

MEET YOUR AIRPLANE: The Skyhawk *(CESSNA 172)*

Made by Michael Tet

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172 variants

Inside the Cockpit

Outside the Cockpit

Lights and Antennas

Discrepancies

Glossary - *go here for definitions!*

172 Variants More details: https://172guide.com/models.htm

Unless specifically noted " P R/S S (G1000) 2007+ " this document refers to most 172 models

1956 ⟷ today

… M,N	P	R	S	S (G1000 now standard)
1973, 1977	1981	1996	1998	2007
Carbeurated 150HP "M" had 40 flaps	160HP Flaps only 30	160HP Fuel Injected!	180HP	

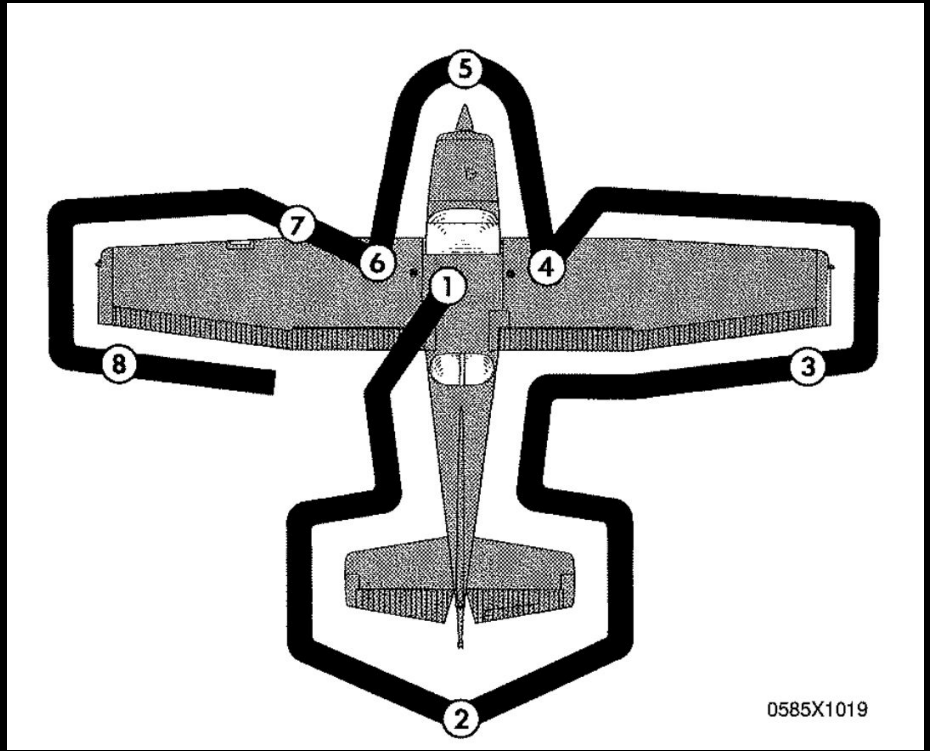
P

R/S

S (G1000) 2007+

BEFORE READING THIS DOCUMENT:
Read your POH Amplified normal procedures section.

- Cockpit
- Fuselage
- Tail surfaces *(stabilizers, elevator, rudder)*
- Right wing
- Right landing gear
- Nose
- Left landing gear
- Left wing



Pitch

Notice the distance between the cowling and the horizon. As this distance changes, the pilot will know whether they are climbing or descending







Centerline

Notice how the centerline appears relative to the cowling. This is important for pilot to determine if they are on centerline

Seat Height

Each person will sit slightly different height. Often “three fingers” is about the distance between the cowling and horizon while level. Pilots height and seat height cause this distance to change from pilot to pilot. See examples to left:



Sight-picture

Familiarize yourself with this straight-and-level sight-picture. Notice how much the human eye can see with peripheral vision. Look straight out the window. Focus your eyes on the cessna facing you. Using only your peripheral vision, notice how the side windows show your wings level with horizon.

Using this picture and your new-found perception of the horizon: Go sit in a cessna 172. Bring a paper and pencil with you. Draw your sight-picture.


R/S


S
(G1000)
2007+

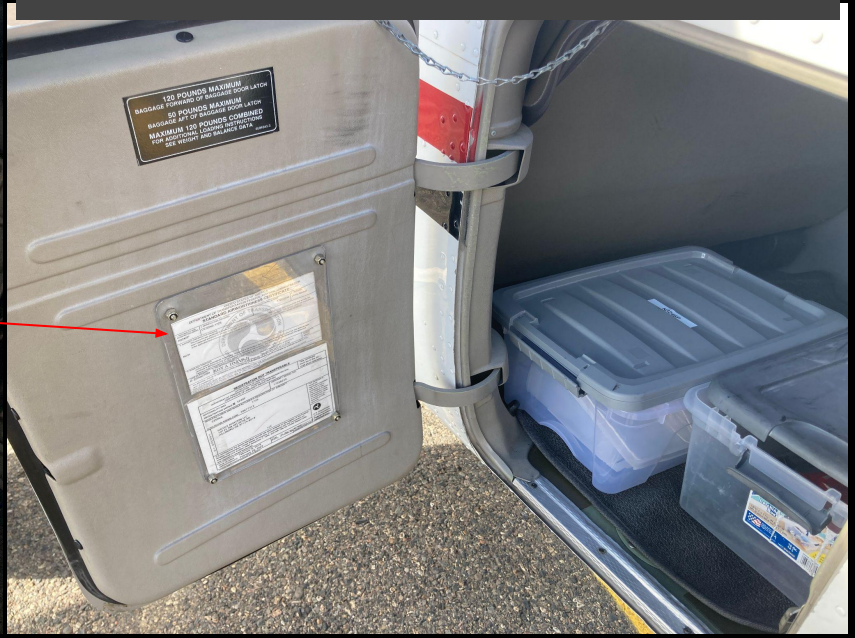
Airworthiness and Registration

Check registration EXPIRATION DATE. found on bottom of registration card.

Most Cessna 172's Airworthiness & Registration are kept in the plastic pocket nearby the rudder pedals (left side)



In some 172's registration is instead kept in the baggage compartment. Some aircraft rental companies do this to avoid damage.





AP/E. Trim Disc.

The big red button. Push to disconnect AutoPilot & Electric Trim.

C.W.S.

Control With Stick. This button will temporarily disengage the autopilot. Hold to make a temporary adjustment, then release and the autopilot will re-engage

Electric Trim

Push BOTH tabs together to move the trim easily!

P.T.T.

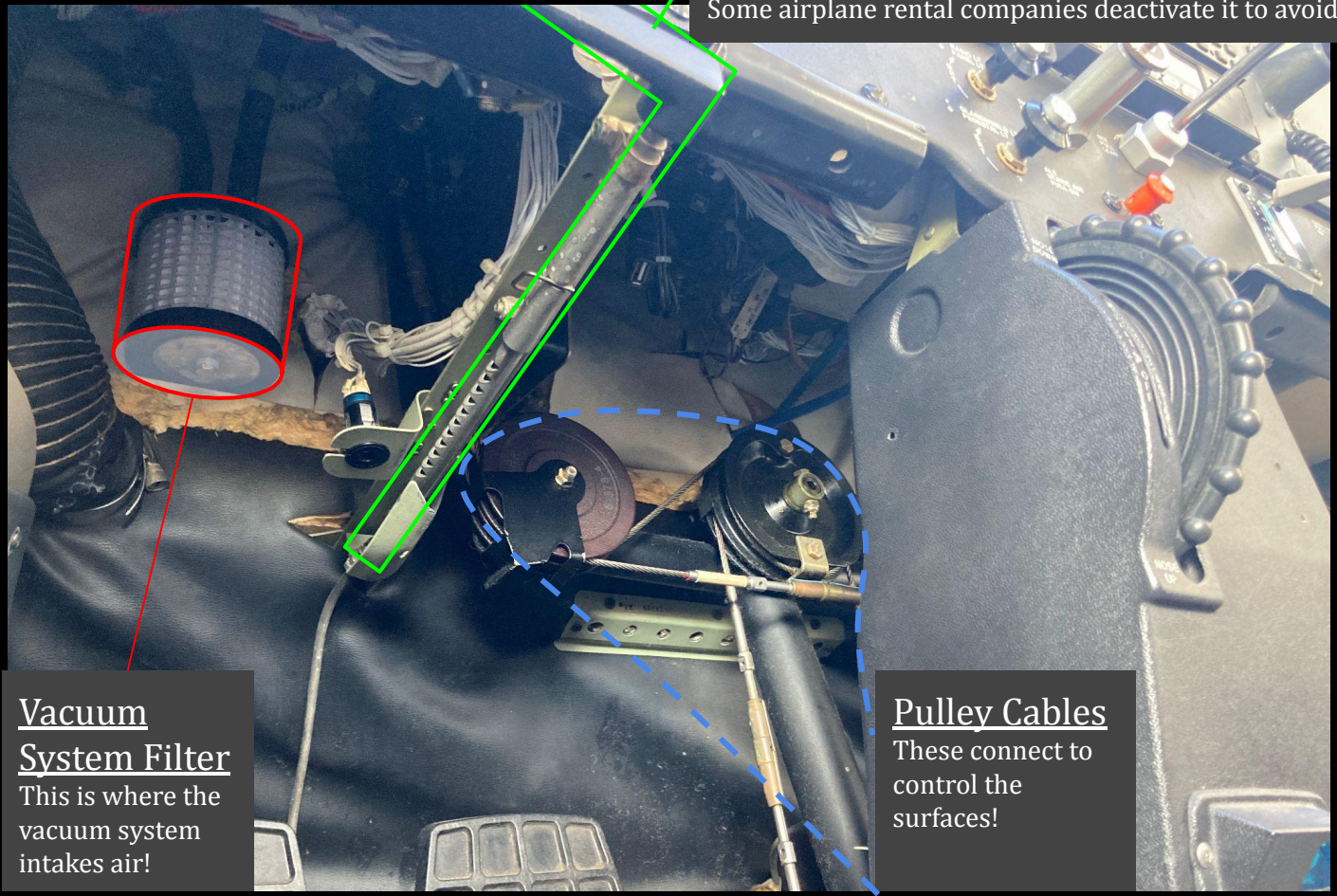
Push-To-Talk. Push this button to speak on the radio.

Common Interior

Parking Brake

Pull & Twist to engage

Some airplane rental companies deactivate it to avoid damage.

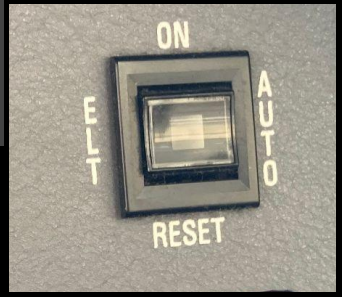


Vacuum System Filter

This is where the vacuum system intakes air!

Pulley Cables

These connect to control the surfaces!





ELT Controls

Different ELTs have different panel switches. Here are some examples…

Classic Panels *(…M, N, P)*



Primer

Carbureted Skyhawks (P models and earlier) are primed with a plunger-style mechanism.

Headset Plugs

In older model Cessna 172s, headset plugs can be located in different places, but usually can be found here, as pictured.

Switches

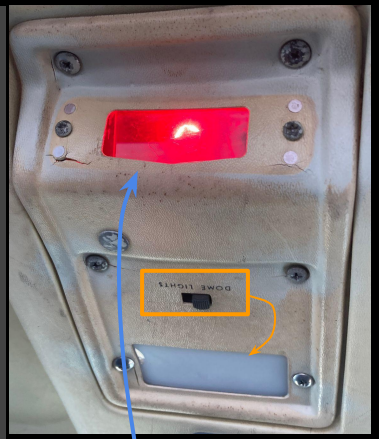
Older model switches may be mounted in different places. The Avionics Master switch is usually SILVER in these older models and mounted as pictured above.

P

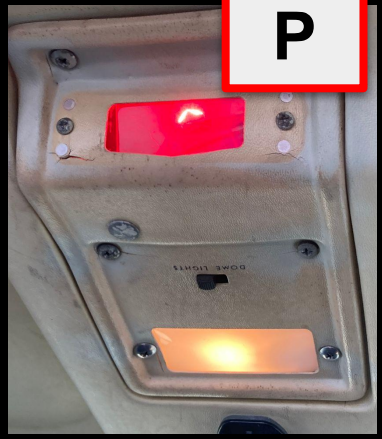


Interior Lights

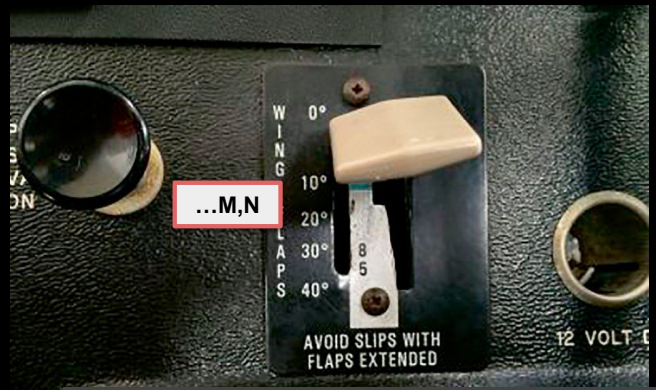
These lights illuminate your entire instrument panel

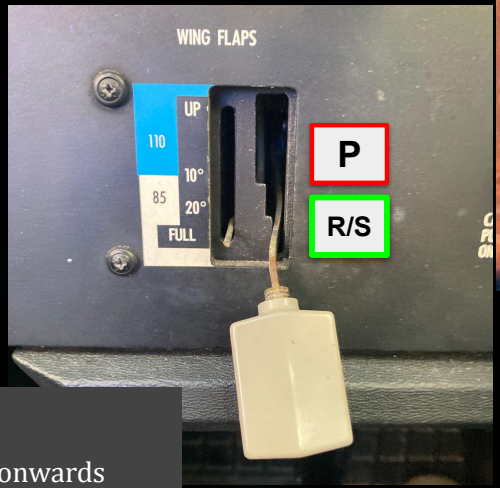


P









Flaps

Older M and N models have 40° of flaps. P and onwards have only 30° of flaps.

R & S Panels

R/S



Map Light

On the bottom of the Pilots' (Left) Yoke, a small light is controlled with a knob to illuminate your kneeboard!





Panel Lights

Radio & Panel LT controls the backlighting of instruments & radios

Glareshield & Pedestal LT controls large spotlights illuminating the whole panel

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2007+





https://www.youtube.com/watch?v=y-dABmGveLY

Panel Lights

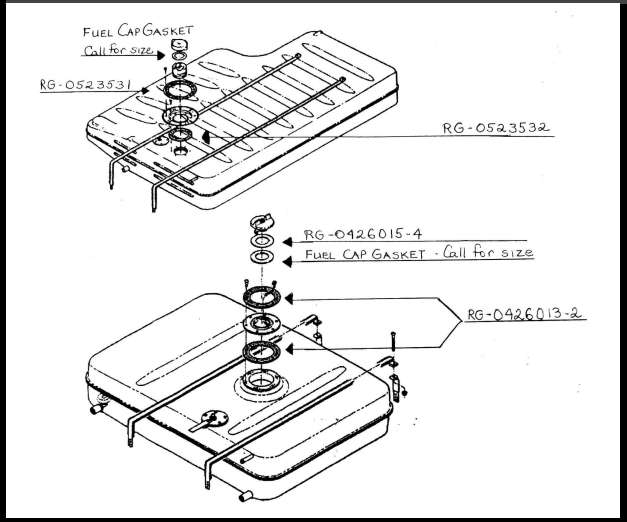
The G1000 model skyhawks have clear interior lights. The panel is back-lit.

Display brightness

To adjust brightness on the PFD:
CLEAR all pfd pop-ups
MENU>crsr>set Manual/auto

Fuel Tanks

MOST Skyhawks have standard tanks. BUT, it's possible to have a different longer range tank. Always read your POH.
A quick way to verify which tanks you have in your plane is the fuel selector valve!





CESSNA
MODEL 172P

SECTION 2
LIMITATIONS

KINDS OF OPERATION LIMITS

The airplane is equipped for day VFR and may be equipped for night VFR and/or IFR operations. FAR Part 91 establishes the minimum required instrumentation and equipment for these operations. The reference to types of flight operations on the operating limitations placard reflects equipment installed at the time of Airworthiness Certificate issuance.

Flight into known icing conditions is prohibited.

FUEL LIMITATIONS

2 Standard Tanks: 21.5 U.S. gallons each.
Total Fuel: 43 U.S. gallons.
Usable Fuel (all flight conditions): 40 U.S. gallons.
Unusable Fuel: 3 U.S. gallons.
2 Long Range Tanks: 27 U.S. gallons each.
Total Fuel: 54 U.S. gallons.
Usable Fuel (all flight conditions): 50 U.S. gallons.
Unusable Fuel: 4 U.S. gallons.
2 Integral Tanks: 34 U.S. gallons each.
Total Fuel: 68 U.S. gallons.
Usable Fuel (all flight conditions): 62 U.S. gallons.
Unusable Fuel: 6 U.S. gallons.

NOTE

To ensure maximum fuel capacity when refueling and minimize cross-feeding when parked on a sloping surface, place the fuel selector valve in either LEFT or RIGHT position.

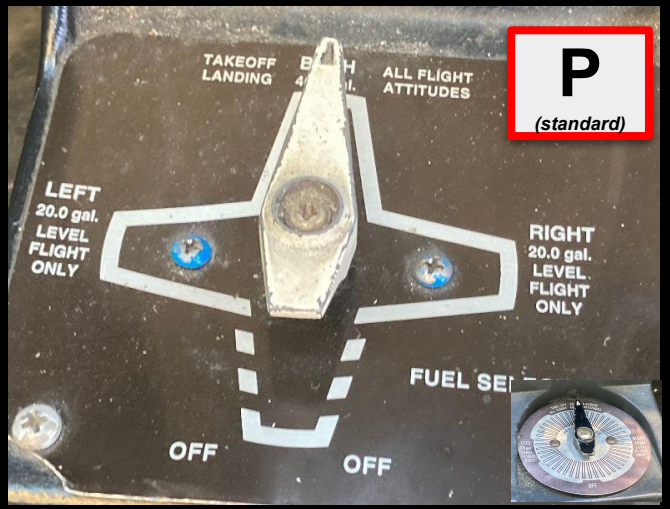
Takeoff and land with the fuel selector valve handle in the BOTH position.

Maximum slip or skid duration with one tank dry: 30 seconds.

With 1/4 tank or less, prolonged uncoordinated flight is prohibited when operating on either left or right tank in level flight.

Fuel remaining in the tank after the fuel quantity indicator reads empty (red line) cannot be safely used in flight.

Approved Fuel Grades (and Colors):
100LL Grade Aviation Fuel (Blue).
100 (Formerly 100/130) Grade Aviation Fuel (Green).





Installed Equipment



“Garmin GI 275”

“Garmin GMA 345”



“Garmin GTN 650”



“Garmin GNC 215”



“KI 227 Indicator & KR87 ADF Receiver”









“Aerospace Logic FD20”



“KAP 140 Autopilot”



“Garmin GTX 345”

Common “6-pack” upgrades:

Read your POHs’ Supplements.

Look up manuals online. Guides are usually free from the manufacturer.



“Aerospace Logic FD20”



“Garmin G5”



“Avadyne AV-30”



“Garmin GI 275”



“Garmin GMA 345”



“Garmin GNC 215”



“Garmin GNC 255”



“Garmin GTX 345”

“Garmin GTN 430”



“Garmin GTN 375”



“Garmin GTN 650”



“Garmin GTN 750”



S G1000 (2007+) Panels

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Standby Battery

(Sometimes called an EFIS *Electronic Flight Information System* battery in other planes).

This provides backup power to the G1000 flight instruments. Read your POH.

Landing, Recog, Taxi

Landing is the brightest setting
Recog & Taxi is the same dimmer setting.

"RECOG" refers to the optimum setting for maximum visibility in non-critical phases, ex. Maneuvering you'd prefer RECOG, but landing, you'd still use landing

Audio Panel

Important Features:

COM1/2 "MIC" = listen and speak

COM 1/2 = just listen

"PLAY" = replay last radio call you recieved!



S G1000 (2007+) Panels

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Headset plugs
Pilot and copilot headphones get plugged in nearby their' knees

TOGA button
Flight director to a climb pitch which will allow airspeed to increase (~7*) ROL level

Activate missed approach of IAP

Aux In
Usually this music input is disabled by airplane rental companies

Cigarette lighter
Smoking may be prohibited by placards, but you can certainly plug in electrical devices here!

Alt Static Source
Airspeed will indicate faster, alt will indicate higher due to lower pressure inside the cabin

R/S

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2007+

Passenger entry

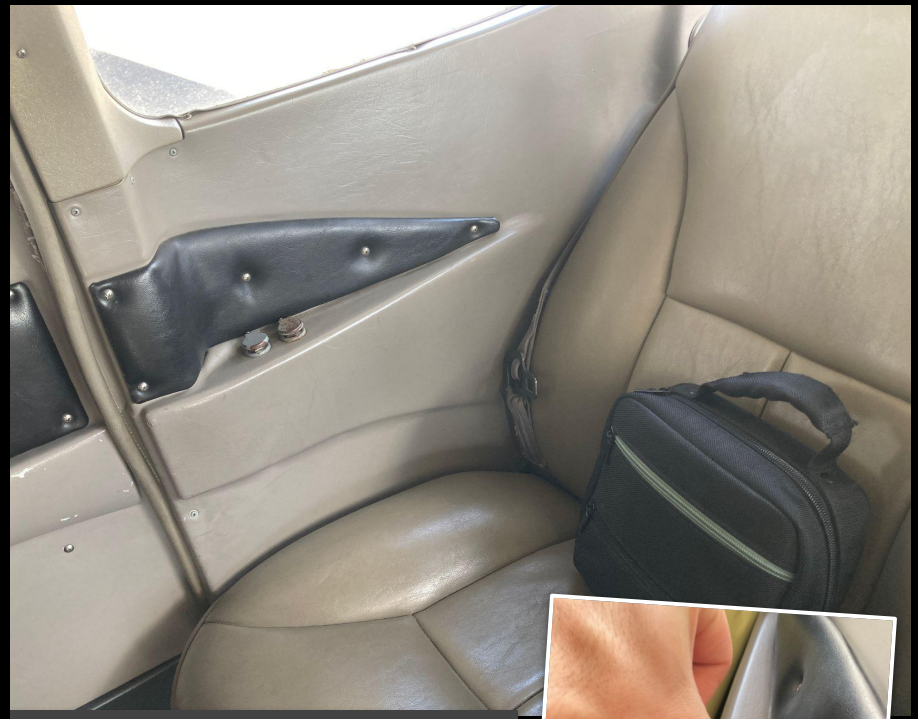
Pilot will need to pull chair forward for boarding



Fire Extinguisher

Mounted between front seats





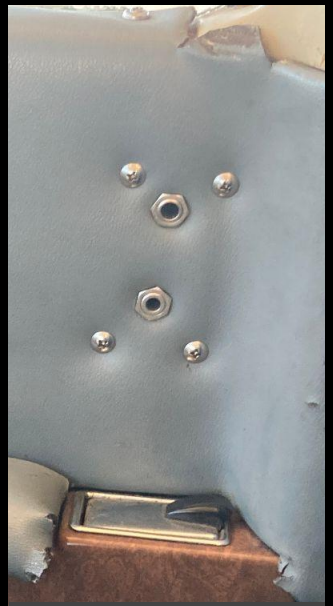
Passenger headset plugs

Passengers will plug their headsets in here.



P





Older Skyhawks may have different headset plug location





Older Skyhawks may have different external handles

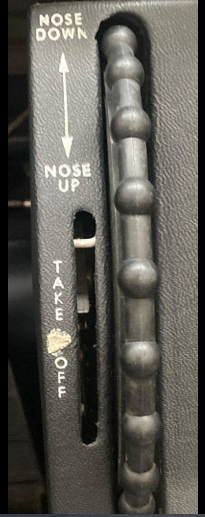


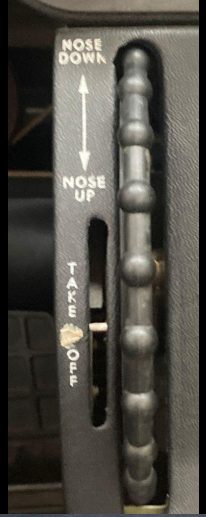


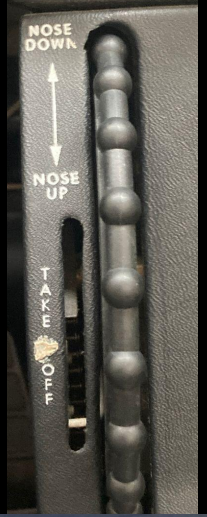




Seat belts may also rest in different locations. Be sure to familiarize yourself will all the belts and shoulder harness locations before taking passengers













TRIM

Take a look at how the trim tab moves based on trim wheel control movements. Verify Trim tab position matches trim wheel position.





Open

The door is completely open in this position. You must pull the handle back like you see here BEFORE closing the door







Closed

The door is closed and unlocked in this position (able to be opened from the outside).







LOCKED

When the door handle is fully down, the door is locked.





Baggage compartment

Push the big button to open.
Push the little button to close.

A far aft section is most convenient for rudder gust locks & towbars.

Registration and Airworthiness certificates are sometimes kept in the baggage compartment as pictured to prevent possible damage.



P

S



Autopilot Cooling Fan

In G1000 models, the Autopilot is mounted in the empennage. A cooling fan can be found in the baggage compartment.



S

(G1000)
2007+


N3245P





Inspection Panel

Instead of tearing the plane apart during inspection, mechanics can just open up small panels to inspect!



Leveling Screws

Used by mechanics to level the airplane out before maintenance

Access Panel

Used by mechanics to access larger autopilot components mounted in the empennage


N714XX



NAV antenna

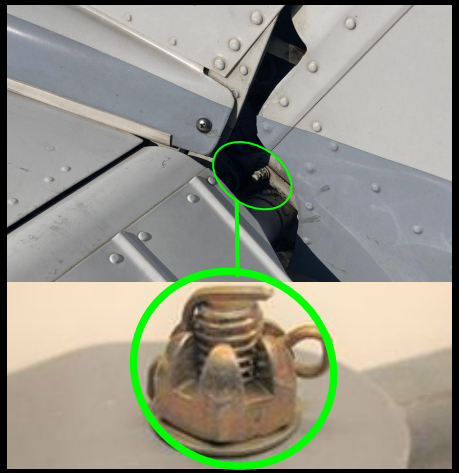
This is a SINGLE antenna shaped in a “V”. Remember: “V-shape for VOR”





Ground Trim Tab

This is the rudder trim tab. This is only adjusted by mechanics on the ground. DO NOT TOUCH. Grabbing this fragile metal will cause it to bend.



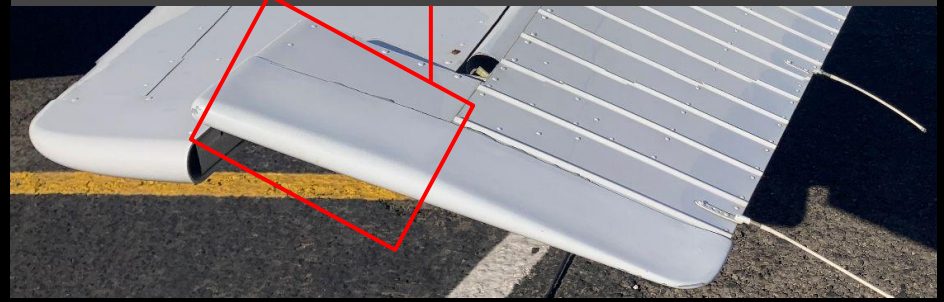


Counter-Weights

On the Rudder and Elevator, the counterweights have 3 jobs:

1. Reduce flutter
2. Alleviate control pressures
3. Increase airflow*

*Only rudder and elevator counterweights increase airflow due to their shape. They “grab” more air similar to slotted fowler flaps. *Aileron counterweights do not increase airflow.*



Cottering Pins

Verify cottering pins are *in*. These pins will be on the nuts of the actuators.

Tail Skid

VISUALLY check for no scratches. Verify to prove aircraft is airworthy and so you don't get blamed for damage.



Elevator Trim Tab

Verify trim is neutral inside and outside the cockpit.

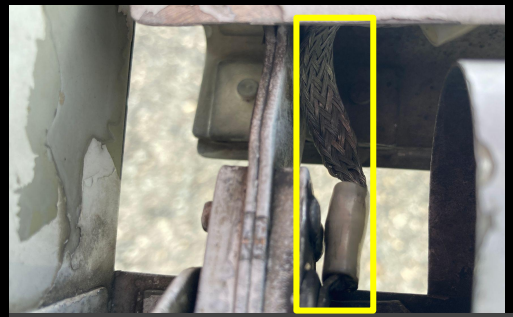


Elevator Trim Actuator

Verify secure and cottering pin is installed.

Elevator Nuts and Cottering Pins

Verify Cottering pin and nuts are secure.







Elevator Nuts and Cottering Pins

Verify Cottering pin and nuts are secure.

Static Line

Connects airframe to the static wicks located on the control surfaces.

The static line allows static electricity flow from the airframe to the static wicks, to escape off the plane.

Static Wick

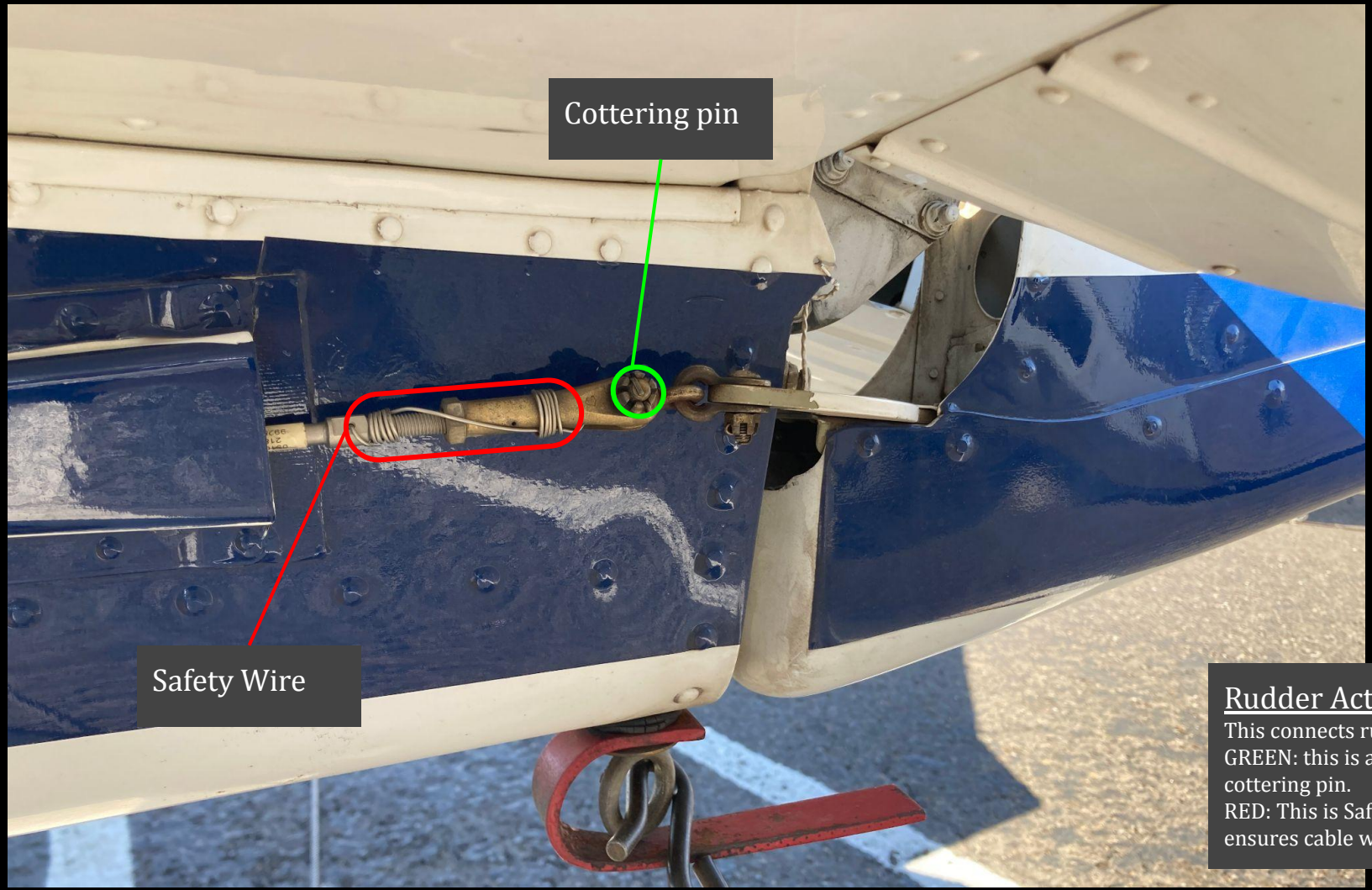
When the plane flies through clouds. Static electricity may build up on the airframe.

Accumulated static electricity can create severe radio interference (called “P-static”).

Static Wicks allow the static electricity to dissipate easily.

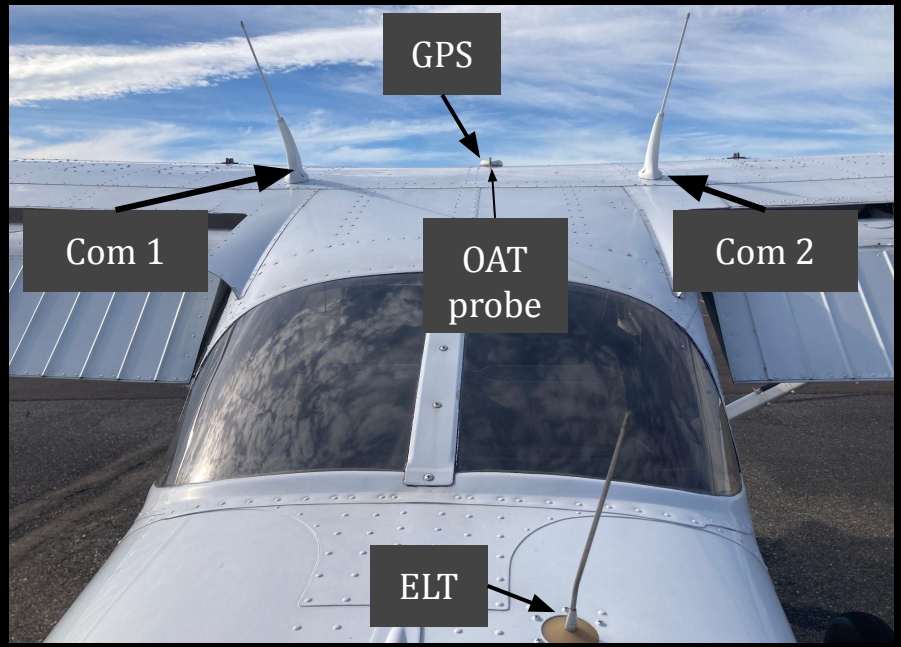






Rudder Actuator Cable

This connects rudder to the pedals.
GREEN: this is an another nut and cottering pin.
RED: This is Safety wire. This ensures cable will not snap.



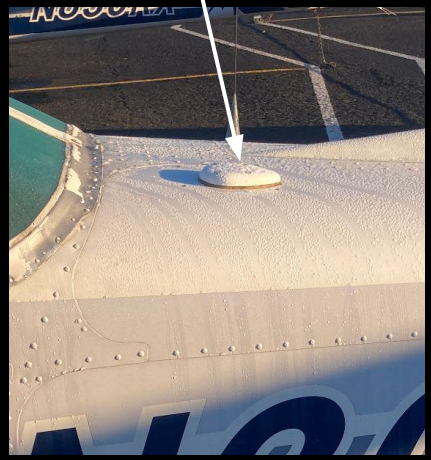


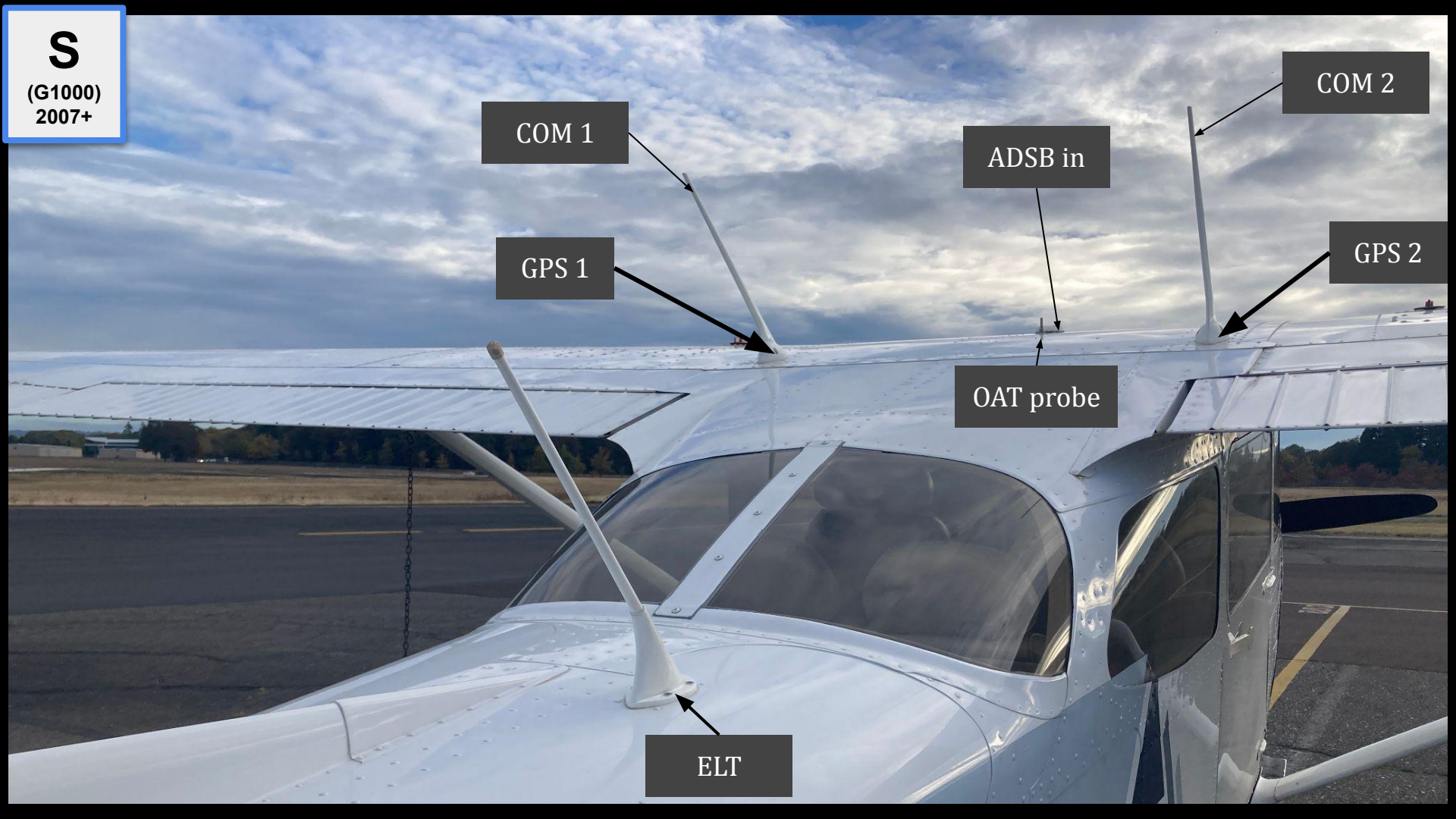


GPS Antenna

May be located in different places, verify with the MTX records of the airplane as needed.

Usually the GPS antenna is mounted on the top of the wing, sometimes you can find it on the empennage



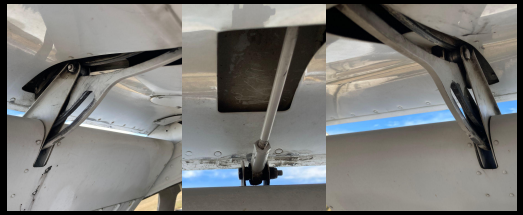

S
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2007+
COM 1
COM 2
ADSB in
GPS 1
GPS 2
OAT probe
ELT


324SP



Flaps

See the gap between the wing and the flap when deployed? This is the “slot”. We only have one of these gaps, so our flaps are called “single-slotted flaps”



Flap tracks and Actuator

Each flap has two tracks and one actuator. The Actuator connects the electric motor to the flap itself. *The cessna 172 has only one flap motor for both flaps.*

Verify Nuts are secure and clean-and-clear flap tracks. Verify actuator has a small amount of wiggle (it has “give”) when deployed.



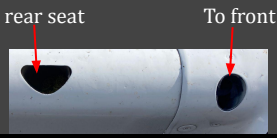
Corrugated Surfaces

Ailerons and flaps have a corrugated texture. This metal bending is a cheap and lightweight way for Cessna to increase the metals’ strength



Fresh air inlet

This leads air into the upper air vents.

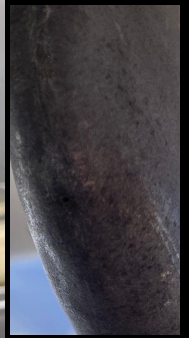




Fuel vent

This will equalize pressure in the fuel tanks as fuel is sucked into the engine. After getting refueled, sometimes fuel will drip down from the vent as shown. This is normal if the tanks have been overfilled.



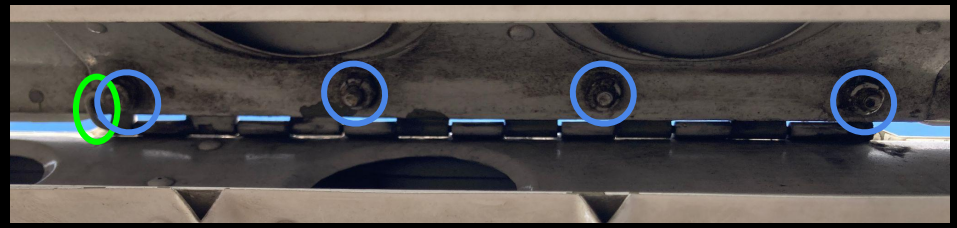


Pitot Tube

This provides ram air pressure to your airspeed indicator. Verify it's forward (ram hole) and aft (drain hole) are both clear.
Check Pitot tube heat with lights. Be careful to not burn hand by using this technique.

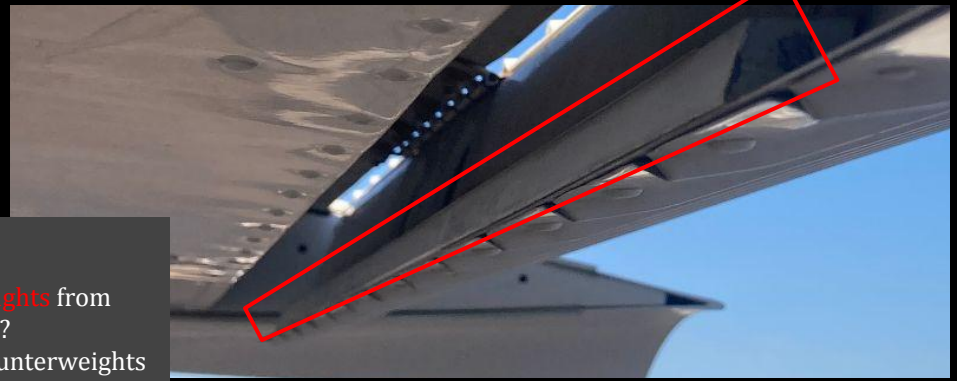






Ailerons

There are **Three Hinges.**
Verify each hinge has **4 nuts** and **cottering pin** secured. Just like the flaps, Verify the **Actuator** has a little bit of give. The Static Line connects the airframe to the static wicks, as explained earlier.



Counter weights

Remember Counter-weights from the rudder and elevator?
Here are the Aileron Counterweights



Leading Edge

Verify smooth and no damage.







Classic

Nav and Strobe wingtip lights



LED

“Light Emitting Diode” bright and newer Nav and strobe lights

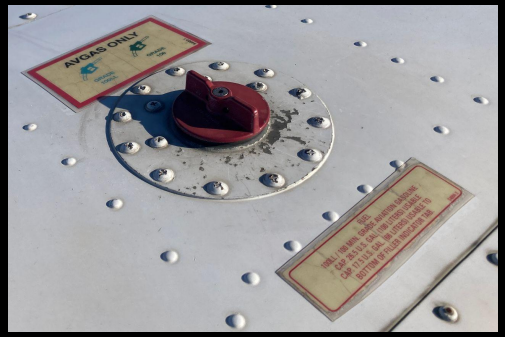


Light Blocking Fences

These little black walls will prevent light from reflecting back towards the pilot.



This transparent tube will allow the pilot to check the lights without staring directly at the light.





Topside

Fuel Caps must be secure. Take notice of the silver component in the center of the red cap. This is another fuel vent. Notice the placard next to the caps. This placard is required per the POH and must be legible.

R/S





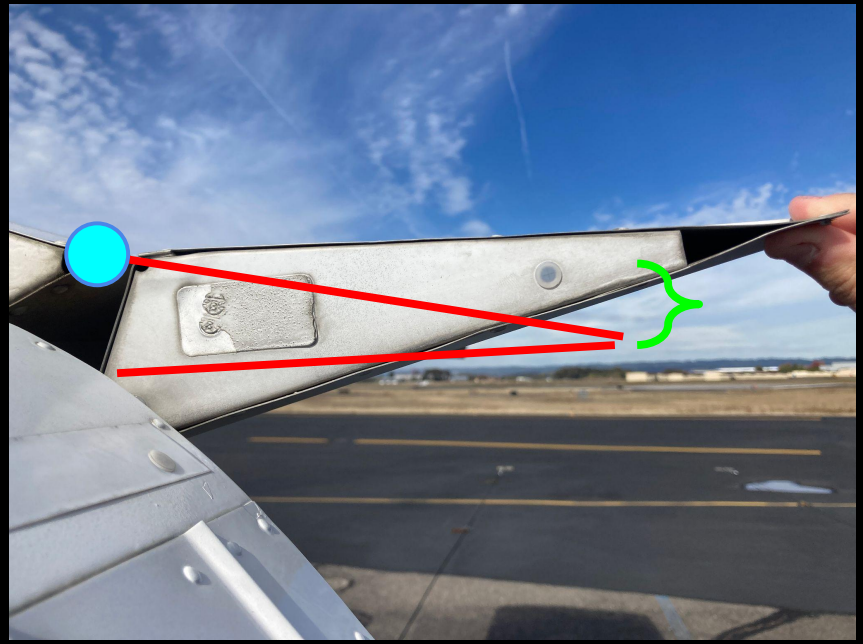


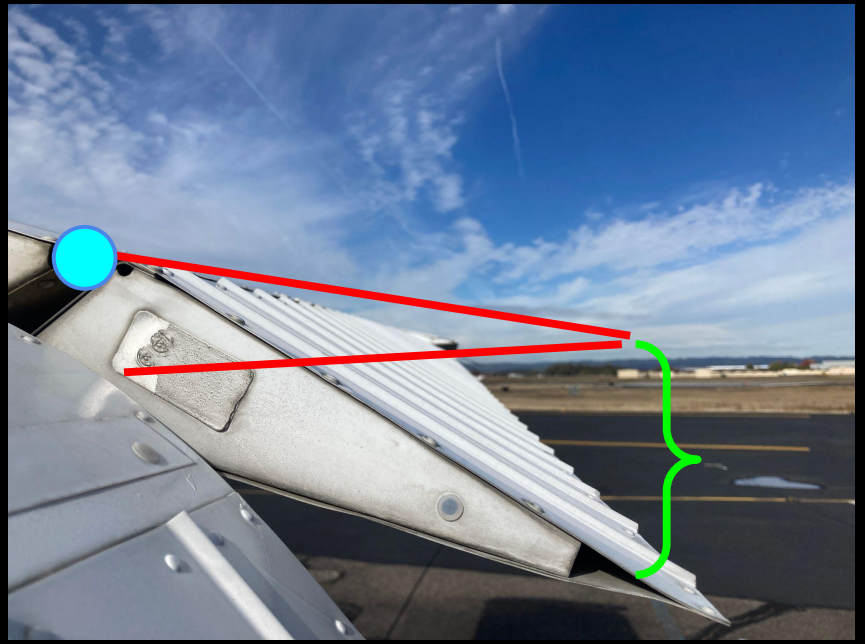
Courtesy Light

Under the wing, the courtesy light (on R/S models) can but activated to assist night-time passenger boarding. The light is controlled by the aft dome light button inside the cabin.

(master switch also needs to be ON, careful to avoid draining the battery!)

“**Differential**, Frise Type Ailerons with washout”





Differential Ailerons

Reduce Adverse yaw by deflecting the *UPWARD* moving aileron *MORE* than the downward moving aileron

“Differential, **Frise Type** Ailerons with washout”



Aileron Down



Aileron Neutral



Aileron Up

Frise-Type Ailerons

To reduce adverse yaw, Cessna uses a frise-type design of the ailerons.

When the aileron moves up, a small part will also move down and expose itself to the relative wind. This will create more drag to offset the downward aileron, which will naturally make more drag.

“Differential, Frise Type Ailerons with **washout**”



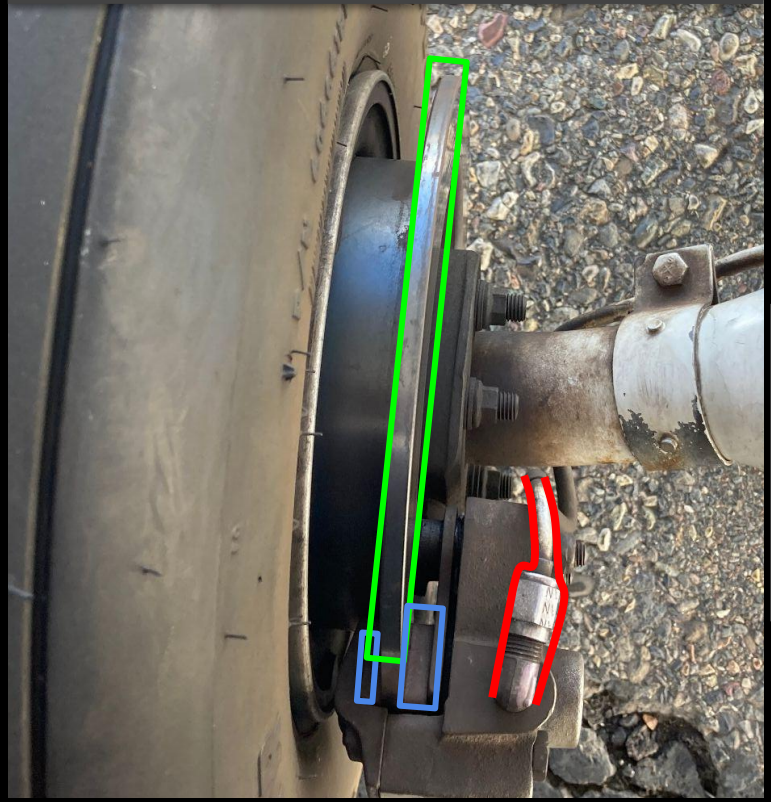
Wingtip Washout

Skyhawk wings have flattened tip angles (angle of incidence). This helps increase aileron effectiveness during a stall.

When the whole wing reaches it's critical angle of attack, actually the wingTIP is at a lower angle, therefore the tips will be *less prone* to stalling!

Brakes

There are two brake pads on each main wheel. In Between each brake pad is the brake disc. Verify brake PAD thickness. The Hydraulic line carries hydraulic fluid from the rudder pedals to the brake pads. Hydraulic fluid is red. Verify no leaks or dripping red hydraulic fluid.





Tire

Verify yellow air cap aligns with painted red (or white) dot.
Verify Cottering pin is installed. Verify Tire tread is deep.
(see glossary for examples).





Tire Tread







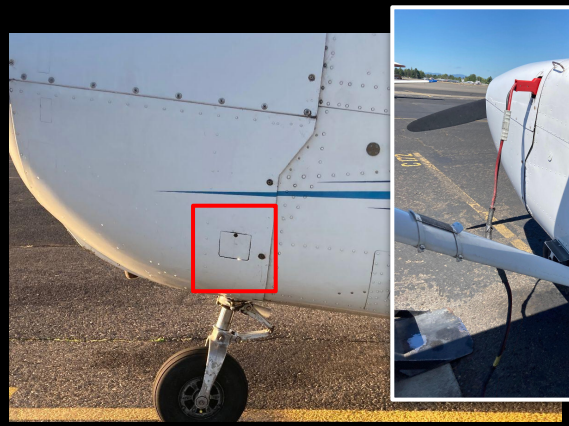


Landing Light(s)

Each Skyhawk may have it's landing/taxi lights in a different location. . .

GPU Receptacle

This is where external “Ground Power Units” can be plugged in

















Propeller

Run your fingers along the trailing edge of the propeller. Verify no dents or deep scratches!

Cabin Air Inlet

This valve allows fresh outside air to enter the cabin. It is controlled on the right side of the instrument panel.



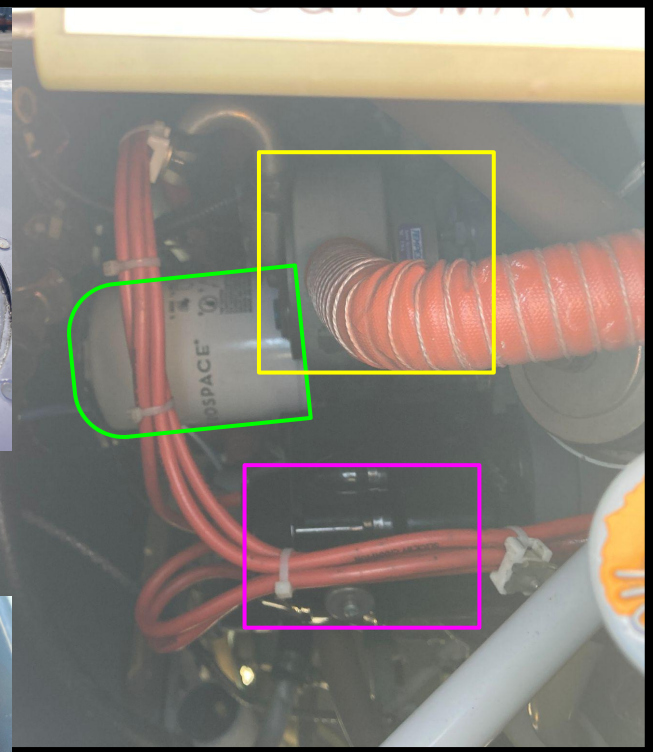


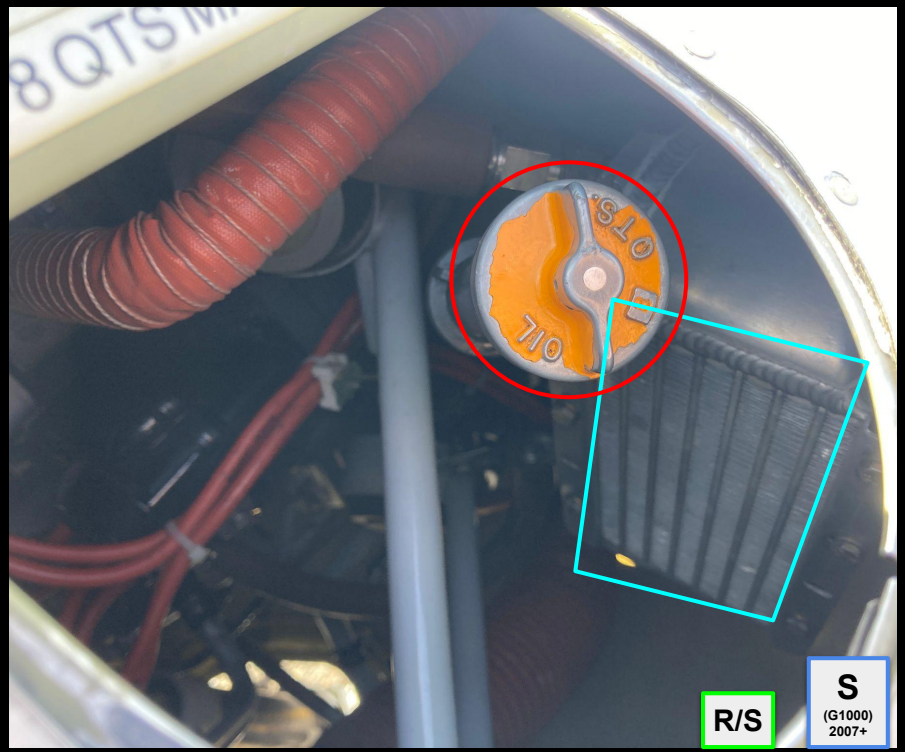


Fuel Strainer Drain

This is only installed in Carbureted Skyhawks. *NOT* in R or S models.

This will drain fuel from the fuel strainer.





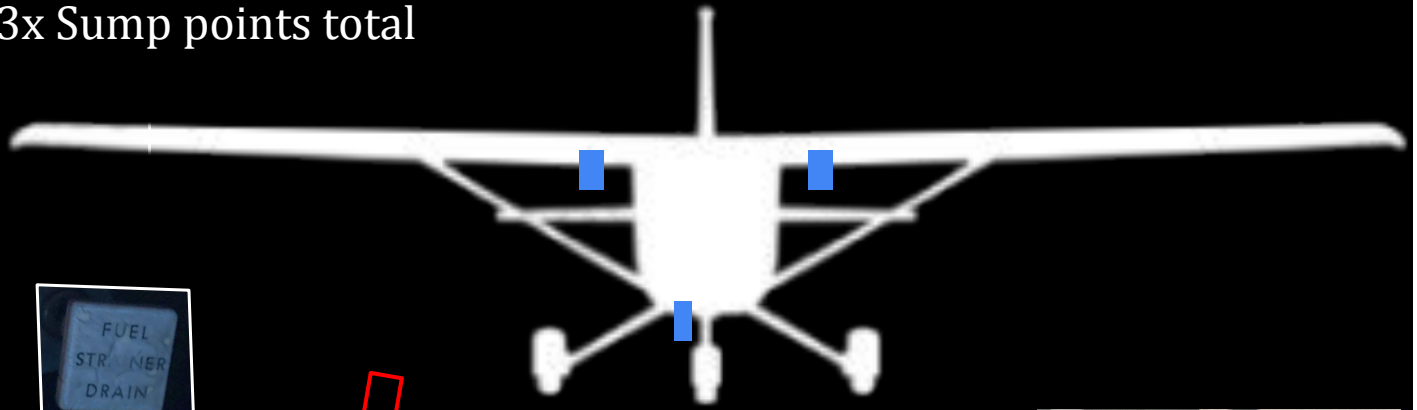
Inside the Cowling

Oil filler cap -> check oil quantity here
Vacuum Pump -> you can also see the “overboard vent” from the diagram!
Oil Filter -> this one is easy to spot because it's white!
Magnetos -> You can also see the [orange] electrical cables running to the spark plugs!
Oil Cooler -> this allows hot oil to get cooled through the air before returning to the engine!

Sumping Fuel

P

3x Sump points total





Fuel Strainer Drain

When you Pull the WHITE drain valve, fuel will pour out of the RED drain (coming from the strainer). This is how you will sump the Carbureted Skyhawks (P,M,N…).



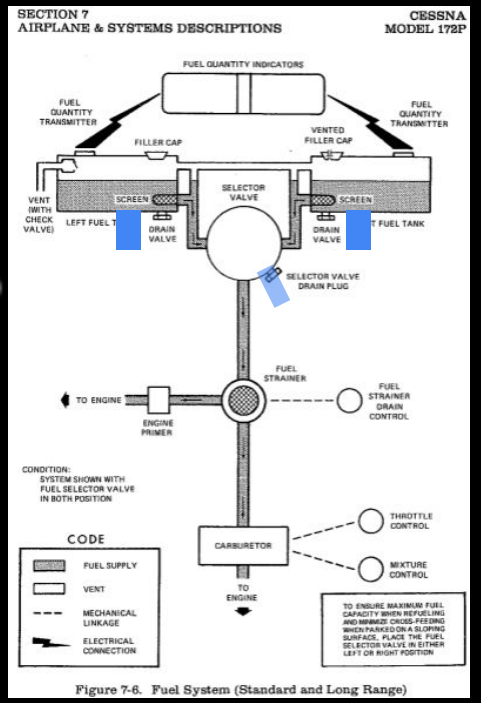
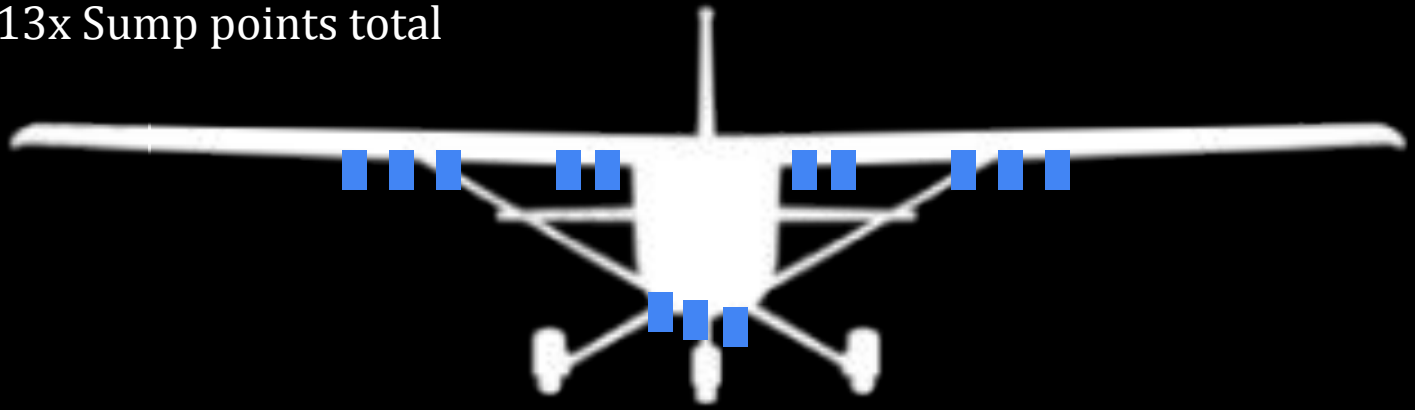


Figure 7-6. Fuel System (Standard and Long Range)

Sumping Fuel R/S

13x Sump points total

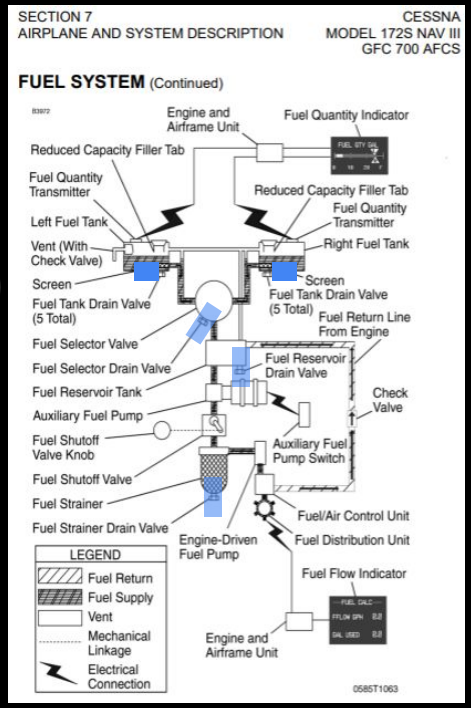


3 Sump Points under the nose (see fuel diagram on left)



5 Sump Points under EACH wing (5x2=10 wing sumps)

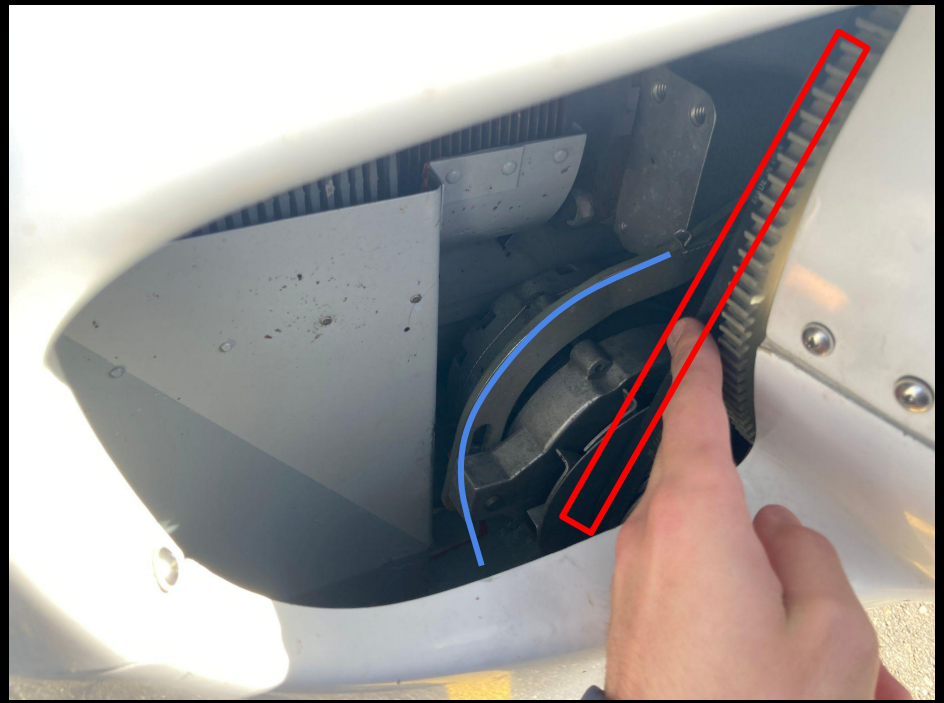




Sumping in R & S models

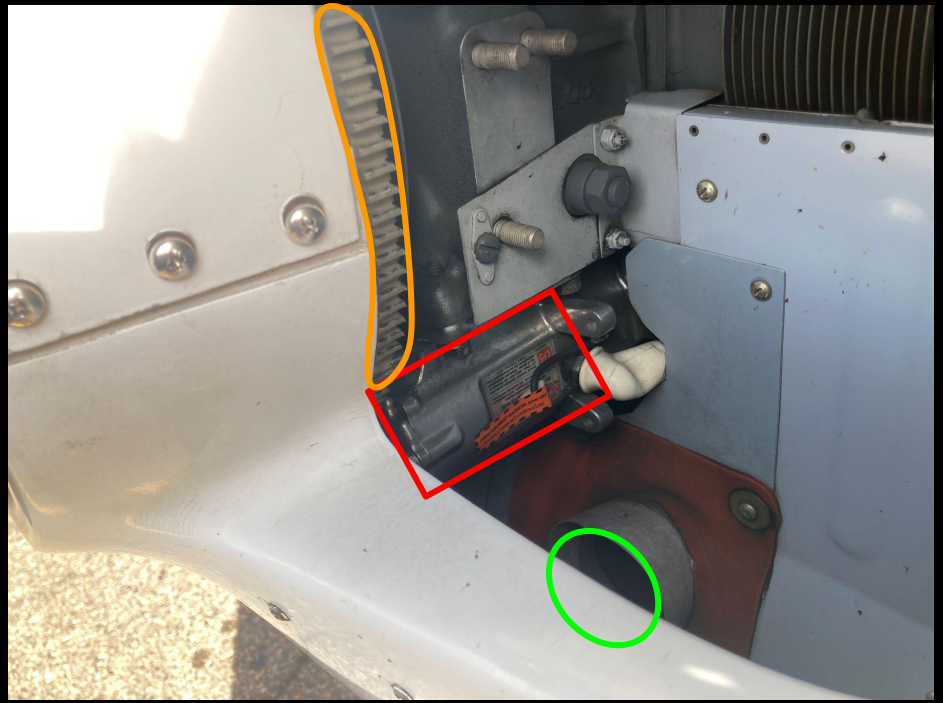
There are 3x sump points under the nose of the fuel injected skyhawks

Also, there are 5x sump points under each wing, so theres a total of 13 sump points in the fuel injected models



Alternator, Belt, Baffles

Alternator Belt This connects the alternator to the crankshaft. Verify belt tension is taught with two fingers.
Alternator This is the alternator itself.



Starter, Heater inlet, oil cooler

Here is the **Starter motor**. This Electrically twists the crankshaft when you key the ignition. Carburetor and cabin **heat air intake**
Ring gear This connects the starter to the crankshaft.







Down Under

Verify Intake **Air Filter** is clean and clear. Verify **Exhaust pipe** has no substantial crack . Verify **Oleo Strut** is inflated. Verify **Actuators** are secure. Verify **Shimmy Dampener** is secure and has no leak. Verify **Battery Vent** and **Crankcase Breather Line** are clear. Verify all cottering pins and bolts are secure. *(more on each of these elements on next slide).*

Nose Wheel

Just like the mains, verify inflation, tread, and cottering pin!





Stop Holes

Cosmetic plastic fairings crack easily. To stop the crack from growing, mechanics drill a small stop hole to equally distribute the stress of the crack. Instead of the crack growing, this helps to prevent the crack from getting larger

Questions

Why are ailerons corrugated?

What is the job of counterweights?

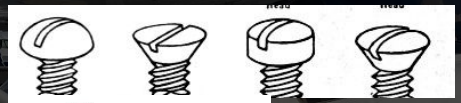
Why are the wings in this shape? Dihedral, Washout, and planview.

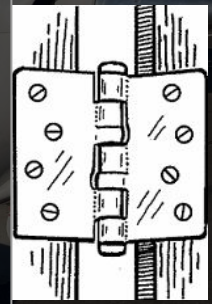
Why is elevator trim tab only on the right side?

Why would cessna only put 1 flap motor for both flaps?

How would a slip or skid affect the readings of your airspeed, altimeter, and VSI?

Glossary

Preflight	Before-flight preparation (walkaround & Calculation)
Walkaround	Physical Inspection of aircraft before flight
Screw	See image: 
Bolt	See image:
Nut	See image:
Hinge	General word for a mechanical join that can rotate.
Cottering Pin	A small pin which intersects bolt and nut, and hinge.
Actuator	General word for “the thing that MOVES it”
Track / Rail	A place for something to move only on this direction





Glossary

Counter-weight	"Counter" = Opposite. Means a weight to oppose the weight of control surface.
Inlet	In-Let = Let-in! This is a hole for air to flow into!
Vent	Like a window, vent is for air to flow in and out.
Breather	Similar to vent. Crankcase breather *could* have oil flow out, too
Panel	A general word for a flat surface
Strut	The name of a structural support beam
Oleo	A *type* of stut with suspension. Contains oil and nitrogen.
Receptacle	Place to RECieve something.
Groove / Tread	See pictures. Vinyl Record GROOVES and Tire TREADS





Glossary

Give	Having “give” means something is able to be squeezed
Taut	Being “taut” NOT tight, but also NOT loose. Perfect middle
Discrepancy	Something that does not match / is not correct
“Squawk”	A industry-wide word for reporting aircraft issues

