

S-TEC

AIRPLANE FLIGHT MANUAL SUPPLEMENT FOR THE S-TEC 01326 DIGITAL FLIGHT CONTROL SYSTEM INSTALLED ON

**Textron Aviation Inc. Models 210, 210A, 210B, 210C, 210D, 210E,
210F, T210F, 210G, T210G, 210H, T210H, 210J, T210J, 210K,
T210K, 210L, T210L, 210M, T210M, 210N, T210N, 210R, T210R,
P210N, and P210R**

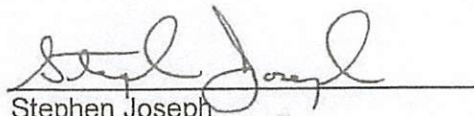
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This supplement must be attached to the latest Textron Aviation Inc. Models 210, 210A, 210B, 210C, 210D, 210E, 210F, T210F, 210G, T210G, 210H, T210H, 210J, T210J, 210K, T210K, 210L, T210L, 210M, T210M, 210N, T210N, 210R, T210R, P210N, and P210R Pilot's Operating Manual and FAA Approved Airplane Flight Manual when the S-TEC 01326 Digital Flight Control System (DFCS) is installed in accordance with STC SA09745DS dated 4-09-18.

The information contained in this document supplements or supersedes the basic manual only in those areas listed. For limitations, procedures and performance information not contained in this supplement, consult the basic airplane flight manual.



Stephen Joseph
Lead ODA administrator
ODA-700096-SW

Dated: 4-09-18
Revision C Date: 6-08-21

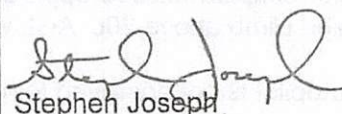
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SECTION V.

APPENDIX

ST-962-II-0001

REVISION PAGE

Rev.	Change	Approved
-	Initial Release	Date: 4-09-18 Stephen Joseph Stephen Joseph ODA-700096-SW
A	Added models 210, 210A, 210B, 210C, 210D, 210E, 210F, T210F, 210G, T210G, 210H, T210H, 210J, T210J, P210N, and P210R. Added Yaw axis and associated procedures.	Date: 11-01-18 Stephen Joseph Stephen Joseph ODA-700096-SW
B	Added knots to MPH chart. Added envelope protection information to Section IV. Updated Pilot Operating Guide date.	Date: 9-6-19 Stephen Joseph Stephen Joseph ODA-700096-SW
C	Updated Pilot Operating Guide date. Updated LNAV Approaches subsection and added VNAV information to Section IV. Updated Computer/Programmer figure in Section VI.	Date: 6-08-21  Stephen Joseph ODA-700096-SW

SECTION I: GENERAL

This supplement is to acquaint the pilot with the features and functions of the S-TEC 01326 DFCS and to provide operating instructions for the system when installed in the models listed in this supplement. The aircraft must be operated within the limitations herein provided when the autopilot is in use.

SECTION II: LIMITATIONS

1. The S-TEC 01326 DFCS Pilot's Operating Guide and Reference P/N 87325, dated May 2021 or later, must be carried in the aircraft and be available to the pilot while in flight.
2. The autopilot and yaw damper must be disengaged from the aircraft controls for takeoff and landing.
3. Approved for Category I ILS, LPV/VNAV and non-precision approach operations.
4. Approved for WAAS lateral and vertical approaches with the appropriate navigation equipment.
5. Flap deflection limited to the approach position (10 deg.) during autopilot operations.
6. Autopilot use prohibited below 200' AGL during coupled approach operations.
7. Autopilot coupled missed approach or go-around maneuver not authorized until the aircraft is in a stabilized climb above 200' AGL with flaps retracted.
8. The autopilot is not approved for operation in known icing conditions.
9. Use of the autopilot is prohibited when any ice is observed forming on the aircraft.

NOTE

The envelope protection minimum airspeed is 80 KIAS. At that airspeed, the autopilot will pitch the aircraft down to achieve 90 KIAS.

NOTE

The envelope protection maximum airspeed is 190 KIAS. At that airspeed, the autopilot will pitch the aircraft up to achieve 185 KIAS.

SECTION III: EMERGENCY PROCEDURES

ALTERNATOR FAILURE

Indication: Illumination of HIGH VOLTAGE light on the instrument panel.

NOTE

Battery life of approximately 34 minutes is predicated on reducing the electrical load of the aircraft to 14 amperes at the first sign of an alternator failure. Use of additional equipment may reduce the life of the batteries.

Electrical systemREDUCE ELECTRIC LOAD
(by placing the Master Switch to "BAT" and Avionics bus switch to OFF)

AUTOPILOT

In the event of an autopilot malfunction, or anytime the autopilot is not performing as expected or commanded;

1. Aircraft Control -----MAINTAIN
(Manually control aircraft attitude by overpowering the autopilot)
2. Autopilot -----DISC
(Press the red AP DISC/TRIM INTR button on the Pilot's control yoke and hold)

NOTE

The AP DISC/TRIM INTR button is a multipurpose switch that will disconnect the autopilot as well as provide trim interrupt. A momentary press will disconnect the Autopilot and Yaw Damper, but leave the Flight Director engaged. To disengage the Flight Director, press and hold the AP DISC/TRIM INTR button for more than 1.2sec.

3. AP Master Switch -----OFF
4. AP Circuit Breaker (Pilot's CB panel) -----PULL

NOTE

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

Altitude loss during a malfunction and recovery:

- The following altitude losses were recorded after a malfunction with a 3 second recovery delay:

<u>Configuration</u>	<u>Altitude Loss</u>
Cruise	-420'
Descent	-580'

- The following altitude losses were recorded after a malfunction with a 1 second recognition delay:

<u>Configuration</u>	<u>Altitude Loss</u>
Maneuvering	-150'
Approach (Coupled or Uncoupled)	-100'

TRIM

In the event of a Trim Runaway

- Aircraft Control ----- MAINTAIN
(Manually control aircraft by overpowering the trim servo)
- AP DISC/TRIM INTR button ----- DEPRESS AND HOLD
(Pilot's control yoke)
- Trim Master Switch ----- OFF
- Manual Trim ----- RETRIM AS REQUIRED

In the event of a Yaw Damper failure:

- Aircraft control ----- MAINTAIN
(Manually control aircraft attitude by overpowering yaw servo)
- AP DISC/TRIM INTR button ----- PRESS
(Pilot's control yoke)
- Rudder Trim ----- RETRIM AS REQUIRED

NOTE

Reengage the autopilot (note: YD will automatically re-engage along with ROLL and PITCH when AP is pressed). If the Yaw Damper problem persists, deselect the Yaw Damper by pressing the YD Button on the Autopilot. This will allow the pilot to use all A/P functions except the Yaw Damper.

SECTION IV: NORMAL PROCEDURES

This section contains preflight procedures for the autopilot and trim systems. For detailed normal operating procedures, including system description, pre-flight and in-flight procedures refer to the S-TEC 3100 DFCS Pilot Operating Guide and Reference, P/N 87325, dated May 2021 or later.

AUTOPILOT SYSTEM PRE-FLIGHT PROCEDURES

NOTE

Full system voltage is required for this test, either by running the aircraft engine or by using a suitable GPU.

NOTE

During the ADAHRS initialization period the aircraft must not be moved for three minutes, minimum.

1. Avionics Master Switch ----- ON
2. A/P Master Switch ----- ON
3. Trim Master Switch ----- ON

NOTE

For proper manual electric trim function, both the A/P Master Switch and Trim Master Switch must be on during the autopilot self test.

4. Autopilot Self Test ----- COMPLETE
5. ADAHRS INITIALIZATION (If installed) ----- COMPLETE
("A/P READY" is displayed)

NOTE

If the system fails to initialize, it will annunciate "A/P FAIL" and not allow any mode to function.

NOTE

The below tests should be conducted with the control yoke held neutral to prevent the weight of the elevator from making a constant command for pitch trim while the ground test is being performed. As the tests are conducted, allow the autopilot to move the yoke while supporting it in the pitch axis.

6. A/P BUTTON ----- PRESS
(A/P, FD indicators illuminate and servos engage. Roll and Pitch annunciate. Steering bars appear on PFD or ADI with Flight Director bars)

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7. PFD/HSI HDG BUG ----- CENTER HDG BUG
8. PRESS HDG (on AP) ----- ENGAGE
9. HDG BUG ----- MOVE HDG BUG LEFT AND RIGHT
 (Aileron control and Steering bars should follow HDG bug)
10. IAS BUTTON ----- PRESS
 (IAS indicates "90", Steering bar moves down and pitch control moves slowly in (forward))
11. Rocker Switch ----- PRESS AND HOLD UP
 (IAS number increases)
12. Rocker Switch ----- PRESS AND HOLD DN BUTTON
 (IAS number decreases)
13. VS BUTTON ----- Press-VS
 (Indicates "0")
14. Rocker Switch ----- PRESS UP BUTTON UNTIL +500 IS DISPLAYED
 (Steering Bar moves up and pitch control moves slowly aft- pilot may have to assist a heavy yoke)
15. Rocker Switch ----- PRESS DN BUTTON UNTIL -500 IS DISPLAYED
 (Steering bar moves down and pitch control moves slowly in (forward))
16. ALT BUTTON ----- PRESS
 (ALT HOLD is displayed)
17. Pitch control ----- SLOWLY PULL AFT
 (Autotrim runs nose down after 3 sec. and "Trim" is displayed. After 8 seconds "Trim-In-Motion" voice annunciated)
18. Pitch control ----- SLOWLY PUSH FORWARD
 (Autotrim runs nose up after 3 sec. and "Trim" is displayed. After 8 seconds "Trim-In-Motion" voice annunciated)
19. PFD ALTIMETER ----- SET ALTITUDE TO FIELD ELEVATION
20. VS mode ----- SELECT
21. Altitude selector knobs (on AP) ----- SELECT AN ALTITUDE 200' BELOW FIELD ELEVATION
22. BARO knob (on PFD) ----- SLOWLY REDUCE ALTITUDE
 (Match altitude that selected on the A/P altitude selector. A/P should display "Altitude Hold" when the two altitudes match.)
23. CWS BUTTON ----- PRESS AND HOLD
 (Pitch and Roll servos disengage and controls are free. CWS annunciator is displayed)

24. CWS BUTTON ----- RELEASE CWS BUTTON
(Servos reengage)
25. AP DISC/TRIM INTR button-----PRESS/HOLD
(All A/P modes and FD disconnect followed by aural tone and voice annunciation)
26. GO AROUND BUTTON-----PRESS
(FD mode illuminates. Roll and Pitch annunciate and pitch steering bar moves to 8° up position)

MANUAL ELECTRIC TRIM TEST

1. TRIM MASTER SWITCH -----VERIFY ON
2. Pitch Trim switch -----MOVE FORWARD
(Trim should run nose down)
3. Pitch Trim switch-----MOVE AFT
(Trim should run nose up)
4. AP DISC/TRIM INTR button-----PRESS AND HOLD WHILE TRIM IS RUNNING
(Trim motion should stop)
5. AP DISC/TRIM INTR button -----RELEASE
(Trim motion should resume)

NOTE

If either the manual electric trim or Autotrim fails any portion of the preflight test, turn the Trim Master switch off. DO NOT USE THE ELECTRIC TRIM UNTIL THE FAULT IS CORRECTED. With Autotrim Trim Master switch off, the autopilot manual trim UP/DN or TRIM indicators and audio warning are activated. If the electric trim fails, or has an in-flight power failure, the system automatically reverts to an out-of-trim annunciation and audio warning. Should this occur, turn the Trim Master switch off, and revert to manual aircraft trim until the fault is corrected.

NOTE

Before flight, verify that the autopilot is disengaged and all trim systems are set for takeoff.

AUTOPILOT SYSTEM FLIGHT PROCEDURES

For detailed normal operating procedures including in-flight procedures, refer to the S-TEC 3100 DFCS Pilot Operating Guide and Reference P/N 87325, dated May 2021 or later. The following modes and procedures presented below are provided for clarity and/or increased emphasis in addition to the information provided in the S-TEC 3100 Digital Autopilot Pilot Operating Guide and Reference.

210, 210A, 210B, 210C, 210D, 210E, 210F, T210F, 210G, T210G, 210H, T210H,
210J, T210J, 210K, T210K, 210L, T210L, 210M, T210M, 210N, T210N, 210R, T210R,
P210N, and P210R
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NOTE

NAV/APR Armed Behavior. When in HDG mode and NAV/APR is armed, the selected HDG must not be greater than 90 degrees to the NAV/APR course or the armed mode will not capture.

All DFCS IAS indications are in knots. For knots to MPH conversion refer to the below chart.

KTS	MPH		KTS	MPH
65	75		130	150
70	81		135	156
75	86		140	161
80	92		145	167
85	98		150	173
90	104		155	178
95	109		160	184
100	115		165	190
105	121		170	196
110	127		175	201
115	133		180	207
120	138		185	213
125	144		190	219

OPERATION IN SUSPECTED ICING CONDITIONS

The autopilot should be disconnected periodically to check for unusual control force or deflection, and to move the flight controls to check for evidence of ice accreting in control surface gaps or frozen servo actuators.

WARNING

The autopilot will NOT maintain airspeed if ice accretes on the airplane.
MONITOR airspeed closely.

OPERATION IN KNOWN ICING CONDITIONS

Do not engage the autopilot. If the autopilot is engaged, hold the control yoke firmly and disengage the autopilot. Do not re-engage the autopilot until the airframe is clear of ice.

WAAS APPROACHES

The S-TEC 01326 DFCS includes this capability.

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ENVELOPE PROTECTION

The system protects against underspeed, overspeed, and excessive bank conditions using the envelope protection feature. Specific limits are stated in Section II. Note that overspeed and underspeed protection is not be available for systems without digital air data information for indicated airspeed.

If envelope protection is active, CWS can be used to establish the aircraft back inside the safe envelope – without disengaging the AP.

Envelope protection has two modes of operation, passive and active.

Passive envelope protection is operating anytime FD mode is engaged, indicated by the FD LED being illuminated.

- 1) **Underspeed** alert activates if the aircraft speed reaches the low speed limit, which triggers an audible alarm followed by an "Airspeed, Airspeed" voice alert. Alerts continue until the aircraft speed is increased beyond the underspeed recovery limit as stated in Section II.
- 2) **Overspeed** alert activates if the aircraft speed reaches the high speed limit, which triggers an audible alarm followed by an "Overspeed, Overspeed" voice alert. Alerts continue until the aircraft speed is reduced below the overspeed recovery limit, as stated in Section II.
- 3) **Excessive Bank** alert activates if the aircrafts roll attitude exceeds 60 degrees, which triggers an audible alarm followed by an "Attitude, Attitude" voice alert. Alerts continue until the aircraft roll attitude is reduced below 60 degrees.

The overspeed and underspeed audible alarms alerts are disabled when the AP is in any of the approach modes (APRLOC, APRGPSS, or APRGPSV) and the system is in FD only (AP not engaged). This allows pilots to hand fly slower approaches but retain FD command bar guidance and to avoid nuisance speed callouts if the AP is disconnected at minimums but the FD remains engaged.

Active envelope protection is operating anytime AP mode is engaged, indicated by the illuminated AP LED. Although excessive bank is still active, it is not relevant while the AP is engaged as the AP is already under control of bank commands.

During an underspeed or overspeed alert, the system vertical mode display does not change, but ALERT flashes to indicate envelope speed protection has been triggered and the vertical mode is no longer active. Roll mode remains engaged, but the roll commands are reduced by half during envelope speed protection.

The **underspeed** alert activates if the aircraft speed reaches the low speed limit, which triggers an audible alarm followed by an "Airspeed, Airspeed" voice alert. AP automatically commands the aircraft to pitch down in order to increase airspeed to the underspeed recovery limit, as stated in Section II.

To recover the aircraft from an underspeed alert:

- 1) Press CWS and then increase aircraft speed beyond the underspeed recovery limit, as stated in Section II.
- 2) If required, manually fly back onto the desired course, then release CWS to let the AP resume aircraft control.

The **overspeed** alert activates if the aircraft speed reaches the high speed limit, which triggers an audible alarm followed by an "Overspeed, Overspeed" voice alert. AP automatically commands the aircraft to pitch up in order to decrease airspeed to the overspeed recovery limit, as stated in Section II.

To recover the aircraft from an overspeed alert:

- 1) Press CWS and then reduce aircraft speed below the overspeed recovery limit as stated in the AFMS.
- 2) If required, manually fly back onto the desired course, then release CWS to let the AP resume aircraft control.

During an ILS or GPS approach with the AP engaged, active envelope protection operates until 1000 feet below glideslope capture point. Once the glideslope has been captured, indicated by GS or GPSV displayed as the active pitch mode, the AP remains in active envelope protection until the aircraft has descended 1000 feet below the initial capture point and then transitions to passive envelope protection for the remainder of the approach.

It is recommended to capture the glideslope at 1500 feet AGL so the envelope protection transition from active to passive occurs at 500 feet AGL.

CAUTION

The autopilot deviates when tracking a glideslope in order to protect airspeed and prevent a potential stall. The pilot is responsible for maintaining the minimum approach airspeed and minimum AP use altitude, as stated in Section II.

ENROUTE VNAV (OPTIONAL)

NOTE

En route VNAV features are only available on appropriately equipped 3100 DFCS units when interfaced to compatible GPS and EFIS equipment. Refer to aircraft STC and installation documentation for additional information.

NOTE

En route VNAV provides guidance from a top-of-descent (TOD) point to a target altitude specified by an en route VNAV descent profile on a compatible navigator. This feature differs from that of vertically guided instrument approaches such as LPV and/or LNAV/VNAV.

When properly equipped and interfaced with a compatible EFIS and navigator, the 3100 DFCS is capable of performing en route VNAV guidance functions via programmed descent profiles.

En route VNAV becomes armed when a valid VNAV profile is programmed into the navigator.

En route VNAV modes are activated using the VNV button located on the right side of the Computer/Programmer bezel.

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NOTE

Computer/Programers with MNU button on right side of bezel are not VNAV capable.

En route VNAV modes are deselected by selecting another pitch mode (e.g. IAS, VS, ALT HOLD, LVL, and GA).

VNV_{UNAVL} appears if the VNV button is pressed and VNAV criteria are not met. This mode annunciation will display for 5 seconds and the DFCS will remain in the currently engaged pitch mode.

NOTE

VNV_{UNAVL} will also be displayed if the VNV button is pressed without a VNAV compatible EFIS/navigator interfaced to the DFCS.

Armed En Route VNAV Mode Annunciations

VNV Appears in armed pitch mode window to indicate that a valid VNAV profile has been programmed and can be armed by pressing the VNV button.

ALT_{VNV} Appears in armed pitch mode window when VNAV has been armed and approaching the TOD.

Active En Route VNAV Mode Annunciations

VNV_{HLD} Appears in active pitch window after programming a valid VNAV descent profile and arming VNAV by pressing the VNV button.

VNV_{CAP} Appears in the active pitch window when the DFCS is capturing the programmed en route VNAV profile.

VNV_{PTH} Appears in the active pitch mode window once established on the en route VNAV profile. The DFCS will track towards the next leg level-off using internal vertical speed commands or vertical speed commands coming from the interfaced navigator. VNV Appears in armed pitch mode window to indicate that a valid VNAV profile has been programmed and can be armed by pressing the VNV button.

Upon level-off at each step-down VNV_{HLD} appears in the active pitch mode window.

The DFCS will automatically transition to a pre-selected minimum altitude or will intercept the LPV glide slope.

The DFCS will transition to ALT HOLD if it reaches a pre-selected altitude bug target at any point in the en route VNAV profile. Pre-selected altitude bug targets should be set to the lowest cleared altitude or the final approach fix (FAF) altitude.

NOTE

Pre-selected altitude bug targets take priority over any VNAV mode.

VNAV Failure

If en route VNAV data is lost while the VNAV mode is activated, **FAIL** flashes on the screen. The DFCS holds the last known pitch command and levels-off at the pre-selected altitude bug target. Note: It is recommended that the pilot set the altitude bug target to the lowest cleared altitude or the final approach fix (FAF) altitude. This will ensure that a valid altitude target is maintained in the event of VNAV data loss.

NOTE

It is recommended that the pilot set the altitude bug target to the lowest cleared altitude or the final approach fix (FAF) altitude. This will ensure that a valid altitude target is maintained in the event of VNAV data loss.

NOTE

A different pitch mode should be selected to clear the **FAIL** annunciation and to ensure that the aircraft is kept on a safe and desired path.

LNAV APPROACHES

There is little difference in flying a LNAV approach (lateral guidance only) with the WAAS capable GPS than there is with a non-WAAS capable unit. The pilot can conduct the approach in either NAVGPSS or APRGPSS. The WAAS capable GPS will have approach procedures, procedure turns (if appropriate), and missed approach procedures that the autopilot will fly in NAVGPSS mode with little or no pilot intervention. For a procedure turn or when on an approach segment where there is greater than a 90 degree turn to the inbound course required, use NAVGPSS until on the final inbound course segment, then press APR for APRGPSS or APRGPSL. Vertical maneuvering is the responsibility of the pilot. The Limitations require that the autopilot be disconnected at the go-around point.

NOTE

APRGPSS or APRGPSL will automatically be selected when in APR mode based on the GPS's current mode (Enroute/Terminal vs LNAV, LNAV+V, LPV)

ILS OR WAAS RNAV APPROACHES WITH VERTICAL GUIDANCE

For the ILS approaches, the pilot will see APR and GS displayed on the autopilot when the aircraft is on the Localizer and on Glideslope. For RNAV approaches, the pilot may engage APR mode while enroute to the IAF via activating the leg or executing a Direct-To. APR_{GPSL} will be annunciated and the autopilot will be following roll steering from the GPS navigator. Upon crossing the IF/IAF when the GPS navigator changes to LPV or LNAV+V, the pilot will see APR_{GPSL} (GPS Lateral). GPSV (GPS Vertical) will be displayed on the autopilot when on the inbound course and on the Glidepath for the WAAS approach.

To arm the automatic glideslope (GS) or glidepath (GPSV) capture function the following conditions must be met:

1. NAV or GPS receiver must be tuned to the appropriate localizer frequency or an approved LPV, LNAV/VNAV, or LNAV+V GPS WAAS approach is activated.
2. Glideslope signal must be valid for the approach – no flag.

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3. Autopilot must be in APR_{LOC} (ILS) or APR_{GPSL} (WAAS) and any appropriate pitch modes (PITCH, VS, IAS, or ALT).
4. Aircraft must be full scale deflection up to approximately ½ dot below the GS centerline, for 2 seconds and within one dot of the localizer centerline for automatic arming to occur.

Glideslope/Glidepath arming will occur when the above conditions have existed for 2 seconds. GS/GPSV will be displayed in the armed position (below the engaged pitch mode). GS/GPSV will be displayed in the upper pitch mode window at Glideslope/Glidepath capture.

Approach the Glideslope/Glidepath with the flaps set to approach at approximately 110-115 KIAS. At the Glideslope/Glidepath intercept and adjust power for desired descent speed.

Once on the Glideslope/Glidepath, the pilot should make power adjustments in small, smooth increments for best tracking results. At the missed approach point or the decision height, disconnect the autopilot for landing or for go-around.

GO-AROUND MODE

If a missed approach is required, the pilot may press the Go-Around button, which will disengage the autopilot and engage the Flight Director in the Go-Around mode. The Pilot can then hand fly the aircraft with reference to the steering bars or the autopilot may be reengaged after the aircraft has been reconfigured for and established in a stabilized climb above 200' AGL. With WAAS capable radios, the use of NAVGPSS or APRGPSS will allow the autopilot to laterally fly the missed approach. Vertical maneuvering (climb rates and level-off altitudes) are the responsibility of the pilot.

SELECTING MISSED APPROACH ALTITUDE

When conducting an ILS approach the pilot can program the missed approach altitude into the altitude selector once established on the final approach altitude and before glide slope capture. Simply dial in the missed approach altitude. At glide slope capture the displayed altitude will be replaced with dashes and cannot be adjusted during the approach. At the missed approach point press the GO-AROUND button that will disengage the autopilot and engage the Flight Director in ROLL and PITCH modes, and configure the aircraft for the go-around. Next, press the Altitude Selector center knob once, which will bring up the preset missed approach altitude. The pilot should fly the aircraft by reference to the steering command bars. The autopilot may be engaged by pressing the A/P button when a safe altitude has been reached.

SECTION V: PERFORMANCE

No change to the basic manual.

SECTION VI: WEIGHT AND BALANCE

Weight and Balance of actual aircraft updated to include installation of autopilot system.

SECTION VII: SYSTEM DESCRIPTION



01326 Computer/Programmer

The S-TEC 01326 is a digital two-axis attitude-based flight control system. It is mainly comprised of a Computer/Programmer which performs all the Input/Output processing and Control Laws, and a bezel/display which is used to select the Modes and display the lateral and vertical modes including trim annunciations. The system provides roll, pitch and yaw modes and controls along with Altitude Selector and Alerter modes. The autopilot accepts steering inputs from the NAV radios and the HDG system digitally via ARINC 429 or through EFIS. The system is also capable of receiving analog NAV and heading data.

The autopilot commands 4 servos (Pitch, Roll, Yaw and Pitch Trim). The autopilot contains the logic, modes, and control laws that provide the autopilot functionality. The autopilot combines the functionality of four aircraft instruments (Autopilot, FD, Altitude Selector/Alerter) into a single box. The main inputs to the autopilot are attitude (roll and pitch), air data (altitude, indicated airspeed and vertical speed), HDG (stabilized magnetic), and NAV signals (VOR, ILS and GPS).

The pilot control input consists of buttons and knobs on the front panel in conjunction with remote mounted switches. The buttons and knobs on the front panel are used to select modes and set values such as target altitude. The remote switches are used to activate specific modes. Some of the remote switches include Manual and Auto Trims, GO-Around, Control Wheel Steering (CWS). Outputs from the autopilot are motor control, solenoid control, programmable analog, ARINC429, RS232/485/422, audio and to a visual display to indicate modes, settings and events, and an audio output to enunciate important events. The autopilot can operate as an autopilot, a Flight Director (FD), or both. When operating as both, the autopilot and FD behaviors are the same. For example, the roll and pitch servo commands from the autopilot will be the same as the roll and pitch error signals from the FD.

The following Switches, Rheostats, and Circuit Breakers are added when the S-TEC 3100 Autopilot is installed.

ITEM	AMPERAGE	LOCATION
AP MASTER SWITCH	N/A	Center Instrument Panel
TRIM MASTER SWITCH	N/A	Center Instrument Panel
COMPUTER/PROGRAMMER	N/A	Center Instrument Panel
AP DISC/TRIM INTR SWITCH	N/A	Pilot's Control Yoke
CWS SWITCH	N/A	Pilot's Control Yoke
GA SWITCH	N/A	Pilot's Control Yoke
4-WAY TRIM SWITCH	N/A	Pilot's Control Yoke
AUTOPILOT CB	5	Pilot's CB Panel

The autopilot includes a level mode which provides a single button press method of bringing the aircraft to a near level attitude. Upon pressing the LVL mode button, the FD engages and the command bars indicate a roll target at wings level and a pitch target of approximately 0 degrees. The autopilot will command the aircraft to roll wings level and to pitch to 0 degrees when AP is engaged or in Ready mode.

SECTION VIII: AIRPLANE HANDLING, SERVICING, AND MAINTENANCE

No Change

SECTION IX: SUPPLEMENTS

No Change

SECTION X: OPERATING TIPS

No Change