Complex Aircraft

AIR ECHO ALPHA 51, LLC.

Objective: To help gain familiarity with the characteristics of a complex aircraft.

Common Errors

- ❑ Failure to monitor engine instruments
- ❑ Improper instrument interpretation
- ❑ Failure to use proper checklist
- ❑ Improper settings for flight profile or cylinder-head temperature reading
- ❑ Failure to establish the appropriate aircraft configuration at the proper time and sequence
- ❑ Fixation, omission errors

Cowl Flaps

❑ Cowl flaps are used to help regulate engine temperature and are hinged covers that fit over the opening through which the hot air is expelled from the engine cowling. If the engine temperature is low, the cowl flaps can be closed, thereby restricting the flow of expelled hot air and increasing engine temperature. If the engine temperature is high, the cowl flaps can be opened to permit a greater flow of air through the system, thereby decreasing the engine temperature. Other tools used to control engine temperature include power setting, airspeed (pitch attitude) and fuel mixture.

Cowl Flap Operation & Engine Temperature Monitoring

❑ A Cylinder-head temperature gauge is a required instrument for aircraft equipped with cowl flaps. Whereas an oil temperature gauge gives an indirect and delayed indication of rising engine temperature, a cylinder-head temperature gauge indicates a direct and immediate cylinder temperature change. This instrument is calibrated in degrees Celsius or Fahrenheit, and is usually color-coded with a green arc to indicate the normal operating range. A red line on the instrument indicates maximum allowable cylinder head temperature.

❑ Cowl Flap Operation
- Before starting the engine and throughout takeoff and high power climb operation the cowl flaps should be OPEN for maximum cooling
- While in cruise flight, cowl flaps should be adjusted to keep the cylinder head temperature at approximately 2/3 of the normal operating range(green arc)
- During extended descents, the cowl flaps should be CLOSED

Flight Profiles

❑ Normal Take-off
1. Throttle & Prop full forward, cowl flaps OPEN
2. Check engine gauges
3. Announce "Airspeed Alive"
4. Begin rotation at 55 KIAS
5. Accelerate to a climb speed between 70-80 KIAS
6. Establish a positive rate of climb and retract the gear when no useable runway remains
7. Announce "Positive rate of climb, Gear up"
8. Climb at 85-95 KIAS, 25" MP, 2500 RPM after passing through 500 feet AGL

❑ Cruise
1. Establish Power Setting -- 15-25" MP, 2100-2700 RPM (consult POH)
2. Adjust Cowl Flaps as required per Cylinder-head temperature gauge
3. Monitor Engine Gauges throughout flight

❑ Normal Landing
1. Complete the Before Landing Checklist prior to entering the traffic pattern
2. Propeller control knob should be positioned full forward
3. Landing gear should be extended, visually observe main gear down and green light
4. Adjust Cowl Flaps to the CLOSED position
5. Slow to 80 KIAS
6. Abeam approach end and when ready to descent out of TPA Announce "Gear Down & Before Landing Checklist Complete"
7. Extend Flaps
8. Establish Airspeed -- 65-75 KIAS
9. Announce on base leg "GUMP - Gas, Undercarriage, Mixture, Prop"
10. Announce on final "Gear down, Stabilized"