used industry wide and in the Cirrus Design SR20 Maintenance Documentation to locate items in the Maintenance Manuals and or Parts Catalogs. The two digits following the hyphen are sequence numbers for each item in that chapter.</p>	
PR 11034-003	

DO YOU KNOW WHERE TO FIND THE EQUIPMENT LIST FOR YOUR AIRPLANE?

THE BACK SIDE

Failed Checks

Below is a list of the End of Course checks that were recently failed in Hangar 4. Some of these are simple problems that proper training and adherence to standard operating procedures can address. Other problems indicate a lack of procedural knowledge that clearly indicate that the student is not yet ready for this level of performance. Do not send your student to the Stage Check examiner unless you are certain that they can pass the FAA check ride.

Instrument Stage Check - Student failed to stop the descent prior to the step down MDA fix and eventually descended thru the lower down MDA.

Comment: Make sure that your students are able to plan an appropriate rate of descent based on ground speed. A rule of thumb that you can use to determine descent rate on an approach (assuming a 3^o glide path) is to take half of the ground speed and multiply by 10; e.g. 120k ground speed would need a 600 fpm rate of descent to maintain a standard glide path.

Instrument Stage Check - Student went missed approach at the LOC MDA minimum while conducting a straight in ILS precision approach.

Comment: Review the minimum altitude while conducting an approach brief. Sometimes it is easy to look at the wrong column or row and miss the DA.

Instrument Stage Check - Student maintained the Circling MDA and did not initiate a descent to the runway.

Comment: A pilot must maintain the circling MDA until in a position to make a normal landing. Assuming that a pilot is circling to a normal final leg distance of no more than 1 mile from the threshold, then the pilot would need to begin the descent while on the modified base leg of the circle. Descending any earlier would place the aircraft too low and may not have the appropriate clearance from obstructions in the circling area. Normal obstruction clearance in this area is only 300'.

Private Short Course Stage Check - Student did not maintain 75kias on final and at one point slowed to 65kias.

Comment: Proper approach speed is essential to making a stabilized approach. Allowing the airspeed to decay will also affect the rate of descent and/or glide path angle to the runway. This type of approach will usually lead into a shallow approach with high power. This is not considered stabilized. If the airplane is not stabilized in terms of configuration, air speed, rate of descent and centerline alignment then a go-around needs to be initiated.

Private Short Course Stage Check - Student did not perform maneuver checks prior to performing each maneuver.

Comment: Every examiner is expecting the student to perform some type of lookout maneuver. Normally this would be turns involving at least 180^o of heading change. Use of the Skywatch system should be used in conjunction with visually clearing the area.

Private Short Course Stage Check - Student did not initially retract the flaps to 50% during stall recovery.

Comment: Every pilot should be able to perform the Standard Stall Recovery. Pitching down, powering up and cleaning up should occur straight away in order to regain flying speed. The sooner that these are applied, the less altitude that a pilot will lose.

Private Short Course Stage Check—Student did not properly perform the ‘dead-cut’ checks. Magnetos were not switched to the ‘OFF’ position.

Comment: Cirrus has incorporated a magneto ‘dead-cut’ check into the shutdown check list. This will check for proper grounding of the magneto switch ‘OFF’ position, which should cut-out both of the magnetos and cause the engine to lose power. Return the key to the ‘BOTH’ position after noticing that the engine losses power.