Fuel requirements

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The fuel rules are aimed at ensuring that you always have enough fuel on board for your planned flight plus a safe margin.

The quantity of fixed fuel reserve is prescribed for different categories of flight, and you must plan to land with your fixed fuel reserves intact. If you need to use your fixed fuel reserve, you are considered to be in an emergency state.

A pilot in command must:

1. Determine how much fuel is required for flight
2. Establish how much fuel is on board before flight
3. Conduct regular in-flight fuel checks
4. Declare an emergency if you need to use your fixed fuel reserve

Fixed Fuel Reserves

Private Operations	Day VFR	Night VFR
Small aeroplane (<5700kg)	30 minutes	45 minutes
Helicopter	20 minutes	20 minutes

Variable fuel reserve is not mandatory for private operations.

Further detail and guidance, including requirements for IFR and charter flights, is available in CAAP 234-1(2).

Fuel planning

Pre-flight planning

Refer to the AFM or POH to find:

- total fuel capacity
- useable fuel
- fuel consumption rates

To determine how much fuel you need, consider:

- the distance to be travelled to reach the proposed destination;
- the meteorological conditions in which the aircraft is, or may be required to, fly;
- where applicable, the possibility of:
  - a forced diversion to an alternative aerodrome
  - a delay pending landing clearance
  - air traffic control re-routing the flight after commencement of the flight
  - relevant NOTAMS
  - a loss of pressurisation in the aircraft
  - where the aircraft is a multi-engined aircraft – an engine failure
- mandatory fixed fuel reserves

Familiarise yourself with the aircraft's fuel systems to know:

- whether the engine is fuel injected or fitted with a carburettor
- where to leave the fuel selector valve when parked:
  - both
  - left (or right) or
  - in the off position

Check fuel availability en-route and note suppliers and operating hours (refer to *ERSA*).

Never plan to use fixed reserve fuel.

Pre-flight inspection

Establishing the amount of fuel on board can be difficult, especially in smaller aircraft. To gain accurate fuel quantities, if tanks are partially full, the aircraft should ideally be on level ground and you should use the manufacturer's accurately graduated dipstick, sight gauge, drip gauge or tank tab.

Try to refuel on level ground to avoid inaccurate fuel measurements and unwanted fuel transfer. Note the procedures that may be set out in the AFM or POH, especially regarding the positioning of the fuel selector valve.

Dip each tank to check the amount of fuel. If the tank is partially filled, any direct reading must be either discounted or rounded down to a figure consistent with the next lower tab or marking. However, direct readings of a partially filled tank may be used if the aircraft is level and:

- the fuel is at or above a tab with a clearly established value or
- the fuel gauge reading corresponds to a dipstick value.

Before starting the aircraft engine, you should cross-check fuel amounts by at least two separate methods. If you are not assured that the aircraft tanks are completely full, or a totally reliable and accurately graduated dipstick, sight gauge, drip gauge or tank tab reading can be done, consider the following methods:

- check of visual readings (tab, dip, drip, sight gauges) against fuel consumed indicator readings
- having regard to previous readings, a check of electrical gauge or visual readings against fuel consumed indicator readings
- after refuelling, and having regard to previous readings, a check of electrical gauge or visual readings against the refuelling installation readings
- where a series of flights is undertaken by the same pilot and refuelling is not carried out at intermediate stops, cross-checks may be made by checking the quantity gauge readings against computed fuel on board and/or fuel consumed indicator readings, provided the particular system is known to be reliable.

As part of a daily inspection, (CAR Schedule 5 Part 1):

- ensure drains and vents are working properly
- ensure, if using Avgas, to rock the aircraft to move trapped water over the drain point before carrying out a fuel drain (refer aircraft manufacturer's recommendations)
- check for contaminants, particularly water; and correct fuel type. Ensure the fuel filler cap is secure and sealed.

In flight

At regular intervals the pilot in command must compare fuel remaining with planned figures and should monitor tank selection. Checking at least every 30 minutes and at turning points is recommended.

Use planned power settings and correct mixture leaning technique (at all altitudes) and make sure gauge readings are conducted per the aircraft's fuel calibration card.

If you find that insufficient fuel remains to continue with the planned flight to land with your fixed fuel reserves intact, you must re-plan to an alternative safe landing area.

An aircraft is considered to be in an emergency situation when the useable fuel predicted to be available upon landing at the nearest safe landing area will be less than the fixed fuel reserve.

If no option exists where a landing can be accomplished at a safe landing area with fixed fuel reserves intact, the pilot in command must declare a fuel emergency state by broadcasting: MAYDAY, MAYDAY, MAYDAY FUEL. This ensures that others operating in your vicinity and ATC are made aware of your situation and afford you priority to land.

Post flight

Compare usage figures with planned figures when next refuelling.