CAP Garmin G1000 GS Part 2 (VFR)

1. Title Page
2. Welcome to part 2
3. This morning we covered Information Management. Now we move in to Automation Management.
4. There are two different autopilot systems in our aircraft. The King KAP140 was a bridge system which would utilize most of the G1000’s capabilities while Garmin continued to develop and certify their autopilot system. The Garmin GFC 700 is a fully integrated autopilot system. This autopilot is designed to maximize the capabilities of the G1000 system. Several functions which are available with the GFC 700 are not available with the KAP140.
5. “Let’s talk autopilots!”
6. The KAP140 autopilot has the following functions.
7. In the event of an AHRS failure you would still have limited autopilot functions. The autopilot is a rate based system which uses a separate gyro system mounted behind the PFD.
8. Here are the various buttons and their functions. The right hand button is where you set the BARO for the KAP140. As a technique, always press the heading knob to sync the heading bug to your current heading before you engage the heading mode.
9. Here they are setting up the altitude preselect. This is on the before takeoff checklist. It doesn’t show well in these slides, but the top line of the KAP140 display is the active mode of the autopilot. The second line is the armed mode. With both autopilots, when you first engage the autopilot, it will initially take a snapshot of the aircraft’s attitude and enter the ROLL and PITCH modes to maintain that attitude. You must select which modes you want. If you press vertical speed the autopilot will continue climbing at that vertical speed.
10. Pressing the up or down key will change the vertical speed by 100 fpm.
11. Pressing the “ARM” key arms the altitude select/altitude hold function. Pressing the ALT key cycles between vertical speed mode and altitude hold. Great if you are mad at your scanner! Note that “ALT” appears on the second line indicating that it is armed.
12. As the aircraft arrives at the preselected altitude the word “ALT” moves from the second line to the first indicating that the autopilot has changed to Altitude Hold mode.
13. Here is a descent using the autopilot.
14. Again, as the aircraft arrives at the preselected altitude the autopilot changes to altitude hold mode.
15. A neat feature of the KAP140 is that, when you input a different altimeter setting you may adjust the aircraft’s altitude by momentarily pressing the up/down button to make a 20 foot change. With both autopilots, use of vertical speed can result in the autopilot flying the plane into a stall. The GFC 700 has an additional mode to avoid this which we’ll cover shortly.
16. Again. To avoid embarrassment, confusion and ridicule from the scanner and observer, press the heading knob to sync the heading bug with the actual heading BEFORE engaging heading mode.
17. \*\*review\*\*
18. An example of being in heading mode, on an intercept heading with the NAV mode armed. Note the word NAV on the second line.
19. Capturing the nav track.
20. CAMI
21. Here are the limitations. Ah, no, pilots may not crawl into the back and sit in a scanner position!
22. More limitations.
23. “Everybody got that?”
24. The GFC 700 has the integrated autopilot and also has a flight director.
25. \*\*review\*\*
26. The flight director provides flying cues via command bars based upon altitude, airspeed and/or navigational inputs selected by you.
27. \*\*review\*\*
28. Here you can see the top of the PFD. The top line is your navigation. What it is doing and where it is going. The second line is the automation. Green is active, white is armed.
29. Flight directors take a bit of getting used to. But once you do they are fabulous tools. Tuck the flight delta into the command bars and you can fly very precisely. The FD is on anytime that the autopilot is on. The FD may be on without the autopilot. If the FD is not giving you desired information, turn it off.
30. Here’s how it works…
31. If the Flight Director is the brain of the GFC 700, the autopilot is the muscles operating through the servos.
32. \*\*review\*\* No autopilot
33. \*\*review\*\* Now autopilot
34. Never let the autopilot take you somewhere which you are not already certain you wish to go! The FAA does not issue violations to the autopilot.
35. Pressing the DISC button once will disconnect the autopilot and will trigger an alert tone. Pressing it twice in quick succession will disconnect the autopilot but silence the tone. To avoid startling your crew you might consider announcing “autopilot coming off” just before you hit the DISC button.
36. \*\*review\*\* If you plan to utilize the FD or AP shortly after takeoff, preset your heading and altitude.
37. \*\*review\*\* Airborne press FD will bring up the command bars of the FD and now you have flying cues. Double check the PFD for correct modes! CAMI
38. Engage the autopilot. CAMI. FLC is the preferred climb mode as it will hold the airspeed which was being flown when the mode was selected. This mode will not fly you into a stall condition.
39. Changing the CDI display will result in the autopilot reverting to ROLL mode. You must re-establish the desired NAV mode.
40. \*\*review\*\*
41. \*\*review\*\*
42. The way the throttle quadrant is setup. Running the power in with your thumb extended will press the Go Around button which will cause the flight director to command a pitch of around 10 degrees.
43. Questions?