



"TAKE YOUR CESSNA HOME
FOR SERVICE AT THE SIGN
OF THE CESSNA SHIELD"

single-engine SERVICE LETTER

MARKETING DIVISION • CESSNA AIRCRAFT COMPANY
WICHITA, KANSAS 67201 • CABLE ADDRESS / CESSCO WICHITA

March 17, 1972

SE72-7

SUBJECT: OPERATIONAL FUEL MANAGEMENT PROCEDURE

AIRCRAFT AFFECTED: Model 172/Skyhawk ---- 1956 through early 1970 models
F172 --- 1963 through early 1971 models

Formation of vapor is a phenomenon common to all fuel systems under certain conditions. The amount of vapor formed increases under certain operating conditions, such as high altitude, high temperature, high humidity and variations in fuel composition. A combination of any of these conditions, of course, further increases the amount of vapor produced. As vapor forms in the fuel system, some returns to the tanks and is dissipated through the vent system, while the remainder is normally consumed by the engine.

Over the past several years scattered reports of power irregularities on the Model 172 have been received, when operating at high altitudes and under certain conditions of temperature and humidity. While many things can cause irregularities in engine power (such as carburetor ice, improper leaning, contaminated fuel, etc.) a build-up of vapor in the fuel system was suspected as a possible cause in some of the cases reported.


In the interest of providing a maximum of reliability and eliminating any possibility of irregular engine operation because of excessive vapor, an additional vent line was added to Model 172 production aircraft in November of 1969 beginning with serial number 172-58856 and F17200780.

At the same time, Service Letter SE69-26 dated December 21, 1969 announced this change and made service kits (SK172-31B, SK172-32) available for those owners desiring to incorporate the additional vent lines on the earlier airplanes. Experience in the past two years since the new line was installed on production aircraft, or with airplanes modified to incorporate the new line, has proven the vent line change to be completely effective in dissipating any vapor that might form in the fuel system. No reports have been received of vapor-caused irregularities on these airplanes.

More recently in order to better understand fuel system vapor characteristics, extensive testing has been conducted by Cessna on the Model 172 under conditions most conducive to vapor formation. During all of the flight tests conducted the problem of power irregularity resulting from fuel vapor was never duplicated.

Additional tests were conducted where air was purposely induced into the fuel system. During these tests the characteristics of the artificially induced air was observed using transparent vent lines and motion picture cameras.

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THERE ARE MORE CESSNAS FLYING THAN ANY OTHER MAKE

Where sufficient air was induced to cause irregular engine operation, tests were then conducted to determine what corrective action was necessary to re-establish normal engine operation.

From these tests it was determined that the corrective action is as simple as switching from one tank to the other, or in the case of operation on both tanks, switching first to one tank and then back to the opposite one.

Precautions under cruise conditions can be simply taken by single tank operation.

Because of this new knowledge, the following are being provided:

1. FUEL SELECTOR VALVE PLACARD

A placard, giving the following operational fuel management technique, is to be placed on the fuel selector valve.

SWITCH TO SINGLE TANK OPERATION IMMEDIATELY UPON REACHING
CRUISE ALTITUDES ABOVE 5000 FEET.

2. OWNER'S MANUAL INSERT

An Owner's Manual insert giving the above placard information plus corrective action to be taken should power irregularities occur.

SUMMARY:

The following summarizes the activities and the knowledge gained in relation to the operation of the Model 172 fuel system.

1. The original fuel system has been highly reliable with no reports of any kind received for the first several years of operation.
2. Power irregularities from a variety of causes can all appear the same to the pilot and may or may not be caused by fuel vapor.
3. Extensive tests of the airplanes have not duplicated the reports which were attributed to fuel vapor.
4. No reports have been received of alleged fuel vapor problems on airplanes that have the additional vent line installed.
5. Should fuel vapor actually be the cause of engine irregularity, simple switching of the tanks will solve the problem.

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RECOMMENDATIONS:

In view of the preceding information, it is recommended that:

1. Owners and operators immediately affix the placard(s) to the fuel selector valve (as shown on Page 4 of this Service Letter) and adhere to the simple tank switching procedure during all future operations.
2. Owners and operators carefully study the Owner's Manual insert and affix it to the last page of Section 2.
3. Owners and operators who have experienced the symptoms of vapor or who consistently operate under conditions of high temperature, high humidity, and high altitude, install the vent kits (shown below) to eliminate any possibility of excess vapor formation.

<u>Kit Number</u>	<u>Description</u>	<u>Special Reduced Price</u>
SK172-31B	Vent Tubes --- Standard Fuel Tanks	\$23.80 (F)
SK172-32	Vent Tubes --- Long Range Fuel Tanks	\$17.10 (F)

NOTE: Installation of vent tubes relieves the necessity for 1 and 2 above (placard and Owner's Manual insert).

4. Because this operational fuel management procedure involves more frequent switching of the fuel selector valve, it is important that the valve be inspected and maintained as detailed in Service Letter SE71-10, dated April 9, 1971.

REMARKS:

A copy of this Service Letter and required placard and Owner's Manual insert have been mailed to all affected 172/Skyhawk owners presently on the FAA Registered Owners List.

If required, additional placards and inserts may be obtained through the Cessna Dealer Organization at no charge.

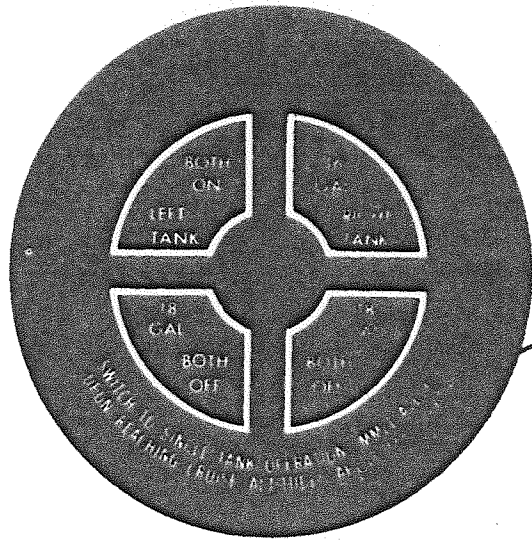
(Owner Notification System - No. 2)

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ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

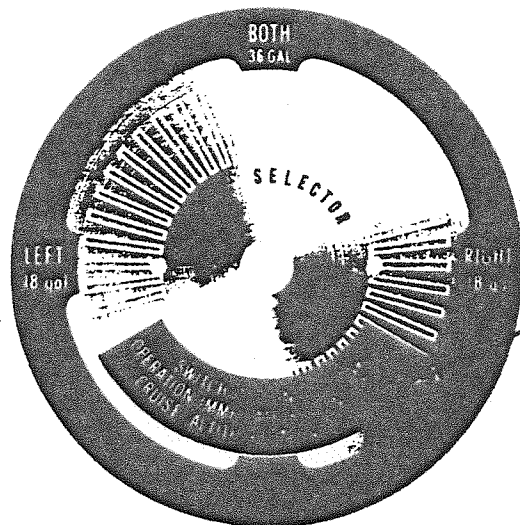
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THE CESSNA AIRCRAFT COMPANY



17228000 THRU 17251822
(1956 THRU 1964 MODELS)

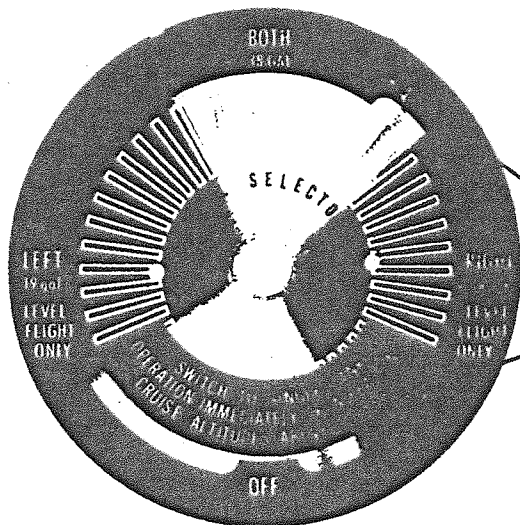
PART NUMBER 0509021-1 PLACARD



17251823 THRU 17256512
(1965 THRU 1967 MODELS)

F1720001 THRU F1720446
(1963 THRU 1967 MODELS)

PART NUMBER 0509021-2 PLACARD



17256513 THRU 17258856
(1968 THRU MID-1970 MODELS)

F1720447 THRU F1720780
(1968 THRU MID-1971 MODELS)

PART NUMBER 0509021-3 PLACARD

PART NUMBER 0509021-2 PLACARD

Figure 1. Fuel Selector Valve Placard Locations.

MODIFIED FUEL MANAGEMENT PROCEDURES

With a combination of highly volatile fuel, high fuel temperature, high operating altitude, and low fuel flow rate in the tank outlet lines, there is a remote possibility of accumulating fuel vapor and encountering power irregularities on some airplanes. To minimize this possibility, the following operating procedures are recommended:

- (1) Take-off and climb to cruise altitude on "both" tanks.
(This is consistent with current recommendations.)
- (2) When reaching cruise altitude above 5000 feet MSL, promptly switch the fuel selector valve from "both" tanks to either the "right" or "left" tank.
- (3) During cruise, use "left" and "right" tank as required.
- (4) Select "both" tanks for landing as currently recommended.

POWER RECOVERY TECHNIQUES

In the remote event that vapor is present in sufficient amounts to cause a power irregularity, the following power recovery techniques should be followed:

OPERATION ON A SINGLE TANK

Should power irregularities occur when operating on a single tank, power can be restored immediately by switching to the opposite tank. In addition, the vapor accumulation in the tank on which the power irregularity occurred will rapidly dissipate itself such that that tank will also be available for normal operation after it has been unused for approximately one (1) minute.

OPERATION ON BOTH TANKS

Should power irregularities occur with the fuel selector on both tanks, the following steps are to be taken to restore power:

- (1) Switch to a single tank for a period of 60 seconds.
- (2) Then switch to the opposite tank and power will be restored.