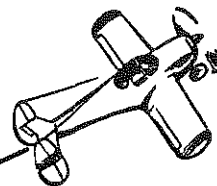


Ercoupe MEMORANDUM

ERCOUPE
SERVICE
MEMORANDUM

No. **31**

SUBJECT: Fuel System Operation



1. The fuel system in the Ercoupe was designed to incorporate simplicity and safety in operation, however, due to unforeseen operational difficulties and failures which have occurred in the field, it has now been deemed necessary to redesign certain parts of the system. The basic operation has, however, remained unchanged. In order that there is a complete understanding of changes, operation and maintenance of the fuel system, the following discussion is supplied.

2. The fuel system is entirely automatic as long as the fuel pump is operating. In the event of a fuel pump failure, there is no fuel being transferred from the wing tanks to the fuselage tank. After such a failure, the fuel available for continued engine operation is limited to the capacity of the fuselage tank.

3. Subsequent to Serial Number 2623, fuselage and wing gas tanks constructed of aluminum have been employed in the Ercoupe. This change was made to improve the quality of the tanks, render more satisfactory service, and to save weight. A description of both the template tank and the aluminum, will be discussed in this memorandum. They will be referred to as a "template tank" and "aluminum tank," as the case may be, even though template tanks have been superseded by stainless steel for replacement purposes.

Wing Tanks:

4. The capacity of either type wing tank is nine (9) gallons of fuel. The two sides are inter-connected with aluminum tubing. The fuel pump transfer suction line is connected to that inter-connection with a "tee" fitting. A shut-off valve is provided in the pump suction line above this tee. This valve and tee are located in front of the right hand seat, near the floor. It should be kept in the open position, except for emergencies such as line failure.

5. Tanks fabricated of stainless steel are being shipped on parts orders in lieu of the template tanks. The stainless steel tanks are interchangeable with the template tanks. All Ercoupes Serial Numbers 813 to 2622 inclusive, can be altered by certain modifications to take aluminum wing tanks. This installation will be described in detail, in a separate publication.

6. The fuel quantity gauge on the template tank installations is located in the right wing tank and

it consists of a float type indicator, encased in a plastic tube. It is marked full, half full, and empty. This gage may give false readings due to improper venting, chiefly the error is reading half full in flight when more than half full of gas. This can be remedied on Ercoupes Serial Numbers 513 to 2623, by complying with the following procedure:

Affected part—415-48089—Vent Assembly

1. Remove 6 x 32 screw and nut which attaches vent to the right side of the fuselage.
2. Break the vent loose from the gage tube by turning the vent.
3. Realign the vent, by lowering the forward end, until it lies in a position from 40° to 45° with relation to the external longeron.
4. Drill a No. 28 hole through the fuselage skin, using the vent plate as a guide.
5. Insert the same 6 x 32 screw that was removed in operation No. 1.
6. Reseal vent to plastic gage tube by using clear nitrate dope, or any suitable cellulose cement. (See illustration No. 1.)
7. Close the original hole with a rivet.

The vent tube (part No. 415-48089) may be installed on Ercoupes prior to Serial Number 513. The following procedure may be used to make the installation:

1. Mark hole center on fuselage skin and wing tank gage tube.
 - a. Locate vertical center line of gage tube. Transfer center line to fuselage skin.
 - b. Draw line 1/4" below the top of the gage tube. Transfer it to the fuselage skin.
2. Remove gage from the right wing tank.
3. Drill hole (No. 12 drill) in the fuselage skin at point located in operation No. 1.
4. Drill hole (No. 12 drill) in the gage tube, 1/4" below top.
5. Replace gage tube on tank.
6. Insert vent through outside of ship and follow directions 3, 4, 5, and 6 of the procedure used for aligning the vent.

7. The fuel quantity gage in the aluminum wing tank is different from the one used in the ternplate tank. The new gage is mechanical and is operated by a float resting on the surface of the fuel, which moves a marked dial, showing the amount of fuel in the tank. This gage is located in the left wing tank where it extends into the cabin forward of the seat.

8. Reports from the field state that these gages can become inoperative due to the rusting of the working parts in the gage. It is recommended that all of the new type fuel gages be periodically inspected and if, after such inspection, the gage is found to be rusted, it should be replaced or repaired. If the latter procedure is desirable, the following information is supplied to aid in making repairs.

1. Remove the gage from the tank, which gage is held in place by 12 screws, (AN 520-4-6).
2. Disassemble the gage and remove all of the rust from the affected parts.
3. Paint these parts with zinc chromate or spar varnish, and allow paint to dry thoroughly.
4. Reassemble the gage.
5. Prior to replacing the gage in the tank, remove all traces of the original sealer, (EC-570, product of the Minn. Mining and Mfg. Corp.) from the parting surfaces of the gage and the tank. If the original material used for a sealer is not available, Permatex or similar gasket cement may be used.
6. Replace the gage, using some of the sealing cement to secure screws.

9. It has been the experience of some Ercoupe owners and operators that line mechanics put the wing tank caps on backwards. To prevent malfunctioning of the fuel system, it is imperative that the caps be put on the tanks with the vent hole to the front. This provides venting of each wing tank and will prevent syphoning or unequal flow of the fuel. Unequal flow may result in the fuel pump being unable to transfer all of the fuel from the wing tanks to the fuselage tank.

10. It is recommended that the wing tank cap be marked in a manner to indicate proper positioning. A painted red line on the wing behind the cap to match a painted sector on the cap should be used. The painted sector on the cap should extend from the point of engagement to the locked position, as indicated on accompanying sketch No. 2.

11. On Ercoupes subsequent to Serial Number 2623, the filler neck and cap combination is foolproof and the caps cannot be put on backwards.

12. The sealing of the cap gasket also affects proper venting. If difficulty is experienced in attaining a good seal of the gas cap, which is an un-machined casting, the sealing surface may be filed smooth and the gasket cemented to this surface. Should there be an excessive amount of solder on the filler neck sealing surface, it may also be removed by filing.

13. A more suitable gasket, made from a synthetic rubber "Neoprene" (sponge rubber) will be available soon. The oil sump gage gasket (Continental Motors Corp. Part No. 22404) has also been found to provide a satisfactory substitute for our gas tank cap seal.

14. The capacity of the ternplate fuselage tank is five gallons; the aluminum fuselage tank will hold six gallons of fuel. The fuselage ternplate and aluminum tanks are not interchangeable. However, stainless steel tanks can be installed in place of the ternplate fuselage tanks, without modification, and should be so used. (See Service Policy Letter A-4).

15. The line that feeds fuel, by gravity, from the fuselage tank to the carburetor is connected to the fuselage tank through a shut-off valve and tank finger strainer. This valve on the ternplate tank has a position selector on the instrument panel, whereas the valve on the aluminum tank may be turned on or off by reaching under the left side of the instrument panel. This valve is for emergency purposes and should not be used to shut off the engine.

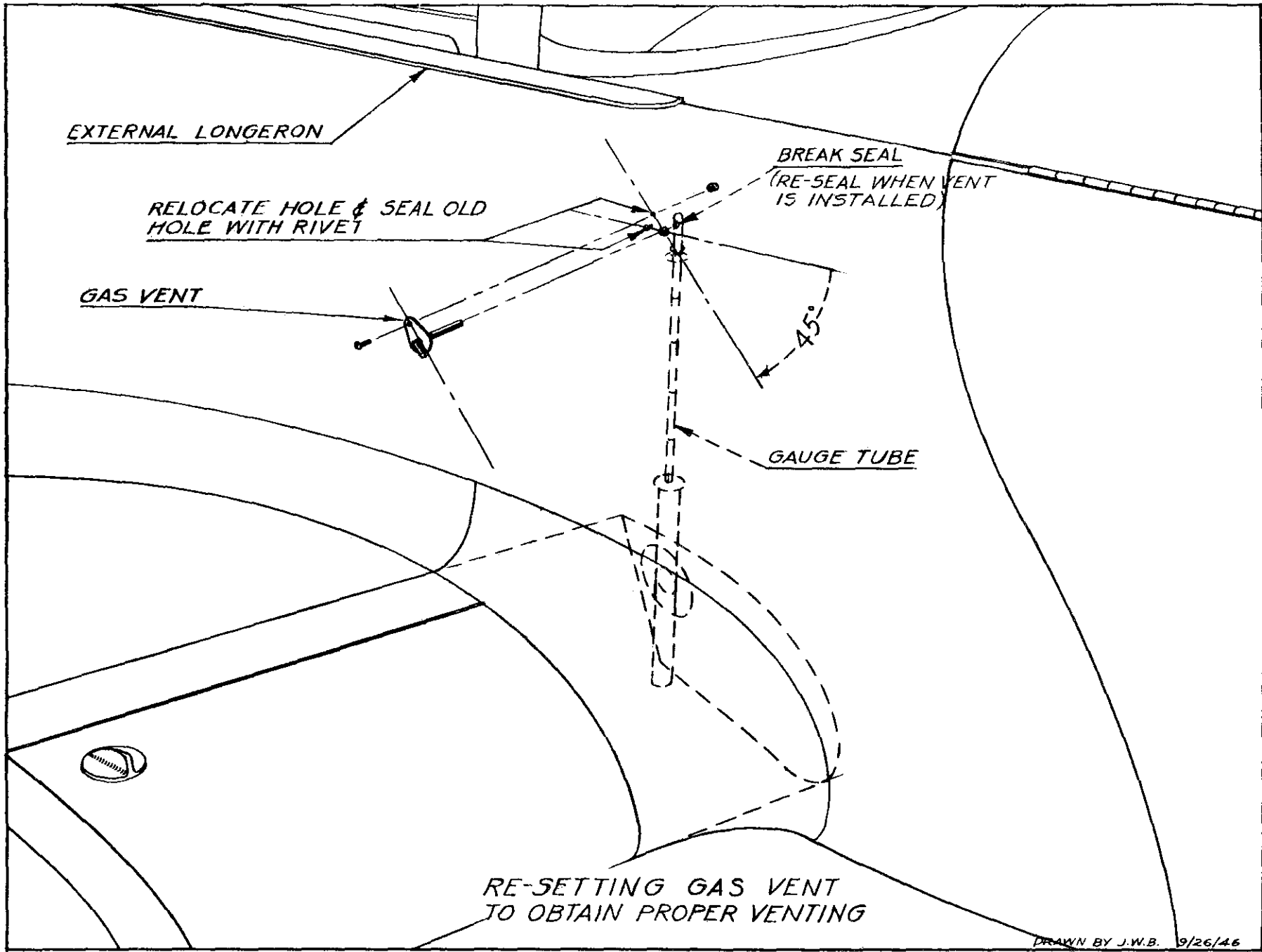
FUEL PUMP, FILTER, AND PLUMBING:

16. The fuel in the wing tanks is transferred to the fuselage tank by a fuel pump that is mounted on the engine. A restricted fitting is located on the outlet side of the fuel pump, and limits the output of fuel to a quantity slightly in excess of the requirements of full throttle operation.

17. A return, or overflow line is provided in the fuselage tank. This line will return to the wing tanks any fuel that is pumped into the fuselage tank in excess of its capacity. Excess fuel is returned to the right wing tank with the ternplate fuselage tank and to the left wing tank with the aluminum fuselage tank.

18. A sediment bowl type filter is located in the gravity fuel feed line. Its function is to accumulate any water or foreign matter that might otherwise enter the carburetor. The bowl is detachable for cleaning. This should be included on the daily inspection sheet. The bowl should be safetied after cleaning.

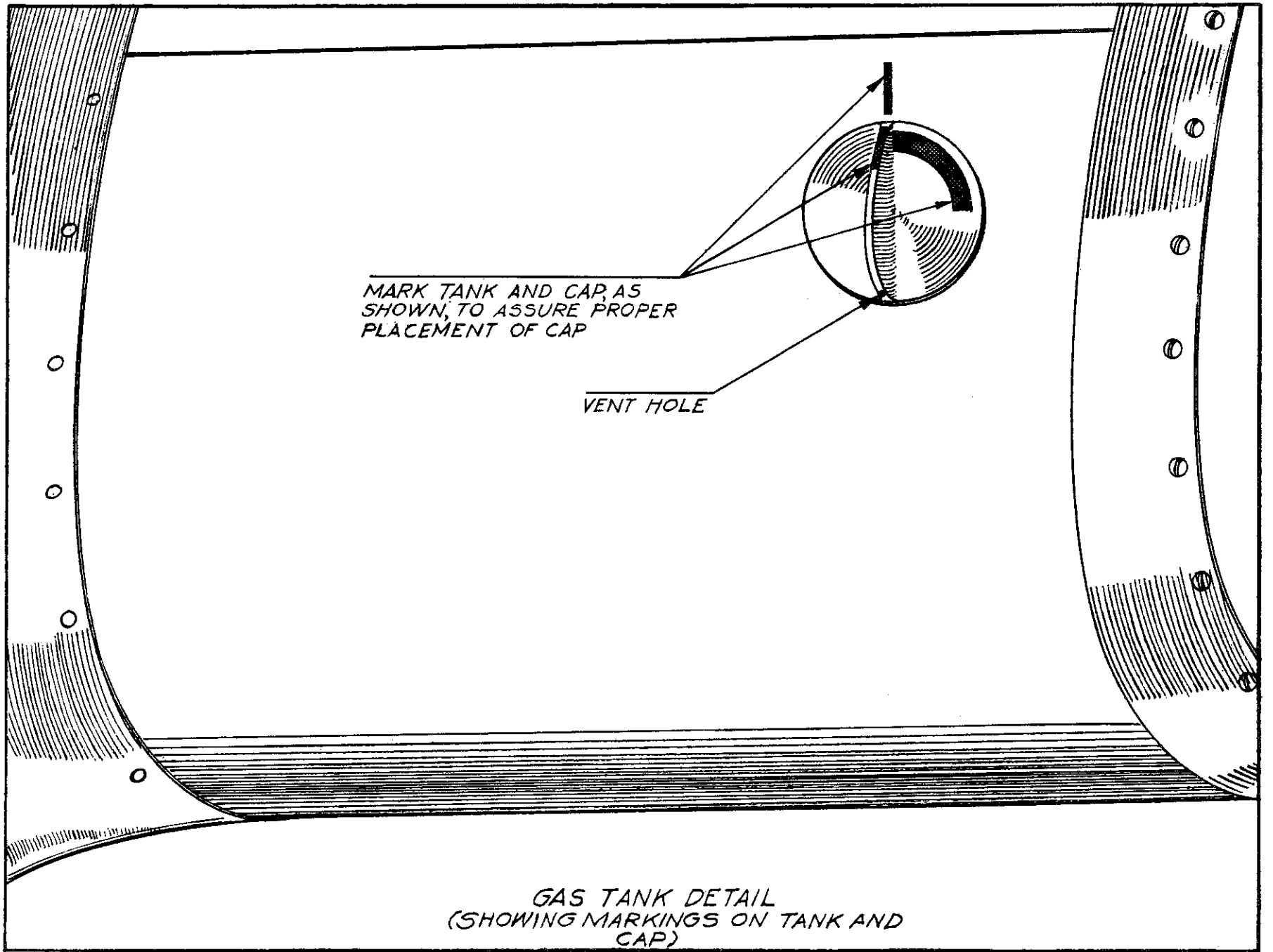
FIG. #1



DRAWN BY J.W.B. 9/26/46

ERCOUPE SERVICE DEPT MEMORANDUM
NUMBER 51

FIG. # 2



MARK TANK AND CAP, AS SHOWN, TO ASSURE PROPER PLACEMENT OF CAP

VENT HOLE

GAS TANK DETAIL
(SHOWING MARKINGS ON TANK AND CAP)