

Ex. 22 – Forced Landing



What you will learn:

- ✓ How to select a landing site and carry out a safe forced approach and landing after an in-flight engine failure.

Why learn this:

- ✓ Today's planes are very reliable and engine failures are very rare – but they do happen
- ✓ The best way to deal with an engine failure is to prevent it by:
 - thorough walk-arounds
 - ensuring that plane's inspection and maintenance schedules are followed
 - careful flight planning (do you have enough fuel?)
 - using proper in-flight procedures to avoid engine shock-cooling, engine over-heating, carb ice formation etc.
- ✓ However, it is important to be able to execute a safe forced landing should you still end up in a situation that requires one.

Estimating Wind Speed and Direction

- ✓ Visual indication of wind direction & speed
 - Smoke
 - Water, crops or tall grass ripples
- ✓ If no visual indication available, recall area forecasts and observe ground speed and in-flight drift.

360° Forced Landing Pattern

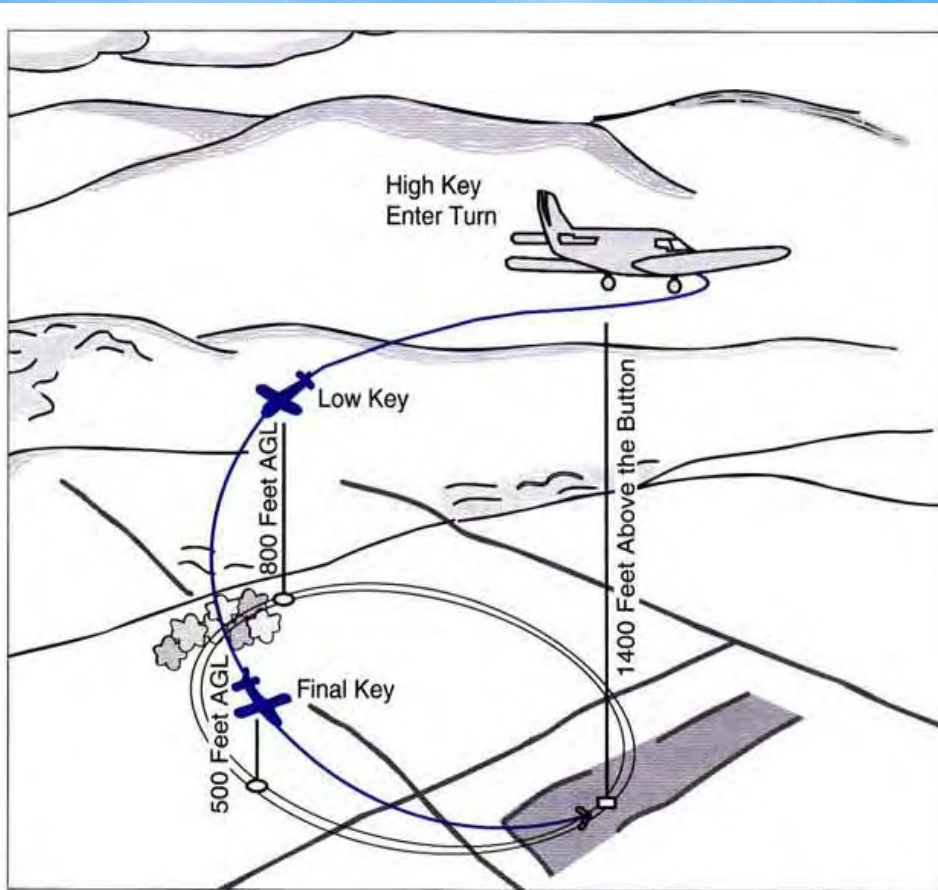


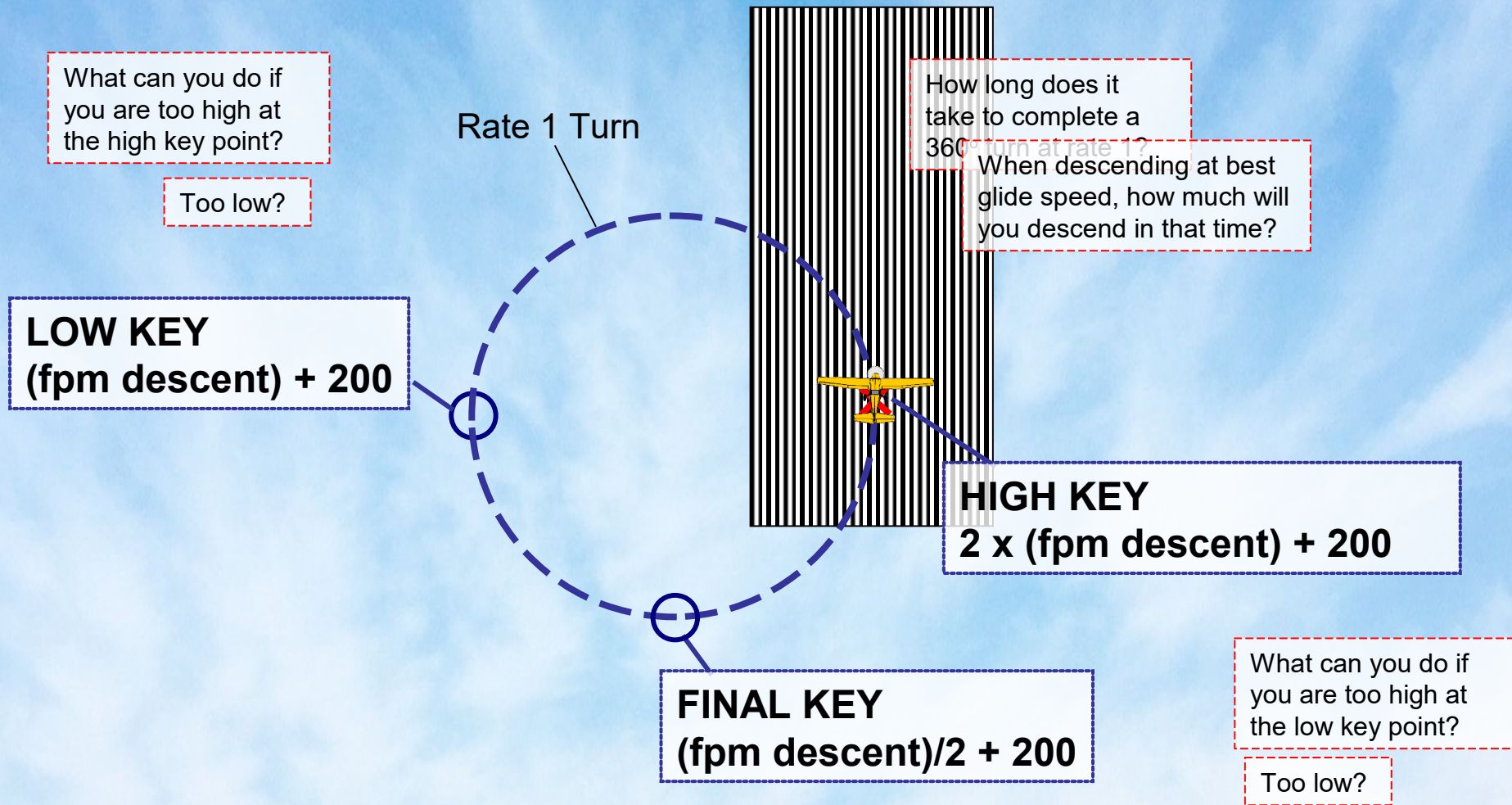
Figure 2-57B 360° Forced Landing Pattern

The appropriate altitude for this high key depends on the glide performance of the aircraft.

To calculate this altitude, take the amount of altitude your aircraft normally loses in two minutes of gliding descent, add 200feet , and you have the height above ground that works well for high key.

For example, if your glide rate is 600 feet per minute, the high key altitude should be 1,400 feet AGL ($2 \times 600 + 200$) .

360° Forced Landing Pattern



Forced Landing Approach

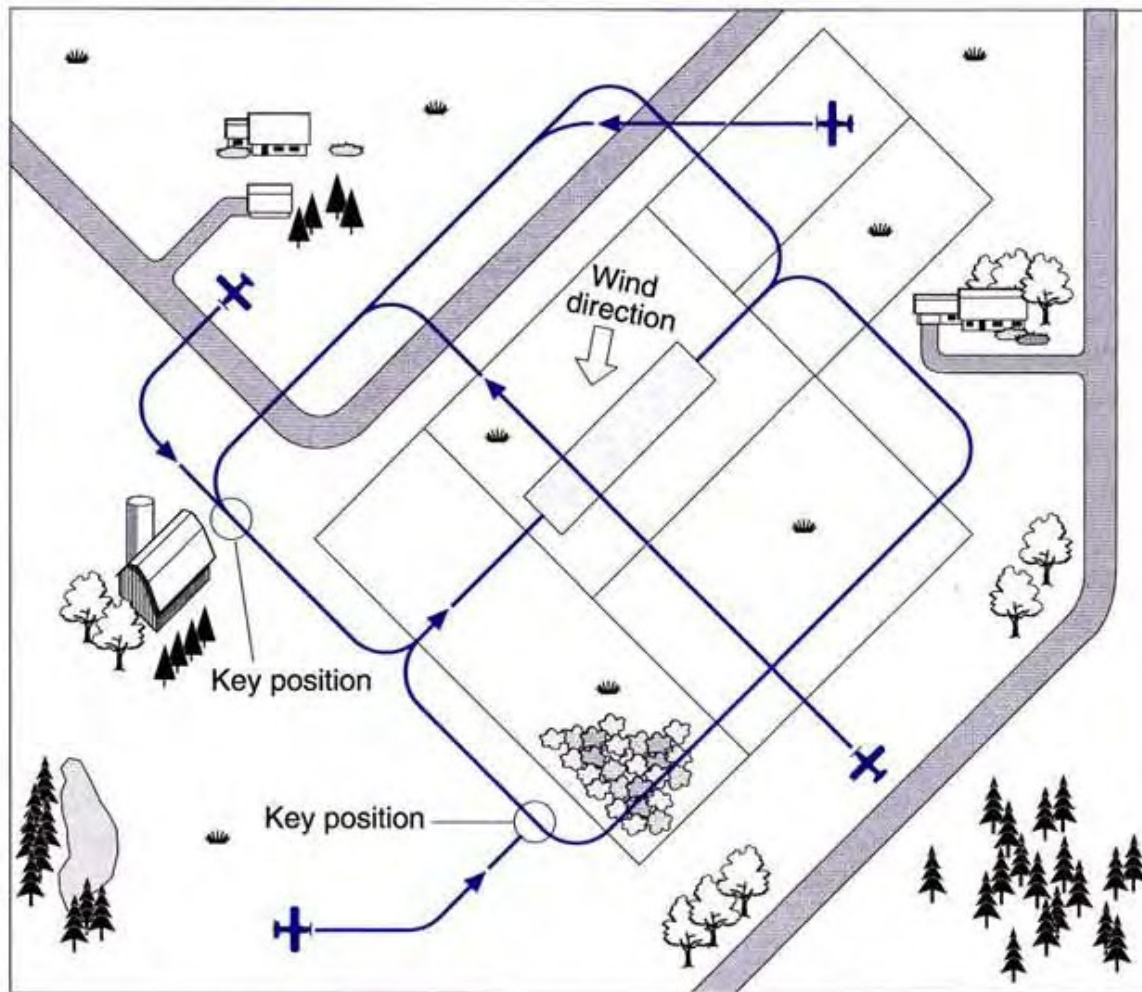


Figure 2-57A Forced Landing Approach

Forced Landing 1 of 3

- A. **GLIDE:** Speed appropriate to weight. Rule of Thumb: Gross weight speed - minus one knot for each 100 pounds under gross weight). Pitch nose attitude for correct speed, then Trim. See POH for glide speeds, for example C152/C172:65 Kts

- ✓ B. **GRASS:** A place to land. Often not an ideal site. Consider WIND. Plan to Key Position. COWLS check Aim for half-way into the clearing initially.

- ✓ C. **GAS:** Cause check - fuel flow, quantity, oil pressure, etc.
- ✓ Fuel selector to Opposite tank. Check selector detente
- ✓ Note: To avoid confusion always go to aux. pump before selector
- ✓ Adjust mixture as necessary
- ✓ Check magnetos are on “Both” & try “L & R” individually

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- ✓ **D. Communicate: ground and GPS position, time, altitude, intentions, or desired help on VHF**
- ✓ **Transponder to 7700. ELT remote switch "ON"**
- ✓ **Transmit ASAP in mountainous terrain before getting blocked**

- ✓ **E. Secure:**
- ✓ **Seat belts, shoulder harnesses, sharp objects cleared, eyeglasses off, heavy objects on floor, etc.**
- ✓ **Quick, assertive brief to passengers.**
- ✓

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E. (Continued)

- **Secure Aircraft:**
- **Mixture idle cutoff, fuel selector off**
- **Mags off**
- **Doors unlocked if appropriate. (If damage is certain, the doors most often will jam. Push the door out and extend the locking device)**
- **Master off before ground contact when off airport.**

✓F. **GET OUT: Exit quickly with the Survival Kit, CARE for the passengers and move everyone away from the aircraft in case of fire**

✓Remember, after a crash landing, most everyone is stunned and subject to **INACTION**. That includes you as the pilot. If upside down, brace yourself before unlatching the seat belt

Considerations

- ✓ This procedure deals with engine failure with some altitude available. Right after take-off or in traffic pattern you may not have enough time for all checks and calls. Concentrate on flying and landing
- ✓ In cruise, constantly be on look-out for good fields within gliding distance. There are many small, unmarked landing strips – see if you can notice those (parked planes are a big give-away). Prior to take-off, familiarize yourself with local terrain to know what the options available to you are
- ✓ Good news: most forced landings are survivable – if you don't stall the plane! Don't try to “stretch a glide” by raising the nose and losing airspeed.

SAFETY

- !** Keep an eye on your airspeed and angle of bank!
- !** When practicing, conduct engine warm-ups every 500' (to avoid shock-cooling the engine)
- !** Aim to be slightly high on final in case wind shear or downdraft cause unanticipated altitude loss
- !** Keep calm and offer reassurance to your passengers. And you did remember to do a thorough pax briefing **BEFORE** even getting into the plane, right?