AUTO FLIGHT - GENERAL

1. General

A. The Garmin G1000 Auto Pilot System (GFC 700) is a three-axis fail-safe digital flight control system. There is no single LRU with the name "GFC 700"; rather, "GFC 700" refers to an integrated autopilot and flight director system, with functions provided by multiple G1000 LRUs and servos. For more maintenance data for the Garmin G1000 refer to the Garmin Caravan G1000 Line Maintenance Manual, P/N 190-00869-00. The following functions are provided by the GFC 700 in this installation:

- Flight Director
- Autopilot
- Manual Electric Trim

B. Airplanes 20800500 and On and Airplanes 208B2000 and On have a Garmin GFC 700 autopilot system installed that includes Garmin GSA 80 or GSA 81 servos and GSM 85A servo mounts.

C. The Model 208 and 208 Cargomaster 20800001 thru 20800145 can have the Sperry 400B Navomatic Autopilot or the Sperry 400B Integrated Flight Control System. The Model 20800001 thru 20800499 and 208B0001 thru 208B1999 can have the King (KAP/KFC-150 or KFC-225) Autopilot/Flight Control System or the King (KFC-250) Flight Control System.

D. These systems provide a means of automatically or manually controlling the flight of the airplane. Included are the following components which provide for tracking of any magnetic heading, automatic intercept and tracking of VOR radials or ILS localizer and glide slope beams, and includes automatic pitch synchronization and trim, manual turn (400B only) and pitch command, altitude hold, back course switching, NAV 1 or NAV 2 receiver selection, pitch attitude disengagement with an associated warning tone, autopilot annunciator lights, and A/P ROLL TRIM indicator (400B only) to indicate any adjustments necessary to neutralize autopilot roll effort and prior-to-flight test function.

2. Description

A. The Garmin GFC 700 Flight Director functions are accomplished by the No.1 GIA 63W/64W and uses data from the G1000 system, including air data, attitude, and navigation data, to calculate commands for display to the pilot and for the Autopilot. Flight Director command bars and mode annunciations are sent to the PFD through a high-speed Ethernet connection for display. The Flight Director operates independently of the Autopilot, and if necessary allows the pilot to hand-fly the command bars. Refer to the applicable sections of Chapter 22 for GFC 700 maintenance data.

B. The Garmin GFC 700 command data is given to the three GSA 81 or GSA 80 servos. Flight Director data is processed by the three servos for aircraft flight control surface commands. The autopilot cannot operate unless the Flight Director is engaged. The following is a summary of the autopilot functions provided by each LRU:

- Garmin Display Units (GDU), Primary Flight Display, pilot (PFD 1), copilot (PFD 2), and the Multi Function Display (MFD) - Display the Flight Director command bars and the autopilot mode annunciations.
- GMC 710 AFCS Controller - Supplies controls for the autopilot functions.
- GIA 63W/64W No.1 - Calculates the Flight Director command bars and shows them on the PFD. The GIA 63W/64W also supplies the control movement commands to the GSA 81 autopilot servos.
- GSA 81 or GSA 80 - Actuates the control surfaces based on commands received from the GIA 63W/64W.

C. Sperry (Type AF-550A) 400B Autopilot (Model 208 only).

(1) This autopilot system consists of the autopilot controller, accessory unit, flux detector, directional and horizontal gyros, roll, pitch and pitch trim actuators, slaving accessory, computer amplifier, altitude sensor, warning horn, airspeed switch, roll trim indicator, and autopilot annunciator lights.

D. Sperry (Type IF-550A) 400B Integrated Flight Control System (Model 208 only).

(1) This optional system incorporates go-around and pitch synchronization functions and a mode selector in addition to the components of the 400B Autopilot (Type AF-550A) System. This system utilizes a flight director indicator instead of an attitude gyro and a slaved HSI installed to replace the standard directional gyro.

E. King (KFC-250) Flight Control System (Airplanes 20800007 Thru 20800083, and 208B0044 Thru 208B0147).

(1) This autopilot/flight director system consists of a mode controller, a mode annunciator panel, an attitude flight command indicator, a slaved pictorial navigation indicator, a slaving accessory and compensator unit, control wheel switches for autopilot disconnect/trim interrupt, control wheel steering and manual electric trim control switches, a go-around button is mounted on the power lever, remote mounted roll trim and pitch actuators, A/P computer, air data unit and inverter, and a panel mounted flight control system switch panel incorporating attitude gyro fast erect switch, inverter selector switch, trim test switch, autopilot roll rate monitor test switch and a flight director/autopilot NAV

1/NAV 2 selector switch.

F. King (KAP/KFC-150) Autopilot/Flight Control System.

(1) This system has a mode annunciator, attitude/flight command indicator, slaved pictorial navigation indicator, slaving accessory and compensator unit, and a combined computer/controller unit. The combined computer/controller unit contains computer functions, vertical modes, mode control buttons, and an altitude sensor. The control wheel switches supply the autopilot disconnect/trim interrupt, control wheel steering, and manual electric trim control. The roll, pitch, and trim actuators are installed in different locations in the airplane.

G. King (KFC-225) Autopilot/Flight Control System.

(1) This system has a flight command indicator, slaved pictorial navigation indicator, go-around mode, slaving accessory and compensator unit, external configuration module, data plug and a combined computer/controller/annunciator unit. The system can also have a mode annunciator. The combined computer/controller/annunciator unit contains computer functions, vertical modes, yaw damper, mode control buttons, annunciator lights and an altitude sensor. The control wheel switches supply autopilot disconnect/trim interrupt, control wheel steering, and manual electric trim control. The roll, pitch, and trim actuators are installed in different locations in the airplane.

3. Operation

A. For operation of the various systems, refer to the Approved Airplane Flight Manual and Pilot&#65533;s Operating Handbook.

4. Maintenance Practices

A. For maintenance practices related to the KING and Sperry auto pilot systems, refer to the following:

(1) Chapter 34, Navigation - General.

(2) Chapter 76, Quadrant Assembly and Controls - Maintenance Practices.

(3) Model 208 customized avionic wiring diagram that was supplied with the airplane (Airplanes 20800348 and On and Airplanes 208B0900 and On).

(4) Specific vendor publications listed in Introduction - List of Publications.