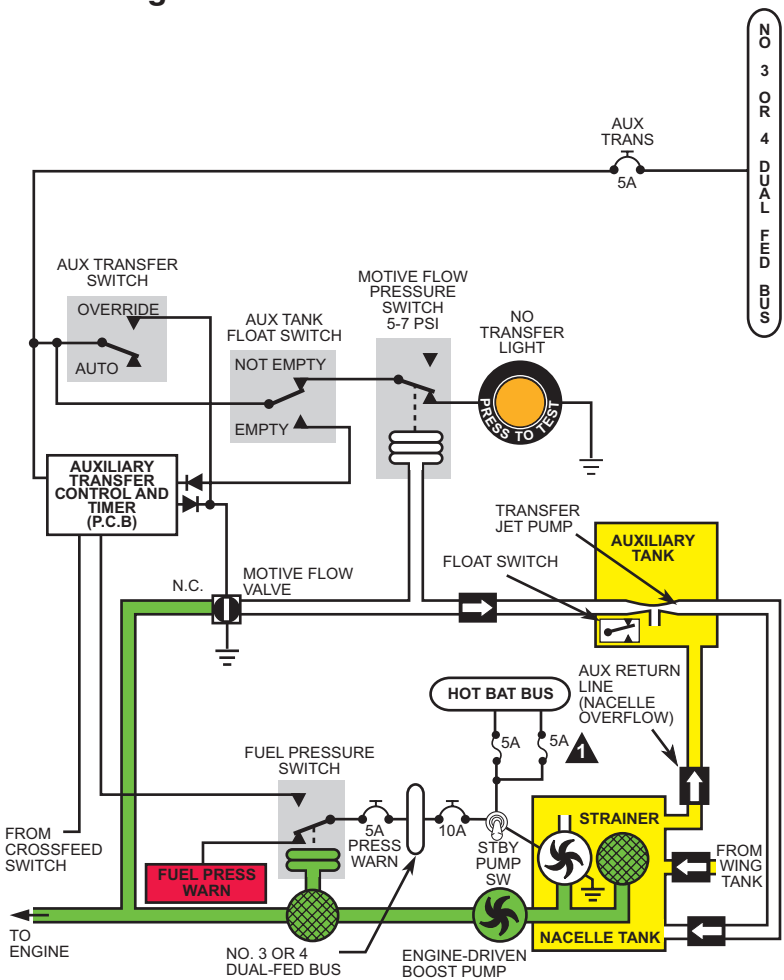
Auxiliary Fuel Transfer System

Before Engine Start – No Transfer



FUEL UNDER PRESSURE

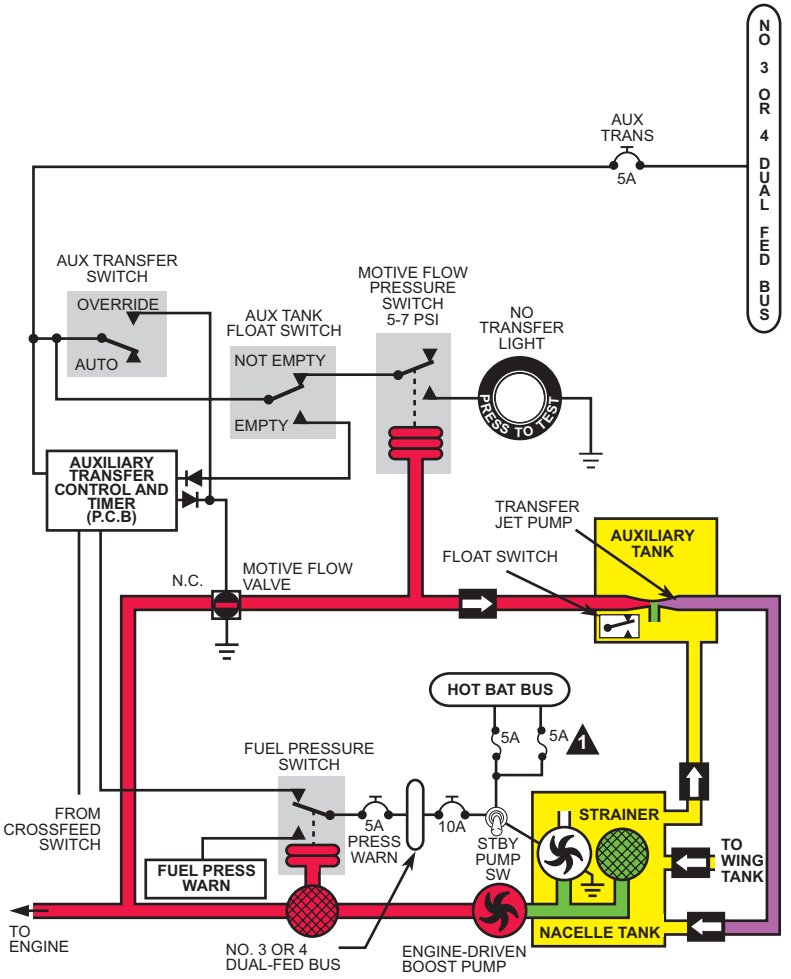
STATIC PRESSURE

FUEL IN STORAGE

1 ON BB-1097, BB-1095 AND PRIOR

Auxiliary Fuel Transfer System

After Engine Start – Fuel Transferring



FUEL UNDER PRESSURE

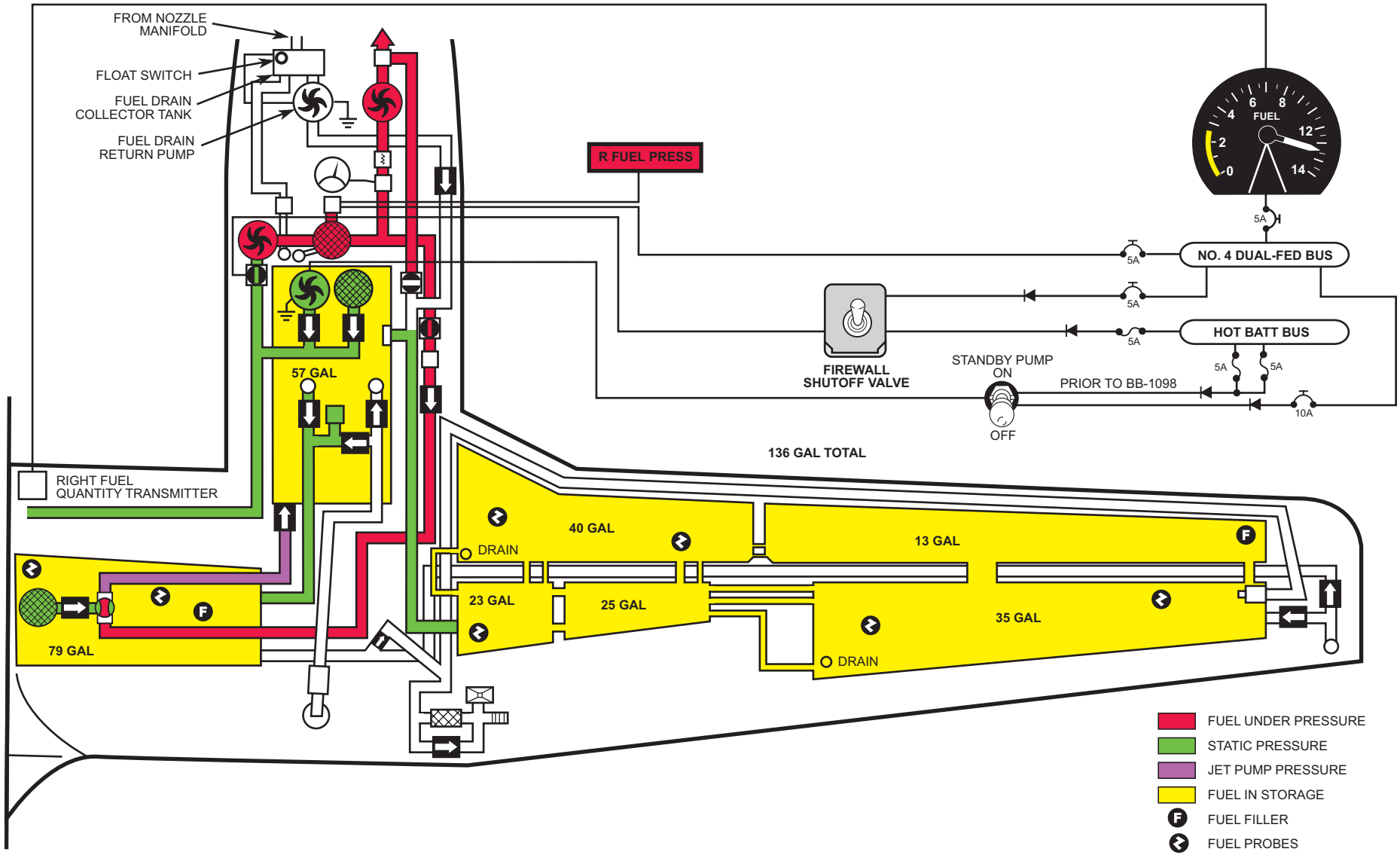
STATIC PRESSURE

JET PUMP PRESSURE

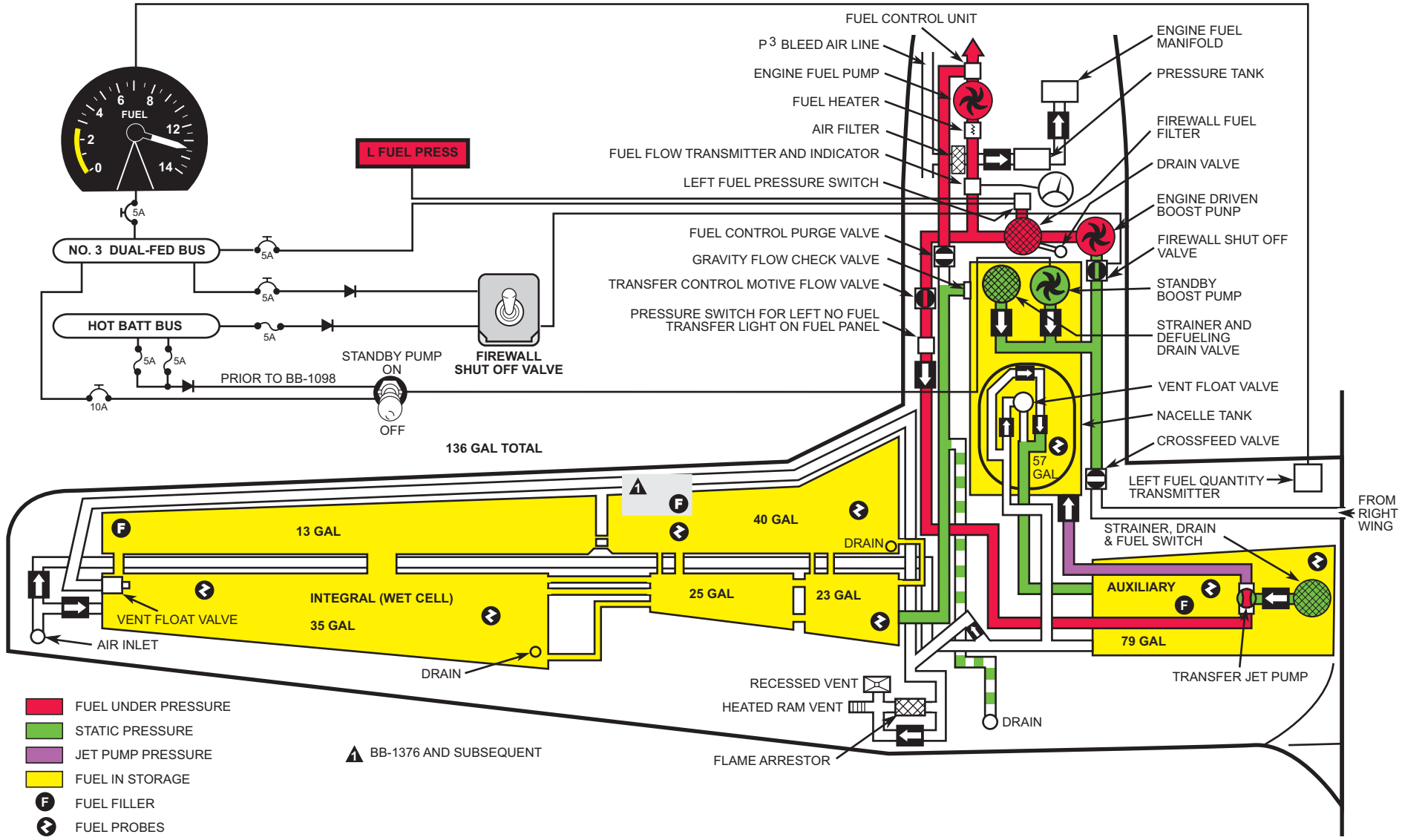
FUEL IN STORAGE

1 ON BB-1097, BB-1095 AND PRIOR

Fuel System
King Air 200



Fuel System
King Air B200



Fuel

The airframe fuel system includes fuel storage, venting, indicating, and distribution. Refer to the Powerplant chapter for engine fuel and fuel control systems. Refueling is covered in the Servicing chapter.

Storage

Wing and auxiliary fuel tanks hold a usable total of 544 or 650 U.S. gallons (with tip tanks). Each wing tank consists of five interconnected tanks and a nacelle tank behind the engine. These tanks are either bladder or integral type. Fuel from the wing tank gravity feeds into the nacelle tank.

From the nacelle tank, an engine-driven fuel boost pump supplies fuel under pressure to the engine through a firewall fuel shutoff valve. Placing a firewall shutoff valve switch in the CLOSED position electrically drives the valve closed.

The auxiliary fuel tank consists of a center section tank in each wing root. Because these tanks are lower than the rest of the fuel tanks, motive flow fuel powers a jet transfer pump to move fuel to the nacelle tank.

Optional wing tip tanks, which gravity drain into the outboard wing tank, are available.

Drain valves at tank low points permit fuel sampling and water removal. These drains are forward of the wheel well (nacelle tank), outboard of the nacelle (leading edge tank), halfway out on the wing (integral tank), and on the middle of the wing root (auxiliary tank). A drain valve permits removal of accumulated water from the gravity feed line that connects the wing and nacelle tanks. The optional tip tanks also have a drain valve at their lowest point.

Indicating

A capacitance-type fuel indicating system provides accurate measurement of fuel quantity regardless of fuel temperature and type. If installed, the tip tank fuel quantity system uses a simple float type quantity transmitter and a separate set of gages.

As fuel level rises and falls in a fuel tank, probe capacitance increases and decreases proportionately. The fuel indicating system then produces an output current to drive the fuel gages. Normally, the fuel gages display main tank quantity in pounds. Placing the fuel selector switch in AUXILIARY displays auxiliary fuel tank quantity.

For tip tank quantities, a fuel quantity transmitter provides a resistance value that corresponds to tank quantity. As fuel tank level falls from full, resistance drops until at the empty level there is near zero resistance. This output drives the associated TIP TANK FUEL gage.

Venting

The wing and auxiliary fuel tanks vent to atmosphere through a pair of vents on the wing underside near the engine nacelle. Each pair of vents has an unheated recessed vent and a heated ram air vent. If one vent clogs, the other continues to provide tank venting.

The outer wing tanks vent to each other and then to atmosphere through a vent float valve near the wing tip and a pair of vents on the lower wing surface. The float valve connects to a vent line running the length of the outboard wing section. The vent line then connects to an unheated recessed vent through a check valve and to a heated ram air vent through a flame arrestor.

An air inlet and two suction relief valves in the wing tip prevent fuel siphoning through the venting system. One of the pressure relief valves connects to the air inlet while the other one connects the float valve to a siphon break line.

The nacelle tank also has a vent float valve and two suction relief valves. From the float valve, a vent line connects this tank to the two wing vents.

When the auxiliary fuel tank is full, its float-operated check valve closes to prevent fuel loss through the venting system. The tank then vents to atmosphere through the vent line connected to the integral wing tank. As the fuel level in this tank drops, the check valve opens and the tank vents directly through the two wing vents.

The optional tip tanks vent through the wing system. Each tip tank has a vent float valve that closes when the tank is full. As fuel level drops, the float valve opens and the tank vents through the wing vent lines.

Tank	Gallons	Pounds	Liters	Kilograms
Left Auxiliary	79	529	299	1418
Left Main	193	1293	731	3466
Right Auxiliary	79	529	299	1418
Right Main	193	1293	731	3466
Total Usable	**544**	**3644**	**2060**	**9768**

Table F1; Usable Fuel Capacity

Tank	Gallons	Pounds	Liters	Kilograms
Left Auxiliary	79	529	299	1418
Left Main	193	1293	731	3466
Left Tip Tank	53	355	200	952
Right Auxiliary	79	529	299	1418
Right Main	193	1293	731	3466
Right Tip Tank	53	355	200	952
Total Usable	**650**	**4354**	**2460**	**11672**

Table F2; Usable Fuel Capacity – Aircraft with Tip Tanks

Distribution

Fuel either gravity flows from the wing tank or is pumped from the auxiliary tank to the nacelle tank. Each nacelle tank supplies fuel to its engine through the firewall fuel shutoff valve.

During engine operation, the engine's fuel boost pump draws fuel from the nacelle tank and provides it under pressure to the engine. If this pump fails, an electrically driven standby fuel boost pump in the nacelle tank provides pressurized fuel. The standby boost pump also moves fuel during crossfeed.

With the respective STANDBY PUMP switch on, 28V DC from the No. 3 Dual-Fed (left pump) or No. 4 Dual-Fed (right pump) powers the standby boost pump. If power is not available from these buses, the Hot Battery bus can also power the standby pumps. On **aircraft BB-1096, 1098 and subsequent**, the standby pumps are not on the Hot Battery bus.

A jet transfer pump transfers fuel from the auxiliary tank to the nacelle tank. With the engine-driven or standby fuel pumps operating, motive flow fuel operates the transfer pump. Placing an AUX TRANSFER switch in AUTO powers the associated motive flow valve after a 30 to 50 second delay. The motive flow valve opens directing pressurized fuel from the engine-driven or standby fuel pump to the jet transfer pump. The transfer pump moves fuel from the auxiliary tank to its nacelle tank. Excess fuel delivered by the transfer pump flows back into the auxiliary tank through a float valve and overflow line at the top of the nacelle tank.

A pressure switch downstream from the motive flow valve monitors fuel pressure in the motive flow fuel supply line. If a boost pump fails and fuel pressure fails to reach 6 ±1 PSI with fuel in the auxiliary tank, the pressure switch illuminates the NO TRANSFER light. Place the AUX TRANSFER switch in OVERRIDE bypasses the control circuitry to open the motive flow valve.

Once the auxiliary tank empties, the tank's float switch provides an empty signal to the control circuitry. After a 30 to 50 second delay, the motive flow valve closes.

A single-valve crossfeed system supplies fuel from an inoperative engine's tanks to the opposite engine. Its use is restricted to single engine operation. With an inoperative right engine, for example, place the CROSSFEED FLOW switch to the left. This action opens the crossfeed valve, energizes the right engine's electric boost pump, and closes the left engine's motive flow valve. Fuel under pressure then moves from the right side to the left side.

Fuel Systems

Main Fuel System

Power Source	Hot Battery bus (**BB 1097, 1095 and prior**) or No. 3 Dual-Fed bus Left standby pump Hot Battery bus (**BB 1097, 1095 and prior**) or No. 4 Dual-Fed bus Right standby pump Hot Battery bus and/or No. 4 Dual-Fed bus Crossfeed valve No. 3 and No. 4 Dual-Fed buses Firewall shutoff valves (L/R)
Distribution	Wing tanks (gravity feed) to nacelle tank Nacelletank to engine
Control	Switches STANDBY PUMP CROSSFEED FIREWALL SHUTOFF VALVES CROSSFEED (closes motive flow valve on receiving side, opens crossfeed valve, turns on standby boost pump on feeding sides, and eliminates crossfeed annunciator)
Monitor	Main fuel gages Fuel flow indicator Annunciators FUEL CROSSFEED FUEL PRESS
Protection	Circuit breakers Check valves Fuses Fuel drain system Fuel filters (pressure switches) Vent system Oil/Fuel heat exchanger

Auxiliary Fuel System

Power Source	Motive flow
Distribution	Auxiliary (center) tank (automatic transfer to nacelle tank with AUX TRANSFER switch in AUTO)
Control	Switches AUX TRANSFER OVERRIDE-AUTO (opens motive flow valve)
Monitor	Aux fuel gages NO TRANSFER lights
Protection	Circuit breakers Fuses