



S-TEC

Pilot's Operating Handbook | Thirty |



S-TEC
One S-TEC Way
Municipal Airport
Mineral Wells
TX 76067-9236
USA

Tel: +1(940) 325 9406
Toll-free: +1(800) 872 7832
Fax: +1 (940) 325 3904

www.s-tec.com
www.meggitt.com

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2.1.2 System Thirty

Perform the actions shown in Table 2-2. For each action, verify the corresponding response where applicable.

Table 2-2. Power-Up Test, System Thirty

ACTION	RESPONSE
1. Set Yaw Damper Master Switch to OFF position (if installed).	-----
2. Set Battery Master Switch to ON position.	-----
3. Set Avionics Master Switch to ON position.	-----
4. Set Autopilot Master Switch to ON position.	RDY, ALT, ST, HD, LO TRK, HI TRK, TRIM UP, and TRIM DN lamps illuminate on AP display TRIM UP lamp extinguishes after 2 seconds RDY, ST, HD, LO TRK, HI TRK, and TRIM DN lamps extinguish after 7 seconds ALT lamp extinguishes after 10 seconds RDY lamp alone re-illuminates on AP display within 3 minutes. (Note 1).

Notes:

1. Should a Turn Coordinator failure be detected, the RDY lamp on the AP display will not re-illuminate as shown in Fig. 2-11, and the autopilot will not operate.

2. Should T&B A+ be 30% below its rated value, the Low Voltage Flag will be in view on the AP display as shown in Fig. 2-12.



2.2.2 System Thirty

Prior to takeoff and with engine running, perform the actions shown in Table 2-5. For each action, verify the corresponding response where applicable.

Table 2-5. Pre-Flight Test, System Thirty

ACTION	RESPONSE
1. Move A/C Control Wheel left and right, to sense its freedom of movement about roll axis.	-----
2. Set L/R Turn Knob located on bezel under its index.	-----
3. Engage stabilizer mode.	ST lamp alone is illuminated on AP display, as shown in Fig. 2-21.
4. Attempt movement of A/C Control Wheel left and right.	A/C Control Wheel's reduced freedom of movement indicates that Roll Servo is engaged. Roll Servo can be overridden. If not, disconnect autopilot and do not use.
5. Turn L/R Turn Knob to the left side of its index.	A/C Control Wheel turns to the left.
6. Turn L/R Turn Knob to the right side of its index.	A/C Control Wheel turns to the right.
7. Set L/R Turn Knob under its index.	A/C Control Wheel stops.
8. Set Heading Bug under Lubber Line.	-----
9. Engage heading mode.	HD lamp alone is illuminated on AP display, as shown in Fig. 2-22.

ACTION	RESPONSE
10. Turn Heading Bug to the left side of Lubber Line.	A/C Control Wheel turns to the left.
11. Turn Heading Bug to the right side of Lubber Line.	A/C Control Wheel turns to the right.
12. Set Heading Bug under Lubber Line.	A/C Control Wheel stops.
13. Select local VOR frequency on Navigation Receiver.	-----
14. Turn Course Pointer until CDI needle is centered.	-----
15. Engage low track mode.	LO TRK lamp alone is illuminated on AP display, as shown in Fig. 2-23.
16. Engage high track mode.	HI TRK lamp alone is illuminated on AP display, as shown in Fig. 2-24.
17. Turn Course Pointer left until CDI needle deflection is 2 dots right of center.	A/C Control Wheel turns to the right.
18. Turn Course Pointer right until CDI needle deflection is 2 dots left of center.	A/C Control Wheel turns to the left.
19. Turn Course Pointer left until CDI needle is centered.	A/C Control Wheel stops.

Table 2-5. Pre-Flight Test, System Thirty

ACTION	RESPONSE
28. Move A/C Control Wheel forward and aft, to sense its freedom of movement about pitch axis.	-----
29. Engage altitude hold mode.	ALT lamp is illuminated on AP display, as shown in Fig. 2-25.
30. Attempt movement of A/C Control Wheel forward and aft.	A/C Control Wheel's reduced freedom of movement indicates that Pitch Servo is engaged. Pitch Servo can be overridden. If not, disconnect autopilot and do not use.
31. Move A/C Control Wheel as far forward as possible.	After 3 seconds, TRIM UP lamp becomes illuminated on AP display as shown in Fig. 2-26, and audible alert sounds a steady tone. After 7 seconds, TRIM UP lamp flashes and audible alert becomes periodic.
32. Move A/C Control Wheel aft until TRIM UP lamp is extinguished.	Audible alert is squelched.
33. Move A/C Control Wheel as far aft as possible.	After 3 seconds, TRIM DN lamp becomes illuminated on AP display as shown in Fig. 2-27, and audible alert sounds a steady tone. After 7 seconds, TRIM DN lamp flashes and audible alert becomes periodic.
34. Move A/C Control Wheel forward until TRIM DN lamp is extinguished.	Audible alert is squelched.

Table 2-5. Pre-Flight Test, System Thirty

ACTION	RESPONSE
35. Disconnect autopilot by any one of the following means: a. Press optional AP DISC Switch typically located on Control Wheel. b. Press/Hold optional MODE SEL Switch typically located on Control Wheel for 3 seconds. c. Press/Hold PUSH MODE Switch located on bezel for 3 seconds.	RDY lamp flashes and audible alert sounds a periodic tone, while all other lamps are extinguished. After 5 seconds, RDY lamp stops flashing but remains illuminated, and audible alert is squelched.
36. Move A/C Control Wheel left and right.	A/C Control Wheel's increased freedom of movement indicates that Roll Servo is disengaged.
37. Move A/C Control Wheel forward and aft.	A/C Control Wheel's increased freedom of movement indicates that Pitch Servo is disengaged.
47. Trim A/C for takeoff.	-----





S-TEC

Pilot's Operating Handbook GPSS



HDG Mode - Used to turn onto a Selected Heading and Hold it

GPSS Mode - Used to Laterally Steer along a Course defined by Waypoints, that have been programmed into the GPS Navigator

Pressing the HDG / GPSS Selector Switch will alternately engage the HDG mode and GPSS mode. This switch is shown in Fig. 1-1. As indicated, when the HDG mode is engaged, the HDG lamp is illuminated and the GPSS lamp is extinguished, but when the GPSS mode is engaged, the GPSS lamp is illuminated and the HDG lamp is extinguished.

When the autopilot's HDG mode is also engaged, the autopilot will turn the aircraft onto the selected heading and hold it.

When the GPSS Converter's GPSS mode is engaged, the GPSS Converter processes the Bank Angle Signal and Ground Speed Signal at its input, to produce a DC Turn Rate Signal at its output. This signal is sent to the input of the autopilot's heading error channel. When the autopilot's HDG mode is also engaged, the autopilot will laterally steer the aircraft along the course defined by the waypoints.

3.1 Normal Operating Procedures

3.1.1 Heading (HDG) Mode

Set the Heading Bug to the desired heading on the compass card (HSI or DG).

Engage the GPSS Converter's HDG mode.

Engage the autopilot's HDG mode.

The autopilot will turn the aircraft onto the selected heading and hold it. The turn rate will be limited to 90% of a standard rate turn, although for some higher performance (turboprop) aircraft this is 75%.

A new heading can be subsequently selected by setting the Heading Bug to it.

3.1.2 Global Positioning System Steering (GPSS) Mode

Set the Heading Bug under the Lubber Line.

Engage the GPSS Converter's HDG mode.

Engage the autopilot's HDG mode.

Program the GPS Navigator with a sequence of waypoints, as a means to define the desired course.

Engage the GPSS Converter's GPSS mode.

The autopilot will begin to laterally steer the aircraft along the course (i.e., track the course).

The turn rate will be limited to 90% of a standard rate turn, although for some higher performance (turboprop) aircraft this is 75%.

If it should happen that the GPS Navigator has not been programmed with a sequence of waypoints upon attempted engagement of the GPSS mode, then the autopilot will hold the aircraft at wings level, and the GPSS lamp will flash on the HDG / GPSS Selector Switch to acknowledge this condition.

Engaging any autopilot roll mode other than HDG (i.e., NAV, APR, REV, STB, LO TRK, HI TRK) will decouple the autopilot from the GPSS mode.

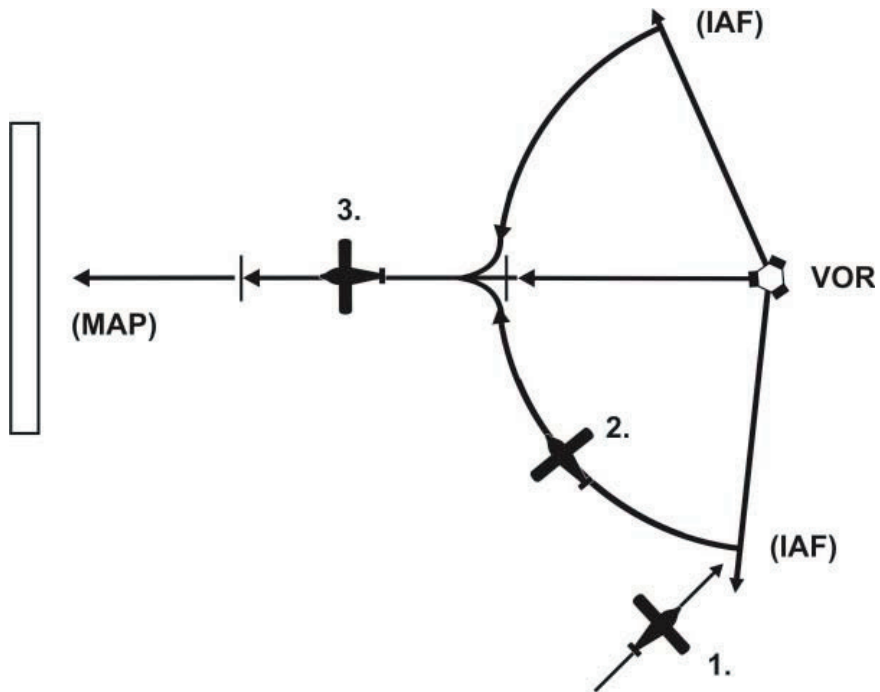
With the GPSS mode engaged, the autopilot will not respond to the Heading Bug or Course Pointer.

S-TEC
One S-TEC Way
Municipal Airport
Mineral Wells
TX 76067-9236
USA
Tel: +1(940) 325 9406
Toll-free: +1(800) 872 7832
Fax: +1 (940) 325 3904
www.s-tec.com



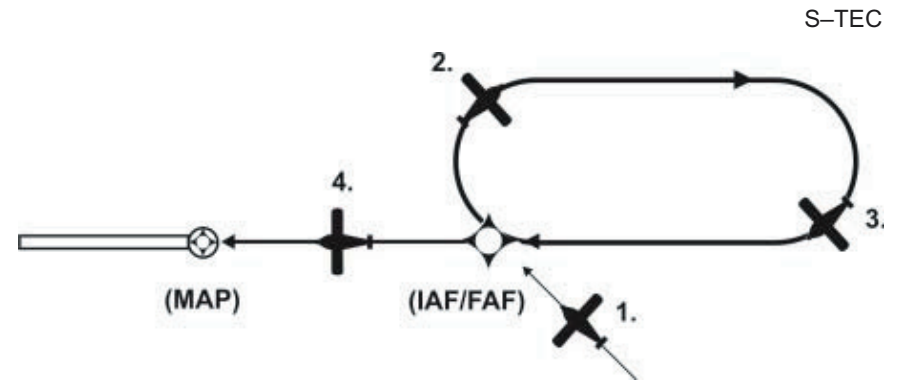
Note:

It is not possible to simultaneously engage the HDG mode and arm the GPSS mode. Consequently, there does not exist the capability to execute a dual mode, pilot selectable intercept angle of the course.



1. a. Set the Heading Bug under the Lubber Line.
b. Engage the GPSS Converter's HDG mode.
c. Engage the autopilot's HDG mode.
d. Program the GPS Navigator with the desired approach.
e. Engage the GPSS Converter's GPSS mode.
f. The autopilot begins tracking to the Initial Approach Fix (IAF).
2. a. The autopilot intercepts the IAF, and then tracks around the arc.
3. a. The autopilot becomes established on the inbound course.
b. At the Missed Approach Point (MAP), disconnect the autopilot for a landing or go-around, as required.

Fig. 3-1. GPS Overlay of VOR / DME-A Approach



1. a. Set the Heading Bug under the Lubber Line.
b. Engage the GPSS Converter's HDG mode.
c. Engage the autopilot's HDG mode.
d. Program the GPS Navigator with the desired approach.
e. Engage the GPSS Converter's GPSS mode.
f. The autopilot begins tracking to the Initial Approach Fix (IAF).

Note:

Perform steps 2-3 only for those GPS Navigators that do not have the capability to execute a holding pattern.

2. a. Engage the GPSS Converter's HDG mode.
b. Lead the aircraft around the outbound leg of the holding pattern in 90° increments, using the Heading Bug.
3. a. Engage the GPSS Converter's GPSS mode.
b. The autopilot begins tracking to the Final Approach Fix (FAF).
4. a. The autopilot becomes established on the inbound course.
b. At the Missed Approach Point (MAP), disconnect the autopilot for a landing or go-around, as required.

Fig. 3-3. GPS Approach with Holding Pattern

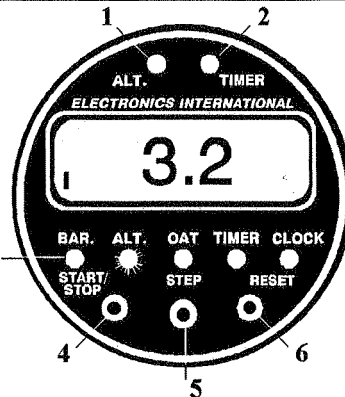
Altitude Alert / Super Clock (ASC-5A) Quick Reference Guide

1105961

Rev A: 1/8/97



1. Altitude Warning LED.
2. Timer Warning LED.
3. Display Mode Indicator LED's.
4. Start/Stop Button.
5. Step Switch. — USED TO DISPLAY THE VARIOUS MODES
6. Reset Button.



Blinking "BAR." LED on Power-up: After power-up, the ASC-5A will blink the Barometric Pressure (BAR) LED. The "BAR." LED will continue to blink until any button or switch is pushed. The blinking "BAR" LED is intended as a reminder to update the ASC-5A with the current Barometric Pressure.

Altitude Warning LED (1): This LED will blink for the following alarms:
A. Level Off Alarm - If your altitude reaches 200' from your Assigned Altitude.
B. Deviation Alarm - If your altitude deviates 200' from your Assigned Alt.
C. Approach Alarm - If your altitude drops below the Approach Altitude.

Push any button to stop the blinking Altitude Warning LED (1).

Timer Warning LED (2): If the Timer is set up as an UP Timer, the Timer Warning LED (2) will blink when the time reaches the programmed Recurring Alarm setting or a multiple of this setting. If the Timer is set up as a Down Timer, this LED will blink when the time reaches 0:00. Push any button to stop the blinking Timer Warning LED (2).

Barometric Pressure (BAR.) Display Mode: This mode displays the Barometric Pressure in inches of mercury or millibars as set by the pilot. To set the Barometric Pressure, select the "BAR." Display Mode and push both the "START/STOP" (4) and "RESET" (6) Buttons at the same time. Select the blinking digit with the "START/STOP" and "RESET" Buttons. Increase or decrease the blinking digit with the "STEP" Switch (5). To exit this mode, push both the "START/STOP" and "RESET" Buttons (4 & 6) at the same time.

TO RESET THE TIME: Push and hold the START/STOP and RESET buttons, then turn aircraft power on. Release. An "L" showing in the lower right display indicates Local clock. Use STEP to set the blinking digit. Press START/STOP or RESET to move left or right to another digit. **TO SET ZULU:** Push RESET until "L" disappears. **TO LOCK Local and ZULU:** Push RESET until "Loc" or "ULoc." Push STEP to change. **TO EXIT:** Push START/STOP and RESET simultaneously.

Altitude (ALT) Display Mode: This mode displays your current Encoder Altitude or Assigned Altitude (depending on the ASC-5A configuration) in thousands of feet. Push and Hold the "START/STOP" Button (4) to display the Encoder Altitude (preceded by an "E") or the Assigned Altitude (preceded by an "A") depending on the ASC-5A configuration. A bar in the upper left corner of the display indicates you need to climb to reach your programmed Assigned Altitude and a bar in the lower left corner of the display indicates you need to descend to reach your Assigned Altitude. To display Density Altitude (preceded by a "d "), push and hold the "RESET" Button (6).

To program the Assigned and/or Approach Altitude, select the "ALT." Display Mode and push both the "START/STOP" (4) and "RESET" (6) Buttons at the same time. A bar in the upper left corner of the display indicates you are programming the Assigned Altitude and a bar in the lower left corner of the display indicates you are programming the Approach Altitude. Select the blinking digit with the "START/STOP" and "RESET" Buttons. Increase or decrease the blinking digit with the "STEP" Switch (5). To program the Approach Altitude, continue pushing the "RESET" Button until a bar appears in the lower left corner of the display. To exit this mode, push both the "START/STOP" and "RESET" Buttons (4 & 6) at the same time.

OAT Display Mode: The Outside Air Temperature may be displayed in 'F or 'C. To toggle the display between 'F and 'C, select the "OAT" Display Mode and push "RESET" Button.

Timer Display Mode: The Timer may be set up as an Up or Down Timer. As an Up Timer you may program a Recurring Alarm or as a Down Timer you may program the Start Time. To program the Recurring Alarm/Start Time and to configure the Timer as an Up or Down Timer, select the "Timer" Display Mode and push both the "START/STOP" (4) and "RESET" Buttons (6) at the same time. You will be programming the Recurring Alarm/Start Time. Select the blinking digit with the "START/STOP" and "RESET" Buttons. Increase or decrease the blinking digit with the "STEP" Switch (5). To configure the Timer as an Up or Down Timer, continue pushing the "RESET" Button until the display shows "UP" or "dn." (Note: The Up Timer will continue to run when the Down Timer is selected.) The "Step" Switch (5) will toggle the display between "UP" and "dn." To exit this mode, push both the "START/STOP" and "RESET" Buttons (4 & 6) at the same time.

CLOCK Display Mode: This mode displays the Local Time when an "L" is showing in the lower right corner of the display. If there is no "L" showing, Zulu Time is displayed. Push the "RESET" Button (6) to toggle the display between Local and Zulu Time.

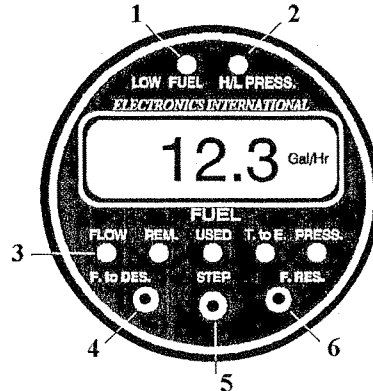




Fuel Flow/Pressure (FP-5L) Quick Reference Guide

1007961

1. Low Fuel Warning LED.
2. High/Low Fuel Pressure Warning LED.
3. Display Mode Indicator LED's.
4. Fuel to Destination Button.
5. Mode Select Switch.
6. Fuel Reserve Button.



Blinking "REM" LED on Power-up: After power-up, the FP-5 will blink the Fuel Remaining (REM) LED and display the fuel remaining in the tank(s). The "REM" LED will continue to blink until any button or switch is pushed. The blinking "REM" LED is intended as a reminder to update the FP-5 if you've added fuel to the aircraft since the last flight.

To Display the Various Modes: Push the Mode Select Switch (5) to the right or left to select the various display modes. The appropriate green Display Mode Indicator LED will be lit indicating which mode is being displayed. Push the "F. to Des." (4) or the "F. Res." (6) button at any time to display Fuel to Destination or Fuel Reserve.

Low Fuel Warning LED (1): This LED will blink if either your first or second Programmable Low Fuel Warning Limit or your Programmable Time to Empty Warning Limit is violated. Push any button to stop the blinking.

High/Low Fuel Pressure Warning LED (2): This LED will blink if either your Programmable High Fuel Pressure Limit or your Programmable Low Fuel Pressure Limit is violated.

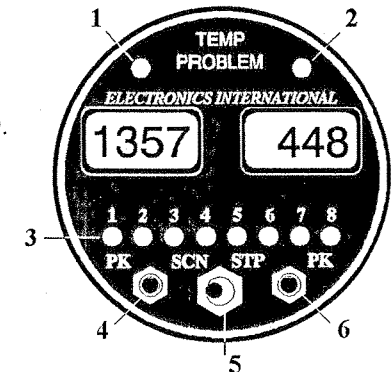
To Add Fuel: Select the "REM" Display Mode. Press both "F. to Des." and "F. Res." Buttons (4 & 6) at the same time and release. Push the Mode Select Switch (5) to the left to remove the word "Add" from the display. Push the Mode Select Switch (5) to the left again to set the display to the default full fuel level for your aircraft. You may program a specific fuel level by selecting the blinking digit with the left and right push buttons (4 and 6). Advance a blinking digits count by pushing the Mode Select Switch (5) to the right. To exit this programming mode, momentarily push both "F. to Des." and "F. Res." Buttons (4 & 6) at the same time.

Ultimate Engine Analyzer (US-8A) Quick Reference Guide

1022962



1. Left Temp Problem Warning LED.
2. Right Temp Problem Warning LED.
3. Channel Indicator LED's.
4. Left Peak Locate Button.
5. Mode Selector Switch.
6. Right Peak Locate Button.



Scan Operating Mode: Push the Mode Selector Switch (5) to the left for the Scan Mode. In the Scan Mode, the US-8A will scan through the channels, automatically analyzing your engine. You do not need to read any temperatures or interpret the display. The US-8A's 16 High Limits, 16 Low Limits, and two Differential Limits stand watch over your engine. In the Scan Mode, a bar high in the left hand corner of the appropriate display will appear any time the hottest cylinder is being displayed.

Temp Problem Warning LEDs (Automatic Engine Analysis): If the displayed temperature violates the programmed High Limit, Low Limit or Differential Limit while in the Scan Mode, the Temp Problem Warning LED over the appropriate display will be lit and the scan will stop on the channel with the problem. If the High Limit has been-violated, a bar high in the left hand corner of the display will appear. If the Low Limit has been violated, a bar low in the left hand corner of the display will appear. If the Differential Limit has been violated, the high and low bar will alternately blink.

Leaning with the US-8A: Set the US-8A into the Manual Operating Mode and push the appropriate Peak Locate Button. Rough lean your engine by adjusting the mixture control from full rich to a leaner mixture near peak EGT as determined by experience. Wait 20 seconds for the temperature to stabilize. Again push the appropriate Peak Locate Button. The US-8A may stop on a different cylinder than the one you started with. Begin precision leaning your engine slowly until the EGT peaks. Set your mixture for a specific EGT rich of peak (consult your P.O.H. for recommended setting).