

**Transport Canada Approved Flight Manual Supplement
For
S-TEC System 55X Autopilot System**


This supplemental manual is applicable to all FBA-2C3 landplanes and floatplanes equipped with an S-Tec System 55X Autopilot. This Supplement must be attached to the Transport Canada Approved Airplane Flight Manual when the airplane is modified by the installation of S-Tec System 55X Autopilot System in accordance with Found Aircraft Canada Mod 1260. The information contained herein supplements or supersedes the basic flight manual, airplane markings and/or placards only in those areas listed herein. For Limitations, Procedures, and Performance information not contained in this Supplement, consult the airplane markings and placards and/or basic Airplane Flight Manual, (P/N: FM2C3).



SUPPLEMENT S03

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SECTION 1

GENERAL

This supplemental manual is applicable to all FBA-2C3 landplanes and floatplanes equipped with an S-Tec System 55X Autopilot System.

The S-Tec 55X Autopilot is a rate based two-axis autopilot system. When in control of the roll axis, the autopilot senses turn rate, as well as closure rate to the selected course, along with the non-rate quantities of heading error, course error, and course deviation indication.

When in control of the pitch axis, the autopilot senses vertical speed, acceleration, and closure rate to the selected glideslope, along with the non-rate quantities of altitude and glideslope deviation indication.

These sensed data provide feedback to the autopilot, which processes them in order to control the aircraft through the use of servos coupled to the airplane's flight control system. A roll servo is connected to the aileron control cables, while a pitch servo is connected to the elevator control cables.

The autopilot also interfaces with the Garmin G500 PFD/MFD system to provide a Flight Director mode. The Flight Director is selected via the autopilot master switch on the flight panel which has three positions, "off", "FD", and "AP".

A quick disconnect switch located on the pilot's control wheel will disengage the autopilot.

The FBA-2C3 installation of the S-Tec System 55X Autopilot features:

- Control Wheel Steering
- Heading Pre-select & Hold
- Altitude Hold with Altitude Trim
- Course Intercept Capability
- NAV Mode
- Dual Mode - HDG/NAV or HDG/APR
- VOR/LOC/GS/REV/GPS Coupling with 3 Gain Levels
- VOR/LOC/GS/REV/GPS Course Deviation and NAV Flag Warning
- Digital Vertical Speed Command
- Pitch Trim Annunciation
- GPSS Roll Steering Mode
- Flight Director Mode

Refer to S-Tec System 55 X Autopilot Pilot's Operating Handbook (POH) for full operational procedures and description of implemented modes. The S-Tec 55X POH also contains detailed procedures for accomplishing GPS & VOR course tracking, front course and back course localizer approaches, and glideslope tracking.

CAUTION

The System Fifty Five X autopilot is a tool provided to FBA-2C3 aircraft owners that serves to assist them with cockpit workload management. The ability of the autopilot to provide optimum assistance and performance is directly proportional to the pilot's knowledge of its operating procedures. Therefore, it is highly recommended that the pilot develop a thorough understanding of the autopilot, its modes, and operating procedures in Visual Meteorological Conditions (VMC), prior to using it under Instrument Flight Rules (IFR).

SECTION 2 LIMITATIONS

The followings are limitations applicable to S-Tec 55X Autopilot installed in Found Aircraft FBA-2C3.

1. Minimum speed with the autopilot engaged is;
Landplane: 90 KIAS
Floatplane: 90 KIAS below 12,500 ft, and 85 KIAS above 12,500 ft.
2. Maximum speed with the autopilot engaged is;
Landplane: 172 KIAS
Floatplane: 145 KIAS
3. The forward center-of-gravity limit with the autopilot engaged is;
Landplane: 18.5 inches aft of datum
Floatplane: 19.0 inches aft of datum
4. The minimum engagement height after takeoff is 500 ft.
5. The minimum use height for the autopilot on approach is 200 ft.
6. Flap deflection is limited to 20 degrees during autopilot operations.
7. The autopilot must not be engaged for takeoff or landing.
8. The autopilot must be disengaged for missed approach, go around, and bailed landing.
9. The autopilot must be disconnected in moderate or severe turbulence.
10. The airplane must be trimmed during approach operations
11. ILS approaches limited to Category I operations only.
12. For VOR/GPS and ILS and localizer intercept, capture, and tracking, the following limitations apply:
 - a) The autopilot must be disconnected during approach if course deviation exceeds 50%. The approach should only be continued by “hand-flying” the airplane.
 - b) The autopilot must be disengaged at the Decision Altitude.
13. The S-Tec 55X Autopilot Flight Manual Supplement P/N S03 must be carried in the airplane at all times and must be available to the pilot while in flight.

Altitude lost and bank angle change during a roll or a pitch axis autopilot malfunction and recovery are as follows:

Landplane:

Flight Phase	Bank Angle	Altitude Loss	Recovery Delay
Climb	$\pm 40^\circ$	180 ft	3 sec
Cruise	$\pm 55^\circ$	230 ft	3 sec
Descent	$\pm 40^\circ$	410 ft	3 sec
Maneuvering	± 45	100 ft	1 sec
Approach	± 20	65 ft	1 sec

Autopilot Altitude Loss and Bank Angle Change: Landplane

Floatplane:

Flight Phase	Bank Angle	Altitude Loss	Recovery Delay
Climb	$\pm 55^\circ$	200 ft	3 sec
Cruise	$\pm 55^\circ$	370 ft	3 sec
Descent	$\pm 40^\circ$	420 ft	3 sec
Maneuvering	± 55	130 ft	1 sec
Approach	± 30	130 ft	1 sec

Autopilot Altitude Loss and Bank Angle Change: Floatplane

SECTION 3

EMERGENCY PROCEDURES

NOTE

These items supplement the FBA-2C3 emergency procedures. Be sure to follow the FBA-2C3 procedures in Flight Manual FM2C3 except as noted below.

Autopilot Malfunction

In the event of an autopilot malfunction:

1. MANUALLY CONTROL AIRCRAFT
2. Disengage the autopilot

The autopilot may be disengaged by:

1. Pressing the red A/P DISC switch on the control wheel
2. AP Master Switch - OFF
3. Pulling the AUTOPILOT circuit breaker

Do not reengage the autopilot until the malfunction has been identified and corrected.

System Failure and Caution Annunciations

If any of the following failure annunciations occur at low altitude or during an actual instrument approach, disengage the autopilot and manually fly the aircraft. Do not try to troubleshoot until a safe altitude and maneuvering area are reached or a safe landing is completed.

Annunciation	Condition	Required Action
Flashing RDY for 5 seconds with audible tone.	Autopilot disconnect. All annunciations except RDY are cleared.	None.
Flashing RDY with audible tone then goes out.	Turn coordinator gyro speed low. Autopilot disengages and cannot be re-engaged.	Check power to turn Coordinator.
Flashing NAV, REV, or APR.	Off navigation course by 50% needle deviation or more.	Use HDG mode until problem is identified. Crosscheck raw NAV data, compass heading, and radio operation.
Flashing NAV, REV, or APR with steady FAIL	Invalid radio navigation signal.	Check Nav radio for proper reception. Use HDG mode until problem is corrected.
Flashing VS	Excessive vertical speed selected over aircraft capable vertical speed. Usually occurs in climb.	Reduce VS command and/or adjust power as appropriate.

SECTION 4 NORMAL PROCEDURES

NOTE

These items supplement the FBA-2C3 normal procedures. Be sure to follow the FBA-2C3 procedures in Flight Manual FM2C3 except as noted below.

Refer to Section 7 – Systems Description for a description of the autopilot.

Power-Up Test

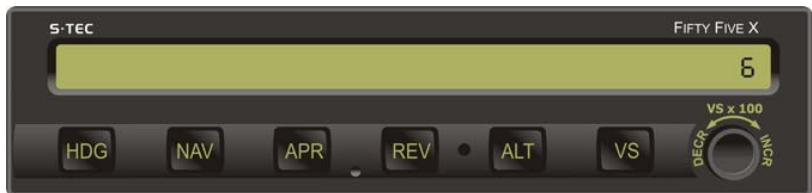
1. Set Battery Master Switch to ON position.
2. Set Avionics Master Switch to ON position
3. Set Autopilot Master Switch to FD.

At start up:

All autopilot annunciators illuminate on AP display for about 10 seconds, and then extinguish. See figure below.



The software revision number briefly appears on AP display between 10 and 20 seconds following power up. See Figure below.



When the turn coordinator gyro has reached operational RPM, the RDY annunciator will come on. (Usually within 3 minutes). See figure below.



Should a Programmer/Computer failure be detected, the "FAIL" annunciation alone will re-appear on the AP display and the auto pilot will not operate.

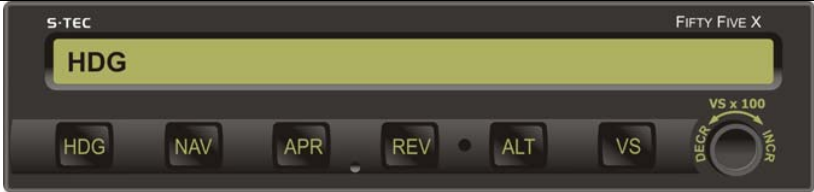


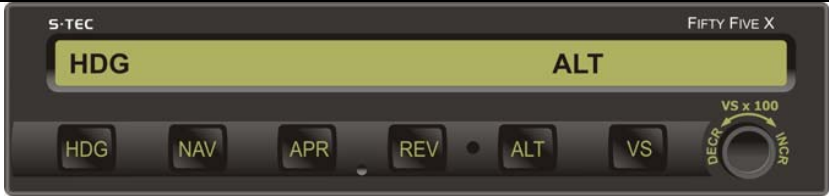
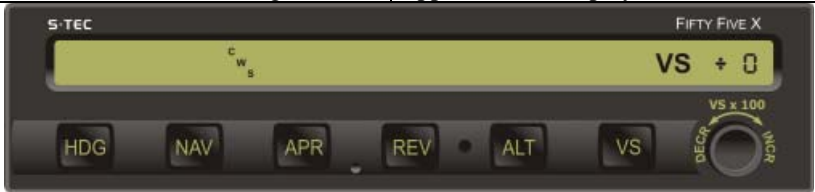
Should a Turn Coordinator failure be detected, the AP display will remain blank indefinitely and the autopilot will not operate. See figure below.

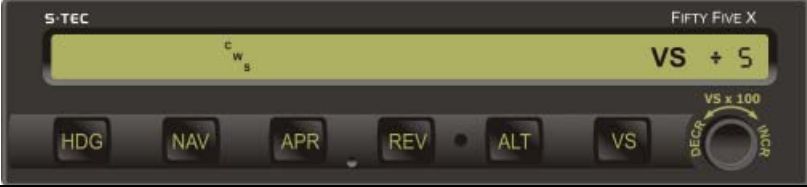





Operations Test

Prior to takeoff and with engine running, perform the following actions.

ACTION	RESPONSE
1. Move aircraft Control Wheel left and right to sense its freedom of movement about the roll axis.	
2. Set Heading Bug under Lubber Line. (Hint: simply depress the left control knob on the G500 display unit once).	
3. AP Master Switch to "AP" position.	
4. Press HDG mode selector switch to engage heading mode.	"HDG" annunciation alone will appear on the AP display
	
5. Attempt movement of aircraft Control Wheel left and right.	Control Wheel's reduced freedom of movement indicates that Roll Servo is engaged. Verify Roll Servo can be overridden. If not, disconnect autopilot and do not use.
6. Turn Heading Bug to the left side of the Lubber Line.	Control Wheel turns to the left.
7. Turn Heading Bug to the right side of the Lubber Line.	Control Wheel turns to the right.
8. Depress the left knob on the G500 display, thus centering the Heading Bug.	Control Wheel stops moving.
9. Move Control Wheel forward and aft to sense its freedom of movement about pitch axis.	

ACTION	RESPONSE
10. Press ALT mode selector switch to engage altitude hold mode.	"ALT" annunciation appears with "HDG" on AP display.
 <p>The image shows the S-TEC FIFTY FIVE X autopilot display. The display screen is green and shows "HDG" on the left and "ALT" on the right. Below the screen are several buttons: HDG, NAV, APR, REV, ALT, and VS. To the right of the buttons is a rotary knob labeled "VS x 100" with "DECR" and "INCR" markings.</p>	
11. Attempt movement of Control Wheel forward and aft.	Control Wheel's reduced freedom of movement indicates that the Pitch Servo is engaged. Verify Pitch Servo can be overridden. If not, disconnect autopilot and do not use.
12. Press and Hold the CWS Switch to arm control wheel steering mode.	"CWS", "VS" and "+0" annunciations only appear on AP display
 <p>The image shows the S-TEC FIFTY FIVE X autopilot display. The display screen is green and shows "CWS" on the left and "VS + 0" on the right. Below the screen are several buttons: HDG, NAV, APR, REV, ALT, and VS. To the right of the buttons is a rotary knob labeled "VS x 100" with "DECR" and "INCR" markings.</p>	
13. Move Control Wheel left and right, while holding the CWS Switch.	Control Wheel's increased freedom of movement indicates Roll Servo disengaged.
14. Move Control Wheel forward and aft, while holding the CWS Switch.	Control Wheel's increased freedom indicates that Pitch Servo is disengaged.
15. Release CWS Switch to engage Control Wheel steering mode.	
16. Attempt movement of Control Wheel left and right.	Control Wheel's reduced freedom of movement indicates that Roll Servo is engaged.
17. Attempt movement of Control Wheel forward and aft.	Control Wheel's reduced freedom of movement indicates that Pitch Servo is engaged.

ACTION	RESPONSE
18. Rotate AP Modifier knob CW until +5 (500 FPM climbing) is commanded.	The Control Wheel moves in aft direction.
 <p>The image shows the S-TEC FIFTY FIVE X autopilot display. The screen displays 'VS + 5'. Below the screen are buttons for HDG, NAV, APR, REV, ALT, and VS. To the right is a control wheel with 'DEGR' and 'WCR' markings and a 'VS x 100' label.</p>	
19. Rotate AP Modifier knob CCW until -5 (500FPM descending) is commanded.	Control Wheel moves in forward direction.
 <p>The image shows the S-TEC FIFTY FIVE X autopilot display. The screen displays 'VS - 5'. Below the screen are buttons for HDG, NAV, APR, REV, ALT, and VS. To the right is a control wheel with 'DEGR' and 'WCR' markings and a 'VS x 100' label.</p>	
20. Rotate AP Modifier Knob CW until +0 (0 FPM) is commanded.	Control Wheel stops.
21. Depress the red AP Disc button. Audible Alert tone is heard.	Control Wheel moves freely left-right and fore-aft. "RDY" annunciation only appears on AP display.
22. Press HDG and VS mode selector switches to engage the Pitch and Roll Servos.	"HDG", "VS" and "+0" annunciations only appear on AP display.
23. Move Control Wheel as far forward as possible.	After 3 seconds, "TRIM▲" annunciation appears on AP display. After 7 seconds, "TRIM▲" annunciation flashes.
 <p>The image shows the S-TEC FIFTY FIVE X autopilot display. The screen displays 'HDG', 'TRIM ▲', and 'VS + 0'. Below the screen are buttons for HDG, NAV, APR, REV, ALT, and VS. To the right is a control wheel with 'DEGR' and 'WCR' markings and a 'VS x 100' label.</p>	

ACTION	RESPONSE
24. Move Control Wheel as far aft as possible.	After 3 seconds, "TRIM▼ " annunciation appears on AP display. After 7 seconds, "TRIM▼ " annunciation flashes.
	
25. Move Control Wheel forward until "TRIM▼ " is extinguished.	"HDG", "VS" and "+0" annunciations only appear on AP display.

FLIGHT DIRECTOR	
The following steps are required to verify proper operation of the Flight Director	
ACTION	RESPONSE
1. Set Autopilot Master Switch to FD position.	Audible Alert sounds a periodic tone. "FD" indicator light is on. FD Steering Command Bars, (yellow), appear on the G500 PFD.
2. Move Control Wheel left and right.	Control Wheel's increased freedom of movement indicates that Roll Servo is disengaged.
3. Move Control Wheel forward and aft.	Control Wheel's increased freedom of movement indicates that Pitch Servo is disengaged.
4. Move Control Wheel as far forward or aft as possible.	After 3 seconds, elevator does not begin to run, indicating that Trim Servo is disengaged (if installed).
5. Turn Heading Bug to 45° left of Lubber Line, to command a left turn.	FD Steering Command Bars slowly move to a left bank position.
6. Turn Heading Bug to 45° right of Lubber Line, to command a right turn.	FD Steering Command Bars slowly move to a right bank position.
7. Rotate AP Modifier Knob CW until +15 (1500 FPM climbing) is commanded.	FD Steering Command Bars slowly move to a pitch up position.
8. Rotate AP Modifier Knob CW until -15 (1500 FPM descending) is commanded.	FD Steering Command Bars slowly move to a pitch down position.

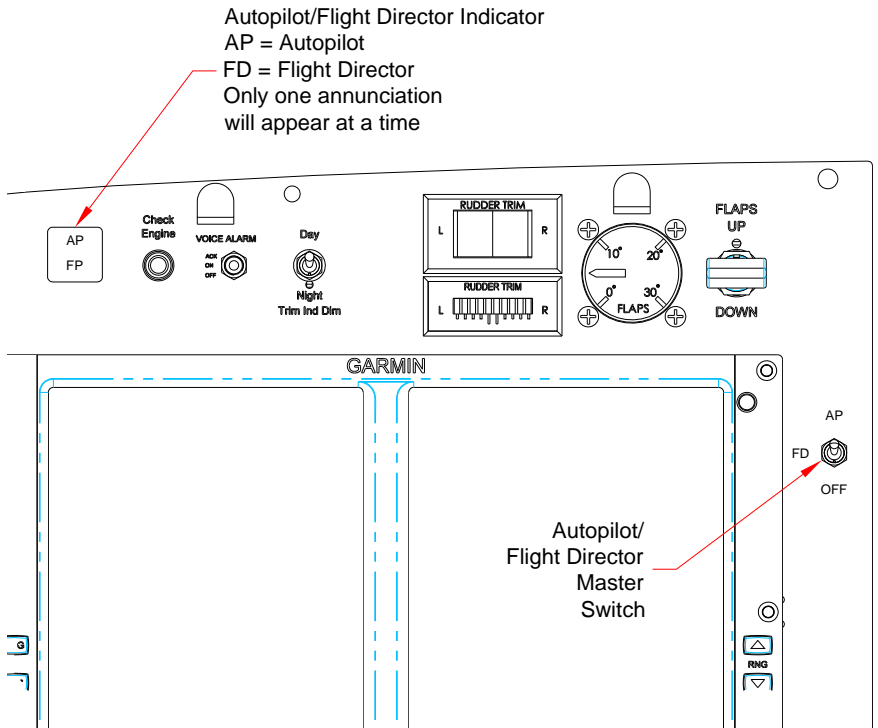


Figure 2 - Autopilot Ancillary Controls

Autopilot In-Flight Procedures

1. Autopilot RDY Light CHECK “ON”
2. Trim airplane for existing flight conditions.
3. Engage desired mode by pressing mode selector button on autopilot computer.

Heading Mode

1. Begin by selecting a heading on HSI within 10° of the current airplane heading.
2. Press HDG button on autopilot computer. The HDG annunciator will illuminate and the airplane will turn to the selected heading.
3. Use HSI HDG bug to make heading changes as desired.

Altitude Hold Mode

1. Manually fly the airplane to the desired altitude and level off.

NOTE

For smoothest transition to altitude hold, the airplane rate of climb or descent should be less than 100 FPM when Altitude Hold is selected.

2. Press HDG or NAV to engage a roll mode. The associated annunciator will illuminate.

NOTE

A roll mode must be engaged prior to engaging a pitch mode.

3. Press the ALT button on the autopilot programmer/computer. The ALT annunciator will illuminate indicating that the mode is engaged and the autopilot will hold the present altitude.

NOTE

Manually flying the airplane off the selected altitude will not disengage altitude hold and the autopilot will command a pitch change to recapture the altitude when the control input is released.

4. Altitude can be synchronized to another altitude by rotating the VS knob on the computer. Clockwise rotation will increase and counter clockwise rotation will decrease altitude 20 feet for each ‘click.’ The maximum adjustment is ± 360 feet. Adjustments greater than 360 feet can be made

by selecting VS mode and flying the airplane to the new altitude and then reengaging ALT mode.

Vertical Speed Mode

1. Begin by manually establishing the desired vertical speed.
2. Press HDG or NAV to engage a roll mode. The associated annunciator will illuminate.

NOTE

A roll mode must be engaged prior to engaging a pitch mode.

3. Press the VS button on the autopilot programmer/computer to engage the vertical speed mode. When the mode is engaged, the autopilot will synchronize to and hold the vertical speed at the time the mode was engaged.
4. Vertical speed can be adjusted by rotating the VS knob on the computer. Clockwise rotation increases and counter clockwise rotation decreases rate of climb (or descent) 100 FPM for each 'click.' The maximum adjustment is ± 1600 FPM.

NOTE

A flashing VS mode annunciator indicates excessive error between actual vertical speed and the selected vertical speed (usually in climb).

The pilot should adjust power or reduce the commanded vertical speed as appropriate to remove the error.

WARNING

Autopilot may not be able to maintain all selectable vertical speeds. Selecting a vertical speed that exceeds the aircraft's available performance may cause the aircraft to stall.

Altitude Capture (Optional Interface)

The Altitude Preselect Function is an option for the G500 Avionics Display System which works with the S-Tec System 55X Autopilot. At the set altitude, the autopilot will go from a Vertical Speed Mode (climb or descent) to an Altitude Capture Mode where it will hold the selected altitude.

1. Select the desired altitude on the GDU 620 (G500 graphical display unit, PFD) by pressing the ALT key and turning the PFD knob so the altitude bug is at the desired altitude.

2. Engage the autopilot in altitude select mode by pressing the autopilot VS and ALT buttons simultaneously.
3. Select a vertical speed on the autopilot appropriate for the aircraft performance, (descent or climb).
4. The autopilot will capture the target altitude.

GPS Tracking and GPS Approach

1. Begin with a reliable GPS signal selected on the NAV receiver.
2. Select desired course on HSI and establish a desired intercept heading.
3. Press the NAV button on the autopilot programmer/computer twice. The NAV and GPSS mode annunciators will illuminate.

NOTE

If the course needle is at full-scale deviation, the autopilot will establish the airplane on a heading for a 45° intercept with the selected course. As the airplane approaches the course, the autopilot will smoothly shallow the intercept angle. The pilot may select an intercept angle less than the standard 45° by setting the desired intercept heading with the HSI HDG bug, pressing and holding HDG, and then pressing NAV twice on the autopilot programmer/computer (NAV, HDG, and GPSS will be displayed). When the on-course intercept turn begins the HDG mode will disengage and the annunciator will go out. During the intercept sequence, the autopilot operates at maximum gain and sensitivity (90% of standard rate turn). When the selected course is intercepted, course deviation needle centered, the course-tracking program is activated. The system will remain at maximum sensitivity for approximately 15 seconds while the wind correction angle is established. The maximum turn rate is then reduced to 45% standard rate. Approximately 60 seconds later, the maximum turn rate is reduced to 15% standard rate.

4. For increased sensitivity during GPS approach or if desired for enroute tracking, press the APR button on the autopilot computer. The NAV, GPSS, and APR annunciators will be illuminated. Use HDG to accomplish a procedure turn. Engage GPSS again to complete the approach.

VOR Tracking and VOR-LOC Approach

1. Begin with a reliable VOR or VOR-LOC signal selected on the NAV receiver.
2. Select desired course on HSI and establish a desired intercept heading.

3. Press the NAV button on the autopilot programmer/computer. The NAV mode will illuminate. Course interception and tracking will be as described under GPS Tracking and GPS Approach above.
4. For station passage, set HDG bug to within 5° of selected course.

NOTE

If the HDG bug is within 5° of center and the course deviation is less than 10%, the autopilot will immediately establish the lowest level of sensitivity and limit the turn rate to a maximum of 15% of a standard rate turn.

5. For increased sensitivity during approach or if desired for enroute tracking, press the APR button on the autopilot computer. Both NAV and APR annunciators will be illuminated.

Glideslope Intercept and Tracking

1. Begin with a reliable ILS signal selected on the NAV receiver.
2. Select autopilot NAV and APR. Airplane must be within 50% needle deviation of localizer centerline.
3. Select ALT mode. Airplane must be 60% or more below the glideslope centerline during the approach to the intercept point. If the above conditions have existed for 10 seconds, GS mode will arm, the GS annunciator will come on and the ALT annunciator will remain illuminated. When glideslope intercept occurs, the ALT annunciator will go out and the system will track the glideslope.

NOTE

If approach vectoring locates the airplane too near the glideslope at the intercept point (usually the outer marker), the GS mode can be manually armed by pressing the ALT button once. Once capture is achieved, GS annunciator will come on and ALT annunciator will go out.

Additional information regarding "Normal Operating Procedures" may be found in Section 3 of the S-Tec 55X POH.

Flight Director In-Flight Procedures

The FD is a display of the flight profile. It is commanded by the autopilot. A pair of Steering Command Bars and an Aircraft Reference Symbol (ARS), superimposed upon a pitch ladder, comprises the FD. The FD operates in the AP mode or the FD mode.

AP Mode

1. Autopilot Master Switch – “AP”
2. Engage a roll and pitch AP mode.

NOTE

The Steering Command Bars are magenta and the autopilot mode indicator shows a green “AP”. The autopilot steers the aircraft toward the Steering Command Bars until the ARS is tucked into them. The FD provides a visual indication of how accurately the autopilot is tracking the roll and pitch commands.

FD Mode

1. Autopilot Master Switch – “FD”
2. Engage a roll and pitch AP mode.

NOTE

The Steering Command Bars are magenta and the autopilot mode indicator shows an amber “FP”. The pilot must steer the aircraft toward the Steering Command Bars, until the ARS is tucked into them. The FD provides a visual indication of how accurately the pilot is tracking the autopilot's roll and pitch commands.

Additional information regarding "Normal Operating Procedures" may be found in Section 3 of the S-Tec 55X POH.

SECTION 5 PERFORMANCE

There is no change to the airplane performance when the S-Tec System 55X autopilot is installed.

SECTION 6 WEIGHT AND BALANCE

There is no change to the airplane performance when the S-Tec System 55X autopilot is installed.

SECTION 7

AIRPLANE AND SYSTEMS DESCRIPTION

The airplane is equipped with an S-Tec System 55X two-axis Automatic Flight Control System (Autopilot).

The basic autopilot system consists of the following equipment:

- Programmer/Computer
- Roll Servo
- Pitch Servo
- Turn Coordinator
- Altitude Transducer (Pressure)
- Autopilot Master Switch
- Autopilot Quick Disconnect Switch (located on the control wheel)
- Control Wheel Steering Switch (located on the control wheel)

The autopilot roll axis uses an inclined gyro in the turn coordinator case as the primary turn and roll rate sensor. In addition to the turn coordinator instrument, the autopilot computer receives signals from the G500 Avionics Display System, an altitude pressure transducer and from its' own integrated accelerometers. The autopilot computer computes roll steering commands for turns, radio intercepts, and tracking. Roll axis steering is accomplished by autopilot steering commands to the roll servo coupled to the aileron cable. The autopilot computer controls pitch thru the pitch servo coupled to the elevator cable.

The following figure is a block diagram of the autopilot system.

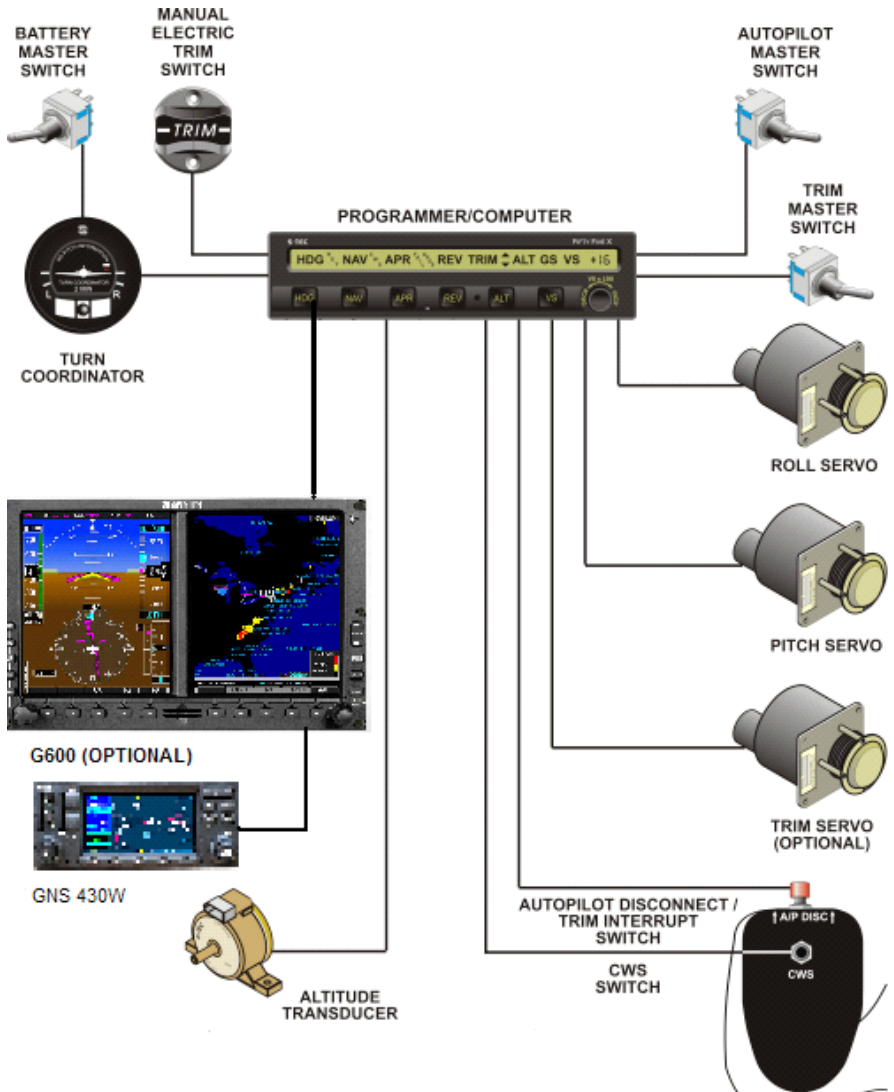


Figure 1 S-Tec System 55X Block Diagram

All Autopilot mode selections are performed by using the mode select buttons and VS modifier knob. Annunciators in the programmer/computer display window annunciate the various modes. Available functions are as follows.

RDY (Ready) – Illuminates when autopilot is ready for engagement. When the airplane's Battery Master switch is turned on and the rate gyro RPM is correct, the RDY annunciator will come on indicating the autopilot is ready for the functional check and operation. The autopilot cannot be engaged unless the RDY light is illuminated.

(Heading) Mode – When HDG is selected, the autopilot will engage the HDG mode, fly the airplane to, and hold the heading set on the G500 PFD. Subsequent heading changes are made using the PFD knob on the G500. For smoothest transition to HDG mode, it is recommended that the airplane be aligned to within 10° of the selected heading before engaging HDG. The HDG mode is also used in combination with the NAV mode to set up a pilot selected intercept angle to a course.

GPSS (GPS Steering) – Pressing NAV twice will cause the autopilot to go to GPSS.

REV (Reverse Course) – When REV is selected, the autopilot will automatically execute high sensitivity gain for an approach where tracking the front course outbound or tracking the back course inbound is required. The APR and REV annunciators will illuminate when REV is selected.

APR (Approach) – When APR is selected, the autopilot provides increased sensitivity for VOR or GPS approaches. APR may also be used to provide increased sensitivity for enroute course tracking.

GS (Glideslope) – The autopilot GS function will capture and track an ILS glideslope. To arm the GS function, the following conditions must be met: (1) the NAV receiver must be tuned to the appropriate ILS frequency; (2) The glideslope signal must be valid – no flag; (3) the autopilot must be in NAV/APR/ALT modes; and (4) the airplane must be 60% or more below the glideslope centerline during the approach to the intercept point, and within 50% needle deviation of the localizer centerline at the point of intercept – usually the outer marker. When the above conditions have existed for 10 seconds, the GS annunciator will illuminate indicating GS arming has occurred (ALT annunciator will remain on). When the glideslope is intercepted and captured, the ALT annunciator will go out.

ALT (Altitude Hold), Mode – When ALT is selected, the autopilot will hold the altitude at the time the mode was selected. Altitude hold will not engage if an autopilot roll mode is not engaged. Altitude correction for enroute barometric pressure changes may be made by rotation of the VS knob on the autopilot programmer/computer. Clockwise rotation will increase and counter clockwise rotation will decrease altitude 20 feet for each ‘click.’ The maximum adjustment is ± 360 feet. Adjustments greater than 360 feet can be made by selecting VS mode and flying the airplane to the new altitude and then re-engaging ALT mode.

VS (Vertical Speed) Mode – When VS is selected, the autopilot will synchronize to and hold the vertical speed at the time the mode was selected. Altitude hold will not engage if an autopilot roll mode is not engaged. The vertical speed is displayed in 100-foot increments at the far right of the programmer/computer window next to the VS annunciation. A plus (+) value indicates climb and a negative or minus (-) value indicates descent. Vertical speed can be adjusted by rotating the VS knob on the programmer/computer. Clockwise rotation increases and counter clockwise rotation decreases rate of climb (or descent) 100 FPM for each ‘click.’ The maximum adjustment is ± 1600 FPM.

WARNING

**Autopilot may not be able to maintain all selectable vertical speeds.
Selecting a vertical speed that exceeds the aircraft’s available performance
may cause the aircraft to stall.**

Altitude Capture (Optional) - The Altitude Preselect Function is an option for the G500 Avionics Display System which works with the S-Tec System 55X Autopilot. At the set altitude, the autopilot will go from a Vertical Speed Mode (climb or descent) to an Altitude Capture Mode where it will hold the selected altitude.

Flight Director

The S-TEC 55X autopilot is interfaced with the Garmin G500 PFD/MFD to provide a flight director function. The FD is a display of the flight profile on the G500 PFD. It is commanded by the autopilot. A pair of Steering Command Bars and an Aircraft Reference Symbol (ARS), superimposed upon a pitch ladder, comprises the FD. The FD operates in the AP mode or the FD mode.

In AP Mode, the Steering Command Bars are magenta and the autopilot mode indicator shows a green “AP” indication. The autopilot steers the aircraft

toward the Steering Command Bars until the ARS is tucked into them. The FD provides a visual indication of how accurately the autopilot is tracking the roll and pitch commands.

In FD Mode, the Steering Command Bars are also magenta and the autopilot mode indicator shows an amber “FD” indication. The pilot must steer the aircraft toward the Steering Command Bars, until the ARS is tucked into them. The FD provides a visual indication of how accurately the pilot is tracking the autopilot's roll and pitch commands.

The pilot selects the mode using the Autopilot Master Switch on the flight instrument panel. An illuminated indicator light above the switch indicates which mode has been selected.