

# S-TEC

**AIRPLANE FLIGHT MANUAL SUPPLEMENT  
FOR THE  
S-TEC SYSTEM 55/55X TWO AXIS  
AUTOMATIC FLIGHT GUIDANCE SYSTEM  
(28 Volt System)  
INSTALLED ON  
CESSNA AIRCRAFT COMPANY  
MODEL 182Q, S/N 18266590 AND BELOW**

P/N: 891163

Reg. No.: N7592T

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This supplement must be attached to the applicable FAA Approved Airplane Flight Manual when the S-TEC System 55/55X is installed in accordance with STC SA09002AC-D dated 8-01-13.

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.

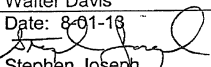


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ODA-700096-SW

Dated: 8-01-13

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REVISION PAGE

Rev.	Change	Approved
-	Initial Release	Date: 5-15-95 Walter Davis
1	Added System 55X information. Removed Optional Equipment section. Updated supplement to latest format.	Date: 2-02-01 Walter Davis
2	Limitations item 4 added 100 KIAS (115 MPH IAS). Added Caution to Glide Slope Flight Procedure. Updated supplement to latest format.	Date: 8-01-18  Stephen Joseph ODA-700096-SW

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## SECTION I: GENERAL

This manual is to acquaint the pilot with the features and functions of the System 55/55X Two Axis Autopilot and to provide operating instructions for the system when installed in the listed aircraft model(s). The aircraft must be operated within the limitations herein provided when the autopilot is in use.

## SECTION II: LIMITATIONS

1. S-TEC System 55 Pilot's Operating Handbook, P/N 8747, dated 10-16-00 or later, or S-TEC System 55X Pilot's Operating Handbook, P/N 87109, dated 11-08-00 or later, (as appropriate for your aircraft) must be carried in the aircraft and be available to the pilot while in flight.
2. Autopilot operation not authorized above 150 KIAS (173 MPH IAS).
3. Flap extension limited to 10° and 95 KIAS (109 MPH IAS) or below, when optional autotrim system is not installed.
4. Flap extension limited to 20° maximum and 100 KIAS (115 MPH IAS) when optional autotrim system is installed and operating.
5. Go-arounds or missed approach maneuvers not authorized.
6. Maximum aft c.g. limited to 46.0 inches aft of datum when autopilot is installed.
7. Placard, P/N 5660, with c.g. limitation, to be located on instrument panel in clear view of pilot.
8. Autopilot use prohibited during take-off and landing.
9. Category I operations only.

## SECTION III: EMERGENCY PROCEDURES

In the event of an autopilot malfunction, or anytime the autopilot is not performing as expected or commanded, do not attempt to identify the system problem. Immediately regain control of the aircraft by overpowering the autopilot as necessary and then immediately disconnect the autopilot. Do not re-engage the autopilot until the problem has been identified and corrected.

1. The autopilot may be disconnected by:
  - a. Depressing the "AP Disconnect" Switch on the left horn of the pilot's control wheel.
  - b. Placing the "AP Master Switch" in the "OFF" position.
  - c. Momentarily interrupting aircraft electrical power at the battery master switch.
  - d. Pulling the autopilot circuit breaker.
2. Trim: (IF INSTALLED)
  - a. In the event of a trim failure, manually control aircraft and DEPRESS AND HOLD "Trim Interrupt/AP Disconnect Switch" on control wheel.
  - b. Place trim master switch in "OFF" position, pull circuit breaker, release interrupt switch.
  - c. Retrim aircraft. Leave trim system OFF until corrected.
3. Altitude loss during a malfunction and recovery:

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

<u>Configuration</u>	<u>Bank Angle/Altitude Loss</u>
Climb	45°/-250'
Cruise	45°/-420'
Descent	35°/-580'

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- b. The following altitude losses and bank angles were recorded after a malfunction with a 1 second recovery delay:

<u>Configuration</u>	<u>Bank Angle/Altitude Loss</u>
Maneuvering	12°/-150'
Approach (Coupled or Uncoupled)	12°/-100'

The above values are the worst case for all the models covered by this document.

#### SECTION IV: NORMAL PROCEDURES

For detailed normal operating procedures, including system description, pre-flight and in-flight procedures refer to S-TEC System 55 Pilot's Operating Handbook, P/N 8747, dated 10-16-00 or later, or S-TEC System 55X Pilot's Operating Handbook, P/N 87109, dated 11-08-00 or later, (as appropriate for your aircraft).

**CAUTION:** When S-TEC Flight Director is installed and operating, the Flight Director Autopilot should be disconnected using the control wheel disconnect switch only. Any other means of disconnect (breaker, ON-OFF switch, etc.) may leave steering bars in view, but inoperable.

#### ELECTRIC TRIM SYSTEM (IF INSTALLED)

The S-TEC Electric Trim System is designed to accept any single failure, either mechanical or electrical, without uncontrolled operation resulting during operations in the Manual Electric Trim Mode. During autotrim mode the system is designed to limit the effect of any failure causing trim operation. In order to assure proper operation of these safeguards, it is necessary to conduct a simple pre-flight test of the system. Following is the trim pre-flight test procedure:

#### ELECTRIC TRIM CHECK (IF OPTIONAL AUTOTRIM IS INSTALLED)

##### Manual Electric Trim - Test Prior to Each Flight

- Trim Switch and A/P Master Switch - ON
- Operate Trim Switch (Both Knob Sections) - Nose DN - Check trim moves nose down and trim in motion indicator ("TRIM") in A/P Programmer flashes. Operate trim switch - Nose UP - Check trim moves nose up and for "in motion" trim light.
- With trim operating Nose UP and DN - grasp manual trim control and overpower electric trim to stop trim action.
- Operate each half of the trim switch separately - trim should not operate unless both switch knob segments are moved together.
- With Trim Operating - Depress trim interrupt switch - Trim motion should stop while interrupt switch is depressed - when released trim should operate normally.

##### Autotrim

- Engage HDG and VS modes of the autopilot.
- Grasp control and apply forward pressure (NOSE DOWN) - After approximately three (3) seconds trim should run NOSE UP.
- Apply aft pressure (NOSE UP) to control wheel - after approximately three (3) seconds trim should run NOSE DOWN.
- Move manual trim switch UP or DN - Autopilot should disconnect and trim operates in the commanded direction. (Trim Switch will disconnect autopilot only when pitch is entered)

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- e. Reengage autopilot HDG and VS Modes and depress Trim Interrupt/AP Disconnect Switch - Autopilot should disconnect.
- f. Retrim aircraft for take-off - Check all controls for freedom of motion and to determine that the autopilot and trim have disconnected.

If either the manual electric or autotrim fails any portion of the above check procedure, move the Trim Master Switch "OFF" and do not attempt to use the trim system until the fault is corrected. With the Trim Master Switch "OFF" the autopilot trim indicators and audio system will return to operation. If the electric trim system suffers a power failure in flight the system will automatically revert to the indicator lights and audio horn. If this occurs turn the Trim Master Switch "OFF" and trim manually, using the indicators until the fault can be located and corrected.

#### GLIDE SLOPE FLIGHT PROCEDURE

Approach the GS intercept point (usually the OM) with the flaps set to approach deflection of 10° to 20° as desired (See Limitations Section) and with the aircraft stabilized in altitude hold mode. At the glide slope intercept, adjust power for the desired descent speed. For best tracking results make power adjustments in small, smooth increments to maintain desired airspeed. At the missed approach point or the decision height, disconnect the autopilot for landing or for the go-around maneuver (See Limitations Section). If a missed approach is required, the autopilot may be reengaged after the aircraft has been reconfigured for and established in a stabilized climb.

**CAUTION:** If flaps are extended at high speed (above 100 KIAS), altitude deviations of 300 + ft. may occur.

#### **SECTION V: PERFORMANCE**

The text of this Section not affected by installation of this equipment.

#### **SECTION VI: WEIGHT AND BALANCE**

The text of this Section not affected by installation of this equipment.

#### **SECTION VII: SYSTEM DESCRIPTION**

Refer to specific pilot's operating handbook for your system.

#### **SECTION VIII: AIRPLANE HANDLING, SERVICING AND MAINTENANCE**

The text of this Section not affected by installation of this equipment.

#### **SECTION IX: SUPPLEMENTS**

Refer to contents of this supplement for operation of the System 55/55X Automatic Flight Control System.

#### **SECTION X: OPERATING TIPS**

The text of this Section not affected by installation of this equipment.

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