



**FAA**  
**Aircraft Certification Service**

**SPECIAL AIRWORTHINESS**  
**INFORMATION BULLETIN**

**SAIB:** CE-09-40

**Date:** July 22, 2009

**SUBJ:** Flight Controls - Trailing Edge Flap Control System

*This is information only. Recommendations aren't mandatory.*

## **Introduction**

This Special Airworthiness Information Bulletin (SAIB) is to inform you, a registered owner or operator of **Commander Aircraft Company (Rockwell International) Models 112 and 112A airplanes**, of an airworthiness concern, specifically the potential for improper operation or installation of the wing flap switch.

At this time, this airworthiness concern is not considered an unsafe condition that would warrant an airworthiness directive (AD) action under Title 14 of the Code of Federal Regulations (14 CFR part 39).

## **Background**

We received a report of a fatal aircraft accident of an Aero Commander Model 112, which had just taken off and the wing flaps were found to be in the full down position. Photographs of the airplane, taken by a witness prior to the airplane's impact, revealed that the airplane's flaps were extended.

Upon review of National Transportation Safety Board (NTSB) records, there have been at least three Aero Commander 112 take-off and go-around accidents where the use of full flaps may have been a factor, and there have been three other issues regarding the switch used for the Aero Commander Model 112 flap switch (Commander Part No. 65853 or MS25201-6).

The following (which is taken from the Aero Commander 112's Flight Manual) describes the wing flap system and operation:

*The wing flaps are electrically operated... Flap position is controlled by a switch labeled "WING FLAPS" (Item 8 of Figure 1)... Flap position is electrically indicated by a gauge mounted above, and to the right of, the flap switch (Item 7 of Figure 1).*

*To extend the wing flaps, the wing flap switch must be depressed and held in the "DOWN" position until the desired degree of extension is reached by pilot reference to the flap position indicator. After the desired flap extension is obtained, releasing the switch allows it to return to the center **OFF** position. When flap retraction is necessary, place the switch in the "UP" position. The switch will remain in the "UP" position without assistance due to an over-center design within the switch.*

*With the flaps extended in flight, placing the flap switch in the "UP" position will retract the flaps in **approximately 6 seconds**. Gradual flap retraction can be accomplished by intermittent operation of the flap switch to the "UP" position. Normal full flap extension in flight will require **approximately 9 seconds**. After the flaps reach maximum extension or retraction, limit switches will automatically shut off the flap motor; however, when the flaps reach the fully retracted position, the wing flap switch should be manually returned to the center-off position....*

The Aero Commander Model 112 flap switch (Commander P/N 65853 or P/NMS25201-6) as explained above is a three-position switch; Up (**not spring loaded to re-center**), Center (power off), Down (**spring loaded to re-center**).

It is possible that the flap switch spring may break, thus not allowing the switch to re-center, providing a continuous contact closure, and driving the flaps to full down within 9 seconds. The flap indicator (as shown in Item 7 of Figure 1) is located outside the pilot's normal scan and may be obstructed by the copilot's yoke. This configuration can become critical to the performance of the airplane if the following occur:

- a pilot uses a timed process of holding and then releasing the flap switch;
- the pilot does not verify the flap position and / or the flap switch position; and
- the flap switch remains in the down position.

We have also become aware of incidences where a mechanic has installed the flap switch upside down, where **Up was spring loaded to center**, and **Down was not spring loaded to re-center**. Thus, while the flap switch is placed in a down position, the flap switch will stay down, and the flaps will continue down until they are fully extended. This can also become critical.

In reviewing the Aero Commander 112 and 112A Flight Manuals, there was no reference to cycling the flaps down and back up during the preflight inspection after the Power is ON.

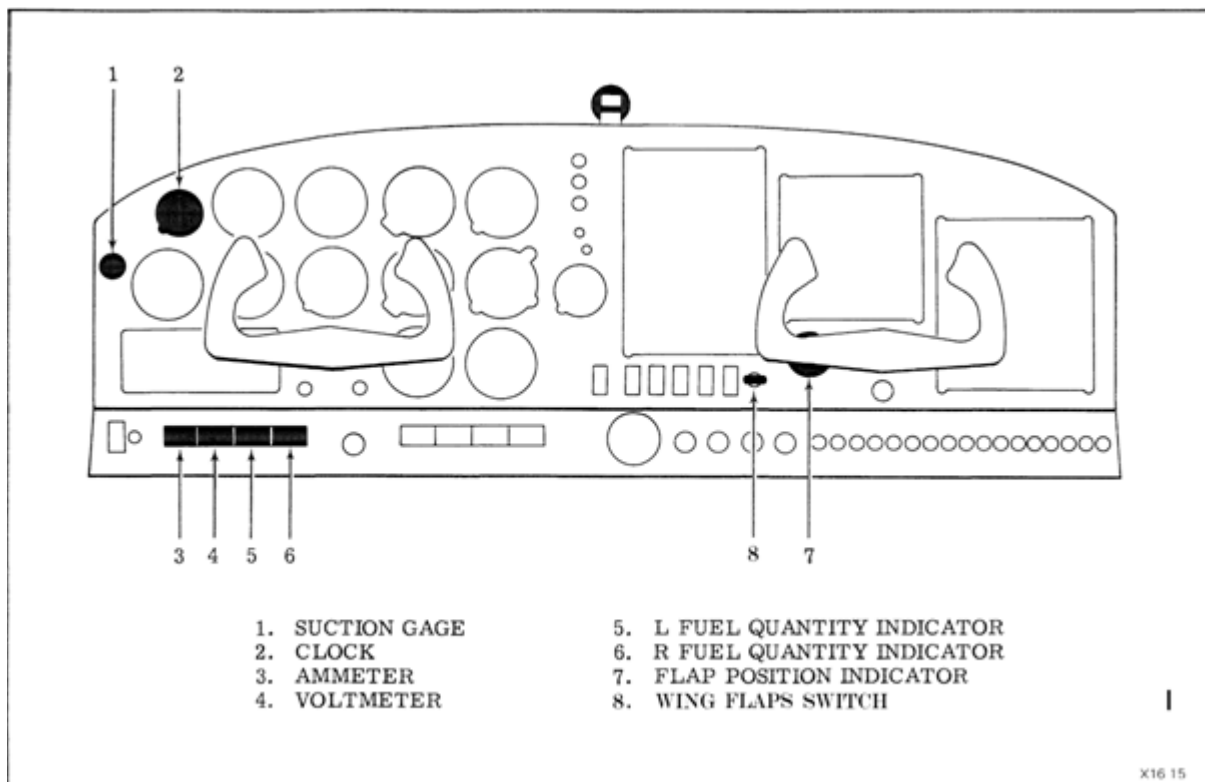


Figure 1  
(Flight Manual "Figure 3-7", modified to show flap switch.)

## **Recommendations**

We recommend the following:

- Cycle the flaps on preflight to assure the condition of the flap system is satisfactory for flight.
- Assure that the wing flap switch operates correctly, specifically the switch springs back to neutral after the pilot releases downward pressure, and the flaps stop the travel.
- Assure flaps are in the appropriate configuration for the specific phase of flight you are proceeding into, especially takeoff.
- To aid in the early detection of a potential issue with the flap switch and its operation, the incorporation of the following within your preflight procedures may be helpful:
  1. Under NORMAL PROCEDURES, AIRCRAFT INSPECTION (Visual Inspection Interior), Section 1 between (d.) “Fuel Quantity Gages – CHECK”, and (e.) “Master Switch – OFF”, insert: Check Flaps Down, Verify flap switch returns to center, Verify flap position by indicator.
  2. Add within NORMAL PROCEDURES, BEFORE STARTING ENGINE, after (9) “Parking Brakes ...”, Check Flaps UP, Verify flap switch remains up until manually returned to center, Verify or monitor flap position by indicator.
  3. Within the NORMAL PROCEDURES, TAKE-OFF Section’s “Normal Take-off”, “Short Field Take-Off”, “Soft Field Take-Off” procedure’s and just after the specific “(2) Wing Flaps –” check, add “Visually check flap indicator.”
- If any inoperative or improperly install switches are found, replace before the next flight.
- Report any inoperative switches and those improperly installed to the FAA point of contact listed below.

### **For Further Information Contact**

Richard Rejniak, Aerospace Engineer, FAA, Wichita Aircraft Certification Office, 1801 Airport Rd, Room 100, Wichita, Kansas, 67209; phone: (316) 946-4128; fax: (316) 946-4107; e-mail: richard.rejniak@faa.gov.

### **For Related Service Information Contact**

Commander Premier Aircraft CPAC, Inc., 2365 Rust Avenue, Cape Girardeau, MO 63703; phone: (866) 335-1006; fax: (573) 335-1009.