Piper Cherokee-Series

Aircraft Systems & Emergencies Review

Flying 20 Club Aircraft`

- N8107B – 1979 Piper Dakota
  - 235HP Lycoming O-540-J3A5D
    - 6 cylinder normally-aspirated
    - 2400RPM maximum

- N455H – 2000 Piper Archer III
  - 180HP Lycoming O-360-A4M
    - 4 cylinder normally-aspirated
    - 2700RPM maximum

- N8237B – 1980 Piper Archer II
  - 180HP Lycoming O-360-A4M
    - 4 cylinder normally-aspirated
    - 2700RPM maximum for 5 minutes
    - 2650RPM maximum continuous

Outline

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- Systems Review
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    - 455H Overhead Switches
  - Pitot-Static System
  - Vacuum System
  - Electrical System
  - Fuel System
  - Brake System
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- Break
- Emergencies
  - Carb Icing
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  - Vacuum Failure
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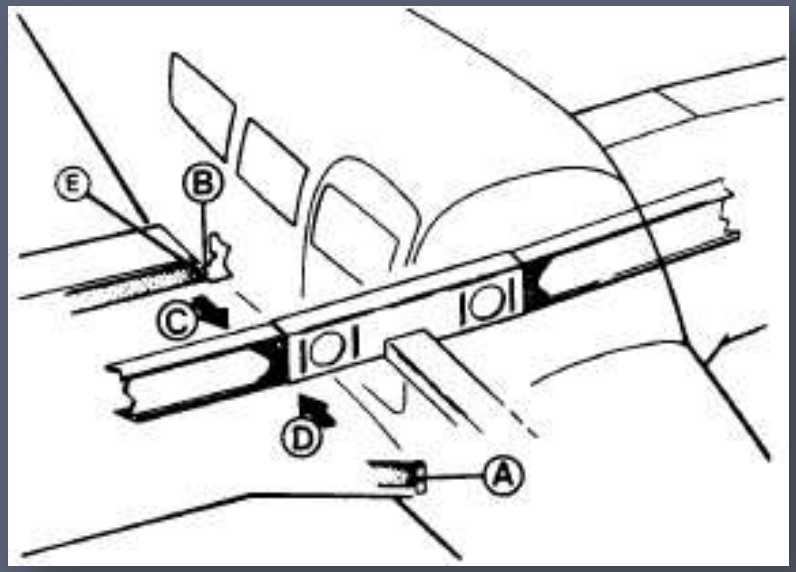
  - Engine Problems
  - Carbon Monoxide
  - Control System Failures
    - Flight Controls
    - Brakes
  - Miscellaneous

Piper PA-28 "Cherokee" Series Overview

- All metal, semi-monocoque structure
  - The skin provides part of the structural strength
    - 0.051" (1.3mm) – 0.016" (0.4mm) thick
- Wings are of a full cantilever design with removable tips



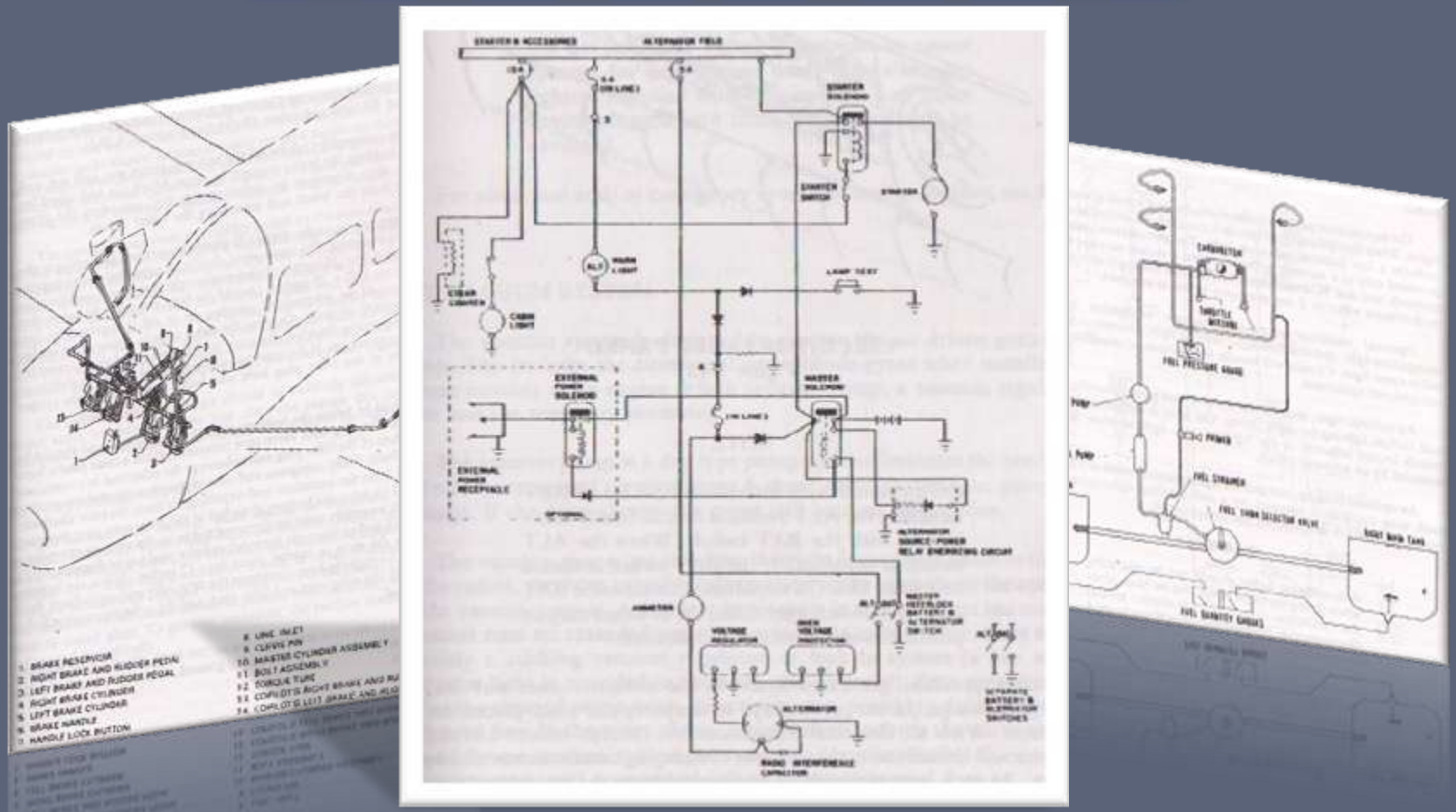
- PA-28(R)(T)-###(T)
  - PA – Piper Aircraft
  - 28(R)(T) – Series ID
    - R = Retractable gear
    - T = T-tail
  - ### – Horsepower
    - ##0/5 = "Hershey bar" wing
    - ##1/6 = Semi-tapered wing
    - ###T = Turbo-charged engine

Flying 20 Club's Piper PA-28 Models

- Piper Dakota (PA-28-236)
  - ATC Type: P28B
  - Oil capacity
    - 12 QT oil capacity
      - 2 ¾ QT minimum
    - Recommend 9 QT minimum
- Piper Archer (PA-28-181)
  - ATC Type: P28A
  - Oil capacity
    - 8 QT oil capacity
      - 2 QT minimum
    - Recommend 6 QT minimum
  - Not uncommon for there to be a slight hesitation/stumble when advancing the throttle through ~1000-1500 RPM
- All 3 have a Tanis engine heater

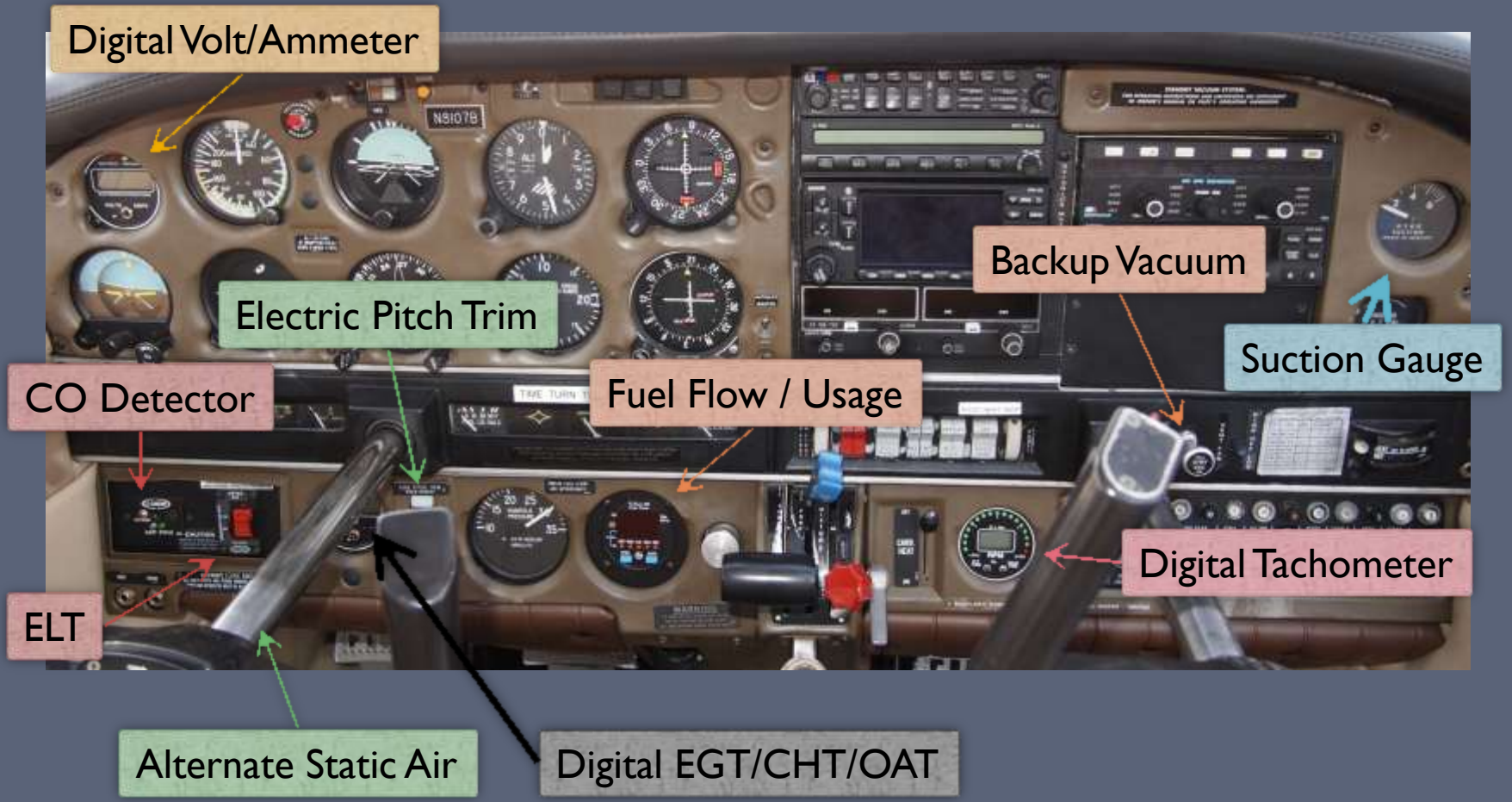
Systems Review

Understanding the aircraft systems can save your life!



Cockpit Layout – N8107B

- Know where all the switches and circuit breakers are by feel

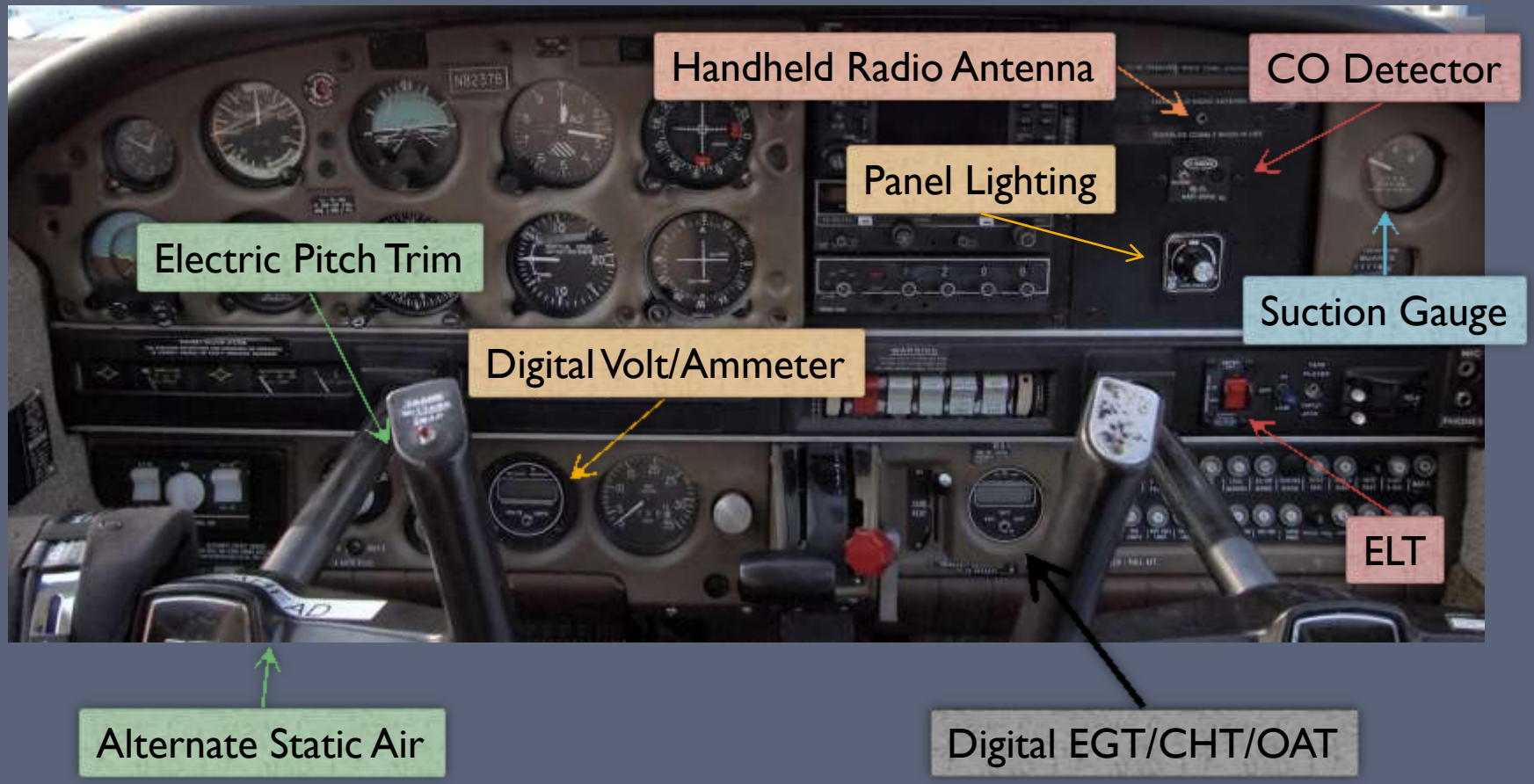


Cockpit Layout – N8107B (Cont.)

- Know where all the switches and circuit breakers are by feel

Cockpit Layout – N8237B

- Know where all the switches and circuit breakers are by feel

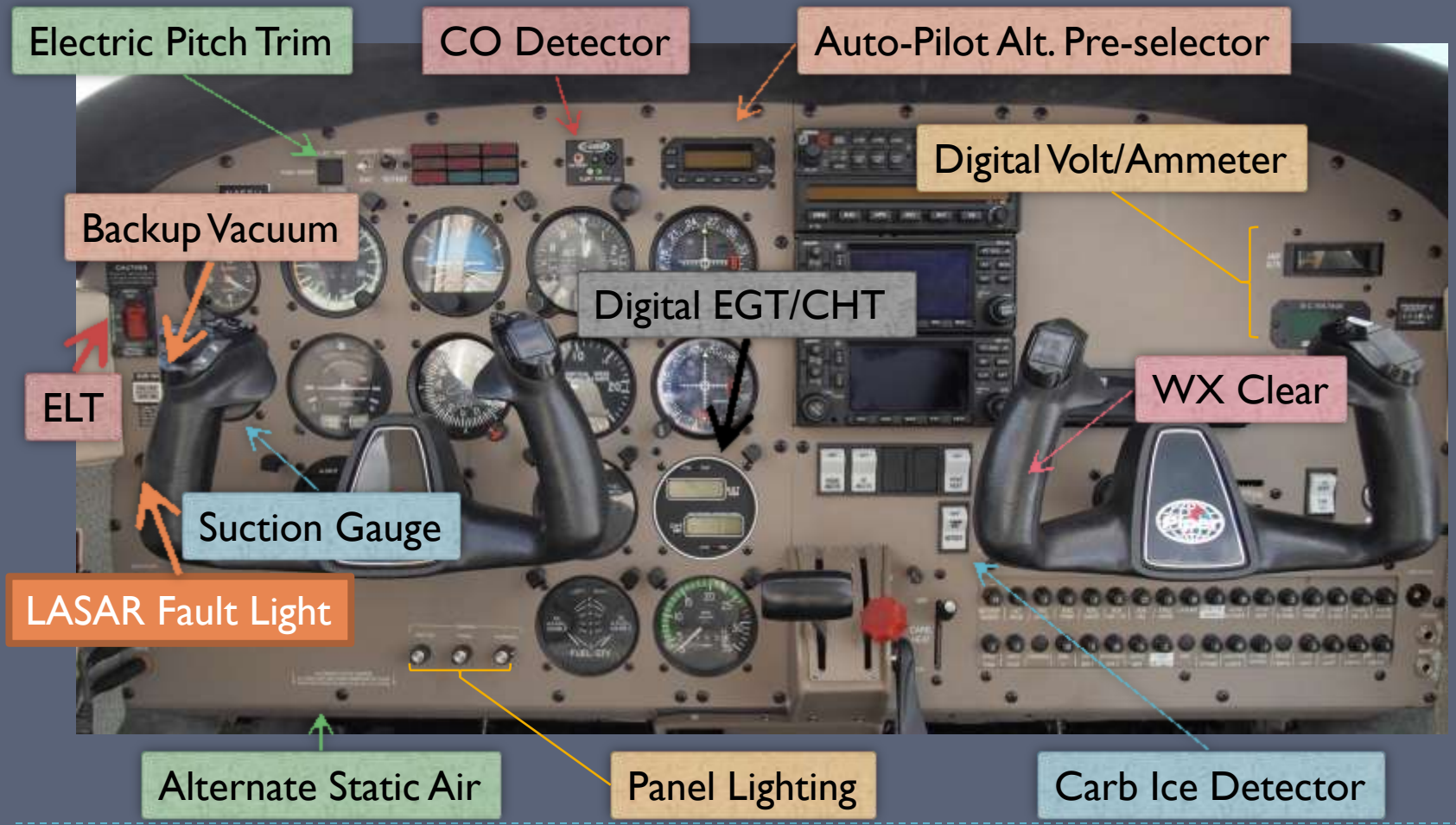


Cockpit Layout – N8237B (Cont.)

- Know where all the switches and circuit breakers are by feel

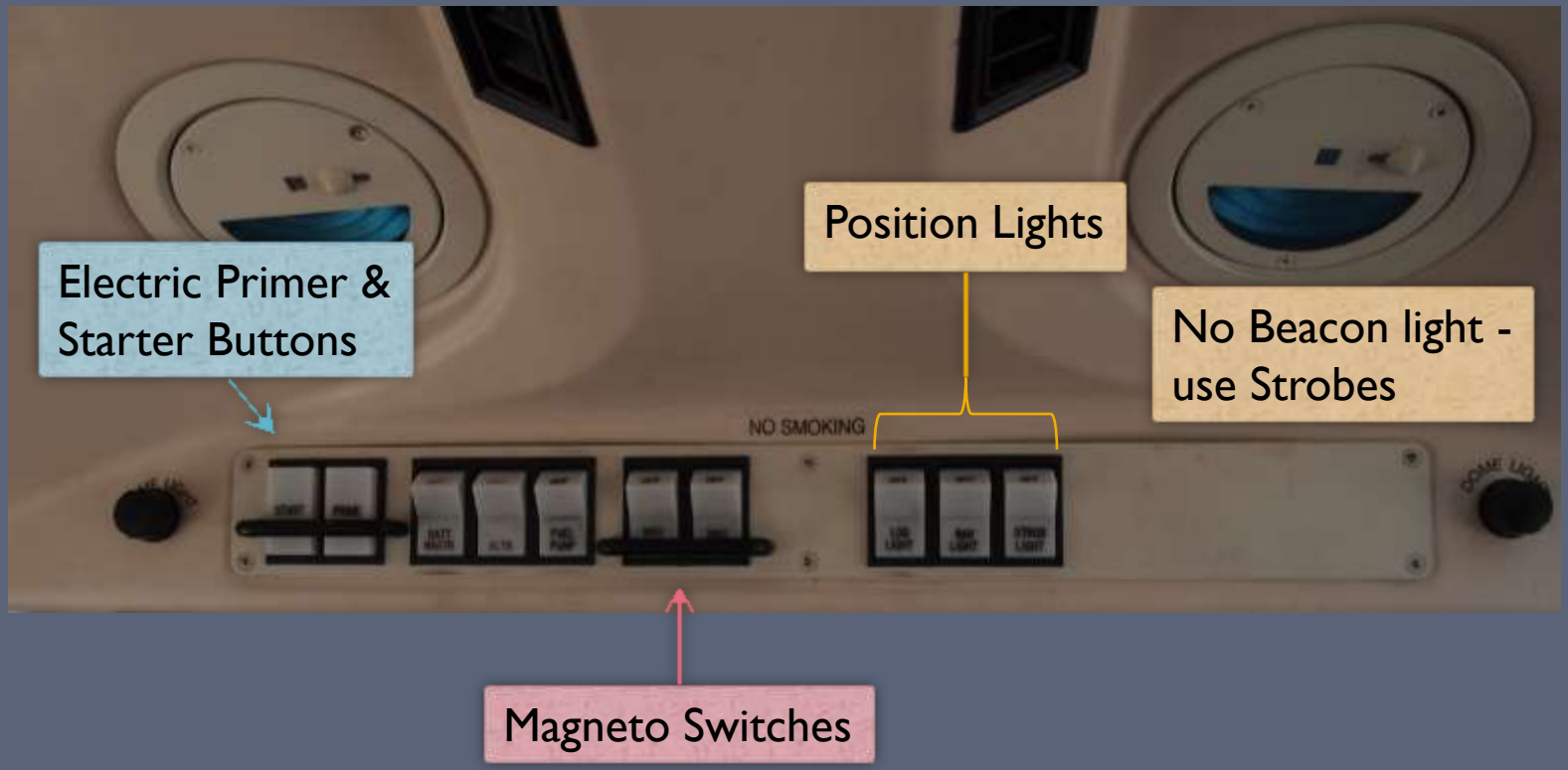
Cockpit Layout – N455H

- Know where all the switches and circuit breakers are by feel

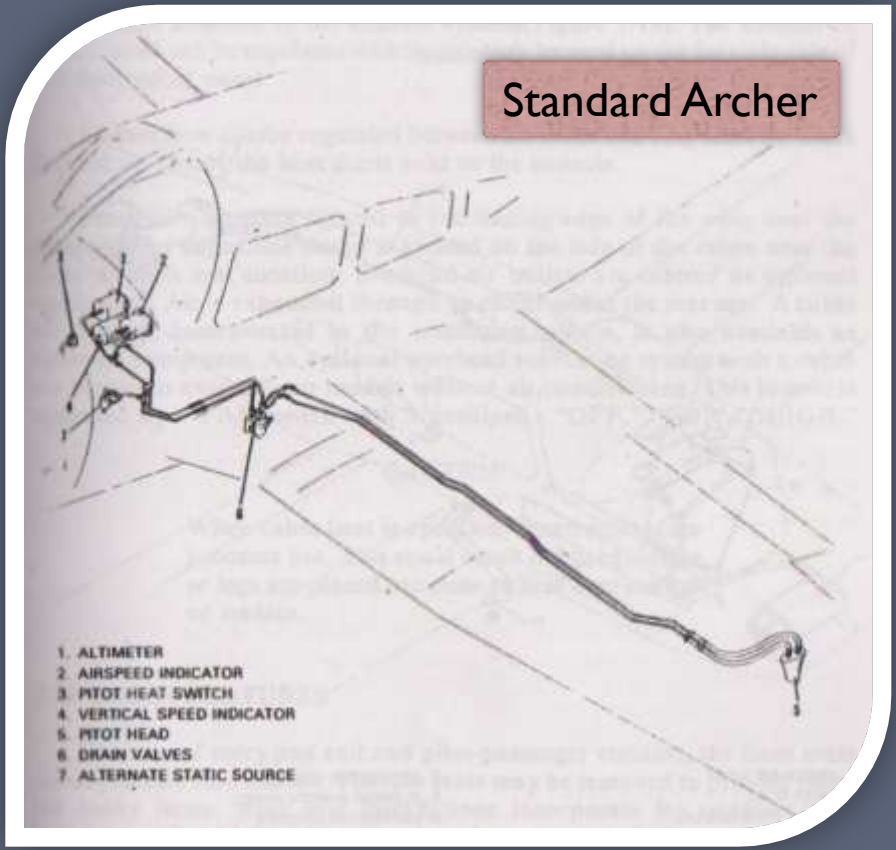


Cockpit Layout – 455H Overhead Switches

- Know where all the switches and circuit breakers are by feel



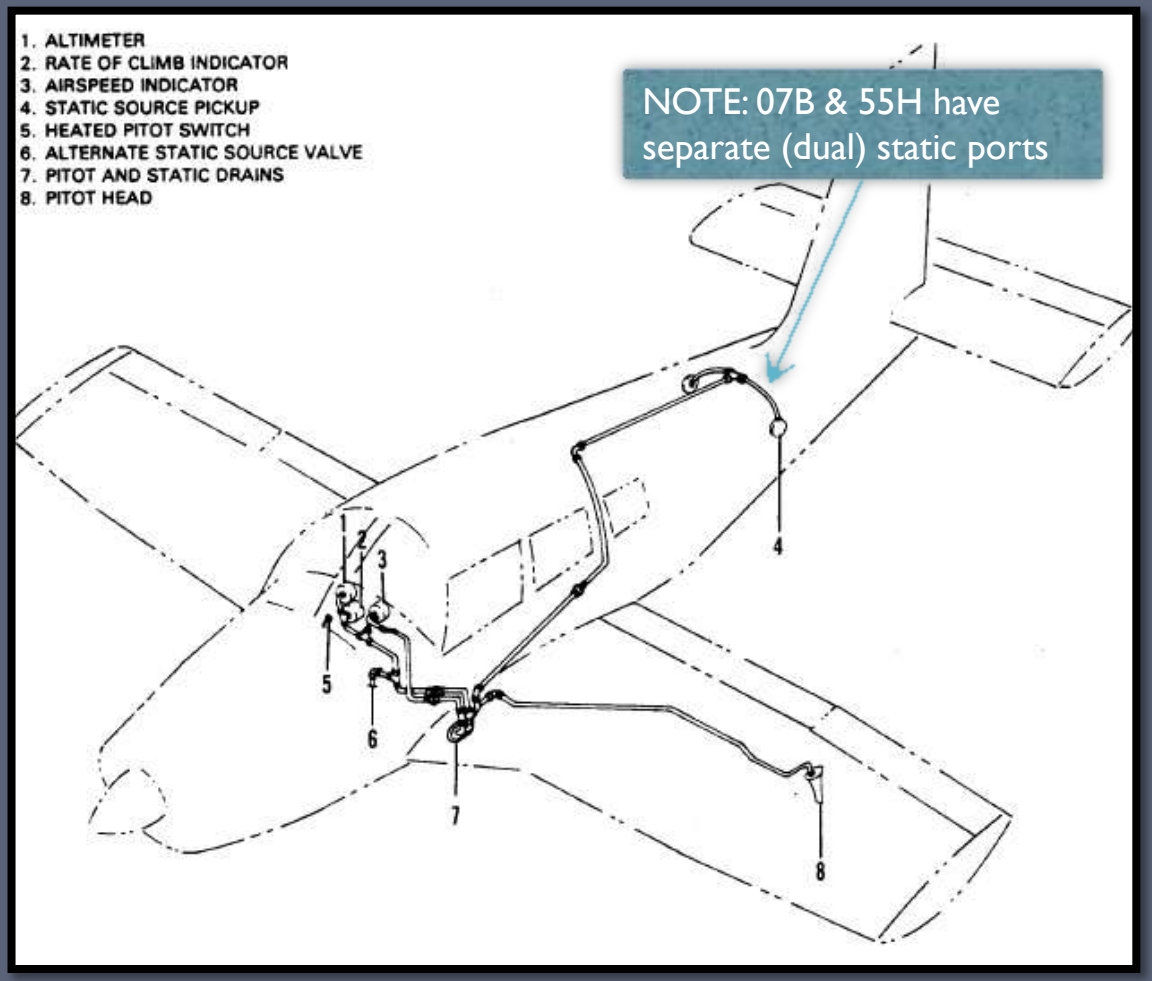
Pitot-Static System



- *The pitot and static lines should be drained prior to each flight*
  - *Not included on most checklists!*
- The ASI, altimeter, and VSI static lines are plumbed in parallel

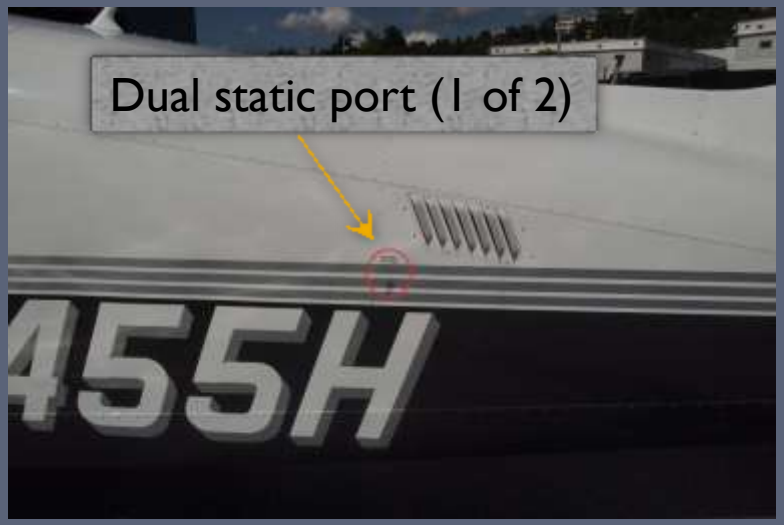
Pitot-Static System – Dual Static Ports

- Benefits of the dual static-port configuration
  - Less likely that both will become obstructed
  - More accurate during a slip

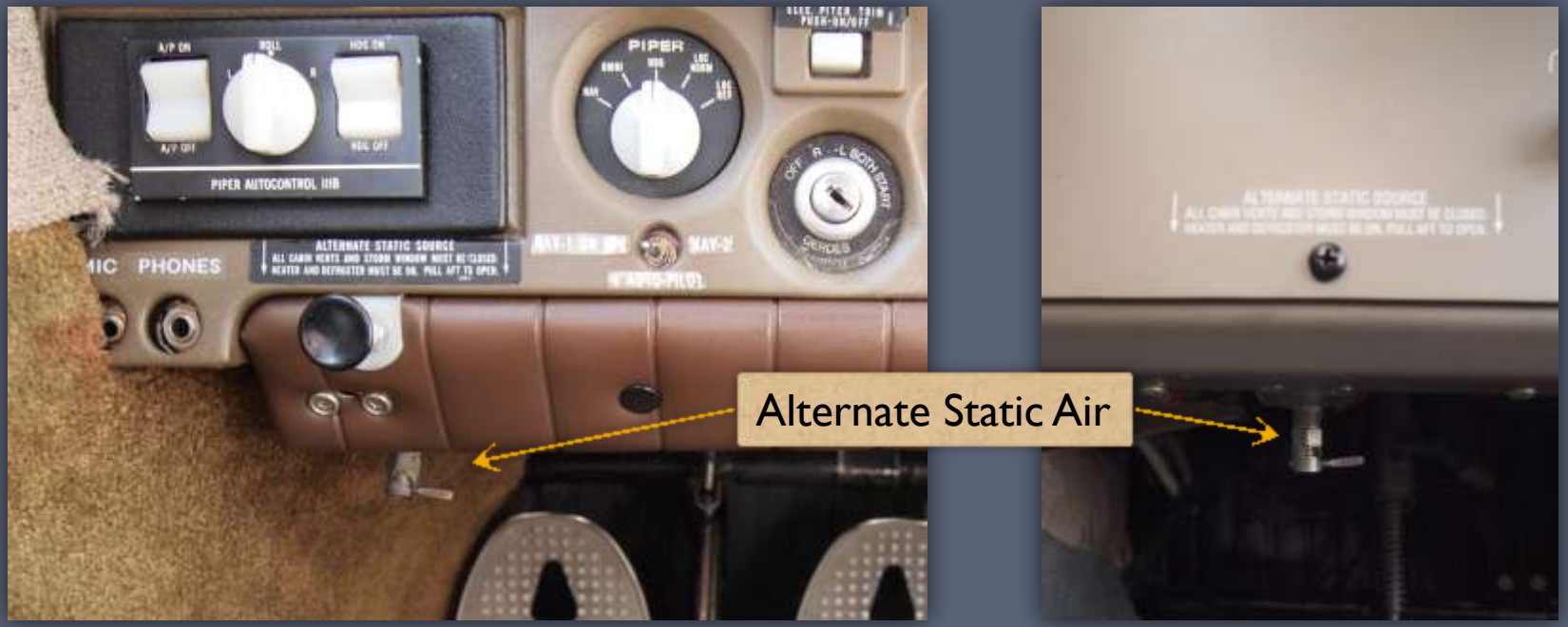


Pitot-Static System - Components

- Heated pitot-static vane
- No external pitot drain
  - Cabin pitot-static drain valves must be opened prior to each flight
- 455H & 8107B: Separate dual static ports



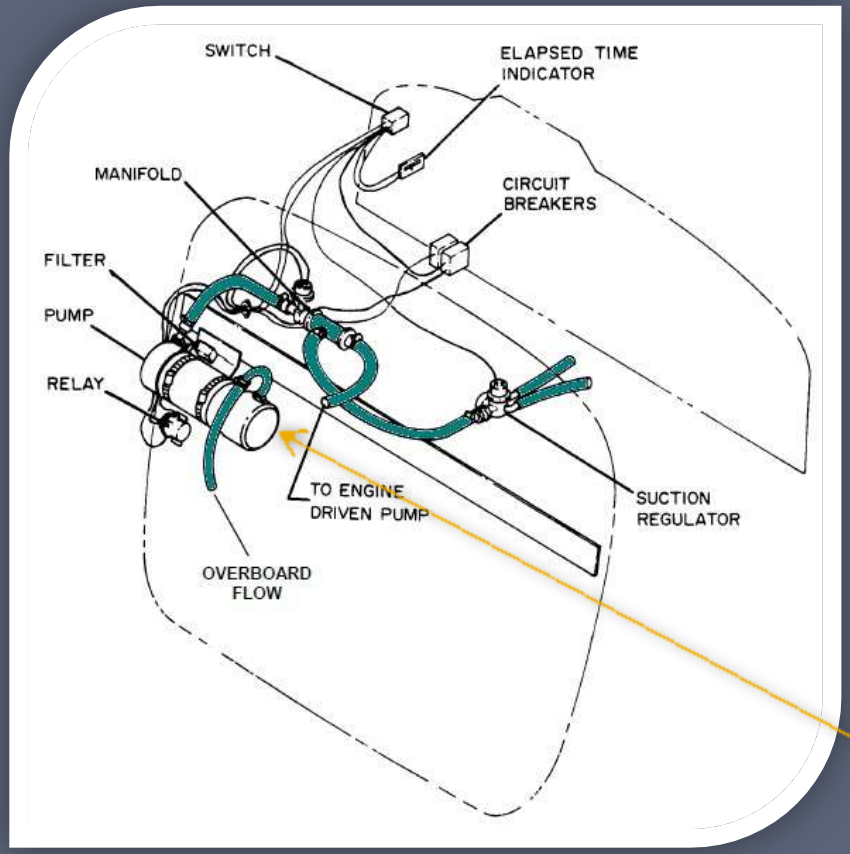
Pitot-Static System - Continued



Using alternate static air	
Storm window and vents	CLOSED
Cabin heater and defroster	FULL ON

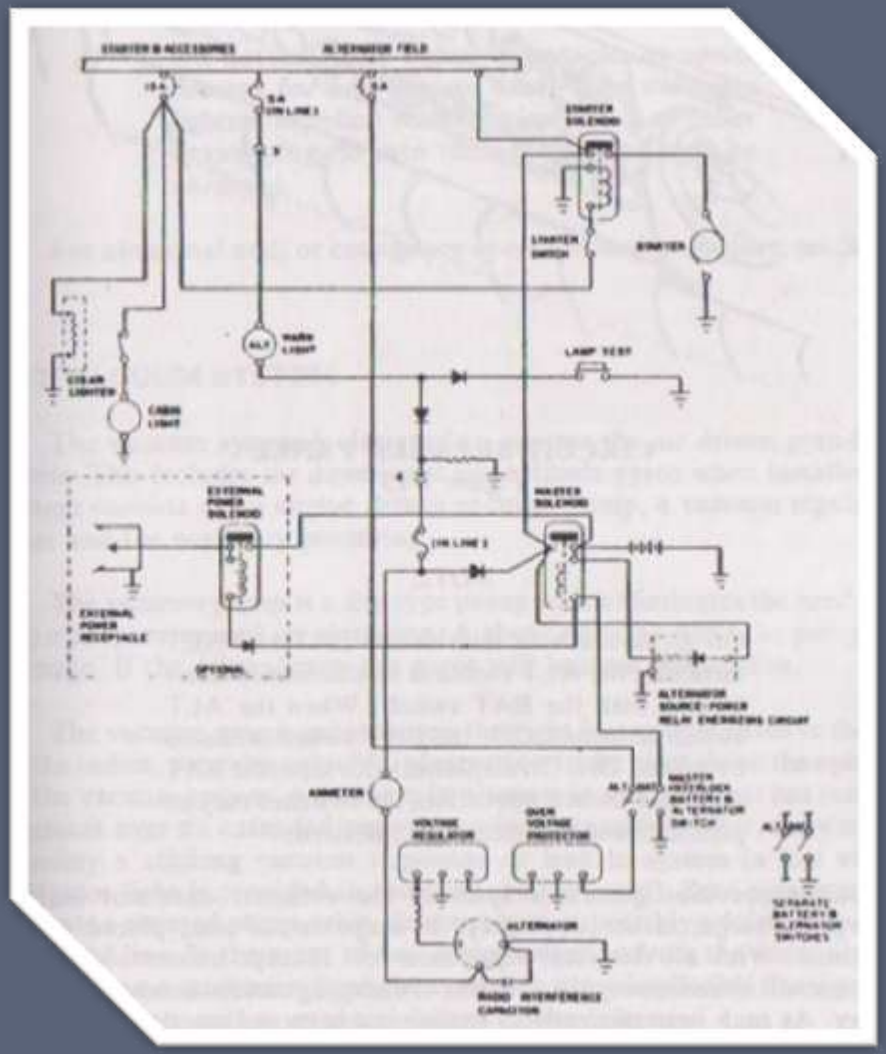
Instrument	Indication
Airspeed Indicator	Reads higher
Altimeter	Reads higher (error <50')
Vertical Speed Indicator	Momentary climb

Vacuum System



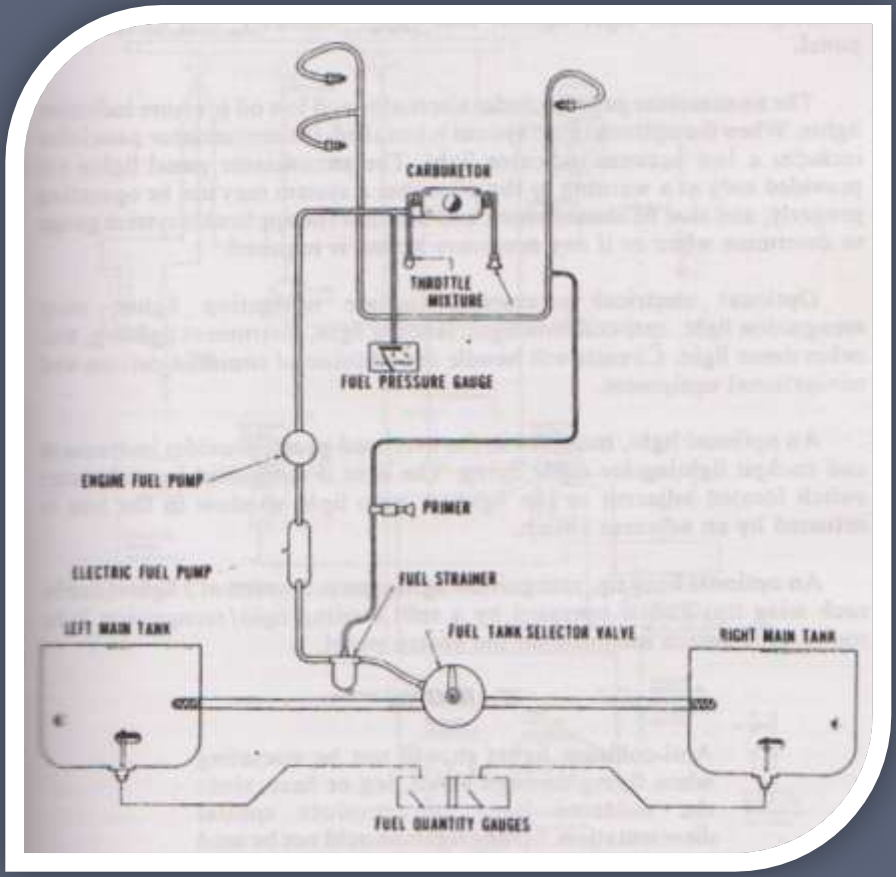
- Normal vacuum range: 4.5” – 5.5” at cruise RPM.
- The vacuum warning light will illuminate when the differential pressure is less than 3.5” hg.
  - At low RPMs (such as during taxiing or idling), the vacuum light may come on.
  - This is normal, and momentarily raising the RPMs should clear the light.

Electrical System



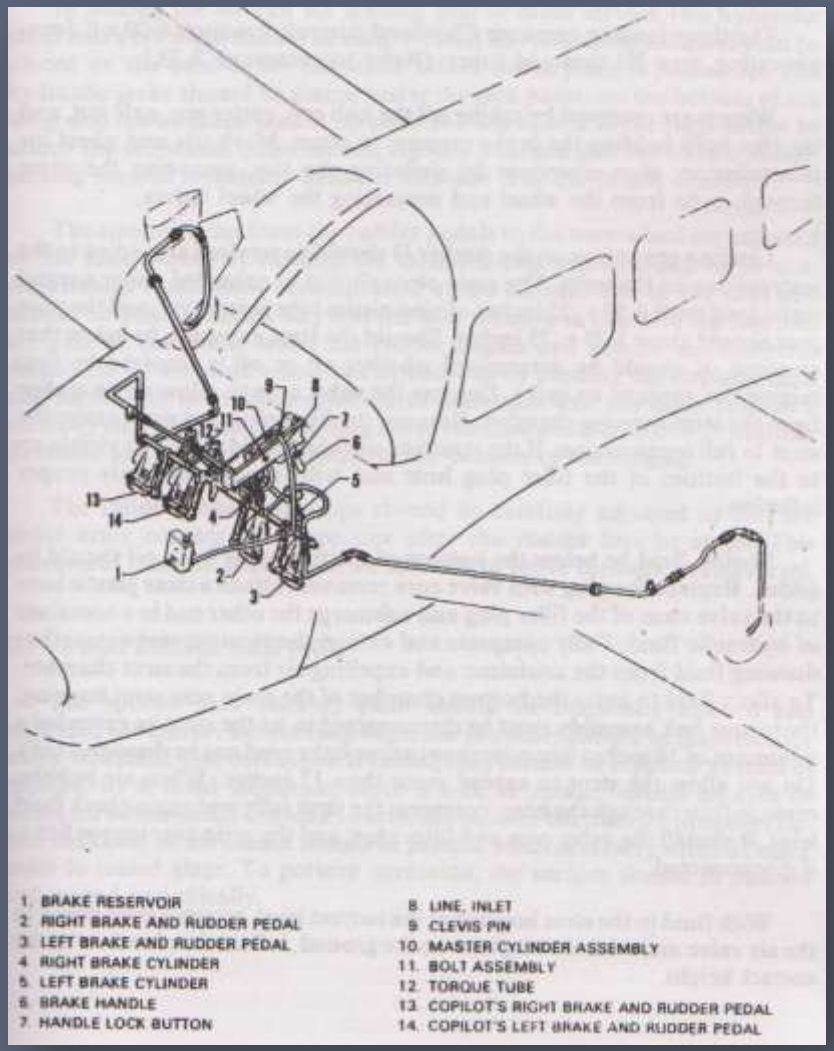
- The alternator warning light will illuminate when the alternator output drops to zero.
- 8237B & 8107B
  - 14V system
  - 12V battery
  - 60A alternator
- 455H
  - 28V system
  - 24V battery
  - 70A alternator
  - The “low bus voltage” light will illuminate when the voltage drops to 24.5v or less.

Fuel System



- One fuel sump and vent per tank, one main fuel strainer sump
- 455H & 8237B
  - Two 25 gallon tanks, 24 gallons usable
    - 17 gallons usable at tabs
  - 50 gallons total, 48 gallons usable
  - 455H
    - Electric primer
  - 8237B
    - Manual primer
- 8107B
  - Two 38.5 gallon tanks, 36 gallons usable
    - 25 gallons usable at tabs
  - 77 gallons total, 72 gallons usable
  - Manual primer
- The carburetor is attached below the oil cooler on Piper Lycomings, so you're essentially always running with partial carb heat.

Brake System

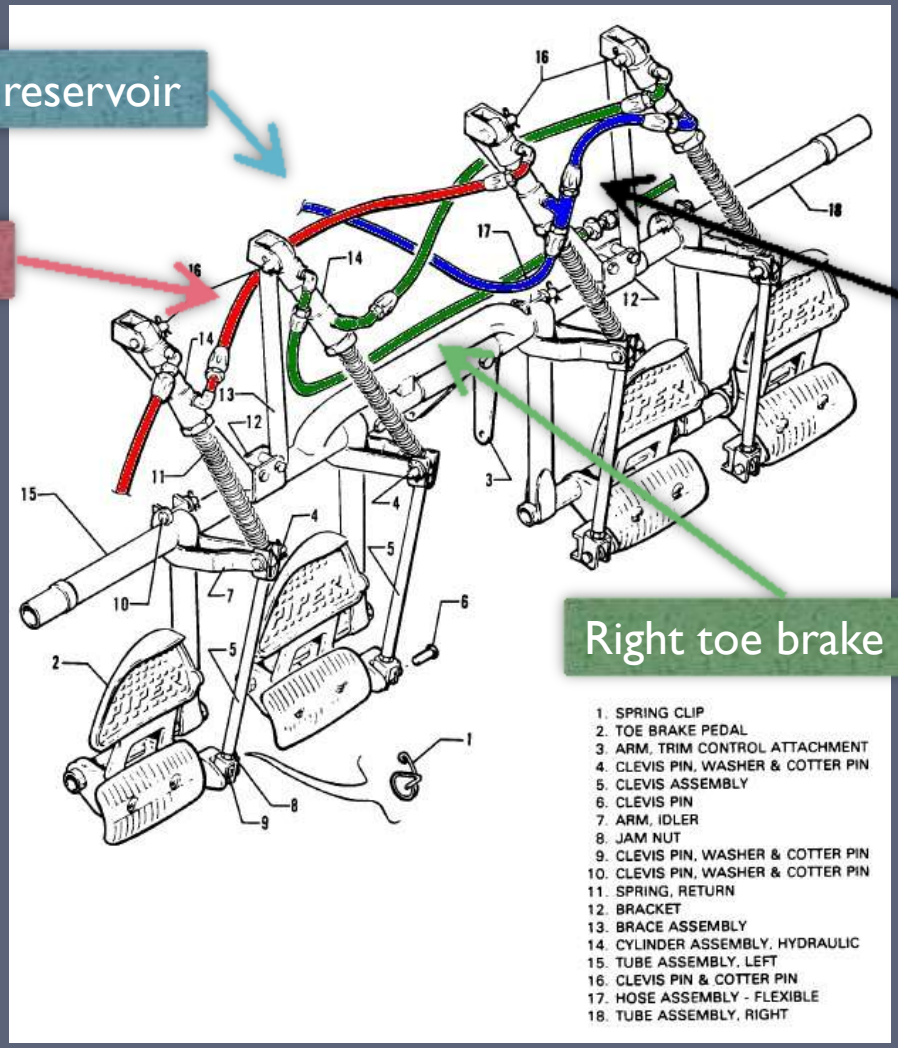


- One master brake fluid reservoir
- Hand brake, and left & right toe brakes all have separate brake cylinders
  - The hand brake is incorporated into the master brake cylinder
- Pilot and Co-pilot brake pedals are plumbed in series

Brake System - Detail

From master brake reservoir

Left toe brake lines

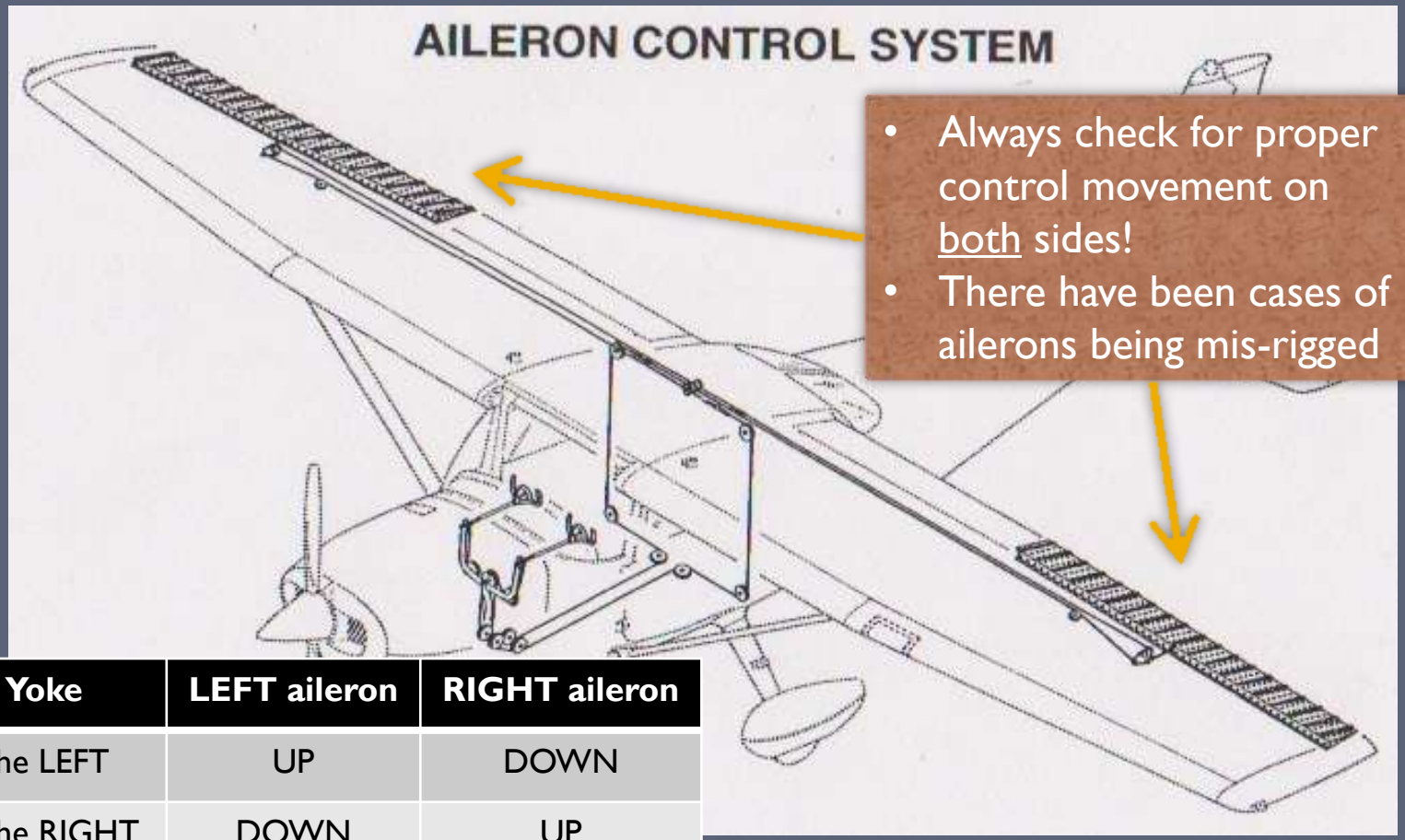


Brake fluid from the master brake reservoir feeds into the left and right toe brakes through the co-pilot's side

Right toe brake lines

Control System – Aileron

- Diagram is of a Cessna 172, but the Piper PA-28 system is very similar



- Always check for proper control movement on <u>both</u> sides!
- There have been cases of ailerons being mis-rigged

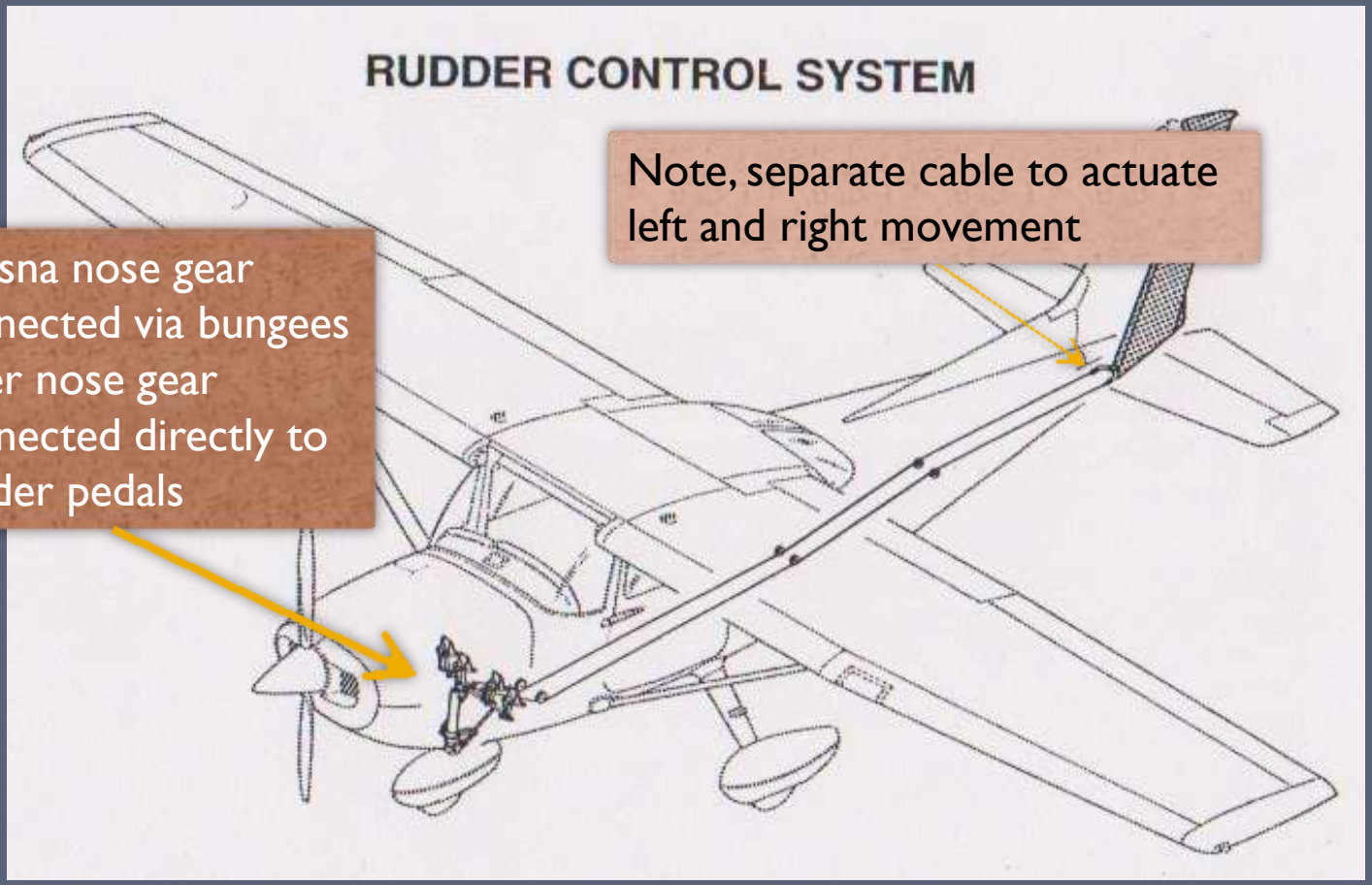
Yoke	LEFT aileron	RIGHT aileron
To the LEFT	UP	DOWN
To the RIGHT	DOWN	UP

Control System – Aileron, Continued

- What to check for during pre-flight
  - Is the control wheel level when both ailerons are neutral?
    - If not, indicates a rigging issue
  - Do both ailerons move in the proper direction?
    - And do they move freely?
  - Do you get full aileron deflection in both directions?
    - If not, this also indicates a rigging issue
  - Are there any bulges in the ailerons?
    - Bulges could mean the aileron was used to push the plane forward, and will cause an out-of-trim condition during flight
  - Are there any cracks in the aileron skin?
  - Is there excessive free play in the ailerons (without a resulting deflection in the control wheel)?
    - Too much (>0.24 “) could indicate low cable tension, among other things

Control System – Rudder

- Diagram is of a Cessna 172, but the Piper PA-28 system is very similar

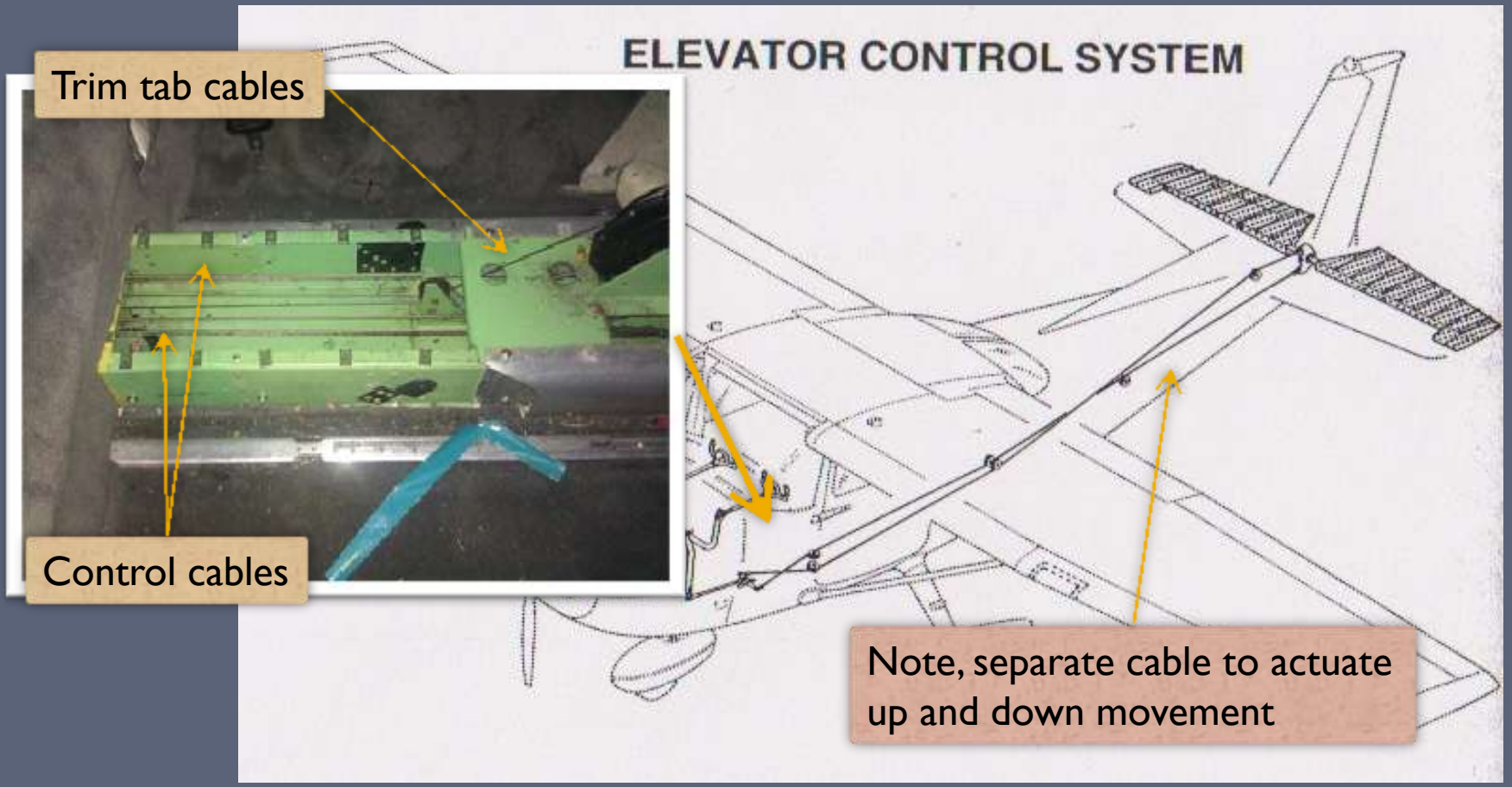


Control System – Rudder, Continued

- What to check for during pre-flight
  - Are the rudder pedals neutral when the rudder is streamlined?
    - If not, indicates a rigging issue
    - This may be difficult to check for – nose gear might not be in neutral position, based on how the aircraft is parked
  - Rudder travel and operation can't be tested during the walk-around (unlike a Cessna)
    - Is there excessive free play in the rudder?
  - Are there any bulges or cracks in the rudder or rudder skin?
    - Since the nose gear is directly connected to the rudder, excessive nose gear shimmy could cause damage

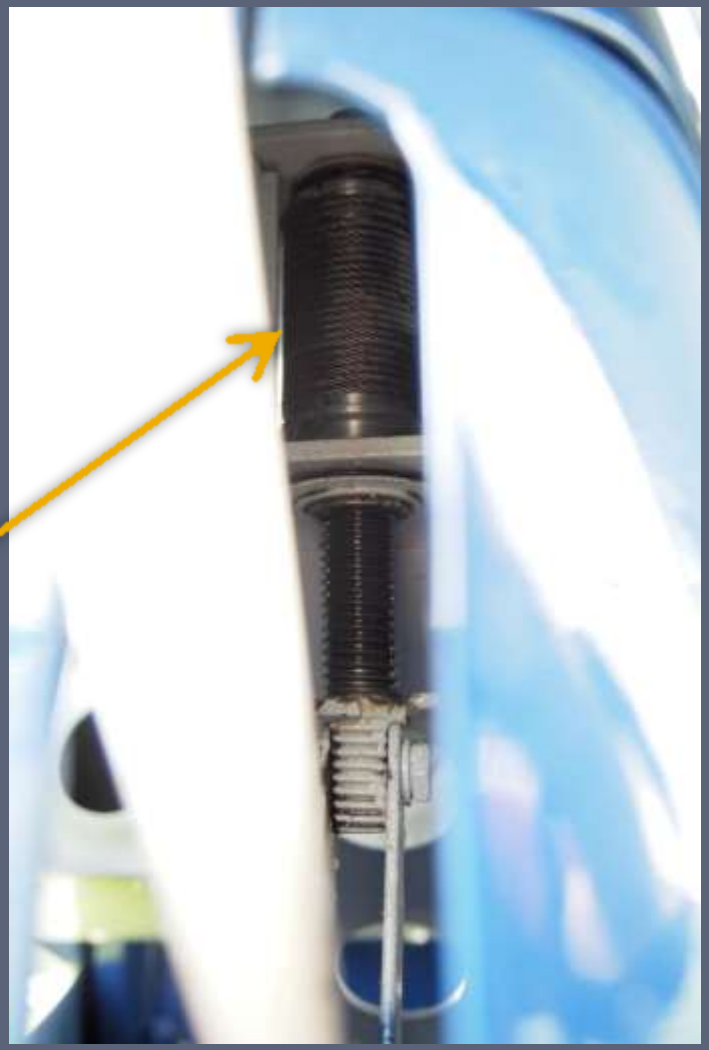
Control System – Stabilator

- Diagram is of a Cessna 172, but the Piper PA-28's rigging is very similar
  - NOTE: Stabilator and anti-servo tab are rigged separately



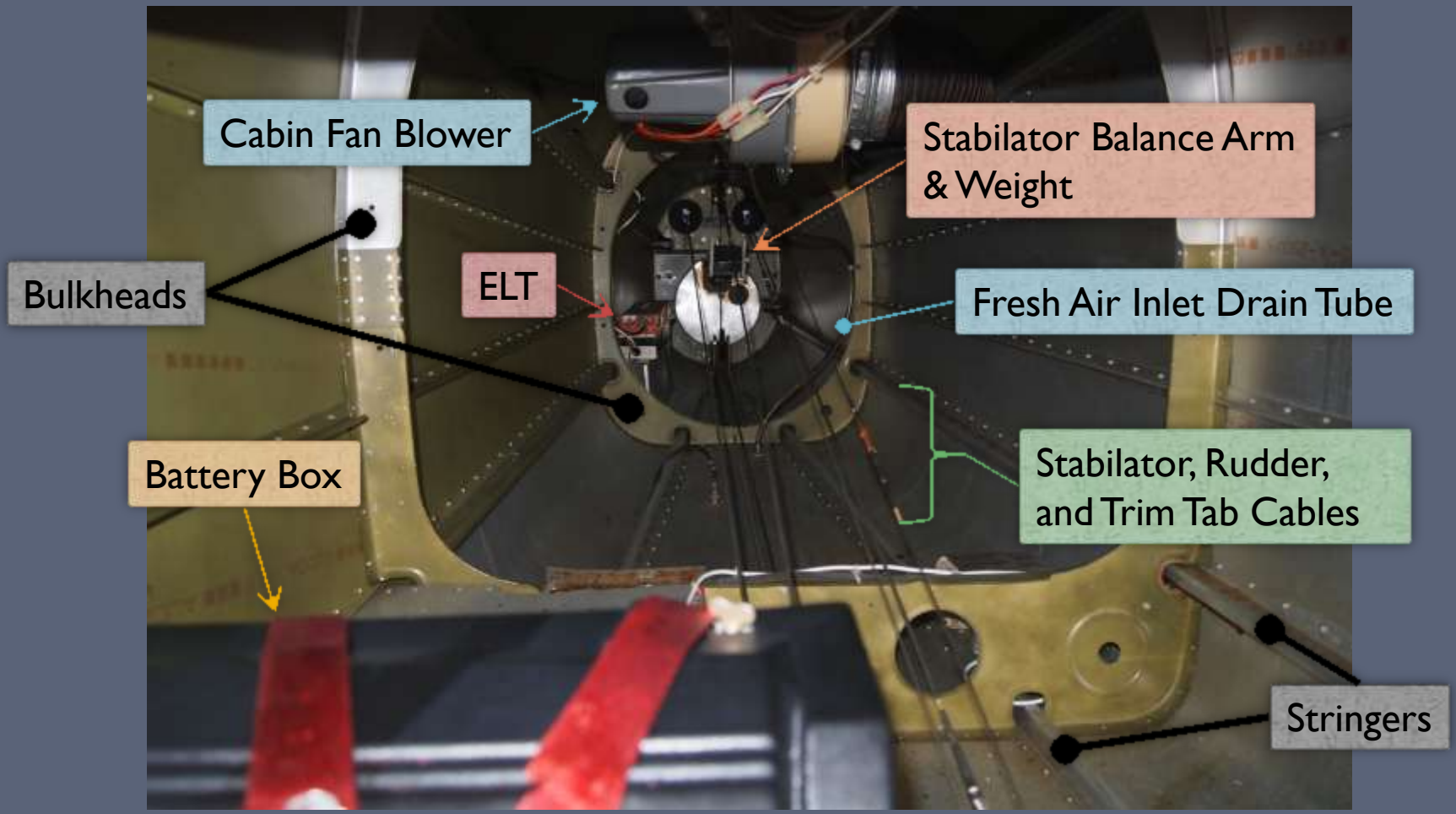
Control System – Stabilator, Continued

- What to check for during preflight
  - Does the stabilator and tab move in the proper direction?
    - Trim tab is an "anti-servo tab", and moves in the *same* direction of the stabilator's movement
  - Do you get full stabilator deflection in both directions?
  - Is there excessive free play in the trim tab?
    - Maximum of 0.15 "
  - Does the trim tab cabling look worn or frayed, or not evenly wrapped around the trim barrel?
  - Does movement of the trim wheel move the trim tab?
    - And does it move freely, or is there excessive resistance?

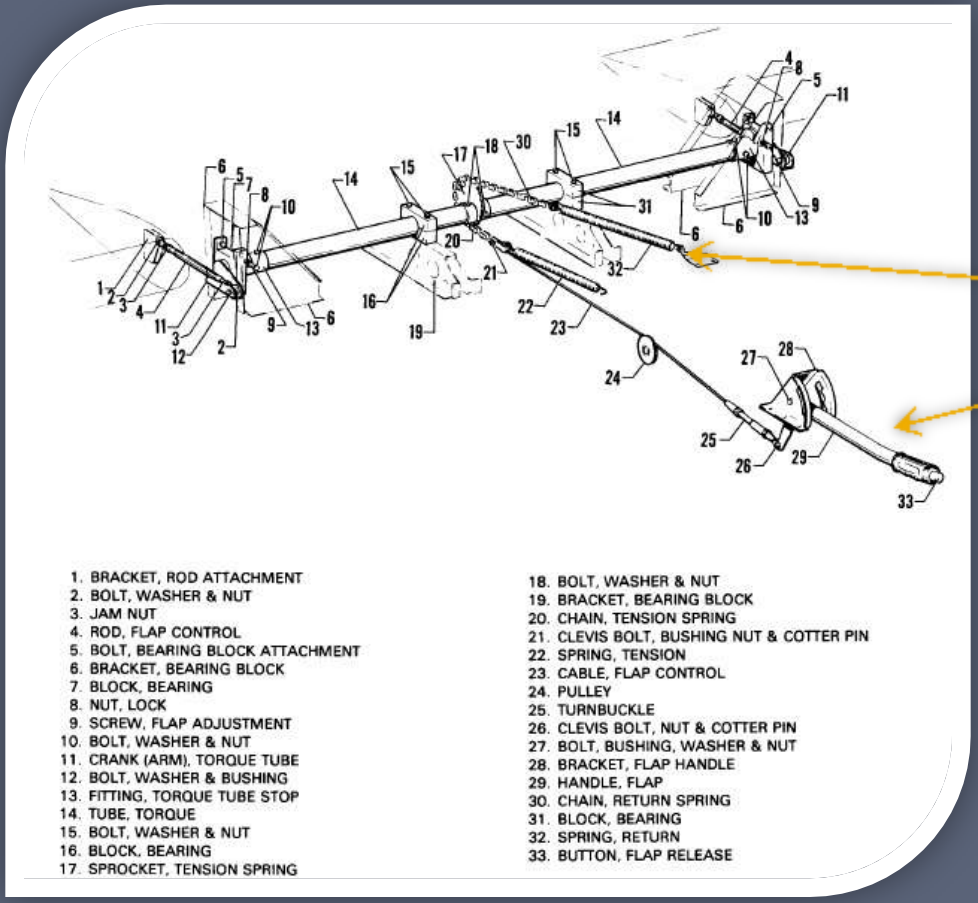


Control System – Empennage

- Empennage access panel (rear of baggage compartment)

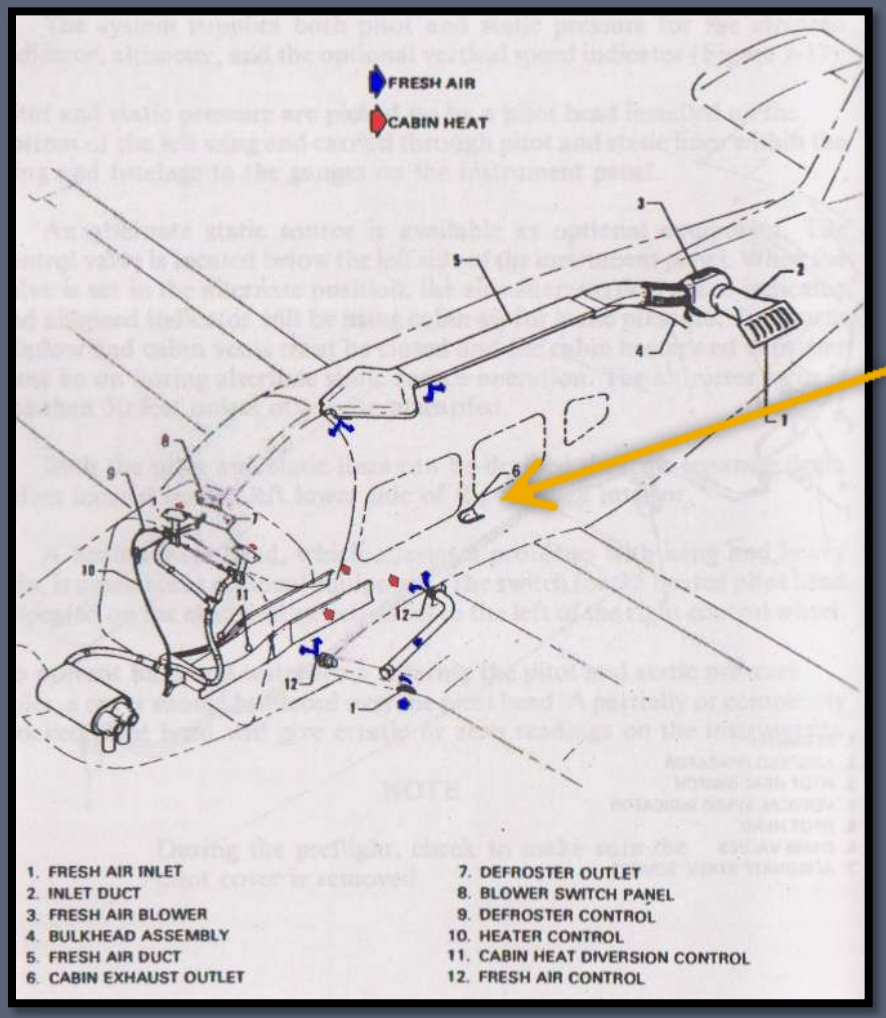


Control System – Flaps



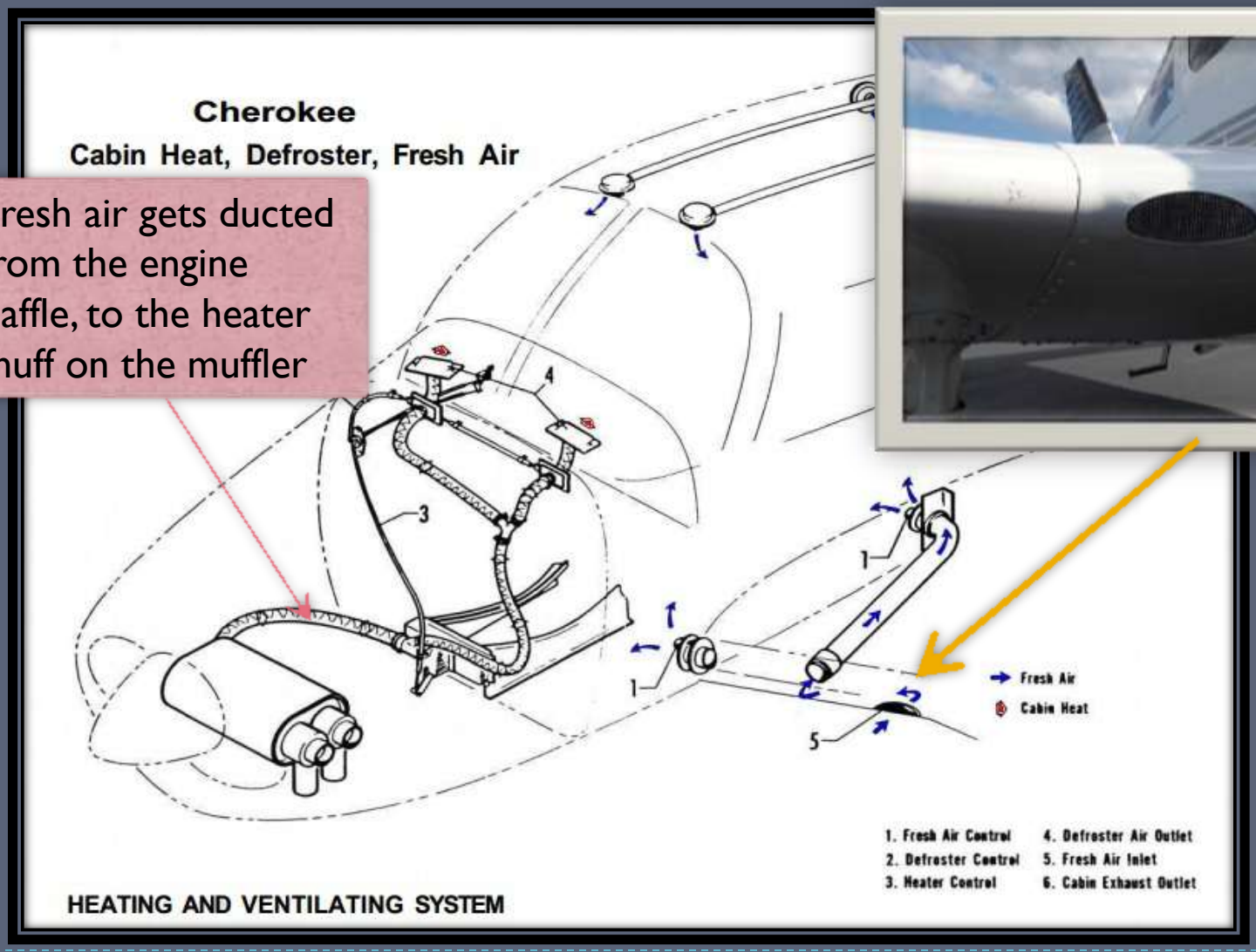
- Two main things to note
  1. Left and right flap are directly linked together
     - Virtually no chance of a split-flap condition
  2. Flap operation
     - Flaps are indirectly pulled UP by spring tension
     - Flaps are *directly* pulled DOWN by the flap handle
- *Due to aerodynamic forces, you might not be able to retract flaps during a spin, with icing, or in other situations outside of the normal operating envelope*
  - Always stay within the operating envelope!
- Flaps may also remain stuck down if the spring breaks

Heating & Ventilation

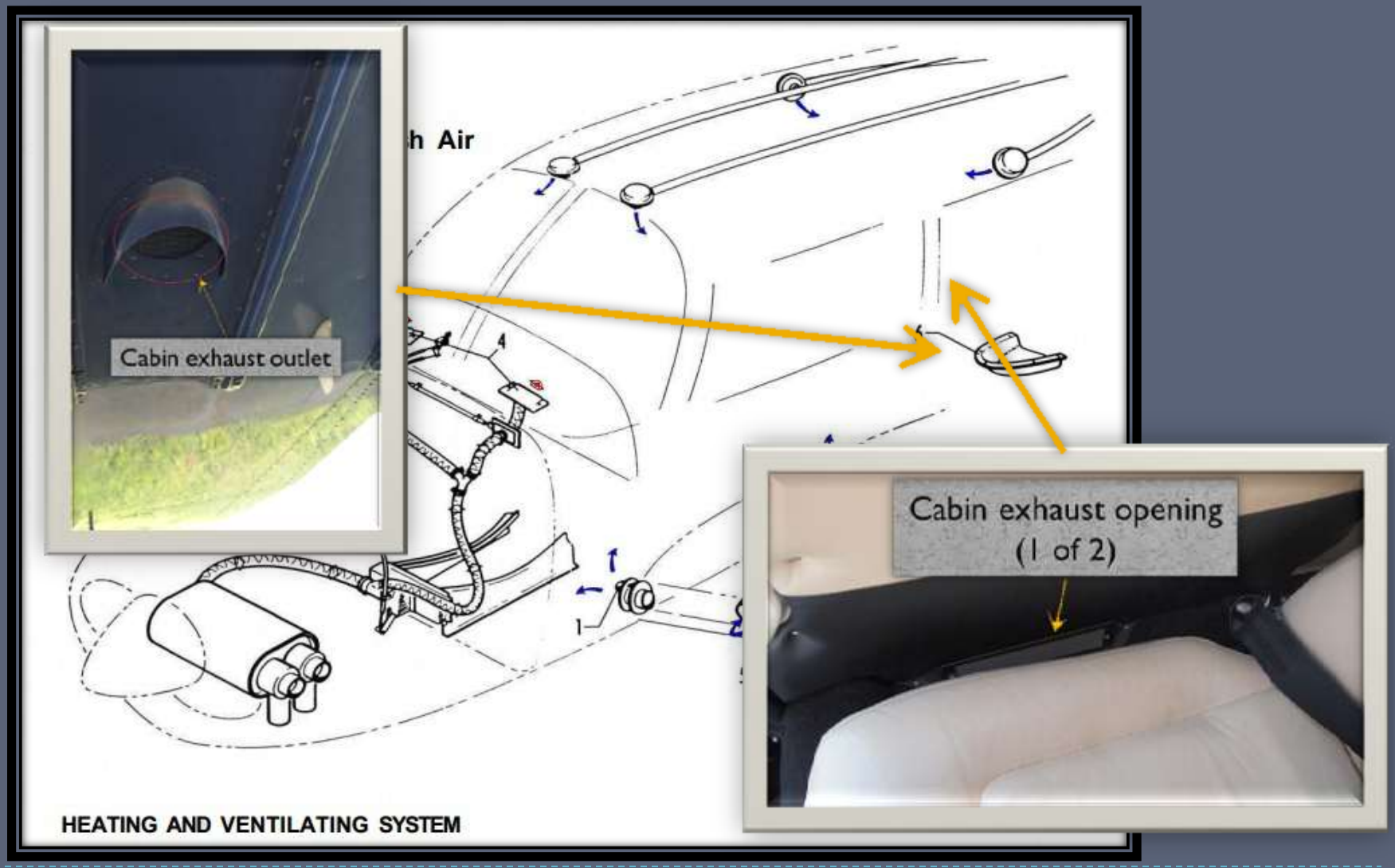


- Airflow is regulated between front and rear seats by levers
- Air is exhausted by an outlet under the rear seats
- Heater and defroster
  - Ram-air: ineffective until you are moving
  - Heat comes from a muffler shroud
    - Cracks in muffler could lead to CO poisoning

Heating & Ventilation – Close Up



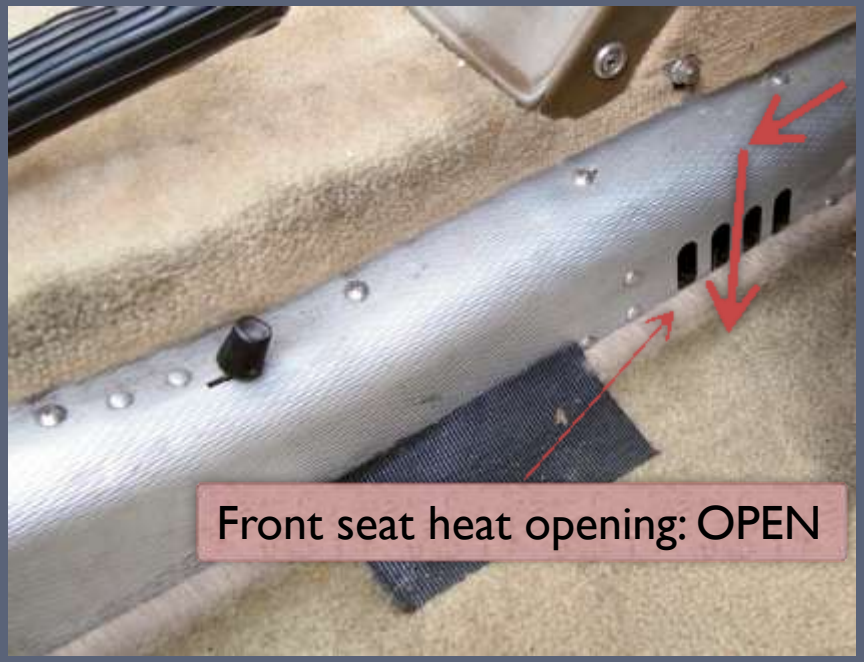
Heating & Ventilation – Close Up (Cont.)

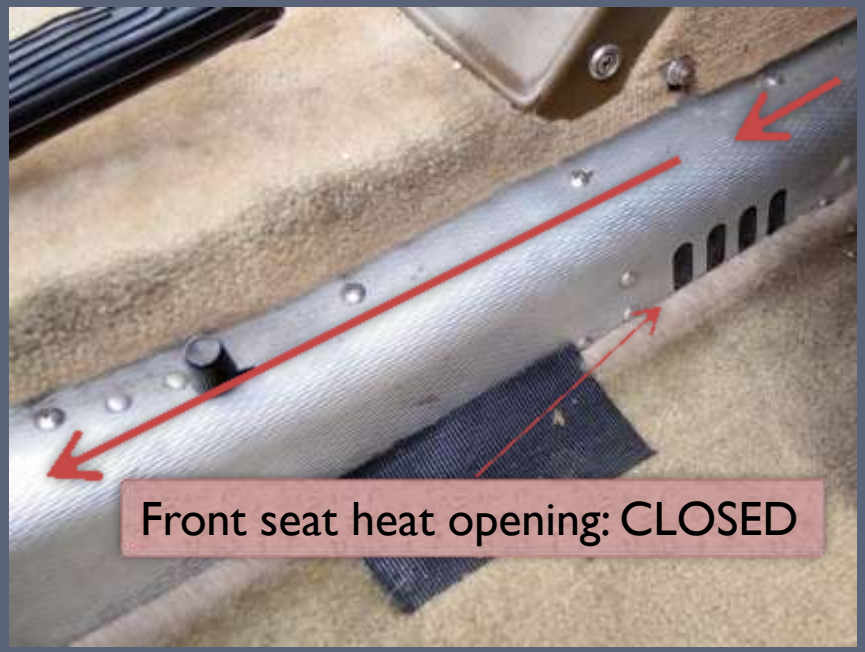


Heating & Ventilation – Heat Diversion

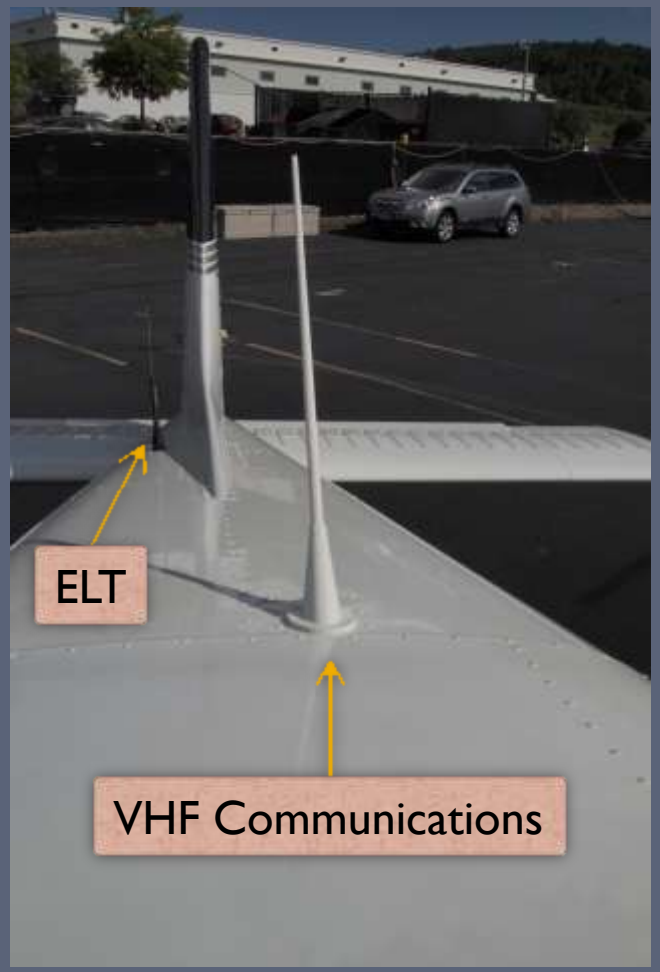
Push forward to divert heat to the front seat

Push reward to divert heat to the back seat



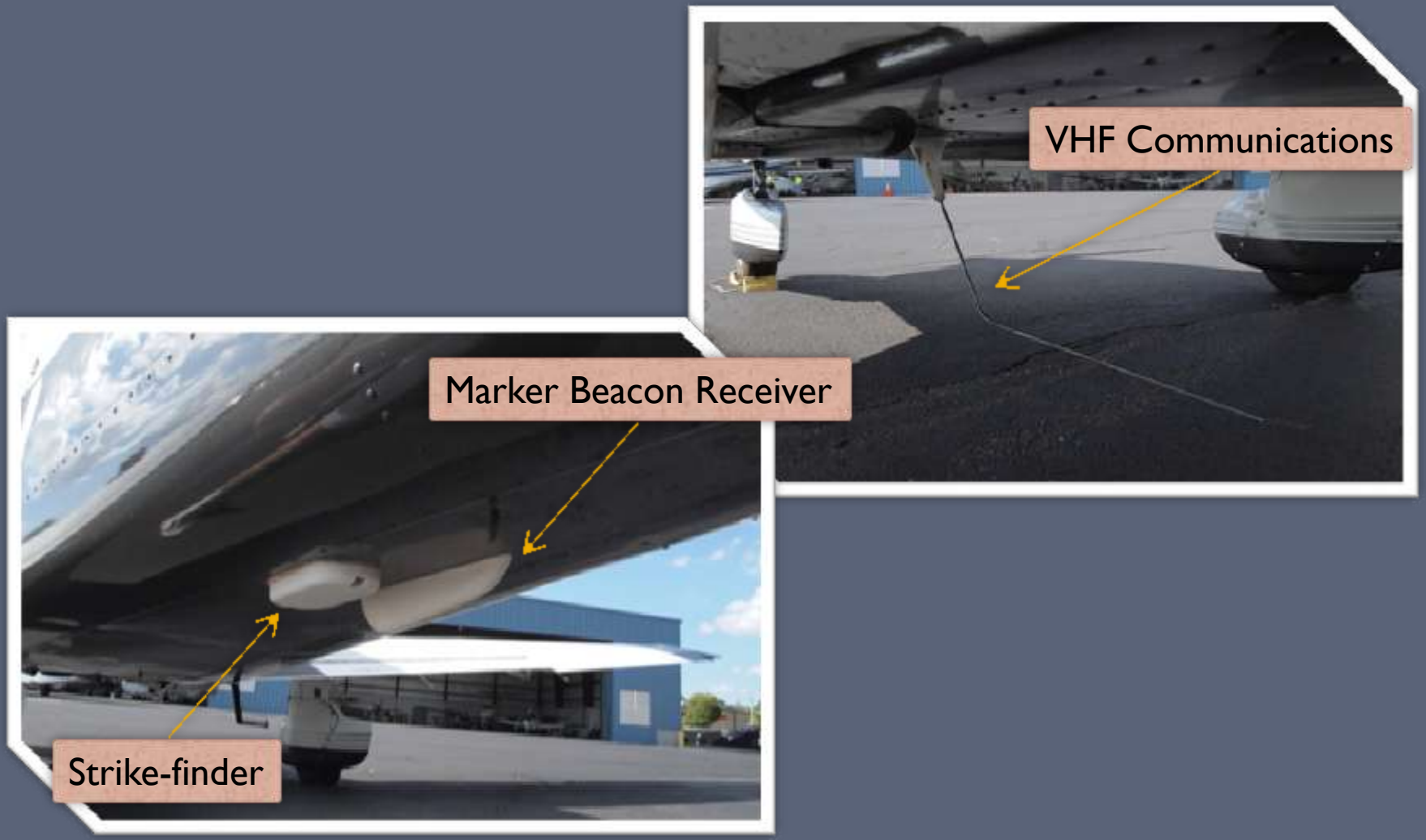


Exterior

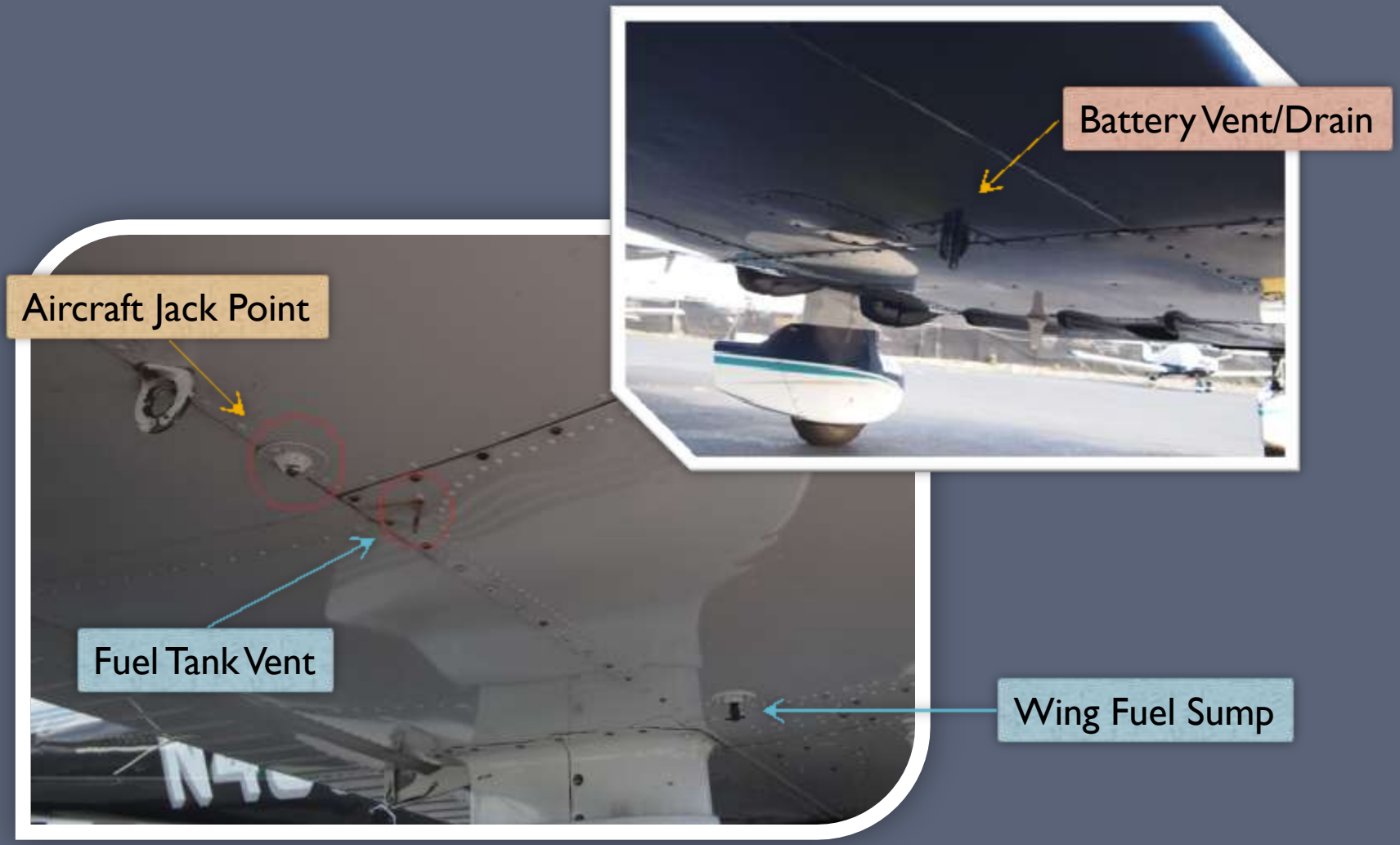


Exterior – Part 2

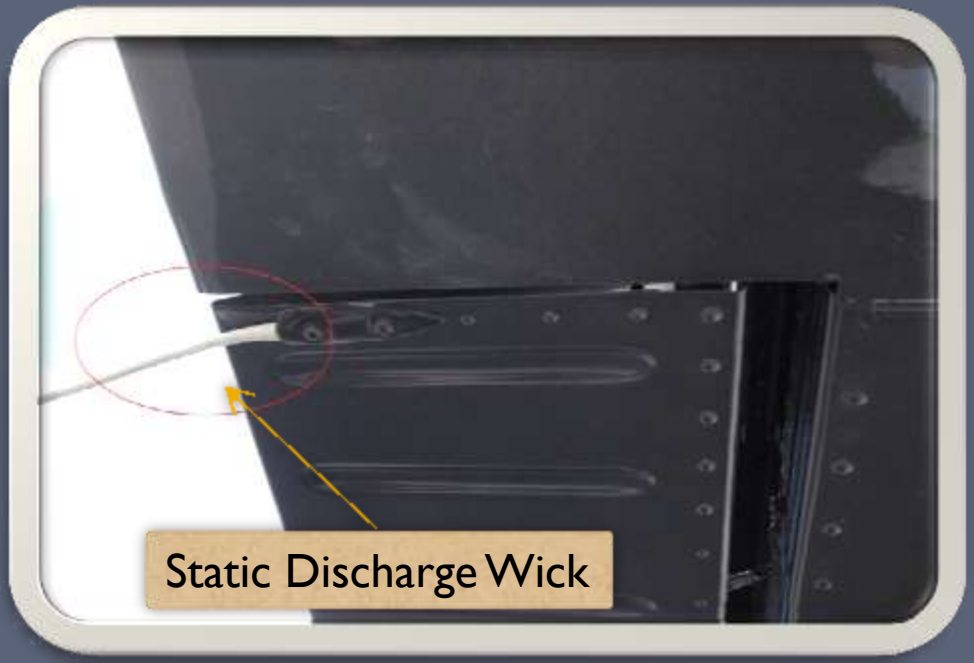
Exterior – Part 3



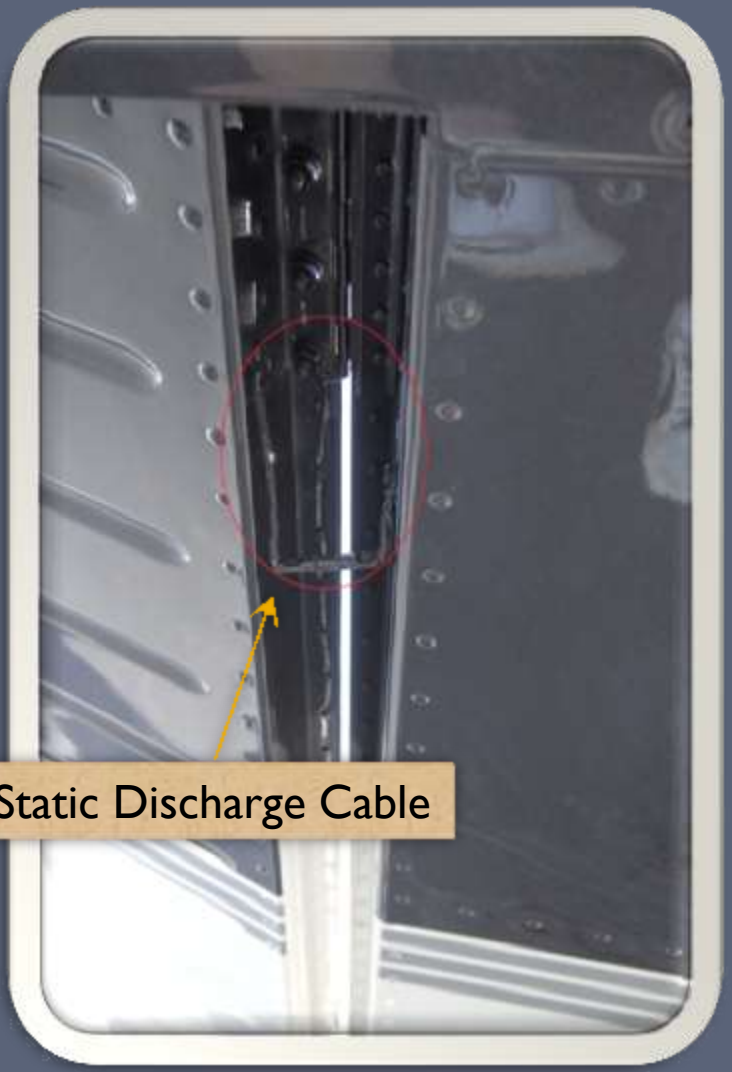
Exterior – Part 4



Exterior – Part 5



- As an aircraft moves through the air, it builds up a static charge. Eventually, the charge differential will become large enough that it will discharge into the air.
  - This discharge causes electromagnetic interference that will be picked up in the radios as loud static.
- The static discharge wicks help control the static build-up, and greatly reduces the electromagnetic interference from static discharges.



Tires & Landing Gear

Question – What is more stressful for the tires: takeoff or landing?

- Consider what the tires go through for takeoff versus landing
  - Landing: Sudden acceleration to touchdown speed, then continual deceleration and slow taxiing
  - Takeoff: Taxiing for takeoff (especially at a large airport) builds up heat in the tires, and then continual acceleration during takeoff
- Answer: both are stressful events

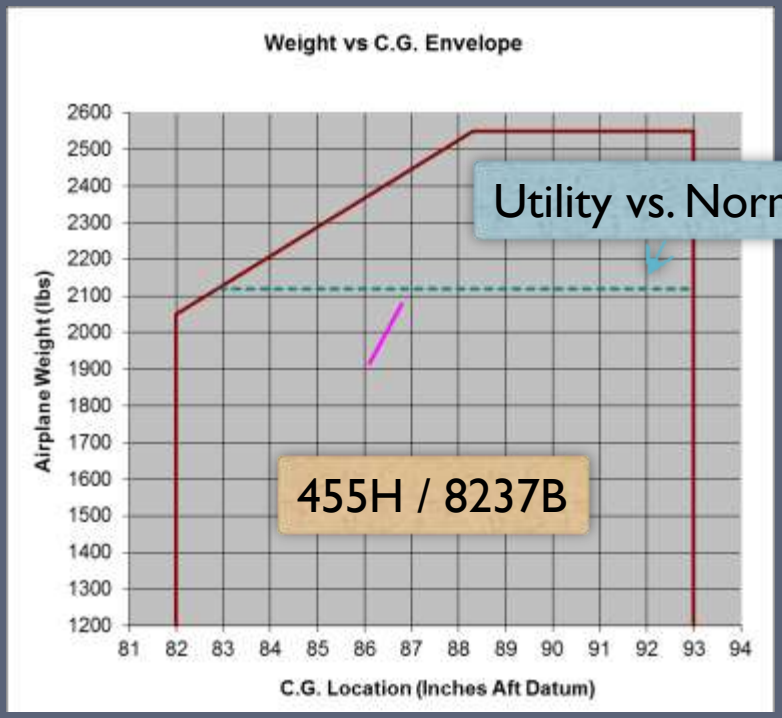
- Over-inflation
  - Can cause uneven tread wear
  - Reduced traction
  - Tread more susceptible to cutting
  - Increased stress on aircraft wheels
- Under-inflation
  - Uneven tire wear
  - Greatly increases stress and flex heating in the tire
    - Shortens tire life
    - Can lead to tire blowouts

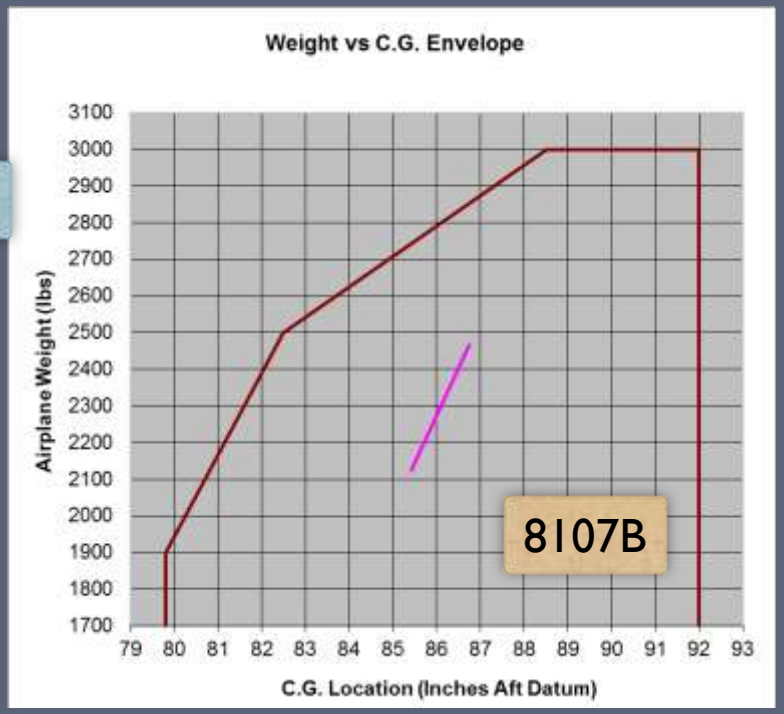
- Proper inflation values
  - 455H & 8237B
    - Nose gear: 18psi
    - Main gear: 24psi
  - 8107B
    - Nose gear: 28-30psi
    - Main gear: 35-40psi
- Proper strut extension
  - Nose gear: 3.25" +/- 0.25"
  - Main gear: 4.5" +/- 0.50"

Weight & Balance

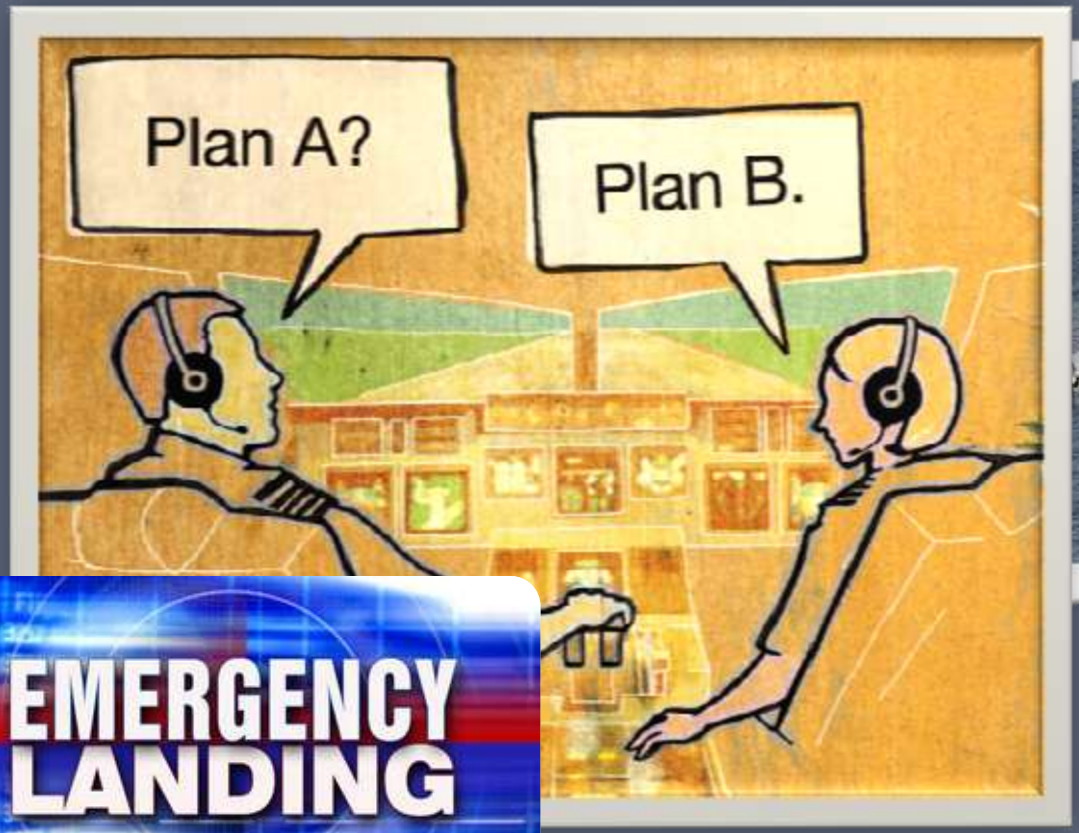
- Empty Weight
  - Aircraft Weight
  - Un-drainable oil & fuel

Density Altitude – Just because you're within the weight & balance, doesn't mean you're necessarily safe!



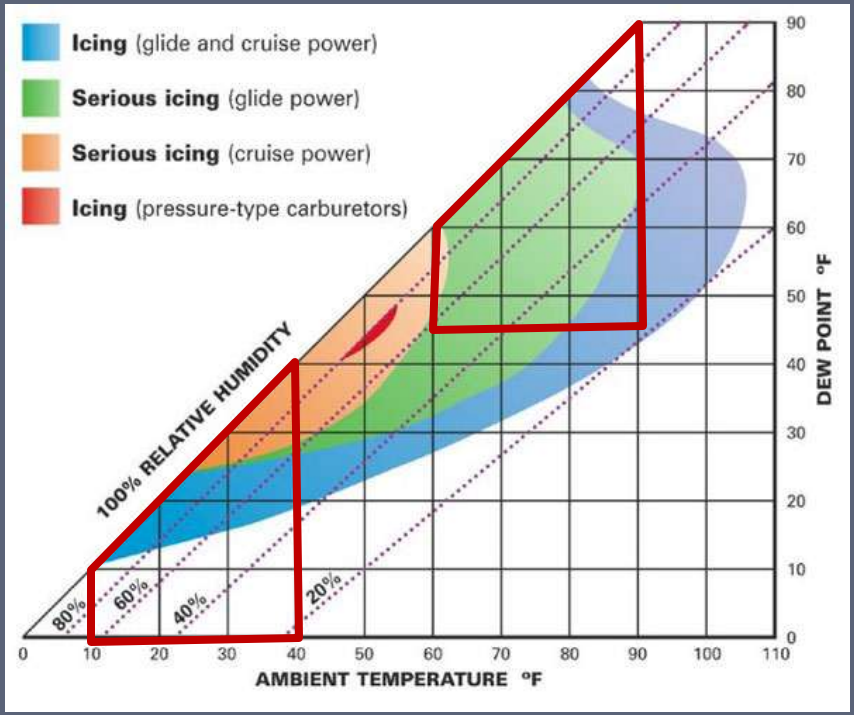


Emergencies



Carb Icing

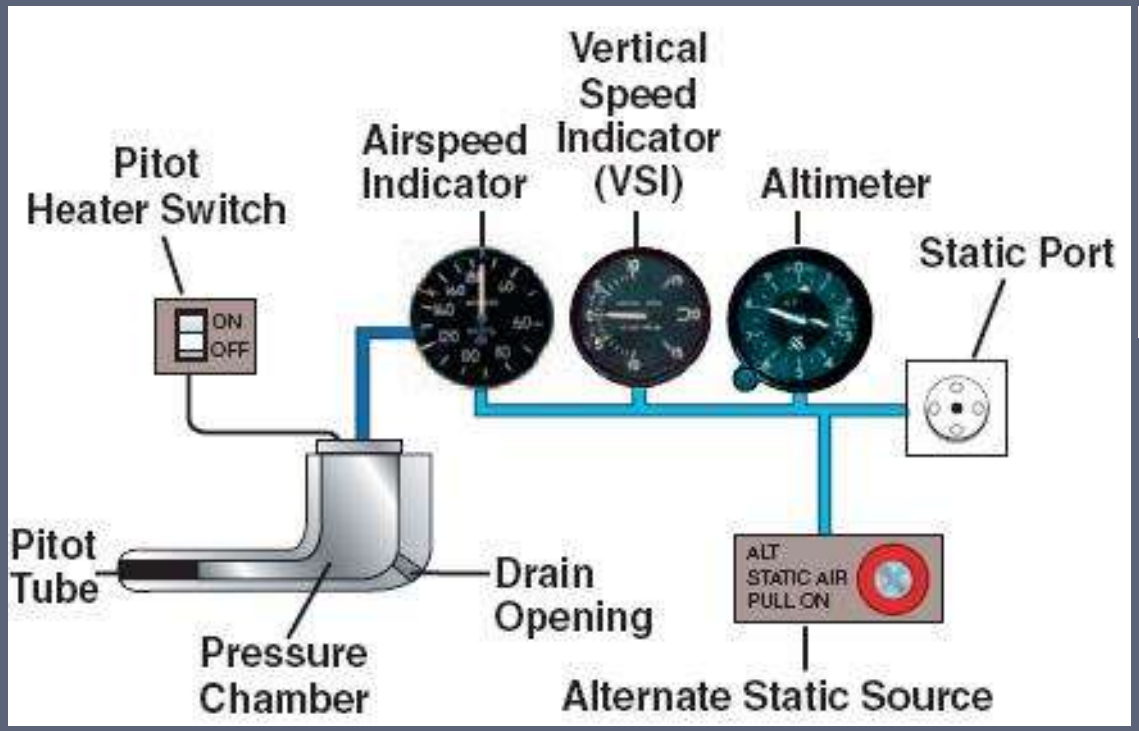
- Be aware of the potential for carb icing
  - When is carb icing more of a threat: the winter or the summer?
    - Answer: More likely in the summer, but potentially more serious in the winter
    - But there's the potential for it nearly year-round
    - See more with AC 20-113, Lycoming SI 1148C

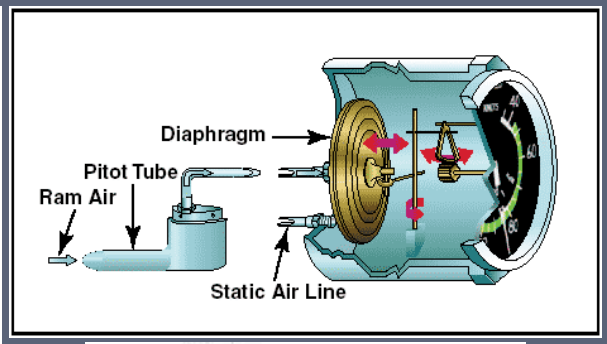


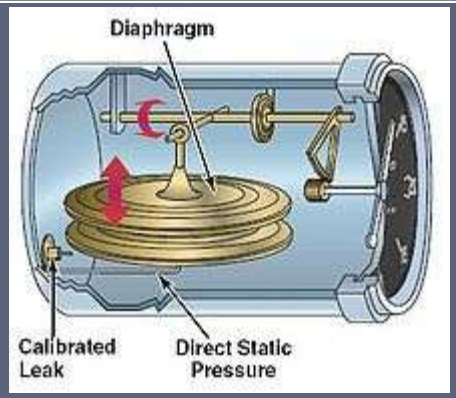
- ALWAYS use full carb heat!
  - Don't use partial heat: ice could reform in the intake system
  - Partial heat is only acceptable with a carb temperature gauge
- During run-up, note a 100-300 RPM drop with carb heat applied
  - If engine roughness and/or RPM increase, indicates potential carb icing
- Detecting carb ice
  - Fixed-pitch (37B, 55H)
    - Unexplained decrease in RPM
  - Constant-speed (07B)
    - Unexplained decrease in MP
- If carb ice is suspected,
  1. Apply carb heat
  2. Wait for a decrease in engine roughness and/or increase in RPM
  3. [Piper POH] If no change after about one minute, turn carb heat off
     1. i.e. Additional troubleshooting required

Pitot-Static Problems

- Know specific power settings that give a known airspeed
- Pitot-heat is anti-ice; turn on *before* entering visible moisture when close to freezing temperatures







Pitot-Static Problems - Continued

Activate pitot heat

Pitot Port	Static Port	Flight Attitude	Result
BLOCKED	CLEAR	Climbing	ASI *increasing*
		Level	ASI frozen
		Descending	ASI *decreasing*

Pitot Port	Static Port	Flight Attitude	Result
BLOCKED	BLOCKED	Climbing	ASI & Alt. Frozen, VSI 0
		Level	
		Descending	

Use Alt. Static Air

Pitot Port	Static Port	Flight Attitude	Result
CLEAR	BLOCKED	Climbing	ASI *decreasing*
		Level	ASI correct
		Descending	ASI *increasing*

Pitot-Static Problems – Discussion

- How would you know if you have a static port blockage?
  - Would ATC know? Why, or why not?
  - You make a pitch and/or power change and don't get the expected indication
  - Use and cross-check with GPS altitude
  - What about occasionally switching to alternate air?
    - If your altitude is way off, it may damage the altimeter
- How would you know if you have a pitot port blockage?
  - Would ATC know? Why, or why not?
    - Would they necessarily tell you?
  - You make a pitch and/or power change and don't get the expected indication
  - Use and cross-check with GPS airspeed
    - Remember, GPS is ground speed, not air speed

Pitot-Static Problems – Examples

- Vertical Speed Indicator
  - Pointer not at zero when level
    - Aging diaphragm / zero rate-of-climb out of adjustment
  - Pointer doesn't respond
    - Obstruction in static line
    - Static vents frozen over
    - Water in static line
  - Pointer oscillates
    - Leak in static lines
    - Possibly defective instrument
  - Rate of climb changes reading when airplane is banked
    - Water in static lines
  - Rate of climb reads very low during (obvious) climb or descent
    - Instrument case broken or leaking
- Altimeter
  - Excessive scale error or oscillations
    - Instrument defective
  - Setting knob hard to turn
    - Instrument defective
  - Altimeter stuck / doesn't change with altitude
    - Water or restriction in static line
  - Altimeter changes reading when airplane is banked
    - Water in static line
- Airspeed Indicator
  - Airspeed oscillates
    - Instrument defective
  - Airspeed reads high
    - Instrument defective
    - Leak in static lines
  - Airspeed reads low
    - Instrument defective
    - Leak in static lines
    - Pitot head incorrectly aligned
  - Airspeed changes when airplane is banked
    - Water in static line

Vacuum Failure

- If instrument rated, be sure to include the vacuum gauge in your scan
  - Know where it is on the instrument panel
- Affected systems
  - Attitude Indicator
  - Directional Gyro
- Know what your backups are
  - Turn Coordinator – electrically-powered gyro
  - All 3 Flying 20 Club planes have a backup electrical Attitude Indicator
- Backup vacuum pump
  - 8237B & 455H
    - Monitor electrical load when turned on

Electrical Problems

What systems are powered by the electrical system?

- Attitude instruments
  - Turn Coordinator
  - Electric Attitude Indicator
    - 455H's electric AI *does not* have a backup battery
  - Vacuum gauge
- Navigation equipment
  - VOR/LOC/GPS
  - Transponder
- Autopilot
  - Electric pitch trim
- Radios
- Engine instruments
  - Fuel level
  - Fuel pressure
  - Oil pressure & temperature
  - EGT/CHT/OAT
    - 455H still uses an analog OAT
  - Volt/ammeter…obviously
  - 8107B
    - Tachometer
    - Fuel flow
- Lights
  - Interior
  - Exterior
- Other
  - CO detector
  - Cabin fan
  - Electric fuel pump
  - Clock
  - 455H
    - Carb ice detector
    - LASAR ignition
    - Electric vacuum pump
  - Hobbs meter
    - The one good thing!

Electrical Problems - Continued

- Know the layout of the circuit breaker panels
- Know which circuit breakers can be pulled

8107B

- Pitch trim
- Landing Lights
- M3 GPS
- Auto-pilot

8237B

- Pitch trim
- Auto-pilot
- Avionics fan

455H

All can be pulled

Electrical Problems - Troubleshooting

- Never reset a circuit breaker more than once!
- If the battery is dead, getting an external power start is not recommended
  - The battery's capacity is very low, and may not provide power very long if the alternator fails

Zero-reading on ammeter	Verify reading isn't simply low by turning on electrical equipment	
	Check for a popped alternator field circuit breaker	
	Reset overvoltage relay (cycle ALT switch)	
	Reduce electrical load and land as soon as practical	
Electrical overload	"Stuck" starter	Starter is acting as a generator; electrical equipment may not function properly
	Possibly a low battery	Indication should decrease within 5 minutes
	Turn BAT switch off, and monitor ammeter	Indication should decrease within 5 minutes
	Turn ALT switch off	
	Reduce electrical load and land as soon as practical	

Engine Problems

- Three types of problems
  1. Complete power loss
  2. Partial power loss
  3. Pending potential problem
- Three phases of flight
  1. During takeoff
     1. Before obtaining a safe altitude
     2. After obtaining a safe altitude
  2. Cruise
  3. Descent & Approach
- The type of problem you have, and the phase of flight that it occurs, will determine which steps you should take.

- Above all else, maintain a safe airspeed!
  - If doing so means having to do a controlled crash, *so be it* – better to crash land under control, than to stall/spin into the ground
    - Nearly all low-altitude stall/spin crashes are fatal!
    - But controlled crash landings have much more favorable outcomes
- When you have an engine problem, "think FAST"
  - Fuel – Fuel pump, switch tanks
  - Air – Carb Heat / Alternate Air
  - Spark – Magnetos
  - Trim - For best glide

Engine Problems – Continued

- Complete Engine Power Loss
  - During takeoff, before safe altitude
    - Maintain safe airspeed
    - Use flaps as necessary
    - Make only shallow turns
  - During takeoff, after safe altitude / During descent and approach
    - Switch fuel tanks
    - Verify mixture rich, fuel pump on, and primer is locked
    - Carb heat on
    - Try left or right magneto separately
    - Adjust mixture and/or throttle
  - During cruise
    - Check engine instruments for indication of cause of power loss
- Partial Engine Power Loss
  - Generally, the same steps as before, except less time critical
    - Aviate, Aviate, Aviate
      - THEN Navigate (and Communicate)
- Engine Roughness / Partial Power Loss
  - Carb heat on
    - [Piper POH] If still rough after one minute, carb heat off
  - Adjust mixture for maximum smoothness
    - Even at the same altitude, you may need to occasionally re-lean due to different air densities ("high to low, lookout below", etc)
  - Fuel pump on
    1. In order to switch tanks
    2. In case of engine-driven fuel pump failure
  - Switch tanks
    - Fuel tank may be empty (or nearly empty)
    - Fuel may be contaminated
    - There may be a block in the fuel line to that tank
    - The fuel vent may be blocked
  - Try left or right magnetos separately
    - If operation satisfactory, continue at reduced power, mixture full rich, and land at first practical airport

Engine Problems – Indications

- Loss of oil pressure
  - Faulty gauge
    - Most likely if oil temperature doesn't also increase
  - Malfunction in oil pressure regulating system
  - Oil leak
- Land as soon as possible
  - If engine still running, maintain altitude in case of a sudden engine stoppage
- The low oil pressure light will illuminate when the oil pressure drops below 35psi.
- High oil pressure
  - Faulty gauge
  - Malfunction in oil pressure regulating system
- Land as soon as possible
  - High oil pressure can damage the engine seals
- Low oil temperature
  - Engine not pre-heated enough
  - Winterizer plate not installed during cold weather
  - Faulty gauge
- Most likely to happen on the ground – shut engine down and investigate the cause
- High oil temperature
  - Low oil level
  - Obstruction in oil cooler
  - Winterizer plate still installed during warm weather
  - Damaged/improper baffle seals
  - Faulty gauge
- Climb at a higher airspeed or level off
- Increase mixture
- Reduce throttle
- If temperature continues to rise, land as soon as possible

Engine Problems – Indications (2)

- Excessively high CHT
  - Use of a lower fuel grade than 100 octane
  - Extremely high manifold pressure with low RPM
  - High power setting with an excessively lean mixture
  - Extended ground operation or steep climbs in which cylinder cooling is reduced
  - Climb at a higher airspeed or level off
  - Increase mixture
  - Reduce throttle
  - If temperature continues to rise, land as soon as possible
- Low fuel pressure
  - Faulty gauge
  - Fuel system blockage
  - Engine-drive pump failure
  - Low fuel
  - Boost pump on
  - Switch tanks

Engine Problems – Miscellaneous

- Excessive engine vibration (other than engine roughness)
  - Could be a propeller out of balance
    - If imbalance is severe enough, it could cause the engine to be pulled off the engine mount
      - If this happens, recovery is likely impossible due to the severe weight & balance imbalance
  - Could also be a more serious engine problem
- Engine fire
  - During start
    - Mixture to idle cutoff
    - Open throttle & continue cranking engine
      - This is to attempt to draw the fire back into the engine
    - If fire continues for more than a few seconds, extinguish it by the best external means
  - In flight
    - Fuel selector off
    - Throttle closed
    - Mixture to idle cutoff
    - Electric fuel pump off
    - Heater & defroster off

Carbon Monoxide

Concentration	Symptoms
35 ppm (0.0035%)	Headache & dizziness within 6-8 hours of constant exposure
200 ppm (0.02%)	Slight headache, fatigue, and nausea within 2-3 hours
400 ppm (0.04%)	Headache within 1-2 hours
800 ppm (0.08%)	Dizziness, nausea, and convulsions within 45 minutes
1600 ppm (0.16%)	Headache, dizziness, and nausea within 20 minutes; death in less than 2 hours
3200 ppm (0.32%)	Headache, dizziness, and nausea within 5-10 minutes; death within 1 hour
6400 ppm (0.64%)	Death within 25 minutes
12800 ppm (1.28%)	Death in less than 3 minutes

- Effects are cumulative over time; even small concentrations over time can be hazardous
- Altitude intensifies the effects
- Smoking also intensifies the effect
  - Smoking is roughly equivalent to a 5000' altitude

Carbon Monoxide – CO Alerts

- All three Flying 20 Club aircraft have the same CO detector installed, BUT they are located differently on the panel; know where to look!
  - Alert is triggered when the CO level > 50ppm
- What to do if you get an alert
  - First of all, don't assume it's a false alarm!
    - False alarms are possible, but the alert must be treated as valid
    - ONE reset of the system is permissible
  - Shut off the heater and defroster
  - Open fresh-air vents and storm window
  - Descending will reduce the effects of altitude and might buy you needed time
  - Land as soon as practicable
    - Declare an emergency if necessary

Control System Failures

- Broken throttle cable
  - Adjust power using the mixture control
- Broken stabilator cable
    - Trim for stable, level flight, until ready to land
    - Plan for a no-flap landing
      - Reduces the pitch variations required
  - Can't raise nose
    - Apply substantial nose-up trim
      - Push *forward* to pitch down, *release pressure* to pitch up
  - Can't lower nose
    - Apply substantial nose-down trim
      - Pull *aft* to pitch up, *release pressure* to pitch down
- Jammed rudder
  - Airplane will generally be flyable, but in a slip
    - Keep this in mind as you make any configuration changes
      - Airspeed may be erroneous
      - Unnecessary maneuvering could cause a stall/spin

Control System Failures – Brakes

- Signs of impending brake failure
  - Gradual decrease in braking action after brake application
  - Noisy or dragging brakes
  - Soft or spongy pedals
  - Excessive travel and weak braking action
- Dealing with brake failure
  - Throttle to idle
  - Full aft elevator (to aide in aerodynamic braking)
  - If spongy brakes or pedal travel increases
    - Attempt to pump the brakes to build up brake pressure
  - If one brake is weak or fails
    - Use the other brake sparingly, using opposite rudder as required

Miscellaneous

- Seat slides back on takeoff or landing
  - DO NOT grab the yoke!
    - Be sure to inform your passengers (especially non-pilots) in the pre-flight briefing
- Sick passenger (airsick or otherwise)
  - What would you do? VFR, IFR
- Runaway pitch trim
  - What would you do?
    - Disconnect autopilot
      - Yoke disconnect
      - Autopilot master switch
      - Pull circuit-breaker
    - Disable electric pitch trim
      - Electric pitch trim master switch
      - Pull circuit-breaker
    - Turn off avionics master switch
    - Turn off master switch
  - Autopilot (including pitch trim) servos are designed to be overpowered
  - There is also a speed sensor that disables the electric trim over 140 KIAS
- Propeller over-speed
  - 455H & 8237B
    - Reduce throttle
      - Stay below 2700 RPM
    - Reduce airspeed
  - 8107B
    - Reduce throttle
      - Stay below 2400 RPM
    - Check oil pressure
    - Reduce prop control
    - Reduce airspeed

Miscellaneous - Continued

- Spins (unintentional)
  - Exact steps vary from plane to plane – read the POH
    1. Throttle to idle
    2. Ailerons neutral
    3. FULL opposite rudder
       1. Followed by control wheel full forward
    4. Neutralize rudder after rotation stops and smoothly regain level flight
       1. Airspeed will build rapidly, so return to level flight needs to be quick, but smooth so as not to overstress the airframe
- Open door
  - Such a common occurrence that is a non-issue, but frequently causes unnecessary accidents
  - Remember, the doors are double-latched, so it's unlikely it is completely unlatched
  - AVIATE, then determine best course of action
    - Nearly impossible to close the door yourself, but if it's only partially unlatched, it *may* be possible for a passenger to attempt to close the door
    - Otherwise, consider landing as soon as possible and closing on the ground

More Information

- AFM or POH
  - Archer II: 761-722
  - Archer III: 761-868
  - Dakota: 761-689
- Operator's Manual
  - Lycoming O-360: 60297-12
  - Lycoming O-540
- Airplane Maintenance Manual
- Type Certificate
  - Aircraft
    - Piper PA-28
  - Engine
    - Lycoming O-360
    - Lycoming O-540
  - Propeller
    - Sensenich 76E-series
    - Hartzell F2YR-series
- Pilot's Handbook of Aeronautical Knowledge (FAA-H-8083-25A)

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