

John Barringer, CFI-A

503-949-5760

johniepilot@gmail.com

VALLEY FLYERS, INC

INTRO TO GLASS COCKPITS

The Olden Days



Here and now!



Garmin G500 Avionics System -



Garmin G500 Avionics Display System

- ◉ Combines the following LRU's
 - GDU 620 Display Unit
 - GRS 77 AHRS
 - GDC 74 Air Data Computer
 - GMU 44 Magnetometer
 - GTP 59 Temperature Probe

Glass Panel Display

- ⦿ Made up of two 6.5” LCD screens –
 - The **PFD** (left side) replaces the traditional “six pack” of flight instruments with an HSI and tape displays of altitude, airspeed and vertical speed
 - The **MFD** (right side) displays a moving map, along with flight plan information, (limited) weather information and other supplemental data

The Air Data Computer

- ⦿ Receives inputs from the Pitot-Static system and the temperature probe to calculate:
 - Airspeed (indicated and true)
 - Pressure Altitude
 - Vertical Speed
 - Outside Air Temperature
- ⦿ Communicates with both the GDU 620 and the AHRS

AHRS

- ⦿ The “Attitude and Heading Reference System”
- ⦿ Calculates attitude and heading information using:
 - Advanced Tilt Sensors (internal)
 - Accelerometers (internal)
 - Rate Sensors (internal)
 - Magnetometer (external)
 - GPS (external)
- ⦿ Takes a few minutes to achieve alignment; and it will happen quicker if the plane is stationary, and all inputs are valid

Magnetometer

- Electronically senses the earth's magnetic field
- Usually mounted out on the wing, but is connected to, and receives its power from, the AHRS unit

What Else?

- N515ED is also getting the following equipment –
- GTN 750 GPS/NAV/COM
- GTN 650 GPS/NAV/COM
- GMA 35 Audio Panel (remote mount)
- GTX 32 Mode C Transponder (remote mount)

Integrated GPS/NAV/COM



GTN 750

- Combines a WAAS enabled GPS with:
- 720 Channel Comm Radio
- VOR/LOC Receiver
- Aircraft Audio Panel Controls
- Transponder Controls

GTN 650

- A compact version of the GTN 750
- Offers the same functions, but without the audio panel or transponder interface

What to look out for?

◎ G500 –

- Translating the tape displays from our round-dial memories
- HSI – better situational awareness, but busier with multiple inputs: GPS? VOR? Both, neither?
- Using “Bugs” – they will help you be more precise in your flying, if you let them
- The “view” – what about track up, north up, SVT, terrain, etc
- Personalizing – please don’t!

The GTN's

- ⦿ Touch screen – “don't need no stinkin' knobs”
- ⦿ Use the finger guides to steady your hand
- ⦿ The flight plan components are interconnected – entries on one will cross-fill to the other unit
- ⦿ You have dual Nav and Comm; along with dual GPS
- ⦿ The displays are independent – so use them to increase the info you have on hand

Warnings (ouch!)

- ⦿ If you change something, check the NAV status bar to confirm the change; the GPS may not take you where *you wanted* to go, but it will take you where *you told* it to go
- ⦿ Altitudes reported by the GPS are geometric calculations, and may not agree with the pressure altimeter; trust the altimeter

Warnings, continued

- ⦿ The screens are coated with a special anti-reflective coating, and are sensitive to waxes, oils and abrasive cleaners
- ⦿ Use only a clean microfiber cloth to clear fingerprints, and eyeglass cleaners are OK, but **do not use cleaners containing ammonia (eg. Windex)**. It will damage the coatings

Lastly - Fly the Airplane!

- ① You will become distracted by the displays – don't let them suck you in
- ① Always be Head's up, and be alert for traffic; the TIS is advisory only, and only functions within a TRACON service area
- ① Don't let the equipment give you a false sense of security; stick to your current personal minimums and limitations