The T-6B contains 3 integral fuel tanks (2 wing tanks, 1 collector tank) to store approximately 1,100 lbs of usable fuel.

The T-6B can be fueled using single-point pressure refueling (primary method), which fuels both tanks simultaneously in 3-5 minutes or using over-the-wing gravity fueling (allows approximately 50 lbs more fuel per wing).


The T-6B contains an Automatic Fuel Balancing System that attempts to balance fuel within 20 lbs between wings:

- If the fuel imbalance exceeds 20 lbs for more than 30 seconds, the motive flow to the lighter tank is automatically shut off.
- If fuel imbalance exceeds 30 lbs for more than 2 minutes, amber FUEL BAL illuminates and the auto balance system shuts off.
  - The system may be reset for an additional 2 minutes of fuel balancing.
  - Manual Fuel Balance switch may be placed to lighter tank in order to manually balance the fuel (only if FUEL BAL switch is placed to MANUAL/RESET).

**Fueling Process**

- Single-Point pressure refueling refuels both wing tanks simultaneously in approximately 3-5 minutes.
- Fueling system contains pre-check valves and pre-check lines, which route fuel directly to pilot valves at tips of tanks to ensure that the fueling process is automatically shut off when complete.
- Each wing tank holds approximately 530 lbs of fuel; Collector tank holds approximately 40 lbs.
- Over-the-wing gravity fueling can be accomplished through the fuel caps and provides for an extra 50 lbs of usable fuel per wing.
- Fuel tanks are vented to the atmosphere through fuel vents that provide vacuum and pressure relief.
  - Float valves at the wingtips close when fuel reaches them in order to prevent fuel from draining.
Fuel Probes and Low Fuel Level Sensors

- The T-6B has 7 fuel probes and 2 Low Fuel Level Sensors
  - Each wing tank contains 3 fuel probes and the Collector Tank contains 1 fuel probe
  - In each wing, the Outer Fuel Probe measures 445 ± 50 lbs, the Middle Fuel Probe measures 308 ± 50 lbs, and the Inner Fuel Probe measures 20 lbs
  - The Low Fuel Level Sensors indicate an amber L or R FUEL LOW in respective tank when the level drops at or below 110 lbs within the tank
    - Low Fuel Level Sensors operate independently of the Fuel Probes

Wing Tanks to Collector Tank

- During normal flight regimes, fuel flows to the Collector tank by gravity as well as via the transfer jet pumps
  - Due to wing dihedral, fuel flows towards the wing tips during inverted flight and away from the collector tank, which limits the fuel supply to the amount in the collector tank
  - As a result, inverted flight is limited to 15 seconds
- Transfer jet pumps are powered by the motive flow lines, which keeps the Collector tank slightly pressurized

Collector Tank to Engine Feed Lines

- Within the collector tank, a flip-flop valve collects fuel and routes it to the engine feed lines during all flight regimes (positive G, zero G, and inverted flight)
- During normal operation, the Primary Jet Pump is powered by the motive flow lines and delivers fuel to engine-driven Low Pressure Fuel Pump
- The Primary Jet Pump is assisted by an electric Boost Pump automatically during the engine start sequence, when switched ON with the cockpit control, or when Low Pressure Switch indicates fuel pressure is less than 10 psi

Engine Feed Lines to Engine-Driven Low Pressure Fuel Pump

- Fuel passes through the Maintenance Shutoff Valve, Fuel Filter (with bypass), and then Firewall Shutoff Valve

Engine-Driven Low Pressure Fuel Pump

- Delivers fuel to the engine-driven High Pressure Fuel Pump
- Some fuel returns via the Motive Flow Lines
  - If fuel pressure drops below 10 psi and boost pump fails to engage automatically, the FUEL PX warning will illuminate
  - If the FUEL PX warning remains illuminated, the engine-driven high pressure fuel pump is suction feeding. Engine operation with high pressure pump suction feeding is limited to 10 hours.

Engine-Driven High Pressure Fuel Pump

- If the engine-driven Low Pressure Fuel Pump and Boost Pump fail, the engine-driven High Pressure Fuel Pump will be suction feeding
- If the engine-driven High Pressure Fuel Pump fails, the engine will flameout and cannot be restarted
Engine-Driven High Pressure Fuel Pump to Fuel Management Unit (FMU)
- The engine-driven High Pressure Fuel Pump delivers fuel to the FMU, which meters fuel in conjunction with the PCL and PMU to the engine
- Following the FMU, a Fuel Flow Transmitter provides fuel flow indications on EICAS display

Applicable EICAS Indications:

**FUEL PX warning**: Fuel pressure below 10 psi in motive flow/return flow supply line

**FUEL BAL caution**: Fuel imbalance exceeds 30 lbs for 2 minutes, or fuel probe or Engine Data Manager fails

**L FUEL LO caution**: Left wing tank below approximately 110 lbs usable fuel

**R FUEL LO caution**: Right wing tank below approximately 110 lbs usable fuel

**BOOST PUMP advisory**: BOOST PUMP selected by switch, starter relay, or low pressure switch

Applicable Emergency Procedures:

**Low Fuel Pressure**

If engine fuel feed pressure drops below 10 psi, and the boost pump fails to engage automatically, the FUEL PX warning will illuminate. If engine fuel feed pressure is fluctuating at or below 10 psi, the boost pump will alternately cycle on and off, illuminating and extinguishing the BOOST PUMP advisory. These low pressure conditions may be caused by a blocked fuel line, low pressure pump failure, fuel leak, low pressure switch failure, or failure of the oil scavenge pump. If any of these conditions are encountered, accomplish the following:

* 1. PEL – Execute

**NOTE**
- If the FUEL PX warning remains illuminated, the engine-driven high pressure fuel pump is suction feeding. Engine operation with high pressure pump suction feeding is limited to 10 hours.

2. BOOST PUMP switch – ON

**CAUTION**
- Unless a greater emergency exists, do not reset BOOST PUMP circuit breaker (left front console) if open.
Fuel Imbalance

The automatic fuel balancing system maintains the fuel load in each wing to within 20 pounds of the other. Conditions which may activate the FUEL BAL caution are a fault in the autobalance system (e.g., fuel probe or EDM failure), or fuel gages indicate greater than 30 pounds difference between left and right tanks for more than 2 minutes. To manually balance the fuel load, accomplish the following:

1. Fuel gages – Verify imbalance and check for fuel leaks

NOTE
- If FP FAIL caution illuminated, refer to the Fuel Probe Malfunction checklist.
- If a fuel leak is suspected, refer to Leaking Fuel from Wing procedure.

2. FUEL BAL circuit breaker (right front console) – Check, reset if open. One reset attempt only.

NOTE
- The pilot should assess the severity of the emergency and equipment lost prior to resetting or opening any circuit breaker.

3. FUEL BAL switch – MAN/RESET (M FUEL BAL advisory illuminates)

CAUTION
- Do not attempt to manually balance fuel load if FP FAIL caution is illuminated. With a probe failure, a fuel imbalance indication may not be correct, and manual balancing attempts may cause or aggravate a fuel imbalance.

4. MANUAL FUEL BAL switch – To low tank

5. Fuel gages – Monitor

IF FUEL IMBALANCE IS CORRECTED (FUEL BAL CAUTION EXTINGUISHES):

6. MANUAL FUEL BAL switch – OFF, when imbalance is corrected

NOTE
- With a full lateral fuel imbalance (one tank full, the other tank empty), sufficient lateral authority exists to control the aircraft (no crosswind). Expect increased lateral stick forces.

7. FUEL BAL switch – AUTO, if desired

If system is returned to autobalance, monitor for correct operation.

NOTE
- If the fuel imbalance remains constant or increases, consider fuel in the wing that is not feeding to be trapped. Subtract trapped fuel to get total usable fuel.
Leaking Fuel from Wing

This procedure may be used to minimize loss of total fuel due to a birdstrike or other system failure. The FUEL BAL caution may illuminate if leaking fuel overboard from either wing. If a fuel leak is suspected in flight, perform the following:

1. **Aircraft structure – Visually inspect for signs of leakage**

   If LEAKING FUEL OVERBOARD:

2. **FUEL BAL switch – MAN/RESET**

3. **MANUAL FUEL BAL switch – To non-leaking tank**

   The manual fuel balance switch may be left set to the non-leaking tank for the duration of the flight to maximize remaining fuel and endurance.

   **NOTE**
   - With a full lateral fuel imbalance (one tank full, the other tank empty), sufficient lateral authority exists to control the aircraft (no crosswind). Expect increased lateral stick forces.

4. **MANUAL FUEL BAL switch – To leaking tank once empty**

5. **Land as soon as possible**

Fuel Probe Malfunction

1. **Fuel gages and fuel flow – Verify indications**

   **CAUTION**
   - Do not attempt to manually balance fuel load if FP FAIL caution is illuminated. With a probe failure, a fuel imbalance message may not be correct, and manual balancing attempts may cause or aggravate a fuel imbalance.

   **NOTE**
   - Depending on which probe malfunctions, the fuel quantity may read lower than actual. A rapid drop in fuel indication may occur.
   - The auto fuel balance system will be inoperative, but the manual fuel balance system remains operative.

2. **EDM circuit breakers (left and right front console) – Check, reset if open**

   **NOTE**
   - The pilot should assess the severity of the emergency and equipment lost prior to resetting or opening any circuit breaker.

3. **Land as soon as practical if fuel state cannot be verified**