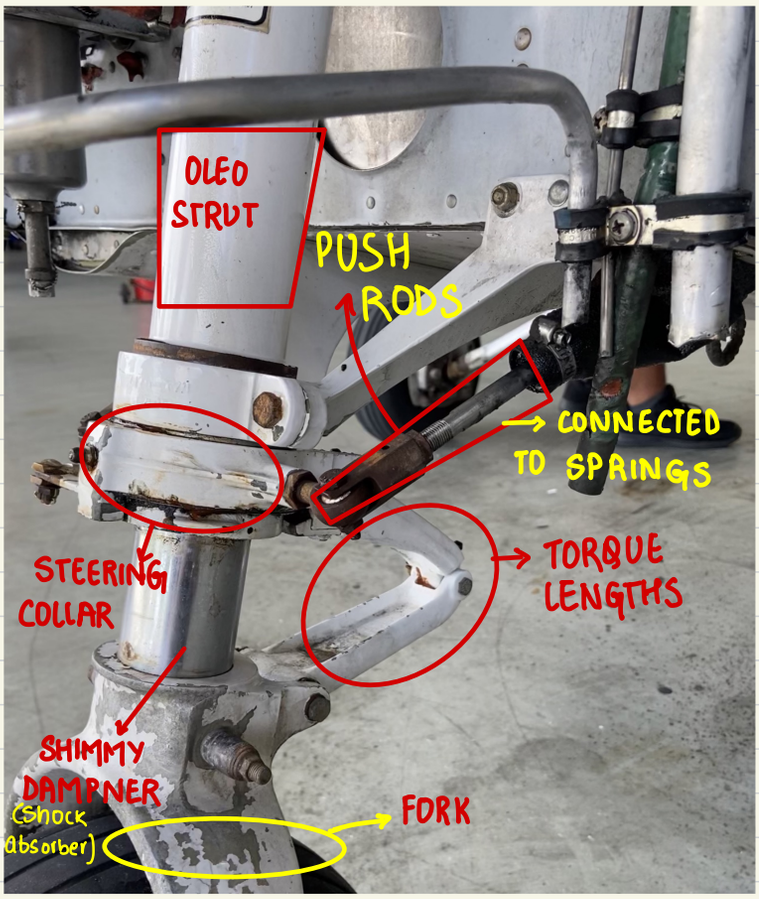
PRE FLIGHT

All the information is either taken from FAA maintenance handbooks or the Phoenix maintenance hangar.



HOW DOES THE RUDDER WORK?



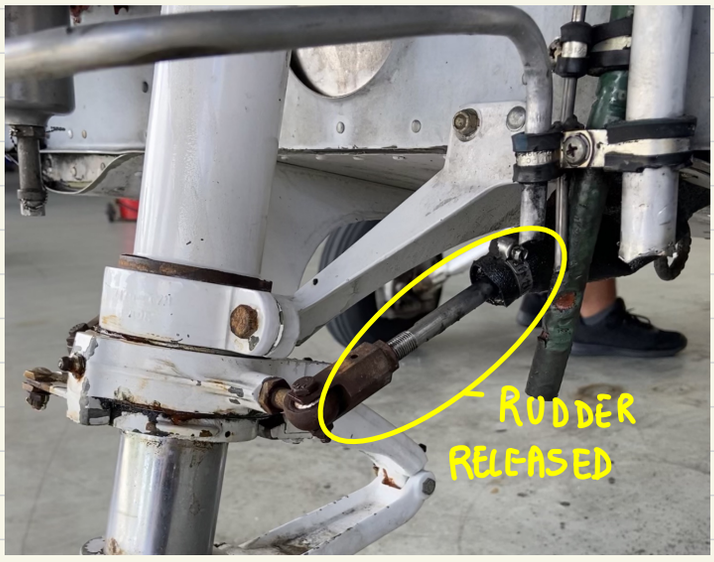
NOSE WHEEL STEERING SYSTEMS:

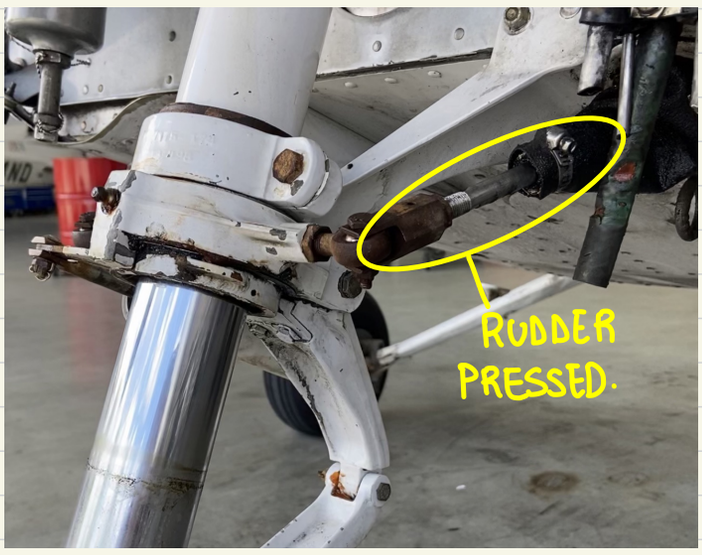
→ Steering capabilities through the use of simple mechanical linkages connected to rudder pedals.

→ PUSH - PULL tubes are connected to pedal horns on the lower strut cylinder.

→ As the pedals are depressed, the movement is transferred to the strut piston axle & wheel assembly which rotates to the L|R.

The nose wheel steering is accomplished through the "push rods connected to the rudder pedal assembly"





- The push rods are connected to the rudder pedals via a spring.
- Both the pilot & instructor can control the rudders.

OLEO PNEUMATIC STRUT

"The nosewheel is fitted with an oleo pneumatic strut with a steering mechanism. The purpose of the oleo pneumatic strut is to absorb shocks and dampen oscillations to prevent them from being transmitted to the airframe. The oleo strut is made of an outer cylinder fixed to the airframe and houses an inner cylinder free to slide up or down. Both cylinders are partly filled with nitrogen and hydraulic fluid."



→ Main gear tire pressure: 42 psi

→ Nose wheel tire pressure: 45 psi.

(where to find it? Section 8)

LANDING GEAR

Consult the following table for servicing information on the landing gear.

COMPONENT	SERVICING CRITERIA
Nose Wheel (5.00-5, 6-Ply Rated Tire)	45.0 PSI
Main Wheel (6.00-6, 6-Ply Rated Tire)	42.0 PSI
Brakes	MIL-H-5606
Nose Gear Shock Strut	MIL-H-5606; 45.0 PSI *

* Keep strut filled with MIL-H-5606 hydraulic fluid per filling instructions placard, and with no load on the strut, inflate with air to 45.0 PSI. Do not over inflate.





WHEN ON GROUND

WHEN IN AIR.

→ The steering collar along with the axle is what moves the nose wheel.
→ If the steering collar's movement is restricted in air, the nose wheel wont steer in air.

MAIN GEAR:

- Shock absorber made by tubular steels.
- Hydraulic actuated disc brakes.
- Brake lines have hydraulic fluid. (red) MIL-L-56-06.
- 42 psi.



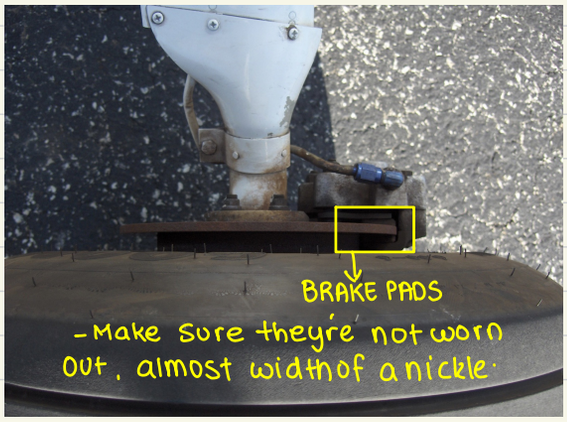
- Mode of 2 tubular struts with the upper ends attached to the fuselage & lower ends for the wheel & brake assembly.
- Each strut covered with a strut fairing to reduce drag.

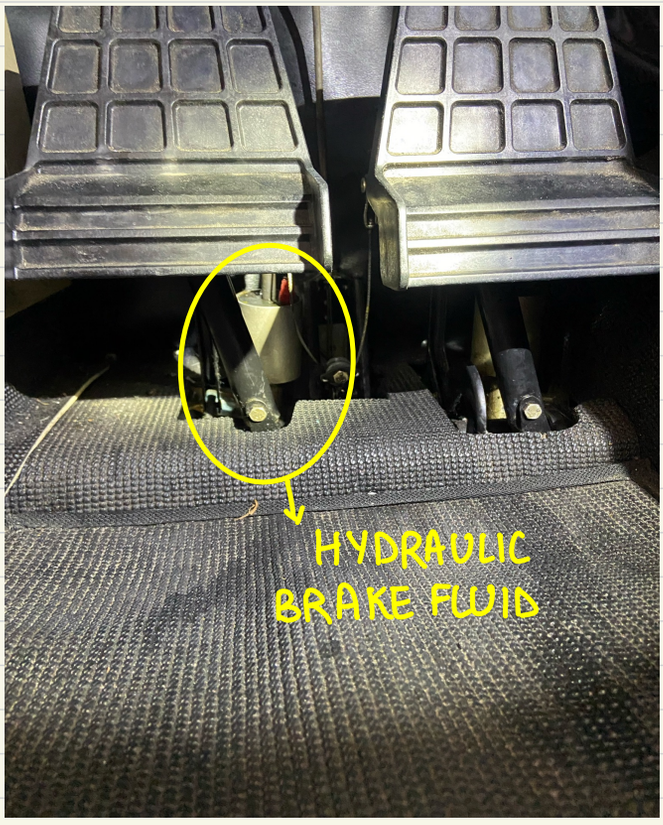
NOSE-WHEEL:

- Shock absorber with shimmy dampner (shown on pg1)
- 45 psi
  ↳ without brake: nose wheel can move 10°.
  ↳ with brake: nose wheel can move 30°.
  ↳ minimum turning radius: 27ft

BRAKES:

- fitted with single disk brakes; mounted on each main gear & independently actuated by rudder pedals.
  - to permit differential braking during turns.
- brakes : a steel disc attached to the wheel.





Brake hydraulic Fluid:

- one cylinder under each rudder pedal (LEFT & RIGHT)
- cylinders : only on the pilot seat (LEFT)
- connected to the RIGHT SEAT.

∴ You can see those cylinders only under the pilot side (LEFT) rudders, not the right seat.

How?

- Brakes applied → force created on master cylinder → below left piston's rudder pedal → piston inside master cylinder pressurizes hydraulic brake line → force high friction brake pads to clamp around steel disc.

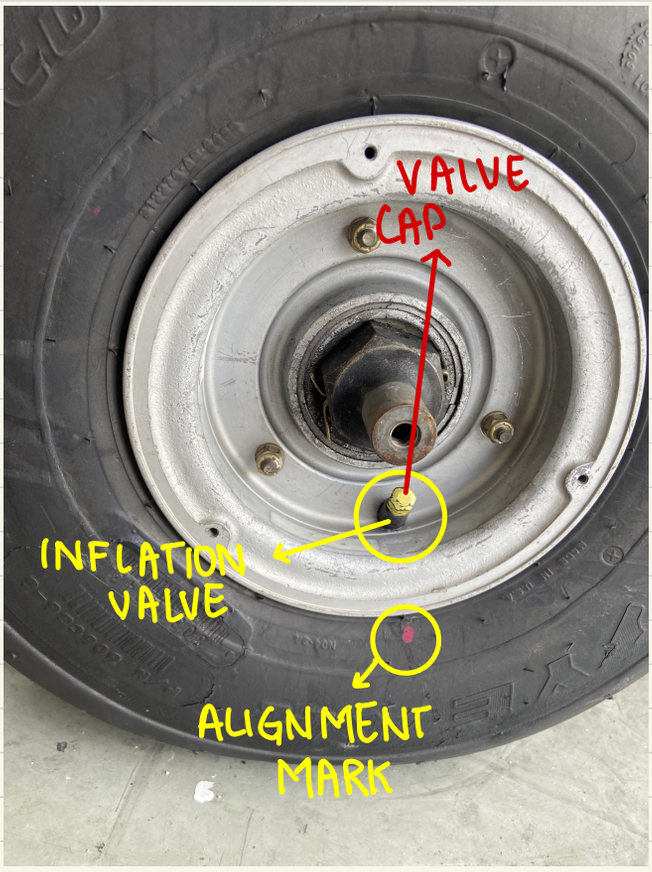
TIRES:



- Good Year Flight Custom III Pneumatic Tires
- TREADS : to prevent hydroplaning
- Tire pressure : accurate:
  - ↳ UNDERINFLATED : cannot maintain its designed shape ; causes rapid wear
  - ↳ OVERINFLATED : smaller footprint, more subject to wearing off at the center. Shortens tires life.
- As long as you can see treads, you're fine

★ MAXIMUM TIRE LIFE:

- ↳ Slow taxi speed
- ↳ minimum brake usage
- ↳ avoid tight turns.



WHAT AM I LOOKING FOR?

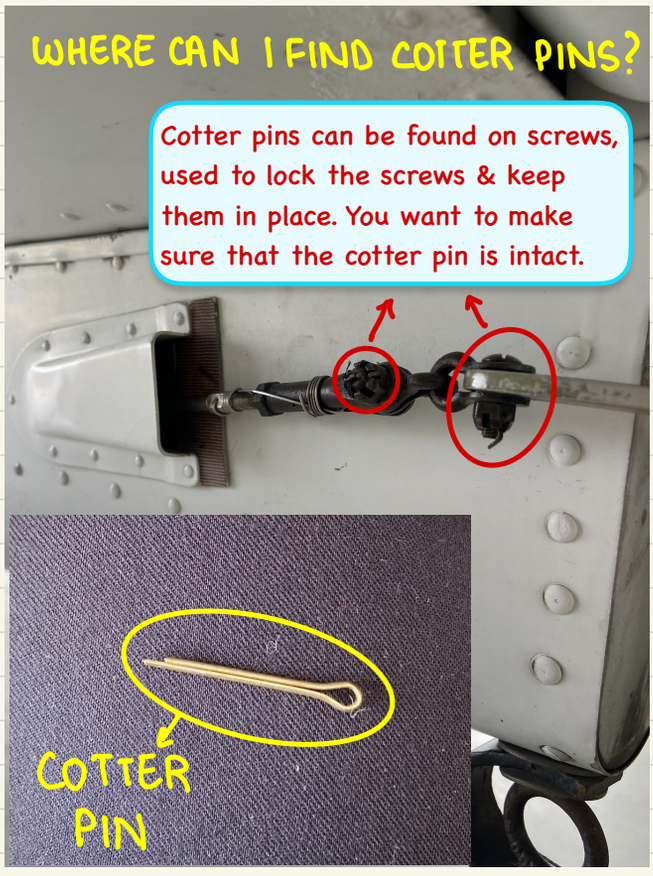
→ The tire (tube) is inflated through a non-return inflation valve.

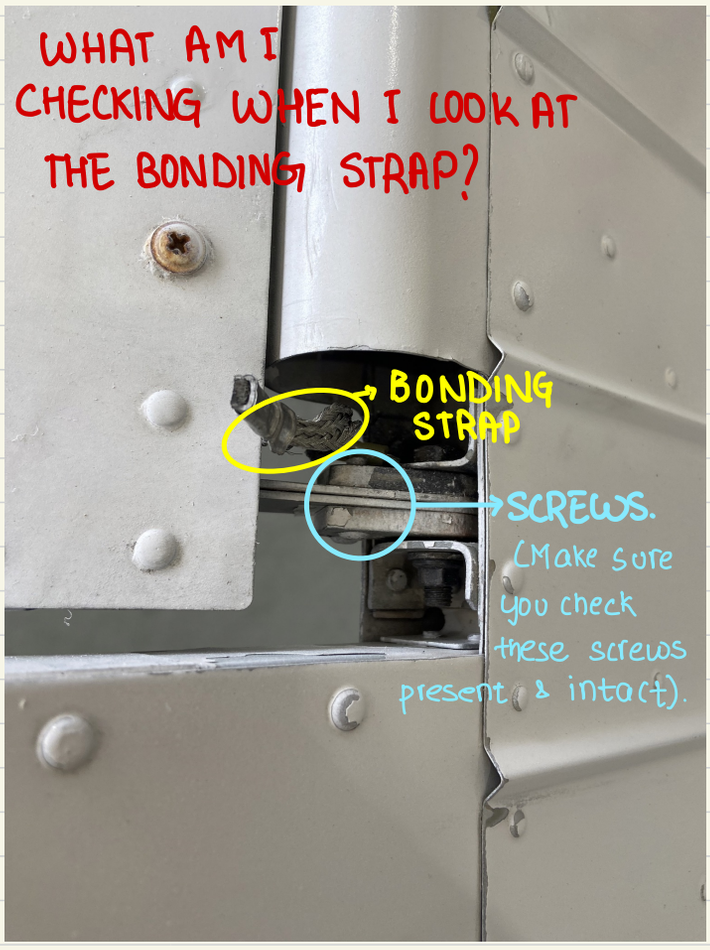
→ Does not guarantee any compressed air from leaking

∴ valve cap: to prevent air from leaking.

→ ALIGNMENT MARK: Placed on the side opposite to which the tire is heavy.

→ Always make sure that the inflation valve & alignment mark are together.





FAA MAINTENANCE HANDBOOK

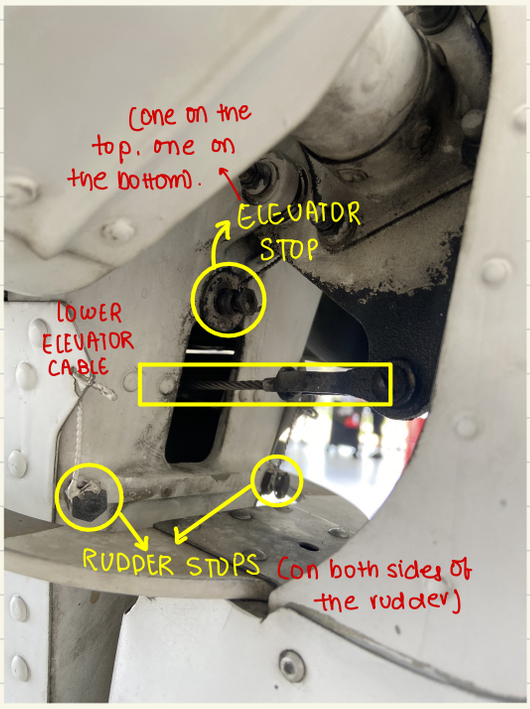
AIRFRAME VOLUME: 1.

→ 2 types of stops → Adjustable
↘ Non-adjustable

→ Purpose: To limit the throw-range or travel movement of the ailerons, elevators & rudders.

→ usualy there are 2 stops for each of the 3 main control surfaces

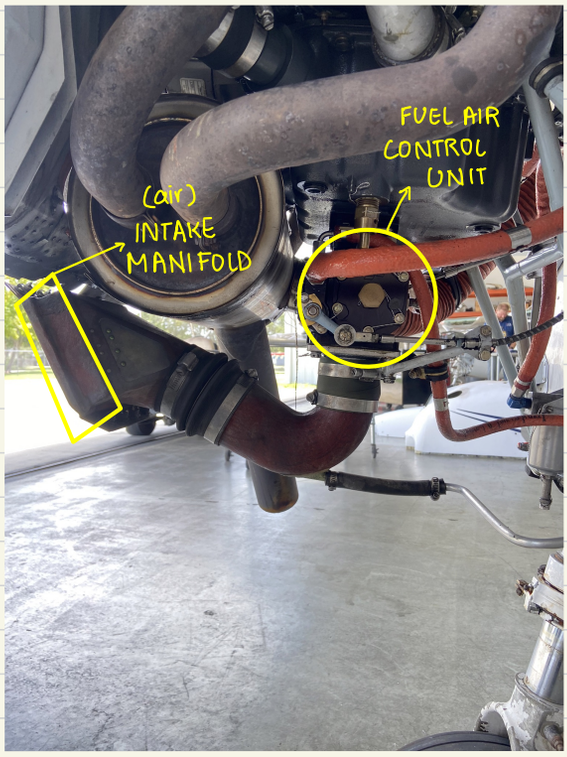
↙ Control Surface (structural stops)
↘ Flight Deck Stops.

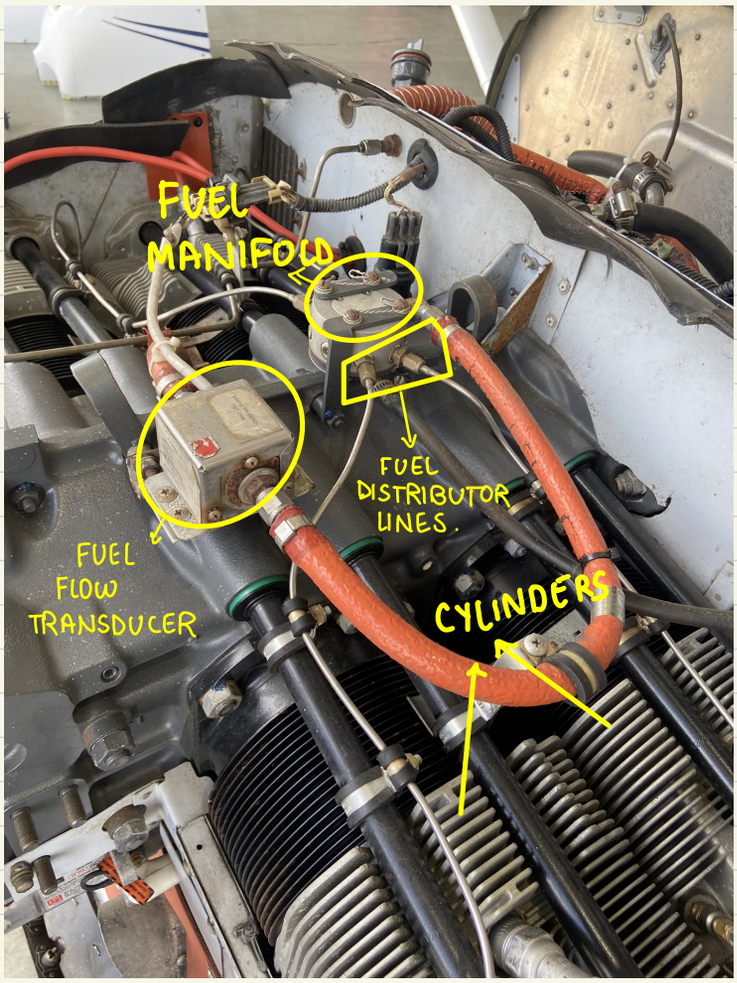


PRE FLIGHT:

- Make sure both the structural stops for elevators & rudder are present.

- Rudder stops (2): one on each side to make sure the rudder doesnt exceed its limits & hit the elevator.
- Elevator stops (2): one on top, one on the bottom.



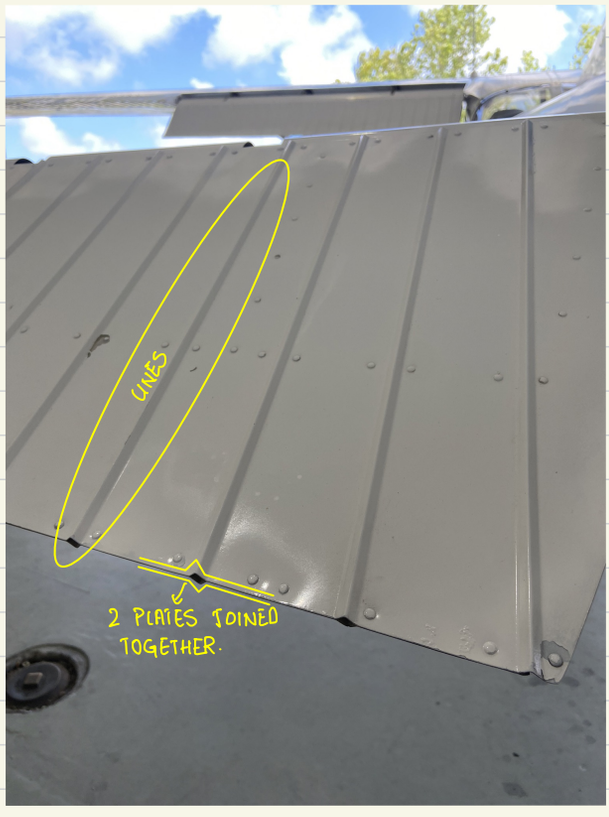


SUPPLEMENT TYPE CERTIFICATES:

→ Type Certificate:
- when an aic is designed, that design is formally approved for manufacturing, the manufacturer is issued a Type Certificate (TC).
- TC is issued by the FAA to signify the airworthiness of an aic design
- TCDS is important to know the specifications of your aic.

→ Supplement Type Certificate:
- TC may not be changed except by formal authorization by the FAA.
- The formal authorization supplements the original TC: its called Supplemental Type Certificate. (STC)
- STC issued by FAA approves a product (aircraft, engine or propeller) modification.

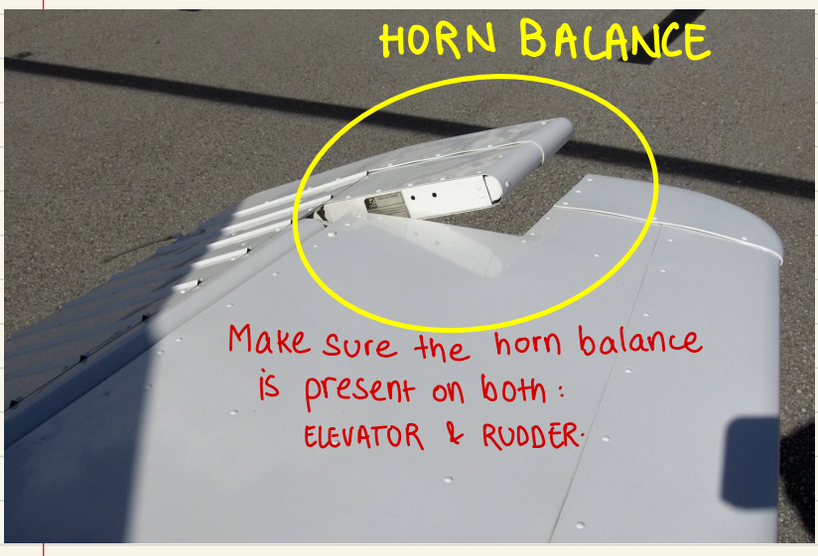
(Example on pg: 2-31 of AMT General handbook).



ELEVATOR:

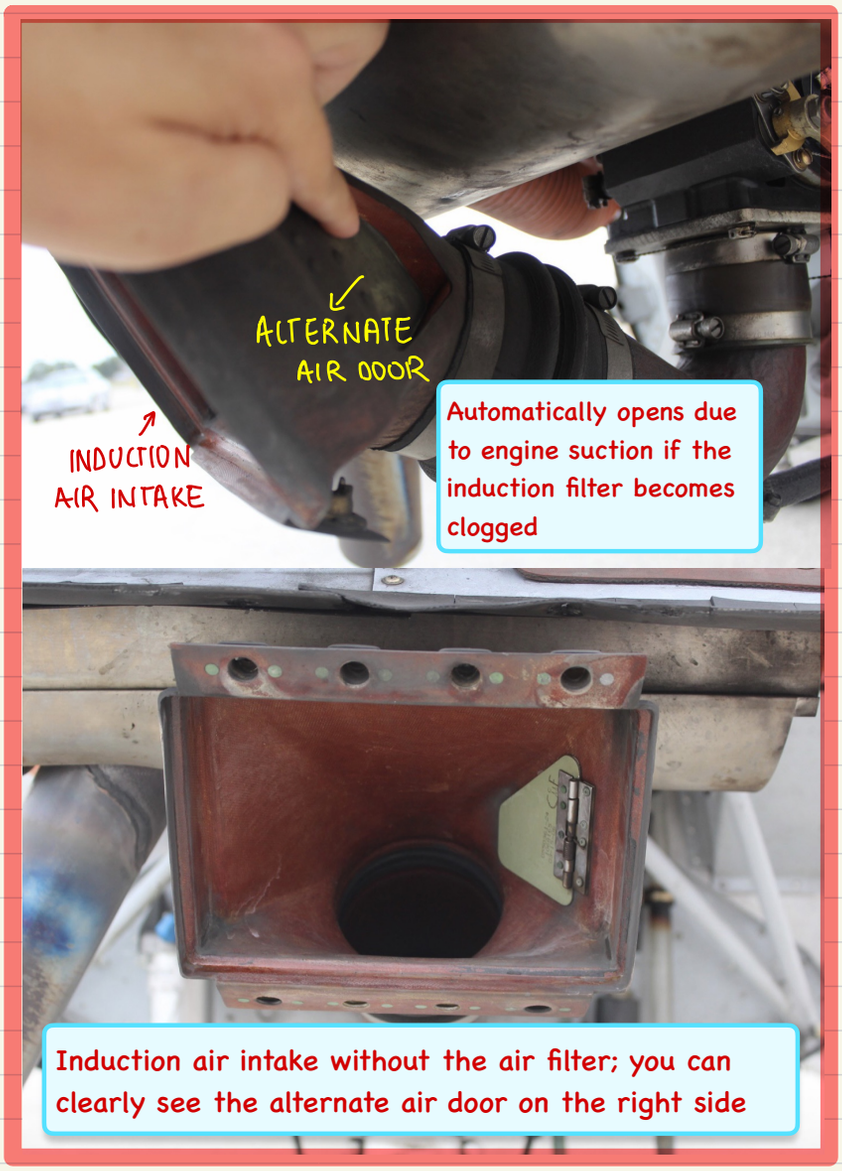
Q) why does the elevator have these lines on it?

A) For increased structural strength.
→ If you look at it closely, you can see that the elevator consits of 2 plates joined together.
→ This gives the elevator more strength.

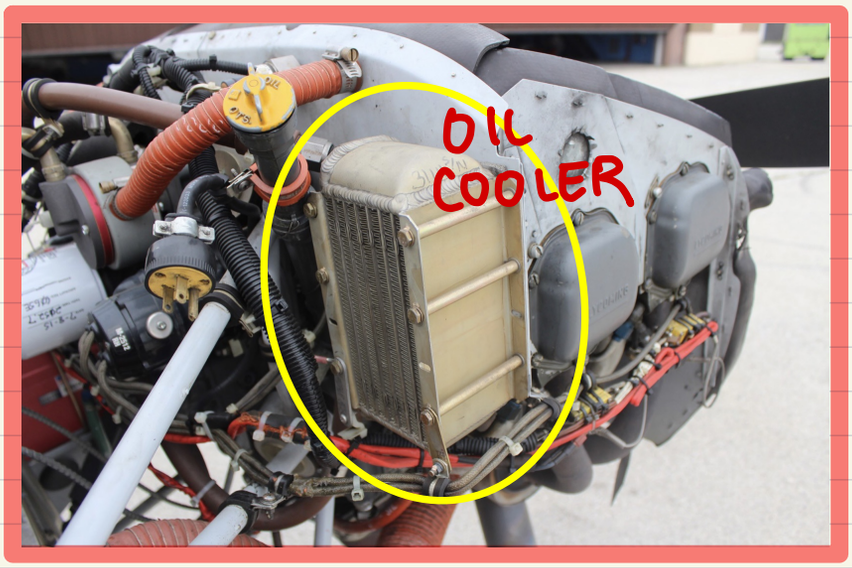


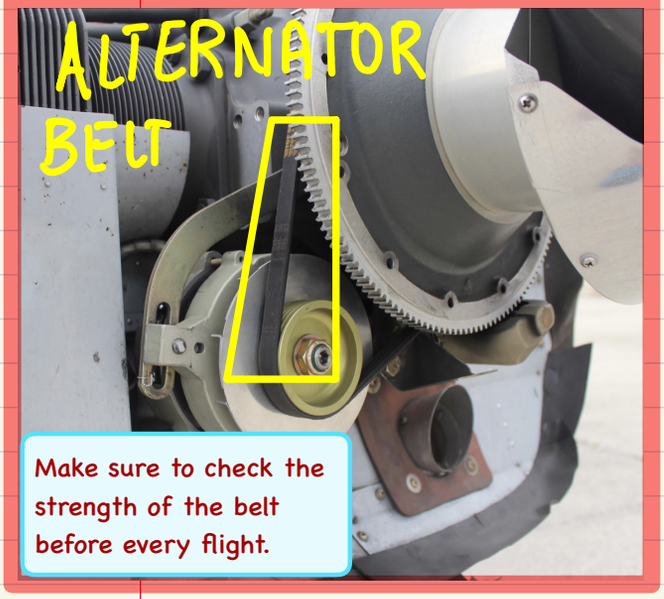
BASIC PRE-FLIGHT KNOWLEDGE:

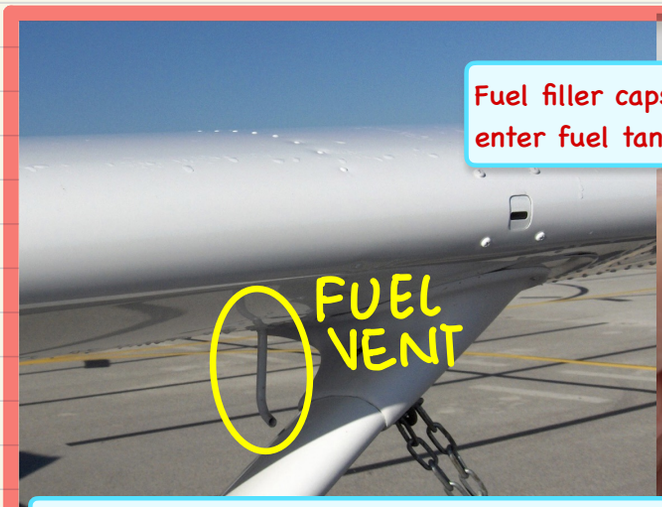










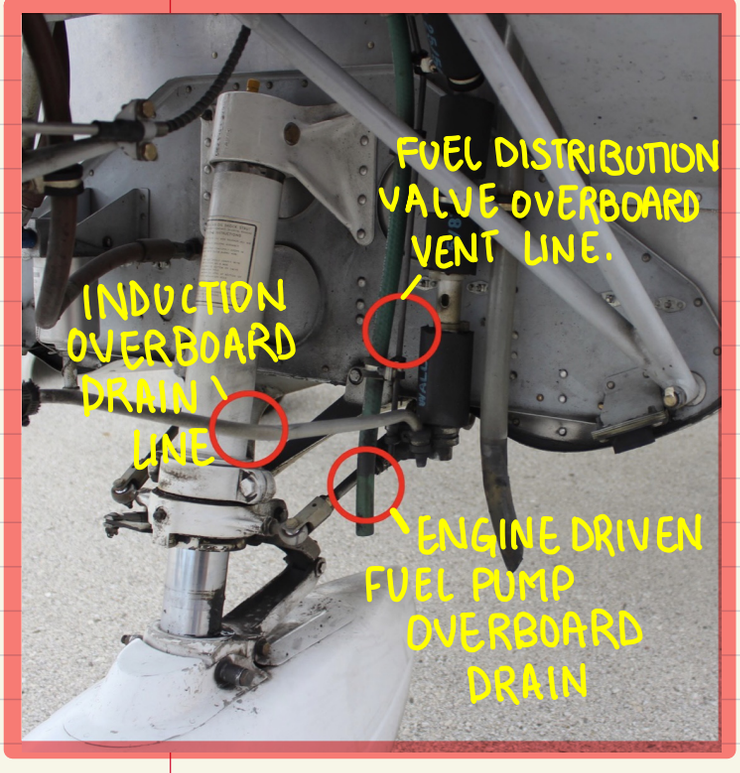


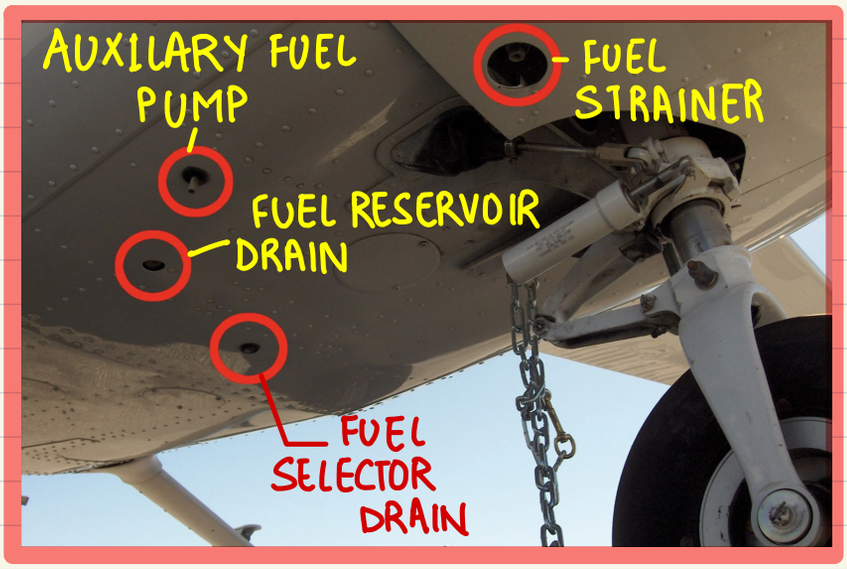


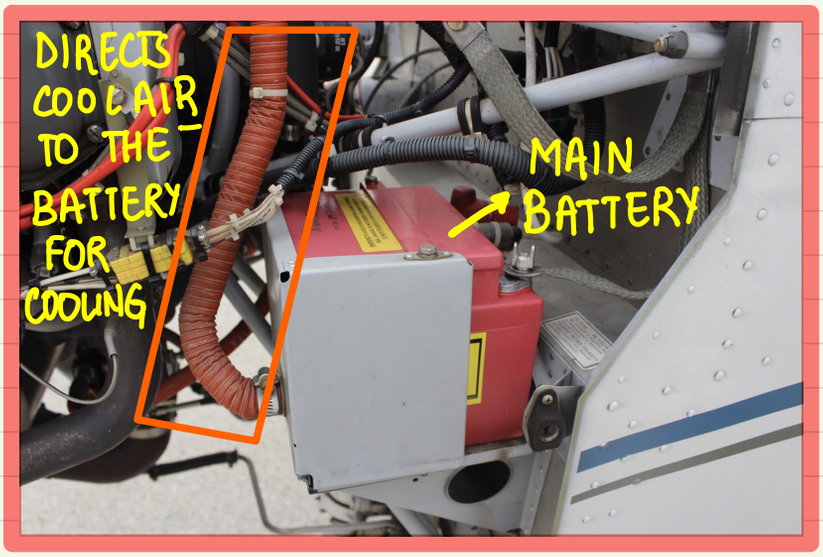
Fuel filler caps: vacuum vented; they'll open & allow air to enter fuel tanks in case over board vents are blocked.

What is the purpose of a fuel vent?

- The fuel vent is for excess fuel to come out and to vent or prevent vacuum in tanks.
- Complete blockage off fuel venting system: decreases fuel flow and eventual engine stoppage.

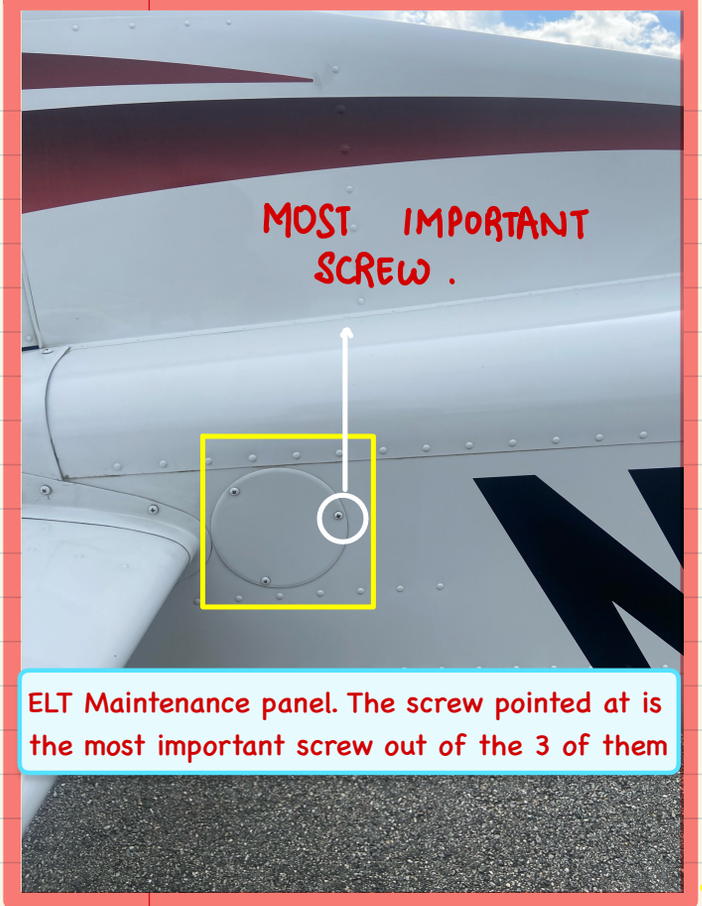




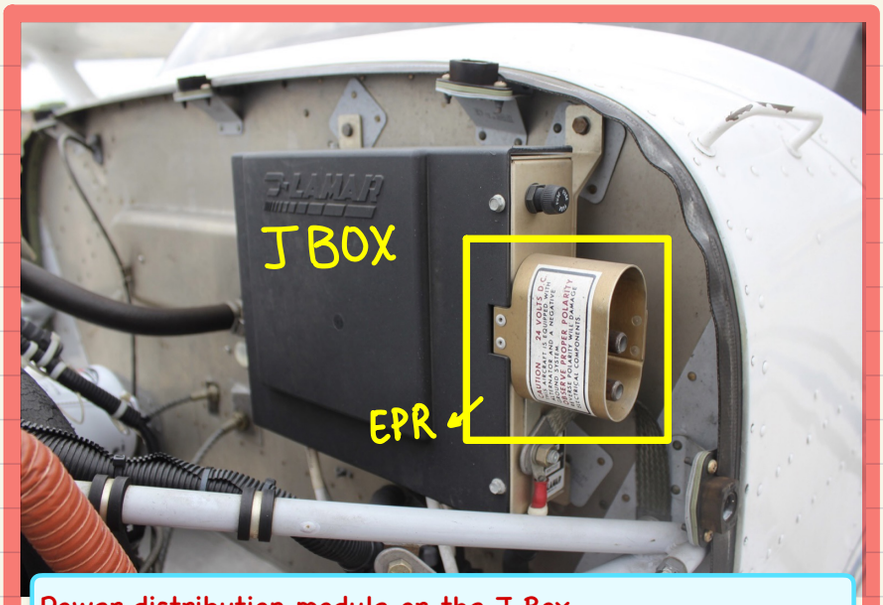




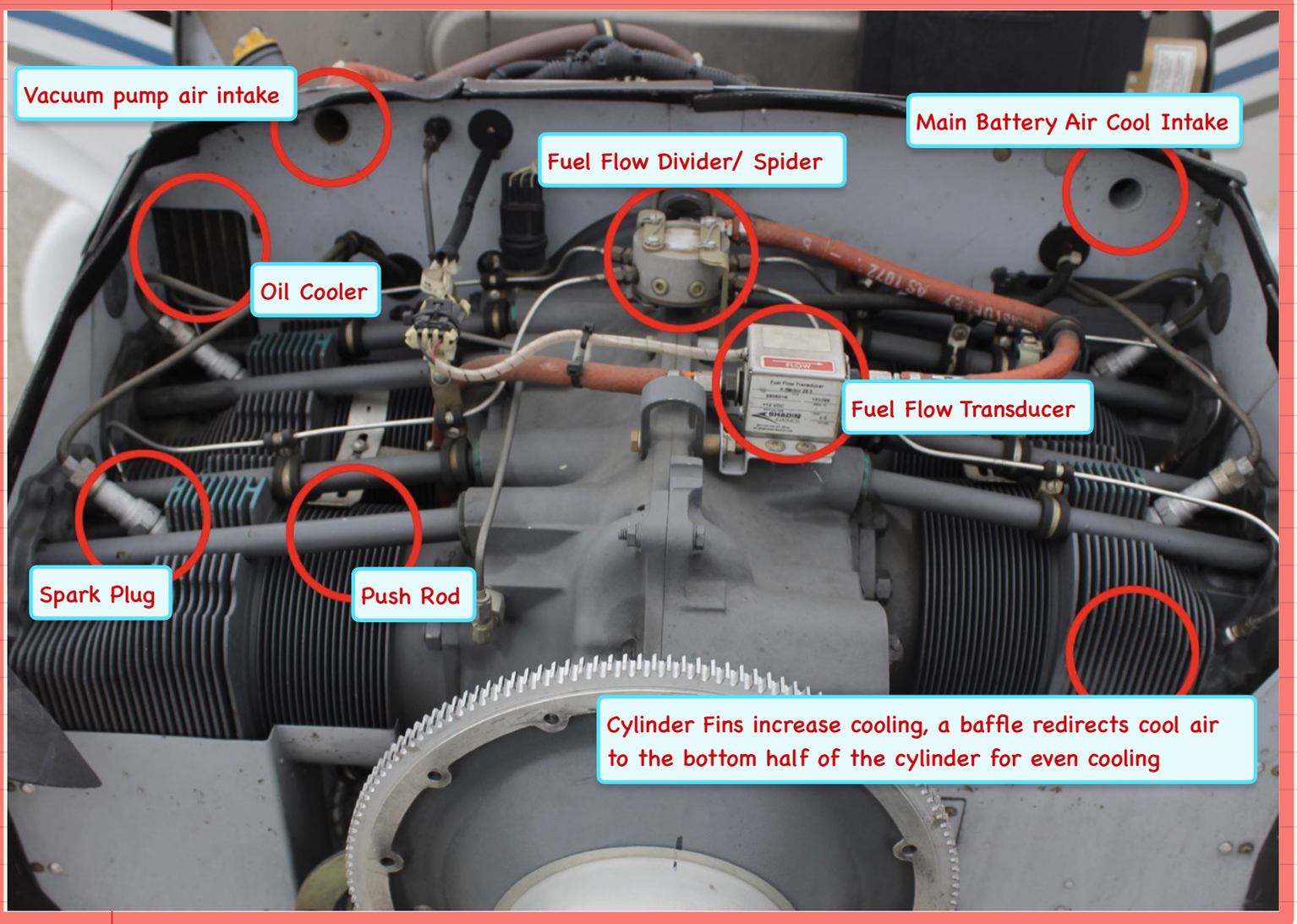
Stand-by battery placed behind the PFD



ELT Maintenance panel. The screw pointed at is the most important screw out of the 3 of them



Power distribution module or the J Box.
You can also clearly see the External Power Receptacle System



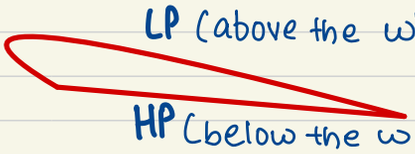
Cylinder Fins increase cooling, a baffle redirects cool air to the bottom half of the cylinder for even cooling



HOW DOES THE STALL HORN WORK?

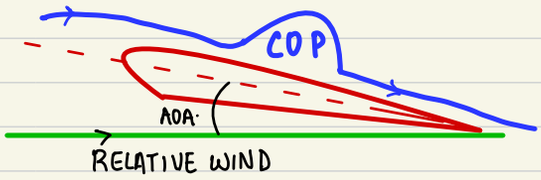
- Stall horn is independent of the electrical system

BASIC AIRFOIL:

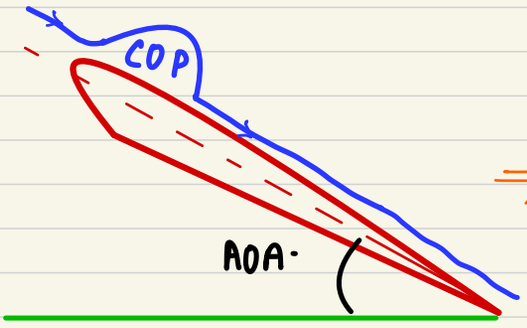


HP constantly wants to go to go low pressure.

AT CRUISING AOA:



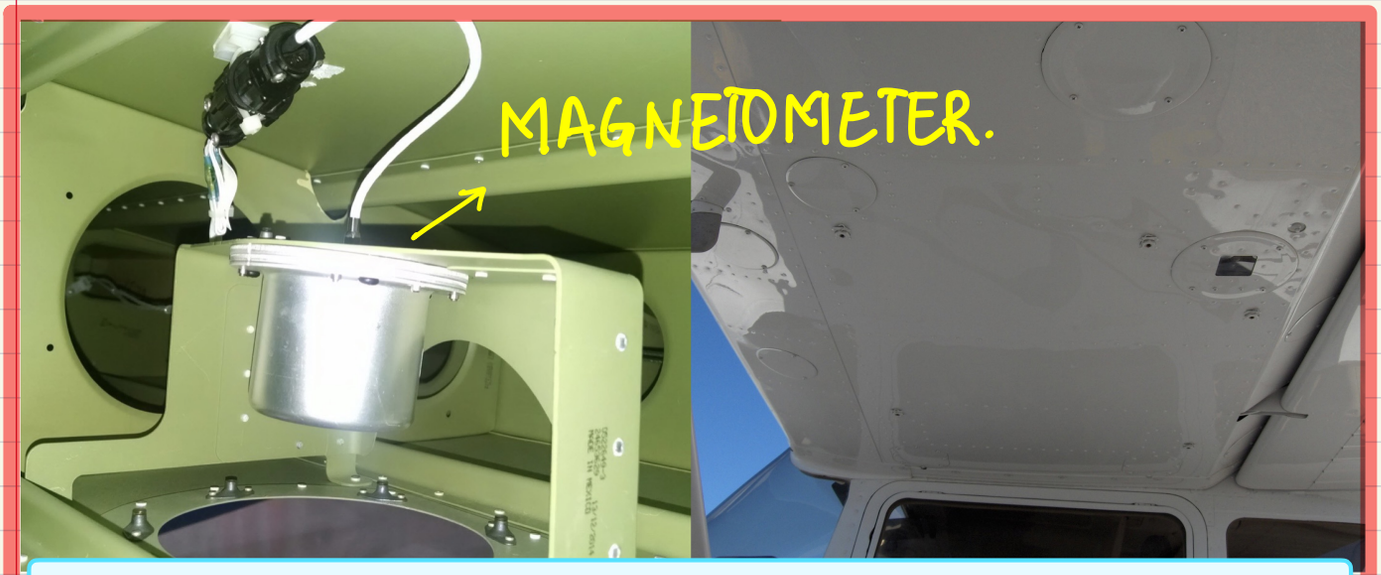
AT HIGH AOA.



→ as you increase the AOA, the COP (Lift) moves forward. (Why? ∵ maximum lift is being generated near the LE → continuous flow).

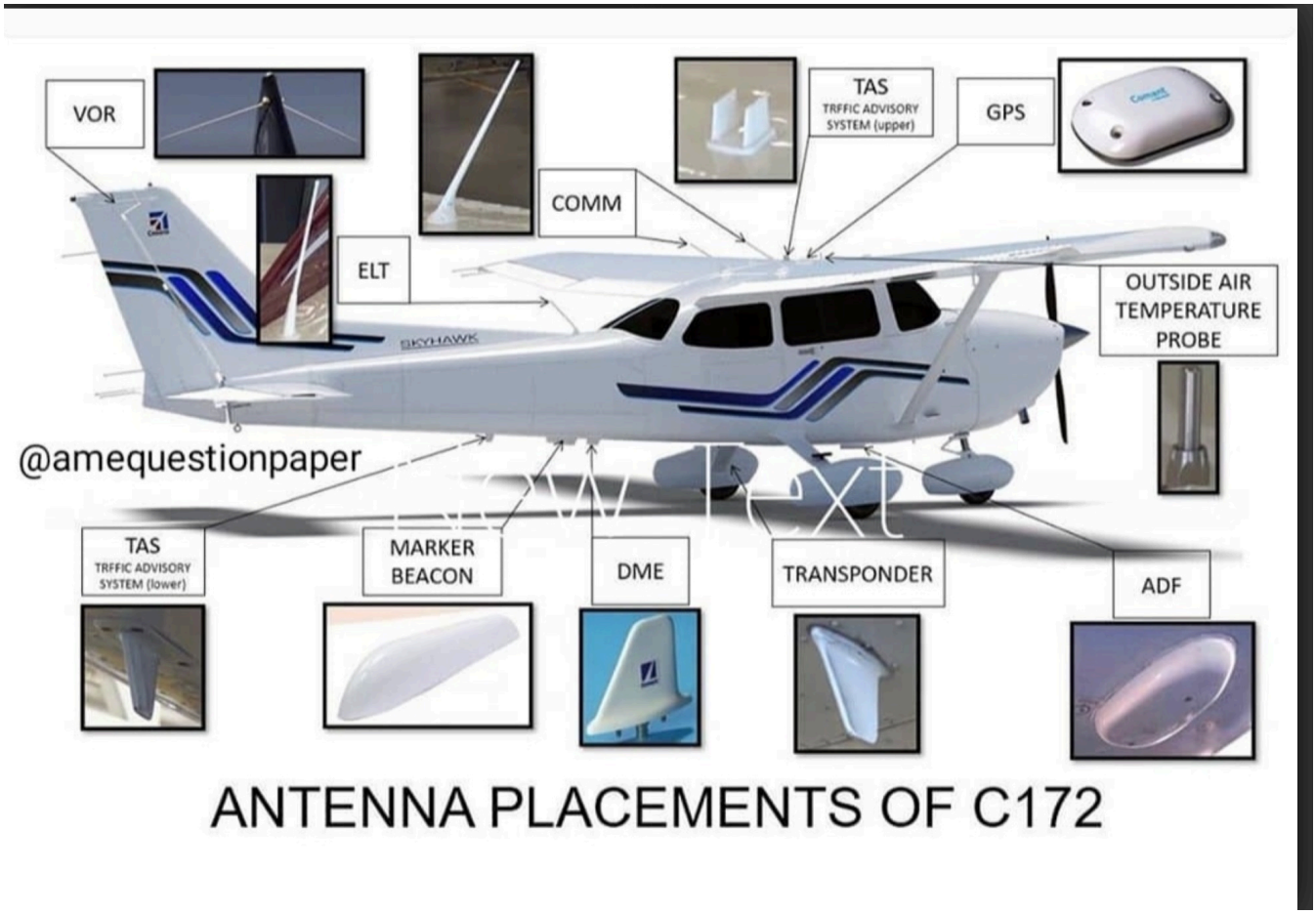
⇒ when the COP starts moving near the LE, your low Pressure on top of the wing towards the stall horn; it creates a suction : activating the stall horn.

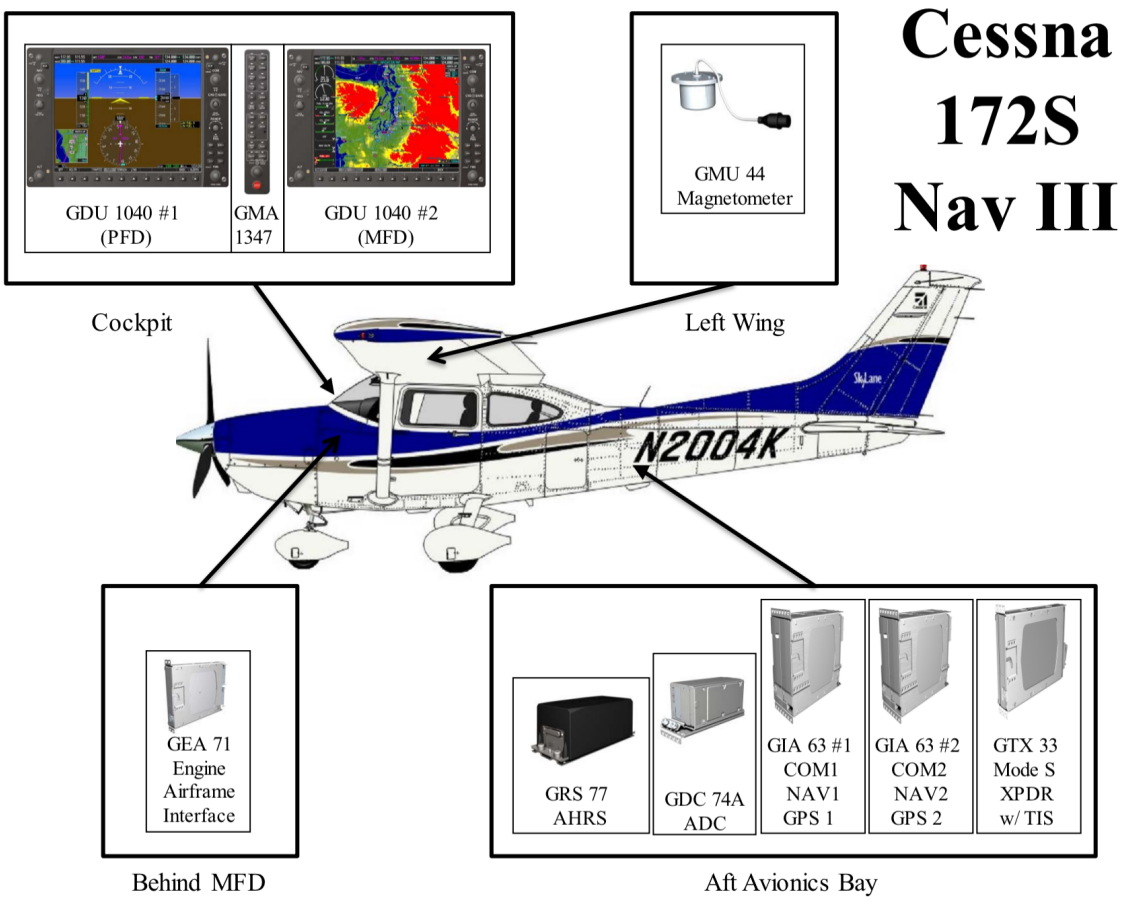
- (inside stall horn : high P. ; when low P approaches the LE : it sucks out the HP)



MAGNETOMETER.

- Magnetometer is on the Left wing to avoid the excessive electrical current deviations from the flap motor (placed on the right wing). It is placed as far away from the electrical field of the aircraft as possible.
- Magnetometer can be accessed through a maintenance panel


VOR
TAS
TRFFIC ADVISORY SYSTEM (upper)
GPS
COMM
ELT
OUTSIDE AIR TEMPERATURE PROBE
@amequestionpaper
TAS
TRFFIC ADVISORY SYSTEM (lower)
MARKER BEACON
DME
TRANSPONDER
ADF
ANTENNA PLACEMENTS OF C172


Cessna 172S Nav III
GDU 1040 #1 (PFD)
GMA 1347
GDU 1040 #2 (MFD)
GMU 44 Magnetometer
Cockpit
Left Wing
N2004K
GEA 71 Engine Airframe Interface
GRS 77 AHRS
GDC 74A ADC
GIA 63 #1 COM1 NAV1 GPS 1
GIA 63 #2 COM2 NAV2 GPS 2
GTX 33 Mode S XPDR w/ TIS
Behind MFD
Aft Avionics Bay