

**COMPARED TO OTHER WWII FIGHTERS, THE MUSTANG HAD A VERY BASIC FUEL SYSTEM OPERATION. YET, THERE WERE ENOUGH ACCIDENTS FOR NAA TO ISSUE THE FOLLOWING BULLETIN**

In response to requests from the field for information on the P-51B and P-51C fuel system, *Weekly Service News* (EDITOR'S NOTE: This was issued on 2 October 1943) presents the following article.

The Merlin engine on the P-51B/P-51C is supplied with fuel from two main self-sealing tanks in the wings, and from combat tanks and ferrying tanks when required. Each main fuel tank is provided with a booster pump, which is controllable from a switch located in the pilot's compartment (FIGURE 1).

The booster pumps may be used individually to select the tank from which fuel is desired. A slide-type check valve prevents cross-flow from one tank to the other. Fuel is supplied from the main system in the booster pump to a check valve. The two systems are joined at the check valve, and a line extends from the check valve to a selector valve.

From the selector valve a line extends through a fuel strainer to an engine-driven Type G-9 fuel pump mounted directly on the engine. This selector valve selects from either combat tank or at the main tanks collectively.

Provisions have been made on the P-51B/P-51C series for installation of droppable ferrying tanks or combat tanks; one mounted on each wing bomb rack (EDITOR'S NOTE: This was before the installation of the fuselage fuel tank). These provisions do not alter the basic fuel system, as the additional tanks are attached to fuel lines already provided. The fuel from these tanks passes through the fuel system selector valve and on to the main fuel lines.

The auxiliary tanks are not interconnected and it is necessary to switch from one tank to the other.

Because of several reported failures caused by a lack of understanding on the part of the pilots, the operating instructions for P-51B/P-51C series with long-range equipment is given. During



FIGURE 1: The switches for fuel booster pump operation.



FIGURE 2: Main fuel control showing the three basic positions.

engine warm-up, the functioning of all the tanks should be tested by switching the fuel valve (FIGURE 2) to each tank for a period sufficient to ensure that the fuel from the tanks has an opportunity to flow to the engine.

Proper performance of the engine during this test will indicate that the fuel system (FIGURE 3) is free from water and dirt and is functioning properly in all fuel valve locations. The fuel selector valve position must be determined by click and feel as well as the setting indicated on the dial.

### OPERATING INSTRUCTIONS

**TAKEOFF:** Turn the fuel tank selector valve to main fuel tanks, then turn the left booster pump to emergency. Be sure the booster pump is *on* emergency and operating properly.

Test flights have shown that an unusual condition exists on airplanes equipped with long-range ferrying tanks when the landing gear is raised or lowered.

With the gear in the down position, the airflow between the landing gear fairing and the ferrying tanks creates a side pressure of sufficient force to cause the landing gear down-lockpins to bind. Therefore, to retract the landing gear under these conditions, the pilot must first pull up on the landing gear handle and then *yaw the airplane from side to side* in order to relieve this air pressure sufficiently to permit the down-lockpins to be released.

**WARNING:** Do not under any circumstances remove the lock



At the Dallas facility, a P-51C is prepared for its first flight test. Depending on schedules, completed aircraft were sometimes flown with incomplete factory schemes. As can be seen, this Mustang has yet to receive national insignia and other standard markings. Zinc chromate areas would be removed prior to USAAF delivery.

bar from the flap control handle and attempt to lower the flaps over 20-deg when the droppable ferrying tanks are installed, as serious structural damage to the airplane would result.

**IN FLIGHT:** Turn the fuel selector valve from *main fuel tanks* position to either right or left droppable tank position. The booster pumps should be *off* when the auxiliary system is in operation. Alternate both tanks in consuming the fuel, to prevent excessive wing heaviness. When the entire auxiliary supply of fuel has been consumed, turn the fuel system selector valve to *main fuel tanks* and the desired booster pump to *normal*.

**NOTE:** The pilot must keep in mind that it requires approximately ten-seconds for the fuel from the second auxiliary tank to reach the engine after the fuel from the other auxiliary tank has been depleted.

**LANDING:** A landing must never be attempted while the engine is operating on fuel from the auxiliary tanks. Make sure that the selector valve is in the *main fuel tanks* position before landing. Be sure the desired booster pump is on *normal*, as a result of thorough flight tests, it is known that when the landing gear is lowered, pressure between the landing gear fairing and the ferrying tanks will prevent the gear from fully lowering into the required position to permit the down-lockpins to engage. To lower the landing gear under these conditions, the pilot must first push down on the landing gear handle and then *yaw the airplane* until the down-lockpins are engaged.

**IMPORTANT:** In case a forced landing on water is necessary, tanks should be dropped prior to landing if time permits. **MI**

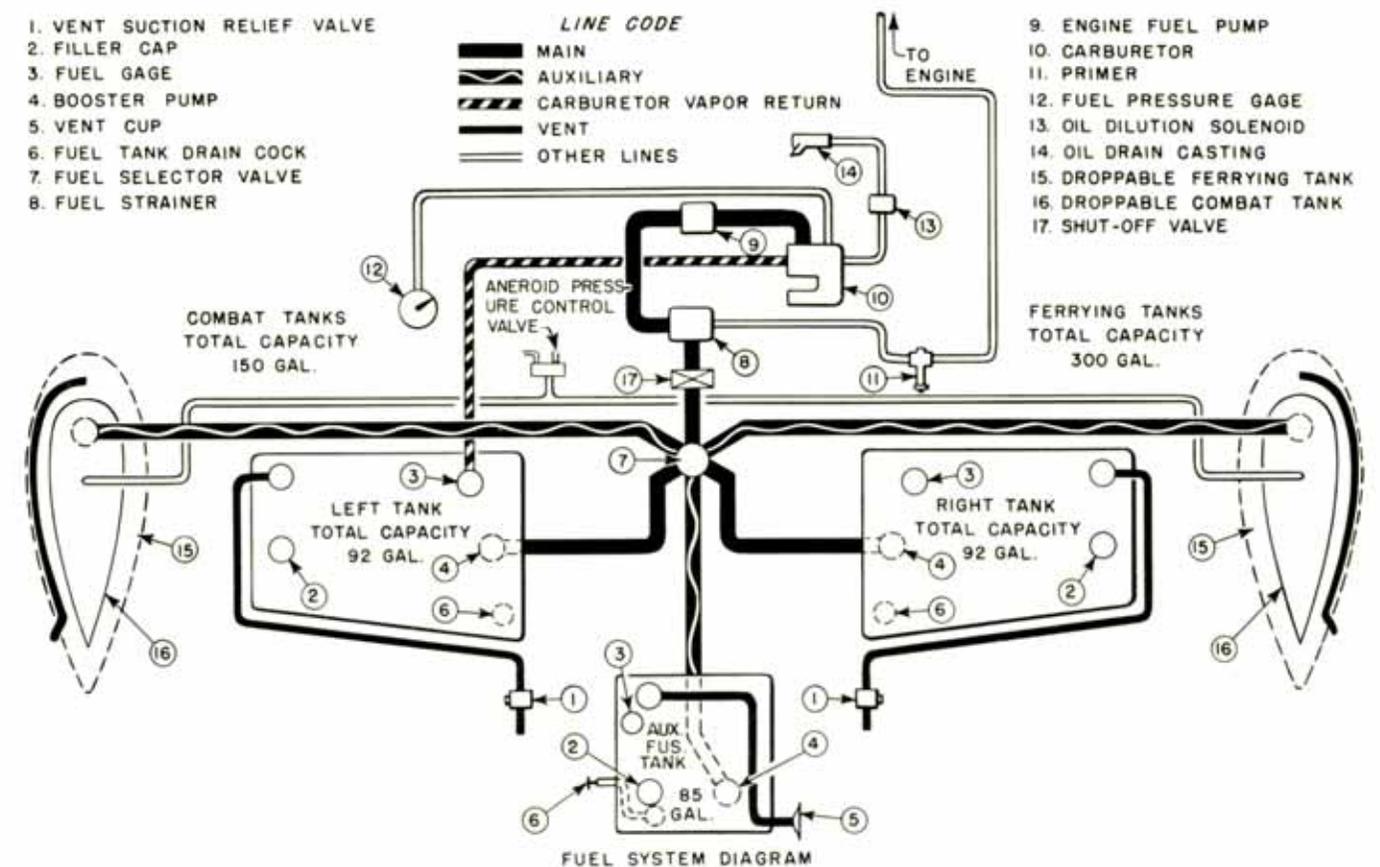


FIGURE 3: Schematic showing the basic functions of the main fuel system.