Section 9
Log of Supplements

Part Number	Title	Date
___ 11934-S01 R2	Garmin GMA 340 Audio System	07-18-05
___ 11934-S05	Garmin GNC 250XL GPS Navigator w/ VHF COM	03-31-99
___ 11934-S06 R1	S-Tec System Twenty Autopilot	12-07-04
___ 11934-S09 R1	Approved Oxygen Systems	01-07-03
___ 11934-S11 R1	L-3 Avionics Systems WX500 Stormscope Sensor	07-18-05
___ 11934-S12	Garmin GTX 327 Transponder	12-26-00
___ 11934-S15 R1	L-3 Avionics Systems SkyWatch Traffic Advisory System	10-12-05
___ 11934-S17	SR20 Airplanes Registered in Canada	10-10-01
___ 11934-S19 R1	S-Tec System Thirty Autopilot with GPSS	12-07-04
___ 11934-S20 R4	S-Tec System 55X Autopilot w/ Altitude Selector/Alerter	08-15-07
___ 11934-S22 R2	Garmin GNS 430 GPS Navigator	08-15-07
___ 11934-S23 R2	Garmin GNC 420 GPS Navigator	08-15-07
___ 11934-S24	Sandel Avionics SN3308 Navigation Display	01-07-03
___ 11934-S25 R1	Winterization Kit	12-07-04
___ 11934-S27 R2	S-Tec System 55SR Autopilot	07-18-05
___ 11934-S28	Garmin GTX 330 Mode S Transponder	07-03-04
___ 11934-S29	SR20 Airplanes Registered in the European Union	05-27-04
___ 11934-S30 R1	Honeywell KGP 560 Terrain/Awareness Warning System	12-15-07
___ 11934-S31 R1	Avidyne EMax™ Engine Instrumentation	12-15-07
___ 11934-S32 R1	Avidyne CMax™ Electronic Approach Charts	12-15-07
___ 11934-S33 R1	XM Satellite Weather System	12-15-07
___ 11934-S34 R2	Avidyne Flight Director	12-15-07
___ 11934-S36 R1	Artex ME406 406 MHz ELT System	12-18-08
___ 11934-S37 R2	SR20 Airplanes Equipped with the “G3 Wing”	05-09-11
___ 11934-S38 R1	Garmin 400W-Series GPS Navigator	11-11-07
___ 11934-S43	SR20 Airplanes Registered in Russia	10/14/09
___ 11934-S44	Part 135 Operation Electrical Loading Shedding	06-13-09
___ 11934-S45	SR20 Airplanes Registered in Argentina	09-30-09

___11934-S51	SR20 Airplanes Registered in Colombia	12-07-10

FAA Approved POH Supplements must be in the airplane for flight operations when the subject optional equipment is installed or the special operations are to be performed.

This Log of Supplements shows all Cirrus Design Supplements available for the aircraft at the cooresponding date of the revision level shown in the lower left corner. A mark (x) in the Part Number column indicates that the supplement is installed in the POH.

Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for

Garmin GMA 340 Audio System

Includes Optional XM Radio System

When the Garmin GMA 340 Audio Panel and the optional XM Radio System are installed in the Cirrus Design SR20, this Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook (Handbook). Information in this supplement either adds to, supersedes, or deletes information in the basic Handbook.

• Note •

This POH Supplement Revision dated Revision 02: 07-18-05 supersedes and replaces Revision 01 of this supplement dated 07-03-04. This September 2011 required data for the optional XM Radio System available for the Garmin GMA 340.

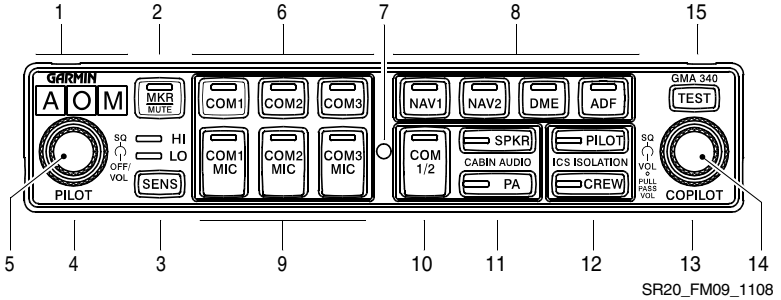
FAA Approved Joseph C Mieso Date 18 JUL 2005

for Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

This supplement provides detailed operating instructions for the Garmin GMA 340 Audio Selector Panel/Intercom System with internal Marker Beacon. This supplement covers the basic operating areas of the Audio Control Panel.

- Power On / Fail-safe Operation
- Audio / Transceiver Selection
- Speaker Output
- Public Address (PA) Function
- Personal Music Inputs
- Intercom (ICS)
- Marker Beacon



SR20_FM09_1108

1. Marker Beacon Annunciators
2. Marker Audio Select Button / LED
3. Marker Sensitivity Select Button
   a. HI Sensitivity LED
   b. LO Sensitivity LED
4. Pilot Intercom Squelch (outer knob)
5. Power / Intercom Volume (inner knob)
6. Transceiver Audio Select Buttons/ LEDs
7. Photocell
8. Receiver Audio Select Buttons / LEDs
9. Transceiver Audio/Transmit Select Buttons / LEDs
10. Split COM Button / LED
11. Cabin Audio Select Buttons / LEDs
    a. SPKR, Cabin Speaker
    b. PA, Public Address
12. Intercom Isolation Buttons / LEDs
    a. PILOT Intercom Mode
    b. CREW Intercom Mode
13. Copilot / Passenger Intercom Squelch (outer knob)
14. Copilot (IN) / Passenger (OUT) Intercom Volume (inner knob)
15. Indicator Test Button

Figure - 1
Audio Control Panel

Section 2 - Limitations

Use of auxiliary AUDIO IN entertainment input and the optionally installed XM Radio System is prohibited during takeoff and landing.

Section 3 - Emergency Procedures

In the event of an audio panel power failure, the audio system will revert to COM 1 for the pilot's mic and headphones and the pilot will have transmit and receive capability.

Section 4 - Normal Procedures

Refer to Section 7 - System Description in this supplement for a complete description and operation of the Audio Control Panel.

Section 5 - Performance

No change from basic Handbook.

Section 6 - Weight & Balance

Garmin GMA 340 Audio System: No change from basic Handbook.

Installation of the optional XM Radio System adds the following optional (Sym = O) equipment at the weight and arm shown in the following table.

ATA / Item	Description	Sym	Qty	Part Number	Unit Wt	Arm
22-01	XM Receiver	O	1	16665-001	1.7	114.0

Section 7 - System Description

Power On and Fail-safe Operation

The Audio Control Panel is powered 'OFF' when the left inner knob (PILOT) is at the full CCW (counter-clockwise) position. Rotating the knob CW (clockwise) activates the unit. CW rotation of knob beyond the 'on' detent increases pilot ICS (intercom system) volume.

A fail-safe circuit connects the pilot's headset directly to the COM1 transceiver in the event of a power failure to the audio control panel or the panel is switched 'OFF.'

Test

Pressing the TEST button illuminates all Panel LEDs and the Marker Beacon Annunciators full bright. During normal operation, a photocell mounted at the approximate center of the control panel senses ambient light to allow automatic LED and annunciator intensity adjustment. Nomenclature dimming is controlled by the INST lights control on the instrument panel bolster.

Audio/Transceiver Selection

Audio selection is performed through the eight selector push buttons in the center of the Audio Control Panel. All audio selector push buttons are push-on, push-off. Selecting an audio source supplies audio to the headphones or cabin speaker. Selected audio sources are indicated by illumination of the push-button switch.

Navigation receiver audio source is selected by depressing NAV1, NAV2 (if installed), MKR, DME (if installed), or ADF (if installed) will select that radio or device as the audio source. Audio level of navigation receivers is controlled through the selected radio volume control.

Transceiver audio is selected by depressing COM1, COM2, or COM3 (if installed). When the audio source is selected using the COM1, COM2, and COM3 buttons, the audio source will remain active regardless of which transceiver is selected as the active MIC source.

Both transceiver audio and MIC (microphone) can be selected by depressing COM1 MIC, COM2 MIC, or COM3 MIC (if installed). Both pilot and copilot are connected to the selected transceiver and both have transmit and receive capabilities. Pilot and copilot must use their respective Push-To-Talk (PTT) switch to transmit. The intercom will function normally. During transmissions the active transmitter's COM MIC button LED blinks at a 1 Hz rate indicating active transmission.

Split COM Function

Pressing the COM 1/2 button activates the split COM function. When split COM is active, COM 1 is the pilot mic/audio source and COM2 is

the copilot mic/audio source. The pilot has receive and transmit capabilities on COM1 and the copilot has receive and transmit capabilities on COM2. While split COM is active, simultaneous transmission from COM1 and COM2 is not possible. The pilot and copilot can still listen to COM3, NAV1, NAV2, DME, ADF, and MKR. Pressing the COM 1/2 button a second time will deactivate the split COM function. While split COM is active, the copilot is able to make PA announcements over the cabin speaker allowing the pilot to continue using COM1 independently. This is accomplished by depressing the PA button while split COM is active. Pressing the PA button a second time deactivates this feature and returns the system to normal split COM as described above.

COM Swap Mode

COM swap mode is not available in this installation.

Speaker Output

Pressing the SPKR button will cause the selected airplane radios to be heard over the cabin speaker. Speaker output is muted when a COM microphone is keyed. Speaker level is adjustable through an access hole in the top of the unit (*refer to Garmin installation manual or AMM)*.

Public Address (PA) Function

Pressing the PA button on the audio control panel activates the PA function. When PA is activated and either the pilot's or copilot's microphone is keyed (PTT pressed), the corresponding mic audio is output over the cabin speaker. If the SPKR button is also active, any previously active speaker audio will be muted while the microphone is keyed. Pilot and copilot PA microphone speaker levels are adjustable through an access hole in the top of the unit (*refer to Garmin installation manual or AMM).*

Personal Music Inputs

• Note •

Serials 1005 thru 1532 and serials before SB 2X-34-14; Audio from AUDIO INPUT jacks Music1 and Music2 is muted during intercom activity.

The Audio Control Panel has provisions for up to two separate personal entertainment input (music) devices. These devices are plugged into the AUDIO INPUT jacks in the center console jack panels. Music1 is connected at the AUDIO INPUT jack near the convenience outlet. Music2 is connected to the jack on the aft console. Music1 is soft-muted during all airplane radio activity. Music1 and Music2 have characteristics affected by the active ICS isolation mode.

- Pressing the PILOT ICS Isolation button isolates the pilot from the copilot and passengers. Music1 is available to copilot and passengers.
- Pressing the CREW ICS Isolation button isolates the crew from the passengers and allows the pilot and copilot to listen to Music1 and the passengers to listen to Music2. Radio activity, MKR activity, and pilot or copilot ICS activity will mute Music1. Music2 is not muted.
- When both the PILOT and CREW ICS Isolation mode are **not** selected, Music1 is available to crew and passengers. Radio activity and MKR activity will mute Music1.

Intercom

Intercom controls are located towards the left side of the Audio Control Panel. The controls consist of a Volume control for the pilot and copilot, a Squelch control for all occupants, and an Intercom Mode Selector switch.

Volume & Squelch Control

ICS volume and voice operated relay (VOX) squelch control is controlled through the left (PILOT) and right (COPILOT) control knobs on the Audio Control Panel Control. Knob control is as follows:

- **Left Inner Knob** – On/Off power control and pilot ICS volume. Full CCW is ‘OFF’ position (click).
- **Left Outer Knob** – Pilot ICS mic VOX level. CW rotation increases the amount of mic audio (VOX level) required to break squelch. Full CCW is the ‘hot mic’ position.
- **Right Inner Knob** – When pushed in, rotation controls copilot ICS volume. When out, rotation controls passenger ICS volume.

- **Right Outer Knob** – Copilot and passenger mic VOX level. CW rotation increases the amount of mic audio (VOX level) required to break squelch. Full CCW is the 'hot mic' position.

Each microphone input has a dedicated VOX circuit to assure that only the active microphone(s) is/are heard when squelch is broken. After the operator has stopped talking, the intercom channel remains momentarily open to avoid closure between words or normal pauses.

Control

The Audio Control Panel provides an adjustable Voice Operated Relay (VOX) Squelch Control for the pilot, copilot, and passengers. Since the VOX circuits reduce the number of microphones active at any one time, the amount of unwanted background noise in the headphones is diminished. This also allows the use of dissimilar headsets with the same intercom. Because the user can adjust the trip level of the VOX squelch to fit the individual voice and microphone, this helps eliminate the frustration of clipping the first syllables. There is a slight delay after a person stops talking before the channel closes. This prevents closure between words and eliminates choppy communications.

To adjust squelch:

1. With the engine running, set the VOX trip level by slowly rotating the SQL control knob clockwise until you no longer hear the engine noise in the headphones.
2. Position microphone near your lips and speak into microphone. Verify that normal speech levels open the channel.

Intercom Modes

The GMA 340 provides three intercom (ICS) modes to further simplify workload and minimize distractions during all phases of flight: PILOT, CREW, and ALL. The mode selection is accomplished using the PILOT and CREW push-buttons. Pressing a button activates the corresponding ICS mode and pressing the button a second time deactivates the mode. The operator can switch modes (PILOT to CREW or CREW to PILOT) by pressing the desired modes push-

button. ALL mode is active when neither PILOT or CREW have been selected.

PILOT — The pilot is isolated from the intercom. The pilot can hear radio and sidetone only during radio transmissions. Copilot and passengers can hear the intercom and music but not the airplane radio receptions or pilot transmissions.

CREW — Pilot and copilot are connected on one intercom channel and have exclusive access to the aircraft radios. They may also listen to Music1. Passengers can continue to communicate with themselves without interrupting the Crew and also may listen to Music2.

ALL — All parties will hear the aircraft radio, intercom, and Music1. The music volume increases gradually back to the original level after communications have been completed. Both pilot and copilot have access to the COM transceivers.

The following table shows, in abbreviated form, what each occupant hears in each of the selectable Intercom modes:

Mode	Pilot Hears	Copilot Hears	Passenger Hears
PILOT	A/C Radios Pilot	Passengers Copilot Music1	Passengers Copilot Music1
CREW	A/C Radios Pilot/Copilot Music1	A/C Radios Copilot/Pilot Music1	Passengers Music2
ALL	A/C Radio Pilot/Copilot Passengers Music1	A/C Radio Pilot/ Copilot Passengers Music1	A/C Radio Pilot/Copilot Passengers Music1

Marker Beacon

The Marker Beacon Receiver provides visual and audio indicators to alert the pilot when the airplane passes over a 75 MHz transmitter. Marker beacon controls and lights are located at the extreme left of the Audio Control Panel.

Marker beacon audio is selected by pressing the MKR push-button. If no marker beacon signal is being received, pressing the MKR push-button a second time deselects marker beacon audio. However, if marker beacon is being received, pressing the MKR push-button a second time will mute the audio but the light will continue to flash. Pressing the MKR push-button a third time (while marker beacon audio is muted) deselects marker beacon audio. Marker beacon audio muting automatically disables when the current signal is no longer received.

• Note •

The marker beacon lamps (O, M, A) operate independently of the audio and cannot be disabled.

Marker beacon light and audio keying for ILS approach are summarized below:

O (Blue)	Outer Marker light and associated 400 Hertz tone. The light and tone are keyed at a rate of two tones/flashes per second.
M (Amber)	Middle Marker light and associated 1300 Hertz tone. The light and tone are keyed alternately with short and long bursts.
A (White)	Airway/Inner Marker light and associated 3000 Hertz tone. The light and tone are keyed at a rate of six times per second.

Marker Beacon Sensitivity

The SENS push-button on the left side of the panel is used to set the marker beacon receiver sensitivity. The selected sensitivity level is indicated by illumination of the HIGH or LOW LED. When HIGH sensitivity is selected, the outer marker beacon tone will sound farther out. Selecting LOW sensitivity at this point allows more accurate location of the Outer Marker. Typically, HIGH sensitivity is selected until the outer marker tone is heard, and then LOW sensitivity is selected for more accurate outer marker location.

XM Radio System (Optional Installation)

• Note •

For a detailed operating instructions, *refer to the XM Radio Wireless Controller User Instructions, Document No. XMC050-4, original release or later*. MFD software partnumber 530-00162-000 or later is required for installation of XM Radio System.

Subscription to a XM Radio System Service Package is required for operation. Contact XM Satellite Radio at 800.985.9200 for subscription information.

The optional XM Radio System provides satellite broadcast audio entertainment and information to aircraft occupants via the Garmin GMA 340 Audio System while traveling anywhere within the contiguous United States of America.

The XM receiver, installed in the co-pilot side of the center console, receives audio information via its integral antenna from two geosynchronous XM broadcast satellites. The audio signal is then sent by wire to the Audio Control Panel's Music1 and Music2 AUDIO INPUT jacks. System operation is provided by a hand held, wireless controller.

- When initially powered, the XM radio volume is set to mute and will remain muted until the XM radio establishes communication with the wireless controller.
- System volume for both AUDIO INPUT jacks is controlled simultaneously via the wireless controller.
- In the event of wireless controller failure during flight, cycling the Weather/Stormscope circuit breaker will reset the volume to mute.
- XM radio is the default audio heard on the AUDIO INPUT jacks. If a personal entertainment device such as a CD player is plugged into either AUDIO INPUT jacks, the external source will override the XM audio signal. Refer to the Intercom Modes Table presented above for a description of intercom modes.

The XM Radio System is powered by 28 VDC supplied through the 3-amp Weather/Stormscope breaker on the Non-Essential Bus.

Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for

Garmin GTX 327 Transponder

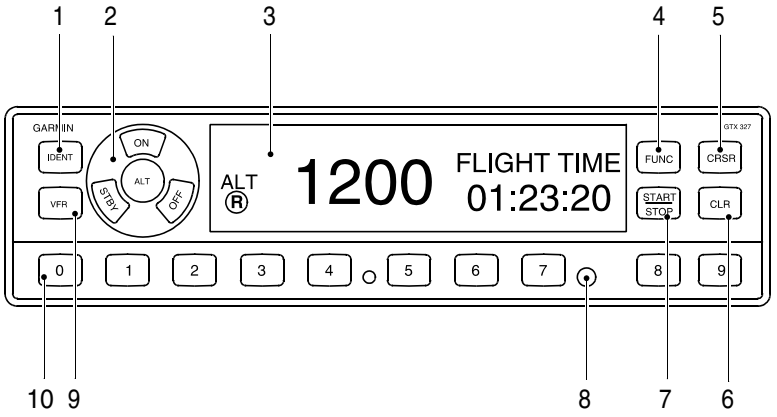
When a Garmin GTX 327 Transponder is installed in the Cirrus Design SR20, this Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

FAA Approved Joseph C Mieos Date 26 Dec 2000

Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

The airplane is equipped with a single Garmin GTX 327 ATC Mode A/C (identification and altitude) transponder with squawk capability. This supplement provides complete operating instructions for the GTX 327 and does not require any additional data be carried in the airplane.



1. Identification Key
2. Mode Selector Keys
   a. OFF
   b. STBY (Standby)
   c. ON
   d. ALT
3. Display Window
4. FUNC (Function) Key
5. CRSR (Cursor)
6. CLR (Clear) Key
7. START/STOP Key
8. Photocell
9. VFR Key
10. Selector Keys
    a. 0-7 - Code Selection
    b. 8-9 - Display Brightness/Contrast

SR20_FM09_1501

Section 2 - Limitations

No Change

Section 3 - Emergency Procedures

No Change

Section 4 - Normal Procedures

• Note •

Expected coverage from the GTX 327 is limited to “line of sight.” Low altitude or aircraft antenna shielding by the airplane itself may result in reduced range. Range can be improved by climbing to a higher altitude.

After Engine Start

1. Avionics Power Switch .....ON

   The transponder will turn on in the STBY mode. The transponder is “on” but will not respond to interrogations from ATC secondary surveillance radar.

Before Takeoff

1. Transponder Mode Selector Keys .....ALT

   If the transponder is in the STBY mode, it will automatically switch to ALT during takeoff when the groundspeed increases through approximately 35 knots. The transponder will respond to ATC Mode C (altitude and identification) interrogations.

   • Note •

   Selecting ON puts the transponder in Mode A (identification) only. The transponder will respond to Mode C (altitude) interrogations with signals that contain no altitude information.

After Landing

1. Transponder Mode Selector Keys ..... STBY or OFF

   If the transponder is in the ALT mode for landing, it will automatically switch to STBY during landing rollout when the groundspeed decreases through approximately 35 knots.

Section 5 - Performance

No Change

Section 6 - Weight & Balance

No Change

Section 7 - Systems Description

• Note •

This supplement provides specific procedures for use of the GTX 327 Transponder in the SR20 and a general description of the unit. For a detailed description of the GTX 327, *refer to GARMIN GTX 327 Mode A/C Transponder Pilots Guide*, p/n 190-00187-00 September 2011 (Feb 2000) or later revision.

The Garmin GTX 327 transponder system consists of the integrated receiver/transmitter control unit, an antenna, and an altitude digitizer. The receiver/transmitter receives interrogations from a ground-based secondary surveillance radar transmitter and then transmits to the interrogating Air Traffic Control Center. Digitized altitude information is provided by the altitude digitizer (encoder) plumbed into the airplane static system. The transponder and integrated controls are mounted in the center console. The transponder control provides active code display, code selection, IDENT button, and test functions. The display is daylight readable and is automatically dimmed through a photocell. The controller buttons are dimmed through the INST lights control on the instrument panel bolster. The transponder antenna is mounted on the underside of the fuselage just aft of the firewall. 28 vdc for transponder operation is controlled through the Avionics Master Switch on the bolster switch panel. 28 VDC for receiver, transmitter, and altitude encoder operation is supplied through the 2-amp ENCODER/XPONDER circuit breaker on the Avionics Essential Bus.

Mode Selector Keys

The mode selector keys are located in a circular arrangement immediately to the left of the display window. The selected mode is annunciated at the left side of the display immediately adjacent to the selector keys. The five positions are:

OFF - Turns off all power to the GTX 327 transponder. The transponder should be off until the engine is started. Normally, the transponder can be left in the STBY position and allow the Avionics Power Switch to control system power.

STBY - Powers the transponder in standby mode. The last active identification code will be selected. In STBY, the transponder will not reply to any interrogations from an ATC secondary ground surveillance radar system. This is the normal position for ground operations in the SR20.

• Note •

STBY mode is automatically entered from ALT mode during landing ground roll as the groundspeed decreases through 35 knots.

ON - Powers on the GTX 327 in Mode A (identification mode.). The last active identification code will be selected. In addition to the airplane's identification code, the transponder will also reply to altitude (Mode C) interrogations with signals that do not contain altitude information.

ALT - Places the transponder in Mode A and Mode C, identification and altitude respectively. The transponder will respond to interrogations with the airplane's identification code and standard pressure altitude (29.92 inches Hg).

• Note •

ALT mode is automatically entered from STBY mode during takeoff ground roll as the groundspeed increases through 35 knots.

Code Selector Keys

Code selection is accomplished by depressing the eight selector keys (numbered 0 - 7) located immediately below the display. Any of 4096 active identification codes can be selected. The selected code must be in accordance with instructions for IFR flight or rules applicable to transponder utilization for VFR flight.

The airplane's transponder code is used to enhance tracking capability by ATC. Therefore, do not switch the transponder to STBY when making routine code changes.

Input a New Code

1. Use CLR key to remove the current code.
2. Use "0 - 7" keys to input the new code. The new code will not be activated until the last (fourth) digit is entered. Pressing the CLR key will move the cursor back to the previous digit. Pressing the CRSR key during code entry will remove the cursor and cancel the entry.

   • Note •

   When making routine code changes, avoid inadvertent selection of code 7500 and all codes within the 7600 series (7600 – 7677) and 7700 series (7700 – 7777). These codes trigger special indicators in automated facilities. 7500 will be decoded as the hijack code.

Important Codes

- 1200 – VFR code for any altitude in U.S.
- 7000 – VFR code commonly used in Europe
- 7500 – Hijacking
- 7600 – Loss of communications
- 7700 – Emergency
- 7777 – Military interceptor operations (Never squawk this code)
- 0000 – Military use only (not enterable)

Reply Light

The reply light is the small reverse video “R” immediately below the mode annunciation in the display window. The reply light will blink each time the transponder replies to ground interrogations. The light will remain on during the 18-second IDENT time interval.

IDENT Key

Pressing the IDENT button activates the Special Position Identification (SPI) pulse for approximately 18 seconds allowing ATC to identify your transponder return from other returns on the controller’s scope. The Reply annunciator in the display will illuminate during the SPI pulse. Momentarily press the IDENT key when the controller requests, “SQUAWK IDENT.”

VFR Key

Pressing the VFR key sets the transponder to the pre-programmed VFR code selected in the configuration mode (factory set to 1200). Pressing the VFR key a second time will restore the previous identification code.

FUNC Key

Pressing the FUNC key changes the data shown on the right side of the display. Pressing the FUNC key a second time will cycle the display to the next data. Displayed data includes Pressure Altitude, Flight Time, Count Up Timer, Count Down Timer, Contrast, and Display Brightness.

PRESSURE ALT - Displays pressure altitude in feet. An arrow to the right of the altitude indicates that the airplane is climbing or descending.

FLIGHT TIME - Displays the flight time. The timer receives groundspeed from GPS1. Flight time starts when the groundspeed reaches 35 knots on takeoff and pauses when the groundspeed descends below 35 knots on landing.

COUNT UP TIMER - The count up timer is controlled by the START / STOP key. Pressing the CLR key zeros the display.

COUNT DOWN TIMER - The count down timer is controlled by the START / STOP key. The CRSR and “0 - 9” keys are used to set the initial time. Pressing the CLR key resets the timer to the initial value.

CONTRAST - Allows adjustment of display contrast. When CONTRAST is selected, pressing the “8” key reduces contrast and pressing “9” increases contrast.

DISPLAY - The display function is not available in this installation. Display brightness is automatically controlled through a photocell in the front panel.

Pilot's Operating Handbook and

FAA Approved Airplane Flight Manual

Supplement
For

S-Tec System 55X Autopilot w/ Altitude Selector/Alerter

When the S-Tec System Fifty Five X (55X) Autopilot with Altitude Selector/Alerter is installed in the Cirrus Design SR20, serials 1268 and subsequent, this Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Revision dated Revision 04: 08-15-07, supersedes and replaces Revision 03 of this supplement dated 07-18-05.

FAA Approved Joseph C Mieso Date Aug 15 2007

for Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

This airplane is equipped with an S-TEC System 55X Autopilot. The System 55X autopilot is a two-axis autopilot system. The system consists of a flight guidance programmer/computer, altitude encoder, altitude selector / alerter, turn coordinator, and HSI. Mode selection and vertical speed selection is made on the programmer/computer panel. A button on each control yoke handle may be used to disengage the autopilot. The autopilot makes roll changes through the aileron trim motor and spring cartridge and makes pitch changes for altitude hold through the elevator trim motor. The SR20 installation of the S-Tec System 55X Autopilot features:

- Heading Hold and Command;
- NAV/LOC/GPS/GS tracking, high and low sensitivity, and automatic 45° course intercept;
- GPS Steering (GPSS);
- Altitude Pre-select, Hold and Command, Altitude display, and baro correction;
- Altitude and Decision Height (DH) alert; and
- Vertical Speed Hold and Command.

Refer to S-Tec System Fifty-Five X Autopilot Pilot's Operating Handbook (POH): *Serials 1005 thru 1336;* P/N 87109 dated 8 November 2000 or later OR *Serials 1337 and subsequent;* P/N 87247 original release or later for full operational procedures and description of implemented modes. The System 55X POH also contains detailed procedures for accomplishing GPS & VOR course tracking, front course and back course localizer approaches, and glideslope tracking.

Refer to S-Tec Altitude Selector / Alerter Pilot's Operating Handbook (POH) P/N 8716 *or* P/N 87110 (original issue or later) for full operational procedures and detailed description of operational modes of the Altitude Selector / Alerter.

• Note •

The SR20 implementation of the System 55X Autopilot does not utilize the optional remote annunciator, roll servo, and optional trim servo. Therefore, all references to these items in the S-Tec System 55X POH shall be disregarded. Additionally,

this installation does not utilize a CWS (Control Wheel Steering) switch or an AUTOPILOT MASTER switch.

• Note •

This installation utilizes the airplane's roll trim actuator to affect steering changes. Therefore, the automatic trim function of the System 55X is not implemented. Disregard all references in the S-Tec System 55X POH to this feature.

Roll information is displayed on the HSI. Autopilot Flight Director is not implemented in this installation.

Section 2 - Limitations

1. Autopilot operation is prohibited above 185 KIAS.
2. The autopilot must not be engaged for takeoff or landing.
3. The autopilot must be disengaged for missed approach, go-around, and balked landing.
4. Flaps must be set to 50% for autopilot operation in Altitude Hold at airspeeds below 95 KIAS.
5. Flap deflection is limited to 50% during autopilot operations.
6. The autopilot must be disconnected in moderate or severe turbulence.
7. Minimum engage height for the autopilot is 400 ft AGL.

• 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.

8. Minimum speed with the autopilot engaged is $1.2V_S$ for the given configuration.
9. For VOR/GPS and ILS glideslope and localizer intercept, capture, and tracking, the following limitations apply:
   a. The autopilot must be disengaged no later than 100 feet below the Minimum Descent Altitude.

b. The autopilot must be disconnect during approach if course deviation exceeds 50%. The approach should only be continued by “hand-flying” the airplane.

c. The autopilot must be disengaged at the Decision Height.

d. 12 knot maximum crosswind component between the missed approach point and outer marker.

e. The intercept of the localizer shall occur at least 5 miles outside of the outer marker.

f. If the crosswind component is greater than 12 knots and less than 17 knots, the intercept shall occur at least 10 miles outside of the outer marker.

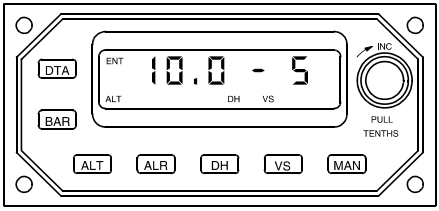
g. The intercept angle shall be no greater than a 45-degree intercept.

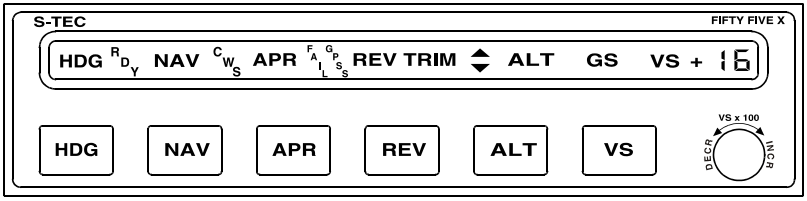
h. The ILS is flown at normal approach speeds, and within any STC or TC speed constraints and as defined in this flight manual.

i. The flaps should be extended in the approach configuration prior to the Outer Marker. No further changes in the flap configuration should be made throughout the autopilot-coupled approach.

j. The glideslope is approached in such a manner to allow automatic arming of the glideslope, or if the glideslope is manually armed no more than 15% above the glideslope.

10. The S-TEC System Fifty Five X Pilot’s Operating Handbook: *Serials 1005 thru 1336;* P/N 87109 dated 8 November 2000 or later OR *Serials 1337 and subsequent;* P/N 87247 original release or later, must be carried in the airplane at all times and must be available to the pilot while in flight.





SR20_FM09_1502A

Figure - 1
System 55X Altitude Selector/Alerter & Autopilot Computer

Section 3 - Emergency Procedures

Autopilot Malfunction

Refer to Electric Trim/Autopilot Failure procedure in the SR20 POH. Do not reengage the autopilot until the malfunction has been identified and corrected. The autopilot may be disconnected by:

1. Pressing the A/P DISC/Trim switch on the control yoke handle.
2. Pulling the AUTOPILOT circuit breaker on Essential Bus.

Altitude lost during a roll axis autopilot malfunction and recovery:

Flight Phase	Bank Angle	Altitude Loss
Climb	30°	None
Cruise	55°	100 ft
Descent	55°	120 ft
Maneuvering	10°	None
Approach	0°	20 ft

Altitude lost during a pitch axis autopilot malfunction and recovery:

Flight Phase	Altitude Loss
Cruise	200 ft
ILS	25 ft

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, execute a go-around or missed approach as appropriate. Inform ATC of problem. Do not try to troubleshoot until a safe altitude and maneuvering area are reached or a safe landing is completed.

Annunciation	Condition	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 error over selected vertical speed. Usually occurs in climb.	Reduce VS command and/or adjust power as appropriate.
Flashing GS	Off glideslope centerline by 50% needle deviation or more.	Check attitude and power. Adjust power as appropriate.
Flashing GS with steady FAIL	Invalid glideslope radio navigation signal.	Disconnect autopilot and initiate go-around or missed approach procedure. Inform ATC.
Flashing GS plus ALT.	Manual glideslope disabled.	Re-enable by pressing NAV mode button.

Section 4 - Normal Procedures

Refer to Section 7 – Systems Description for a description of the autopilot and altitude selector and their respective modes.

The Autopilot is integrated with the Altitude Selector/Alerter and can be operated with or without data inputs from the Altitude Selector/ Alerter. The autopilot ALT and VS modes are coupled to the Altitude Selector/Alerter ALT and VS outputs by pressing and holding the Autopilot Programmer/Computer VS button and then pressing the ALT button. Altitude Selector Vertical Speed output can be individually coupled to the autopilot through the autopilot VS mode by pressing the autopilot VS button.

• WARNING •

The pilot must properly monitor and control the engine power to avoid stalling the airplane in autopilot altitude hold or vertical speed modes.

• Note •

Any coupled Altitude Selector / Alerter mode can be disabled by disconnecting the autopilot.

Autopilot and Altitude Selector Pre-Flight Tests

1. Battery Master Switch ..... ON
2. Transponder ..... ON
3. Avionics Power Switch ..... ON

   Note that all autopilot annunciators, except CWS, and TRIM illuminate. After about 5 seconds, all lights will go out. When the turn coordinator gyro has reached operational RPM, the RDY annunciator will come on.
4. Altitude Selector Tests:
   a. Altimeter ..... Set Field Elevation.
   b. Self-Test – On power up, all annunciators come on for approximately 5 seconds and then sounds an audio tone. After the self-test is complete, press the DTA and then BAR buttons on the altitude selector.

c. Rotate altitude selector input knob to set BARO to the nearest 0.1 inch Hg.

d. Push ALT button to display ALT SEL. With a flashing SEL annunciator, rotate the selector knob to input an altitude 300 to 400 feet lower or higher than the indicated altitude.

e. Push the VS button. Rotate the selector input knob to input the desired climb (+) or descent (-) vertical speed.

f. Push ALT button, ALT SEL annunciator will illuminate.

g. Engage autopilot HDG mode.

h. Press and hold the VS button and then press the ALT button. Autopilot VS and ALT annunciators will illuminate.

i. Rotate altitude selector knob to change selected altitude to match field elevation. VS annunciator on autopilot programmer should go out when the ALT SEL setting on the altitude selector is within 100 feet of indicated altitude on altimeter. Autopilot ALT mode should remain illuminated, indicating autopilot altitude hold is engaged. If ALT engagement does not occur within 100 feet of indicated altitude, readjust BARO setting on altitude selector.

5. Autopilot Tests

a. Heading Mode ..... TEST

1.) Center the HDG bug under the lubber line on the HSI.

2.) Momentarily press HDG button on autopilot Mode Selector. Note that HDG light illuminates.

3.) Then rotate HDG knob on the HSI to the left then right. Note that control yokes follow movement of knob. Then return HDG bug to lubber line.

b. Vertical Speed ..... TEST

1.) Press VS button on autopilot programmer/computer. Note that VS light illuminates VS+0.

2.) Rotate the VS control knob to 500 FPM up (+5). After a short delay, the control yoke will move aft.

3.) Rotate the VS control knob to 500 FPM down (-5). After a short delay, the control yoke will move forward.

c. Altitude Hold .....TEST

1.) Depress ALT button on autopilot programmer/computer. Note that ALT annunciator comes on, VS annunciator goes out, and yoke does not move.

d. Overpower Test:

1.) Grasp control yoke and input left aileron, right aileron, nose up, and nose down to overpower autopilot. Overpower action should be smooth in each direction with no noise or jerky feel.

e. Radio Check:

1.) Turn on NAV1 radio, with a valid NAV signal, and select VLOC for display on the HSI.

2.) Use autopilot programmer/computer to engage NAV mode and move OBS so that VOR deviation needle moves left or right. Note that control yokes follow direction of needle movement.

f. Autopilot Disconnect Tests:

1.) Press Pilot A/P DISC/Trim Switch (control yoke). Note that the autopilot disengages. Move control yoke to confirm that pitch and roll control is free with no control restriction or binding.

2.) Repeat step using Copilot A/P DISC/Trim Switch.

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 programmer/computer.

Heading Mode

1. Begin by selecting a heading on HSI within 10° of the current airplane heading.
2. Press HDG button on autopilot programmer/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.

Autopilot 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 programmer/computer. Clockwise rotation will increase and counterclockwise 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.

Autopilot 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.

• Note •

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.

4. Vertical speed can be adjusted by rotating the VS knob on the programmer/computer. Clockwise rotation increases and counterclockwise 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.

Altitude Pre-Select

The altitude selector may be used to set up an altitude and vertical speed for intercept and capture. The altitude can be above or below the current altitude and the vertical speed chosen should be appropriate (climb or descent) for the altitude. Once selected, the altitude and vertical speed can be coupled to the autopilot by pressing and holding the VS button and then pressing the ALT button.

1. Press altitude selector DTA button to enter the data entry (ENT) mode.
2. Press altitude selector BARO button and adjust baro setting as necessary.
3. Press the ALT button to enter altitude select mode. The SEL annunciator will flash. Use the altitude selector knob to input the desired altitude in thousands of feet; for example, 5500 feet is entered as 5.5 and 10,500 is entered as 10.5.

4. Press DTA again to accept altitude entry, the ENT annunciator will go out and the SEL annunciator will stop flashing and illuminate steady indicating that the system is in the 'operate' mode.

   • Note •

   When the system is in the 'operate' mode, pressing the ALT button will cause the system to extinguish the SEL annunciator and display the baro corrected encoded altitude. Pressing the ALT button again will return the display to the selected altitude and the SEL annunciator will come on again.

5. Press altitude selector VS button and use altitude selector knob to input the desired vertical speed in 100 FPM increments. Turn the knob clockwise to increase vertical speed and CCW to decrease vertical speed. Positive (+) vertical speed indicates climb and negative (-) vertical speeds indicates descent. Any vertical speed from ±1 (100 FPM) to ±16 (1600 FPM) is selectable.

   • Note •

   If an altitude is selected that requires an opposite vertical speed from that selected, the system will automatically select the correct sign ('+' for climb, '-'for descent) and a vertical speed of 500 FPM.

6. After takeoff, press and hold the VS button and then press the ALT button to engage the autopilot VS mode and arm the autopilot altitude hold mode to capture and hold the selected altitude. If the ALR button is pressed, the system will provide alarms at 1000 feet and 300 feet from the selected altitude. As the airplane's altitude nears the selected altitude, the system automatically reduces vertical speed command in 100 FPM increments to provide a 300 FPM vertical speed at altitude capture. The system will make a smooth transition to the selected altitude and hold the selected altitude.

BARO Selection

Upon initial start-up, the altitude selector enters BARO select immediately after the self-test if it is receiving a valid altitude signal. The setting can easily be entered at this time. At other times, it is necessary to select the DTA entry and BARO modes in order to adjust the BARO setting. After initial start-up, the Baro setting can be changed at any time using the following procedure:

1. Press DTA button on altitude selector to enter the data entry mode. ENT will be annunciated.
2. Press BAR button to display the BARO setting. Repeated presses of the BAR button will toggle the display between millibars and inches Hg.

   • Note •

   The BARO setting can also be displayed by pressing the ALT button while in the 'operate mode' (i.e. SEL annunciator illuminated).

3. Rotate the selector knob (CW to increase setting or CCW to decrease setting). Only three digits are displayed for millibars: for a BARO setting of 952.8 mb, the display will indicate 952; and for a BARO setting of 1003.8 mb, the display will read 003. For inches Hg, the 1/100 decimal position will not be selectable or displayed; for example, a 29.92 inch Hg setting is input and displayed as 29.9.
4. Press DTA again to accept the entry.

Set Decision Height (DH)

1. Press altitude selector DTA button to enter the data entry (ENT) mode.
2. Press DH button to enter decision height with the display reading 0.0. Use the altitude selector knob to set the desired decision height to the nearest 100 ft above the desired decision height. For example, for a DH of 1160 feet, set 1200 feet.
3. Press altitude DTA button again to enter the selected DH. The display will show the selected decision height for approximately 5 seconds and then revert to ALT mode and display the altitude. The DH annunciator will remain illuminated indicating a decision height

is set. As the airplane approaches within approximately 50 feet of the decision height, the alert will sound and the DH light will flash. As the airplane passes through approximately 50 feet beyond the decision height, the alert will sound and the light will flash again.

• Note •

Pressing the DH button again will disable the DH function causing the DH annunciation to go out. Repeated activation of the DH button alternately activates and deactivates the DH mode.

Set Altitude Alert (ALR)

1. Press altitude selector ALR button to arm alert mode. The ALR annunciator will come on. Upon entering within 1000 feet of the altitude selected in ALT SEL, the altitude alert chime will sound in the cabin speaker and headphones and the ALR annunciator will flash. The chime will sound and the ALR annunciator will flash again as the airplane approaches within 300 feet of the selected altitude. If the airplane's altitude deviates ± 300 feet from the selected altitude, the chime will sound and the ALR annunciator will flash to indicate the condition.
2. To disable ALR, press the altitude selector ALR button again. The ALR annunciator will go out.

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 once to

intercept course in NAV mode or twice to intercept course in GPSS mode on the autopilot programmer/computer. 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 programmer/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 programmer/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.

Section 5 - Performance

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

Section 6 - Weight & Balance

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

Section 7 - Systems Description

Autopilot

The airplane is equipped with an S-Tec System 55X two-axis Automatic Flight Control System (Autopilot). The autopilot programmer/computer is installed in the center console radio stack.

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 roll axis computer receives signals from the HSI and the #1 NAV/GPS radio. The roll computer computes roll steering commands for turns, radio intercepts, and tracking. Roll axis

steering is accomplished by autopilot steering commands to the aileron trim motor and spring cartridge.

The pitch computer receives altitude data from the altitude encoder pressure transducer plumbed into the static system, an accelerometer, and glideslope information from the HSI and #1 NAV radio. Pitch axis command for altitude hold, vertical speed hold, and glideslope tracking is accomplished by pitch computer commands to the elevator trim motor.

The altitude selector provides altitude and vertical speed pre-select capability for the autopilot. A pre-programmed altitude and vertical speed can be input into the altitude selector/alerter and then coupled to the autopilot. The autopilot will then follow the selected vertical speed until the selected altitude is reached. Then the altitude selector will signal the autopilot to hold the selected altitude. The altitude selector/alerter receives uncorrected altitude data from the same altitude encoder used by the transponder. In addition to the preselect functions, the altitude selector provides altitude alert, decision height, and altitude readout.

28 VDC for autopilot and altitude selector/alerter is supplied through the 5-amp AUTOPILOT circuit breaker on the Essential Bus.

All Autopilot mode selection is performed by using the mode select buttons and VS knob on the autopilot programmer/computer in the center console. Annunciators in the programmer/computer display window annunciate modes. *Refer to Figure 1* for an illustration of the programmer/computer.

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.

HDG (Heading) Mode – When HDG is selected, the autopilot will engage the HDG mode, fly the airplane to, and hold the heading set on the HSI. Subsequent heading changes are made using the HDG knob on the HSI. 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 for smoother tracking and transitions. When GPSS is selected, the autopilot can be switched between heading and GPSS modes of operation. In the heading mode, the converter receives a heading error signal from the heading bug on the Horizontal Situation Indicator. GPSS converts this information and sends this heading error directly to the autopilot.

In the GPSS mode, the converter receives ground speed and bank angle digital signals that are calculated and converted to a commanded turn rate. The turn rate is then scaled and converted to a DC heading error signal that is compatible with the autopilot. The end result is an autopilot that can be directly coupled to the roll steering commands produced by the GPS Navigator, eliminating the need for the pilot to make any further adjustments to the HSI course arrow.

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 counterclockwise 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 counterclockwise rotation decreases rate of climb (or descent) 100 FPM for each 'click.' The maximum adjustment is ±1600 FPM.

Altitude Selector / Alerter

The altitude selector / alerter provides the autopilot with an altitude preselect function, a programmable vertical speed function, as well as provides altitude alert, decision height alert, and baro corrected altitude display. The altitude selector reads and decodes altitude information from the same altitude encoder that provides altitude information to the transponder. The decoded altitude is baro corrected and then compared to the selected altitude setting. When the decoded and baro corrected altitude matches the selected altitude, the altitude selector signals the autopilot to engage the ALT hold mode. The altitude select (ALT SEL) function is operable only when the transponder and encoder are operating and then both the autopilot ALT and VS modes are selected.

The altitude selector also provides a vertical speed signal to the autopilot pitch computer that is proportional to the amplitude and direction of the selected or computed vertical speed. This signal is not used by the autopilot until the autopilot VS mode is engaged. When VS is engaged, the autopilot compares the selected vertical speed signal with the existing vertical speed derived from the autopilot's altitude transducer and maneuvers the airplane to attain the selected vertical speed. The Vertical Speed (VS) select portion of the altitude selector / alerter is showing a selected vertical speed (VS annunciator on) and the autopilot Vertical speed (VS) mode is engaged.

The altitude selector / alerter also provides Decision Height (DH) and Altitude Alert (ALR) selection. All selector function selection is made through the altitude selector/alerter. Available functions are as follows:

DTA (Data) – The data entry button is used to select data entry mode. The first time the DTA button is pressed the selector will enter the data entry mode, the ENT annunciator will come on, and the SEL annunciator will flash to indicate the system is ready to accept an altitude entry. To change baro (BAR) correction, Decision Height (DH), or Vertical Speed (VS), press the appropriate button on the selector and rotate the input knob at the right of the display CW to increase the displayed numbers and CCW to decrease the displayed numbers. Pull the knob out and rotate as required to change the decimal numbers.

When the system is in the ENT mode, it is not coupled to the autopilot. In this mode, the autopilot will hold the last vertical speed selected.

• Note •

It is not necessary to enter the DTA mode to change the vertical speed, if vertical speed is coupled to the autopilot. If this is the case, vertical speed changes can be made by rotating the input knob as required to obtain the new vertical speed.

While in this mode, pressing DTA a second time will toggle the system to ‘operate’ mode. Repeatedly pressing the DTA button will toggle the system between ENT and ‘operate’ mode.

BAR (baro) – In this mode, the baro setting used by the altitude selector may be changed. When the Altitude Selector / Alerter is initially powered, the BARO mode is displayed automatically at the completion of the self-test. At other times, it is necessary to enter the data entry mode by pressing the DTA button and then inputting a new baro correction. Pressing the DTA button a second time will return the system to the ‘operate’ mode.

ALT (Altitude) – The ALT button has two functions: Altitude Pre-select and Altitude readout.

Pre-select - When the ALT button is pressed while the system is in the Data Entry (DTA) mode the SEL annunciator will flash and a new altitude can be selected by rotating the input knob CW to increase altitude and CCW to decrease altitude in thousands of feet. Pull the knob to input altitude in hundreds of feet. For example: 5500 feet is input as 5.5. Pressing DTA again will return the system to 'operate' mode and the SEL annunciator will stop flashing with the ALT annunciator remaining on. When a preselect altitude is coupled to the autopilot by pressing and holding the VS button and then pressing the ALT button, the airplane will fly at the selected vertical speed until the selected altitude is intercepted. At that time the altitude selector will command the autopilot to engage altitude hold.

Readout – When the ALT button is pressed in the 'operate' mode, the SEL annunciator will go out and the display will show the baro corrected encoder altitude. Repeated pushes of the ALT button will alternately display baro corrected encoder altitude and pre-selected altitude.

ALR (Alert Mode) – The ALR button enables the altitude alert system in conjunction with the ALT SEL mode. Pressing the ALR switch illuminates the ALR annunciator indicating arming of the alert mode. Upon entering within 1000 feet of the altitude selected in ALT SEL, the altitude alert chime will sound in the cabin speaker and headphones and the ALR annunciator will flash. The chime will sound and the ALR annunciator will flash again as the airplane approaches within 300 feet of the selected altitude. If the airplane's altitude deviates ± 300 feet from the selected altitude, the chime will sound and the ALR annunciator will flash to indicate the condition. The ALR function can be alternately enabled and disabled by repeatedly pressing the ALR button.

DH (Decision Height) – The DH button allows entry and arming of altitude alerting at a set decision height. To set a DH, first enter the data (DTA) entry (ENT) mode, press the DH button, and rotate the selector knob to input the desired decision height to the nearest 100 feet above the specified decision height. For example, for a DH of 1160 feet set 1.2 (1200 feet). After setting the desired decision height, press the DTA button again to accept the entered DH. The display will show the selected DH for approximately 5 seconds and then revert to Alt mode until the selected DH is reached during descent. The DH annunciator will remain illuminated indicating a decision height is set. As the airplane approaches within approximately 50 feet of the decision height, the alert will sound and the DH light will flash. As the airplane passes through approximately 50 feet beyond the decision height, the alert will sound and the light will flash again. Pressing the DH button again will disable the DH function causing the DH annunciation to go out. Repeated activation of the DH button alternately activates and deactivates the DH mode.

VS (Vertical Speed) – At initial start up, after self-test, pressing the Altitude Selector / Alerter VS button enables vertical speed selector mode. The initial vertical speed will be set at + 2 indicating a climb at 200 feet per minute. Rotating the selector input knob will change the selected vertical speed in 100 FPM increments. Rotate CW to increase vertical speed or CCW to Decrease vertical speed. The maximum vertical speed is ± 1600 FPM (± 16). Zero vertical speed is not selectable.

The vertical speed display is the only Altitude Selector / Alerter function available in the ‘operate’ mode. Therefore, vertical speed changes can be commanded by rotating the selector input knob. Vertical speeds can also be entered in the data (DTA) entry (ENT) mode by pressing the VS button and using the selector input knob to enter a new vertical speed. The DTA button must be pressed again to accept the new vertical speed and enter the ‘operate’ mode.

The Altitude Selector / Alerter VS mode can be disabled by pressing the Altitude Selector / Alerter MAN button.

MAN (Manual) – Vertical Speed selection can be completely decoupled from the autopilot system by depressing the Altitude Selector / Alerter MAN button.

Pilot's Operating Handbook and

FAA Approved Airplane Flight Manual

Supplement
For

S-Tec System 55SR Autopilot

When the S-Tec System Fifty Five SR (55SR) Autopilot is installed in the Cirrus Design SR20, serials 1337 and subsequent, this Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Revision dated Revision 02: 07-18-05 supersedes and replaces Revision 01 of this supplement dated 12-07-04.

FAA Approved Joseph C Mieso Date 18 JUL 2005

for Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

This airplane is equipped with an S-TEC System 55SR Autopilot. The System 55SR autopilot is a two-axis autopilot system. The system consists of a flight guidance programmer/computer, altitude transducer, turn coordinator, and primary flight display (PFD). Mode selection is made on the programmer/computer panel. A button on each control yoke handle may be used to disengage the autopilot. The autopilot makes roll changes through the aileron trim motor and spring cartridge and makes pitch changes for altitude hold through the elevator trim motor. The autopilot operates on 28 VDC supplied through the 5-amp AUTOPILOT circuit breaker on the Essential Bus. The S-Tec System 55SR Autopilot features:

- Heading Hold and Command.
- NAV/LOC/GPS tracking; HI and LO sensitivity.
- Altitude Hold and Command.
- Vertical Speed Hold and Command.
- GPS Steering (GPSS) for smoother turns onto a course or during course tracking.

Refer to S-Tec System Fifty-Five SR Autopilot Pilot's Operating Handbook (POH), P/N 87127 dated 01 September 2003 or later revision for full operational procedures and description of implemented modes.

• Note •

The SR20 implementation of the System 55SR Autopilot does not utilize the optional remote annunciator, roll servo, yaw servo. Therefore, all references to these items in the S-Tec System 55SR POH shall be disregarded. Additionally, this installation does not utilize a CWS (Control Wheel Steering) switch or an AUTOPILOT MASTER switch.

This installation utilizes the airplane's roll trim actuator to affect steering changes. Therefore, the automatic trim function of the System 55SR is not implemented. Disregard all references in the S-Tec System 55SR POH to this feature.

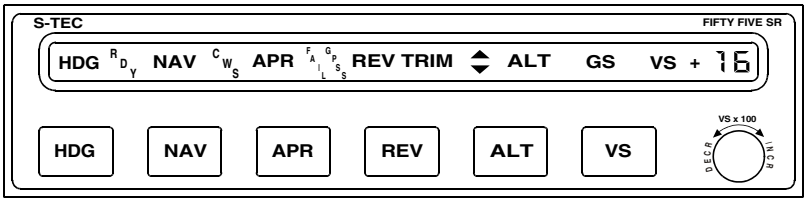
Roll information is displayed on the PFD. Autopilot Flight Director is not implemented in this installation.

Section 2 - Limitations

1. Autopilot operation is prohibited above 180 KIAS.
2. The autopilot must not be engaged for takeoff or landing.
3. The autopilot must be disengaged for missed approach, go-around, and balked landing.
4. Flaps must be set to 50% for autopilot operation in Altitude Hold at airspeeds below 95 KIAS.
5. Flap deflection is limited to 50% during autopilot operations.
6. The autopilot must be disconnected in moderate or severe turbulence.
7. Minimum engage height for the autopilot is 400 ft AGL.
8. Minimum speed with the autopilot engaged is $1.2V_S$ for the given configuration.
9. For VOR/GPS and ILS glideslope and localizer intercept, capture, and tracking, the following limitations apply:
    a. The autopilot must be disengaged no later than 100 feet below the Minimum Descent Altitude.
    b. The autopilot must be disconnect during approach if course deviation exceeds 50%. The approach should only be continued by “hand-flying” the airplane.
    c. The autopilot must be disengaged at the decision height.
    d. 12 knot maximum crosswind component between the missed approach point and outer marker.
    e. The intercept of the localizer shall occur at least 5 miles outside of the outer marker.
    f. If the crosswind component is greater than 12 knots and less than 17 knots, the intercept shall occur at least 10 miles outside of the outer marker.
    g. The intercept angle shall be no greater than a 45-degree intercept.
    h. The ILS is flown at normal approach speeds, and within any STC or TC speed constraints and as defined in this flight manual.

i. The flaps should be extended in the approach configuration prior to the Outer Marker. No further changes in the flap configuration should be made throughout the autopilot-coupled approach.

10. The S-Tec System 55SR Autopilot Pilot's Operating Handbook (POH), P/N 87127 dated 01 September 2003 or later, must be carried in the airplane and available to the pilot while in flight.



SR20_FM09_1996

Figure - 1
System Fifty-Five SR Autopilot

Section 3 - Emergency Procedures

Autopilot Malfunction

Refer to Electric Trim/Autopilot Failure procedure in the SR20 POH. Do not reengage the autopilot until the malfunction has been identified and corrected. The autopilot may be disconnected by:

1. Pressing the A/P DISC/Trim switch on the control yoke handle.
2. Pulling the AUTOPILOT circuit breaker on Essential Bus.

Altitude lost during a roll axis autopilot malfunction and recovery:

Flight Phase	Bank Angle	Altitude Loss
Climb	30°	None
Cruise	55°	100 ft
Descent	55°	120 ft
Maneuvering	10°	None
Approach	0°	20 ft

Altitude lost during a pitch axis autopilot malfunction and recovery:

Flight Phase	Altitude Loss
Cruise	200 ft

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, execute a go-around or missed approach as appropriate. Inform ATC of problem. Do not try to troubleshoot until a safe altitude and maneuvering area are reached or a safe landing is completed.

Annunciation	Condition	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 error over selected vertical speed. Usually occurs in climb.	Reduce VS command and/or adjust power as appropriate.

Section 4 - Normal Procedures

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

• WARNING •

The pilot must properly monitor and control the engine power to avoid stalling the airplane in autopilot altitude hold or vertical speed modes.

Autopilot Pre-Flight Test

1. Battery 1 Master Switch ..... ON
2. Transponder ..... ON
3. Avionics Power Switch ..... ON

   Note that all autopilot annunciator illuminate. After about 5 seconds, all lights will go out. When the turn coordinator gyro has reached operational RPM, the RDY annunciator will come on.

4. Autopilot Tests

   a. Heading Mode .....TEST

      1.) Momentarily press HDG button on autopilot Mode Selector. Note that HDG light illuminates.

      2.) Select and rotate the HDG bug knob on the PFD to the left then right. Note that control yokes follow movement of knob.

   b. Activate a GPS flight plan or waypoint on the GPS navigator (GPS 1).

   c. Press and release the GPSS/HDG switch. HDG will go out and GPSS will flash. Note that the HDG bug will no longer move the control yokes.

   • Note •

   The GPSS requires a ground speed component to function, therefore the GPSS function cannot be ground tested.

   d. Press and release the GPSS/HDG switch. GPSS will go out and HDG will come on.

e. Altitude Hold ..... TEST

1.) Depress ALT button on autopilot programmer/computer. Note that ALT annunciator comes on, VS annunciator goes out, and yoke does not move.

f. Overpower Test:

1.) Grasp control yoke and input left aileron, right aileron, nose up, and nose down to overpower autopilot. Overpower action should be smooth in each direction with no noise or jerky feel.

g. Radio Check:

1.) Turn on NAV1 radio, with a valid NAV signal, and select VLOC for display on the PFD.

2.) Use autopilot programmer/computer to engage NAV mode and move Course Select knob so that VOR deviation needle moves left or right. Note that control yokes follow direction of needle movement.

h. Autopilot Disconnect Tests:

1.) Press Pilot A/P DISC/Trim Switch (control yoke). Note that the autopilot disengages. Move control yoke to confirm that pitch and roll control is free with no control restriction or binding.

2.) Repeat step using Copilot A/P DISC/Trim Switch.

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 programmer/computer.

Heading Mode

1. Begin by selecting a heading on PFD within 10° of the current airplane heading.
2. Press HDG button on autopilot programmer/computer. The HDG annunciator will illuminate and the airplane will turn to the selected heading.

3. Use the HDG bug to make heading changes as desired.

Autopilot 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 programmer/computer. Clockwise rotation will increase and counterclockwise 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.

Autopilot 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.

   • Note •

   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.

4. Vertical speed can be adjusted by rotating the VS knob on the programmer/computer. Clockwise rotation increases and counterclockwise 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.

GPS Tracking and GPS Approach

1. Begin with a reliable GPS signal selected on the NAV receiver.
2. Select desired course on the PFD 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 once to intercept course in NAV mode or twice to intercept course in GPSS mode on the autopilot programmer/computer. 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 25% standard rate.

4. For increased sensitivity during GPS approach or if desired for enroute tracking, press the APR button on the autopilot programmer/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 the PFD 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 25% of a standard rate turn.

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

Section 5 - Performance

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

Section 6 - Weight & Balance

There is no change to the airplane weight & balance when the S-Tec System 55SR autopilot is installed.

Section 7 - Systems Description

Autopilot

The airplane is equipped with an S-Tec System 55SR two-axis Automatic Flight Control System (Autopilot). The autopilot programmer/computer is installed in the center console radio stack.

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 roll axis computer receives signals from the PFD and the NAV/GPS radio. The roll computer computes roll steering commands for turns, radio intercepts, and tracking. Roll axis steering is accomplished by autopilot steering commands to the aileron trim motor and spring cartridge.

The pitch computer receives altitude data from the altitude encoder pressure transducer plumbed into the static system, the PFD, and #1 NAV radio. Pitch axis command for altitude hold is accomplished by pitch computer commands to the autopilot elevator trim motor.

28 VDC for the autopilot is supplied through the 5-amp AUTOPILOT circuit breaker on the Essential Bus.

All Autopilot mode selection is performed by using the mode select buttons and VS knob on the autopilot programmer/computer in the center console. Annunciators in the programmer/computer display window annunciate modes. *Refer to Figure 1* for an illustration of the programmer/computer.

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.

NAV (Heading) Mode – When HDG is selected, the autopilot will engage the HDG mode, fly the airplane to, and hold the heading set on the PFD. Subsequent heading changes are made using the HDG bug knob on the PFD. 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 for smoother tracking and transitions. When GPSS is selected, the autopilot can be switched between heading and GPSS modes of operation. In the heading mode, the converter receives a heading error signal from the heading bug on the Horizontal Situation Indicator. GPSS converts this information and sends this heading error directly to the autopilot.

In the GPSS mode, the converter receives ground speed and bank angle digital signals that are calculated and converted to a commanded turn rate. The turn rate is then scaled and converted to a DC heading error signal that is compatible with the autopilot. The end result is an autopilot that can be directly coupled to the roll steering commands produced by the GPS Navigator, eliminating the need for the pilot to make any further adjustments to the PFD course arrow.

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.

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 counterclockwise 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 counterclockwise rotation decreases rate of climb (or descent) 100 FPM for each 'click.' The maximum adjustment is ±1600 FPM.

Intentionally Left Blank

Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for

Honeywell KGP 560 Terrain/ Awareness Warning System

When the Honeywell KGP 560 Terrain Awareness and Warning System is installed in the Cirrus Design SR20, this Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Revision dated Revision 01: 12-15-07 supersedes and replaces the original release of this supplement dated Original: 07-03-04.

FAA Approved Joseph C Mieso Date 15 Dec 2007

for Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

The airplane is equipped with an Honeywell KGP 560 Terrain Awareness and Warning System that performs the functions of a Class C Terrain Awareness and Warning System (TAWS) in accordance with TSO C151b.

Incorporating much of the technology found in TAWS for air transport aircraft, the KPG 560 supports:

- Alerting for premature descent.
- Alerting for excessive rate of climb/descent.
- Altitude callout (500 ft) and alerting within 5 nm of 2000 ft public runways.
- Look-ahead algorithms and integrated terrain/obstacle database.

The system consists of the 560 GA-EGPWS Processor mounted on the underside of the pilot-side kickplate, a Terrain/Obstacle Database integral to the processor, the Configuration Module integral to the system's wire harness, and the TAWS annunciator panel mounted on the lower LH portion of the instrument panel.

The KGP 560 receives data from the GPS sensor, Transponder, Primary Flight Display, and the Multifunction Display (MFD). Aural alerts are communicated to the pilot via the GMA 340 Audio Panel. To enhance the situational awareness to the pilot, color-coded terrain display is interfaced on the MFD.

For specific MFD operational details *refer to the Avidyne FlightMax EX5000C Pilot's Guide*.

For specific KGP 560 operational details, *refer to the KGP 560 & 860 EGPWS Pilot's Guide, P/N 006-18254-001, Revision 04 or later.*

Section 2 - Limitations

1. Do not use the Terrain Awareness Display for navigation of the aircraft. The KGP 560 Terrain Awareness and Warning System is intended to serve as a situational awareness tool only and may not provide the accuracy fidelity on which to solely base terrain or obstacle avoidance maneuvering decisions.

Section 3 - Emergency Procedures

Off-Airport Landings

1. For ditching or other off-airport landings, inhibit the Terrain Awareness System functions by selecting the TERR INHIBIT switch on the annunciator panel to prevent unwanted aural alerting.

Section 4 - Normal Procedures

• Note •

Only vertical maneuvers are recommended responses to warnings and alerts unless operating in VMC or the pilot determines, using all available information and instruments, that a turn, in addition to the vertical escape maneuver, is the safest course of action.

During certain operations, warning thresholds may be exceeded due to specific terrain or operating procedures. During day VFR flight, these warnings may be considered as a cautionary.

If the TAWS issues an alert when the Terrain Awareness Display Page is not selected, a pop up message will appear on the active display page of the MFD. To clear the alert, the pilot must acknowledge the pop up message by pressing the Soft Key next to the displayed “OK”.

Pilots are authorized to deviate from their current air traffic control (ATC) clearance to the extent necessary to comply with a TAWS warning.

Activate TAWS

• Note •

If the aircraft horizontal position derived from the Garmin Navigator (GPS 1) is invalid, TAWS will be inoperative and the TERR INOP annunciator will illuminate.

1. SKYWATCH/TAWS Circuit Breaker ..... IN
2. MFD Circuit Breaker ..... IN
3. Battery Master Switch ..... ON
4. Avionics Power Switch ..... ON
5. Verify TERR INOP Annunciator ..... OFF
6. At MFD prompt, any Key ..... PRESS
7. MFD Soft Keys ..... SET to TAWS

Response To Ground Proximity Warnings

Aural "PULL UP" Warning
Red TERR WARN Annunciation

1. Level the wings, simultaneously adding full power.
2. Increase pitch attitude to 15 degrees nose up.
3. Adjust pitch attitude to ensure terrain clearance while respecting stall warning. If flaps are extended, retract flaps to the UP position.
4. Continue climb at best angle of climb speed (V_X) until terrain clearance is assured.

Aural "SINK RATE" Warning
Aural "DON'T SINK" Warning
Amber TERR CAUT Annunciation

1. Initiate appropriate corrective action to remove the cause of the warning.

Response To Awareness Alerts

Aural "TERRAIN AHEAD" Alert
Aural "OBSTACLE AHEAD" Alert
Amber TERR CAUT Annunciation

1. Take positive corrective action until the alert ceases. Stop descending, or initiate a climb turn as necessary, based on analysis of all available instruments and information.

Aural "TERRAIN AHEAD; PULL UP" Alert
Aural "OBSTACLE AHEAD; PULL UP" Alert
Red TERR WARN Annunciation

1. Level the wings, simultaneously adding full power.
2. Increase pitch attitude to 15 degrees nose up.
3. Adjust pitch attitude to ensure terrain clearance while respecting stall warning. If flaps are extended, retract flaps to the UP position.
4. Continue climb at best angle of climb speed (V_X) until terrain clearance is assured.

Deactivate TAWS

1. SKYWATCH/TAWS Circuit Breaker..... PULL

   or

2. Avionics Power Switch .....OFF

Section 5 - Performance

No Change.

Section 6 - Weight & Balance

Installation of the Honeywell KGP 560 Terrain Awareness and Warning System adds the following optional (Sym = O) equipment at the weight and arm shown in the following table.

ATA / Item	Description	Sym	Qty	Part Number	Unit Wt	Arm
34-01	KGP 560 Processor	O	1	15963-001	1.25	117.0

Section 7 - Systems Description

The Honeywell KGP 560 Terrain Awareness and Warning System compares GPS information from the Garmin Navigator (GPS 1) to the integrated Terrain/Obstacle Database to produce a real-time model of the surrounding terrain. This “virtual” picture is then sent to the MFD to provide enhanced situational awareness to the pilot.

The system consists of the 560 GA-EGPWS Processor mounted on the underside of the pilot-side kickplate, a Terrain/Obstacle Database integral to the processor, the Configuration Module integral to the system’s wire harness, and the TAWS annunciator panel mounted on the lower LH portion of the instrument panel.

The 560 GA-EGPWS Processor is powered by 28 VDC through the 5-amp SKYWATCH/TAWS circuit breaker on the Avionics Nonessential Bus.

For a additional system information, *refer to the KGP 560 & 860 EGPWS Pilot’s Guide, P/N 006-18254-001, Revision 04 or later*.

System Constraints

- If there is no terrain data in the database for a particular area, then TAWS alerting is not available for that area. The affected area on the Terrain Awareness Display Page will be colored a MAGENTA dot pattern.
- If the TAWS has been inhibited (e.g. the pilot selected TERR INHIBIT) the system will not give aural alerts. The MFD will display a purple message block with cyan text reading, “TAWS Inhibited”.
- The TAWS will not be available and the TERR INOP annunciator will illuminate if any of the following components are inoperative: MFD, PFD, GPS 1, Transponder, or Attitude Encoder.

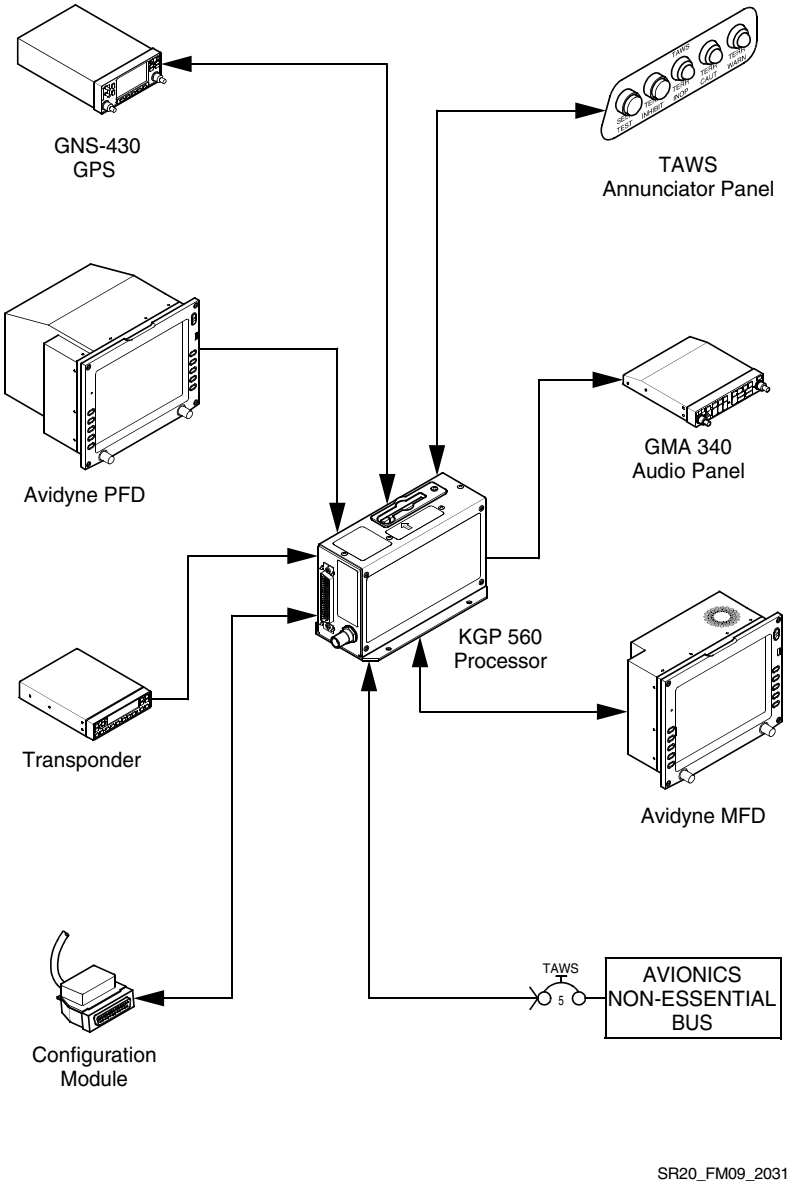


Figure - 1
Honeywell KGP 560 TAWS Simplified Schematic

TAWS Annunciator Panel

TAWS terrain annunciations and control functions are incorporated into the Annunciator Panel. The panel consists of a momentary pushbutton switch (SELF TEST), an illuminated pushbutton switch (TERR INHIBIT), and three LEDS for Terrain Warning (TERR WARN), Terrain Caution (TERR CAUT), Terrain Inoperative (TERR INOP).

- SELF TEST - Provides test function for the TAWS.
- TERR INHIBIT - To inhibit nuisance or unwanted warnings at airports that are not in the system database, the pilot may select the TERR INHIBIT switch. Although selection will inhibit all TAWS visual and aural alerts, the Terrain Awareness Display will remain functional with the message “Warnings Inhibited” displayed on the MFD. When activated the switch will illuminate amber.
- TERR INOP - Indicates the TAWS inoperative. When activated the LED will illuminate amber.
- TERR CAUT - Indicates a possible terrain or obstacle conflict within 40-60 seconds. When activated the LED will illuminate amber.
- TERR WARN - Indicates a possible terrain or obstacle conflict within 30 seconds. When activated the LED will illuminate red.

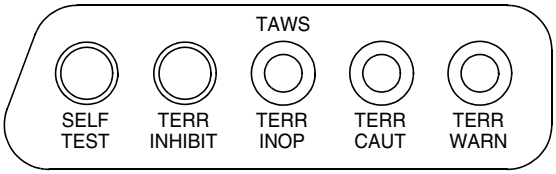
The annunciators are dimmed via the instrument panel lighting dimmer switch. The TAWS annunciator panel is powered by 28 VDC through the 2-amp ANNUN circuit breaker on the Essential Bus

Alert Priority

When any of the TAWS aural alerts are in progress, all aural TRAFFIC alerts are inhibited.

Advisory Callout

The advisory callout “*FIVE HUNDRED*”, occurs at approximately 500 feet AGL.



SR20_FM09_2033

Annunciator	Color	Function
SELF TEST	N/A	Provides test function for TAWS
TERR INHIBIT	AMBER	All TAWS alerting functions inhibited
TERR INOP	AMBER	Indicates TAWS inoperative
TERR CAUT	AMBER	Possible terrain or obstacle conflict within 40-60 seconds
TERR WARN	RED	Possible terrain or obstacle conflict within 30 seconds

Figure - 2
TAWS Annunciator Panel

MFD Terrain Awareness Display

• WARNING •

Do not use the Terrain Awareness Display for navigation of the aircraft. The TAWS is intended to serve as a situational awareness tool only and may not provide the accuracy fidelity on which to solely base terrain or obstacle avoidance maneuvering decisions.

To select the Terrain Awareness Display Page on the MFD, rotate the page knob to TAWS.

Terrain and obstacle alerts are the most critical situations displayed by TAWS. There are two levels of alerts:

- **Caution Alert** - Possible terrain or obstacle conflict within 40-60 seconds. When triggered, the terrain or obstacle that caused the alert is displayed in bright yellow. In addition, a message describing the nature of the alert is presented in the MFD message bar.
- **Warning Alert** - Possible terrain or obstacle conflict within 30 seconds. When triggered, the terrain or obstacle that caused the alert is displayed in bright red. In addition, a message describing the nature of the alert is presented in the message bar

When a caution or warning alert is active, the display image surrounding the target is enlarged somewhat to allow the terrain or obstacle to be better seen on the display.

If a terrain or obstacle alert occurs while a page other than Terrain Awareness Display Page is being displayed, a terrain or obstacle alert message is displayed in the Message Bar. When the pilot acknowledges this message, the MFD will automatically switch to the Terrain Awareness Display Page.

The message bar will be removed from the display when the TAWS is no longer in alert status, or if the pilot acknowledges the message from the Terrain Awareness Display Page.

Geometric Altitude versus Measured Sea Level

An indication of MSL-G or Geometric Altitude may appear on the left side of the MFD indicating the height above Measured Sea Level (MSL) calculated from the GPS.

This data serves as the reference for color-coding for the Terrain Awareness Display Page and as an input to the TAWS Look-Ahead algorithm. Because it is derived from GPS, Geometric Altitude may differ from corrected barometric altitude. Therefore, Geometric Altitude may be in error by as much as 100 ft and should not be used for navigation. MSL-G is presented solely to provide the pilot additional situational awareness regarding the true MSL height upon which the TAWS Terrain Display and Alerting is based.

Self Test

Proper operation of the TAWS can be verified when the aircraft is on the ground as follows:

1. Select the TAWS page on the MFD
2. Clear all caution messages in the lower right corner
3. Ensure that the TERR INHIBIT switch is not engaged, and momentarily push the SELF TEST switch:
    a. The amber TERR INOP light should be illuminated.
    b. The amber TERR INOP light should extinguish.
    c. The red TERR WARN light should be illuminated.
    d. An aural “EGPWS SYSTEM OK” is enunciated over cockpit speaker.
    e. The red TERR WARN light should extinguish.
    f. The amber TERR CAUT light should be illuminated.
    g. The amber TERR CAUT light should extinguish.
    h. A terrain self-test pattern should appear on the MFD.
    i. The terrain self-test should disappear after several sweeps of the terrain display.
    j. A TAWS Sensor Self Test Caution message should appear in the lower right comer of the MFD.
4. Acknowledge and clear this caution.

Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for

Avidyne EMax™ Engine Instrumentation

When the Avidyne EMax™ Engine Instrumentation system is installed in the Cirrus Design SR20, this POH Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Revision dated Revision 01: 12-15-07 supersedes and replaces the original release of this supplement dated Original: 10-12-05.

FAA Approved Joseph C Mieso Date 15 Dec 2007

for Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

EMax™ Engine Instrumentation provides the pilot with engine parameters depicted on simulated gauges and electrical system parameters located in a dedicated region within in the EX5000C MFD display.

Figure - 1
Avidyne EMax™ Engine Instrumentation

Section 2 - Limitations

No Change.

Section 3 - Emergency Procedures

No Change.

Section 4 - Normal Procedures

No Change.

Section 5 - Performance

No Change.

Section 6 - Weight & Balance

Installation of the Avidyne Engine Instruments adds the following optional (Sym = O) equipment at the weight and arm shown in the following table.

ATA / Item	Description	Sym	Qty	Part Number	Unit Wt	Arm
34-03	Engine Sensors	O	11	-	1.0	75.0
34-04	Engine Sensor Unit	O	1	14843-001	1.1	118.0
34-05	Engine Sensor Harness	O	1	15030-001	0.9	92.0
34-06	Engine Sensor Cabin Harness	O	1	15032-001	2.1	108.0

Section 7 - System Description

An Engine Sensor Unit interfaces (SIU) with engine-mounted sensors, some of which are shared with the standard airplane gauges, and provide data to the MFD for display.

Airplanes equipped with EMax™ Engine Instrumentation display all engine settings and parameters on a dedicated MFD engine monitor page. The MFD also displays engine and fuel data in data blocks on the full-screen moving map display. In the event of an exceedence, each out-of-limit parameter is highlighted on the screen for immediate attention. The engine monitor also includes data capture capability,

providing full-time recording of critical engine performance parameters.

The Engine Instruments system is powered by 28 VDC supplied through the 5-amp Engine Instruments breaker on the Main Bus 1.

Refer to Avidyne FlightMax EX5000C Pilot's Guide for a more complete description of EMax Engine Instruments, its operating modes, and additional detailed operating procedures.

Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for

Avidyne CMax™ Electronic Approach Charts

When the Avidyne CMax™ Electronic Approach Charts system is installed in the Cirrus Design SR20, this POH Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Revision dated Revision 01: 12-15-07 supersedes and replaces the original release of this supplement dated Original: 10-12-05.

FAA Approved Joseph C Mieso Date 15 Dec 2007

for Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

Avidyne CMax™ Electronic Approach Charts allows the pilot to view terminal procedure chart data on the EX5000C MFD. If the chart is geo-referenced, an ownship symbol and flight plan legs can be overlaid on the chart to further enhance the pilot's situational awareness. Most approach charts and airport diagrams are geo-referenced; most arrival, departure, and miscellaneous charts are not.

Figure - 1
Avidyne CMax™ Electronic Approach Charts

Section 2 - Limitations

1. Do not use the CMax Approach Charts function for navigation of the aircraft. The CMax Approach Charts function is intended to serve as a situational awareness tool only.
2. The Avidyne FlightMax EX5000C Pilot's Guide, P/N 600-00108-000, Revision 03 or later, must be available to the pilot during all flight operations.

Section 3 - Emergency Procedures

Loss of CMax™ Electronic Approach Charts

- In the event CMax Approach Charts cannot be displayed on the MFD, refer to back-up approach data such as paper copies or a laptop containing the JeppView software and data.
- If no back-up data is available contact Air Traffic Control for approach information.

Section 4 - Normal Procedures

• Note •

Back-up approach charts for CMax are not required. However, back-up approach data for departure, destination, and alternate field is recommended. Reference CMax Description in this supplement.

Section 7 - System Description

The CMax installation is entirely software dependant. No additional hardware is required.

• Note •

Back-up approach charts for CMax are not required. However, back-up approach data for departure, destination, and alternate field is recommended. Back-up approach data could be printed copies of published approach charts, a laptop containing the JeppView software and data, or notes providing the approach vertical data (the Garmin 430 can display lateral approach information).

Refer to Avidyne FlightMax EX5000C Pilot's Guide, for a more complete description of CMax Approach Charts, its operating modes, and additional detailed operating procedures.

Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for

XM Satellite Weather System

When the XM Satellite Weather System system is installed in the Cirrus Design SR20, this POH Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Revision dated Revision 01: 12-15-07 supersedes and replaces the original release of this supplement dated Original: 10-12-05.

FAA Approved Joseph C Mieso Date 15 Dec 2007

for Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

The XM Satellite Weather System enhances situational awareness by providing the pilot with real time, graphical weather information depicted on the MAP page of the EX5000C MFD display.

Figure - 1
XM Satellite Weather Overlay

Section 2 - Limitations

1. Do not use the XM Satellite Weather System for navigation of the aircraft. The XM Satellite Weather System is intended to serve as a situational awareness tool only.

Section 3 - Emergency Procedures

No Change.

Section 4 - Normal Procedures

No Change.

Section 5 - Performance

No Change.

Section 6 - Weight & Balance

Installation of the XM Satellite Weather System adds the following optional (Sym = O) equipment at the weight and arm shown in the following table.

ATA / Item	Description	Sym	Qty	Part Number	Unit Wt	Arm
34-07	XM Receiver	O	1	16665-001	1.7	114.0

Section 7 - System Description

The XM Satellite Weather System enhances situational awareness by providing the pilot with real time, graphical weather information. The XM antenna, integrated with the COM1 antenna, receives weather information from dual-redundancy satellites. This signal is sent to the XM receiver, installed in the co-pilot side of the instrument console, which interprets and overlays the weather data on the MAP page of the EX5000C MFD.

Once activated, the XM Satellite Weather System will overlay the following weather data on the EX5000C MFD:

- NEXRAD Radar

- METARs
- SIGMETs
- AIRMETs
- TFRs
- Lightning Strikes

The XM Satellite Weather System is powered by 28 VDC supplied through the 3-amp Weather/Stormscope breaker on the Non-Essential Bus.

Refer to Avidyne FlightMax EX5000C Pilot's Guide for a more complete description of XM Satellite Weather System, its operating modes, and additional detailed operating procedures.

Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for

Avidyne Flight Director

When the Avidyne Flight Director is installed in the Cirrus Design SR20, this POH Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Revision dated Revision 02: 12-15-07 supersedes and replaces the original release of this supplement dated Revision 01: 08-15-07.

FAA Approved Joseph C Mieso Date 15 Dec 2007

for Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

The Flight Director system enhances situational awareness by reducing cockpit workload through providing a visual cue for the pilot to follow as indicated by the PFD's Flight Director Steering Command Bar. Through turning or pitching the airplane as "directed" by the Steering Command Bar, the pilot will follow the necessary course to arrive at a programmed destination.

The Avidyne system software version for this installation is 530-00159-XXX, where X can be any digit from 0 to 9.

Avidyne Primary Flight Display with Flight Director
Figure - 1

Section 2 - Limitations

1. The Flight Director System integrates with the Primary Flight Display (PFD) System. Adherence to the PFD imitations in the basic SR20 Pilot's Operating Handbook is mandatory.
2. The Avidyne FlightMax Entegra-Series PFD Pilot's Guide, P/N 600-00142-000, Revision 03, or latest revision, must be available to the pilot during all flight operations.

Section 3 - Emergency Procedures

No Change.

Section 4 - Normal Procedures

No Change.

Section 5 - Performance

No Change.

Section 6 - Weight & Balance

No Change.

Section 7 - System Description

Fully integrated with the S-Tec System 55X Autopilot, the Flight Director system replaces the "flying W" aircraft reference symbol on the PFD with the Flight Director Steering Command Bars and Wedge.

The system consists of two lighted push-buttons installed on the upper, LH side of the instrument panel and associated relays and wiring between the PFD and autopilot. The remaining portion of the Flight Director system is entirely software dependant.

When a vertical mode of the autopilot is being used, a set of flight director command bars will indicate the required steering of the aircraft to achieve the commanded tracking from the autopilot. In autopilot mode, "AP" will be in the autopilot annunciation field, the command bars will be visible and magenta and the aircraft should track the bars.

In flight director only mode, "FD" will be displayed in the autopilot annunciation field, the command bars will be visible and green, and

the pilot is expected to actuate the flight controls as required to track the bars.

The following describes push-button annunciation and related Autopilot and Flight Director status:

No Annunciation	• Autopilot off. *or* • Autopilot not active in either roll or pitch control.
Green **AP ON** Annunciation	• Autopilot active in roll and/or pitch control. • If Autopilot active in roll and pitch control, “AP” annunciation appears on top edge of PFD, and Flight Director Steering Command Bars MAGENTA.
Amber **AP OFF** **FD ON** Annunciation	• Autopilot uncoupled. • If Autopilot active in roll and pitch control, Flight Director ON, “FD” annunciation appears on top edge of PFD, and Flight Director Steering Command Bars GREEN.

The Flight Director system is powered by 28 VDC through the 5-amp AUTOPILOT circuit breaker on the Essential Bus.

Refer to Avidyne FlightMax Entegra-Series PFD Pilot’s Guide, for a more complete description of the Flight Director, its operating modes, and additional detailed operating procedures.

**Pilot's Operating Handbook and
FAA Approved Airplane Flight Manual
Supplement
for**

SR20 Airplanes Equipped with the "G3 Wing"

When the G3 Wing is installed on the Cirrus Design SR20 Serials 1878, 1886 and subsequent, this POH Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Change, dated Revision 02: 05-09-11, supersedes and replaces Revision 01 of this POH Supplement dated 08-26-09.

FAA Approved Joseph C Mieos **Date** May 9, 2011

for Charles Smalley, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Intentionally Left Blank

Section 1 - General

The G3 Wing is constructed in a conventional spar, rib, and shear section arrangement. The upper and lower skins are bonded to the spar, ribs, and aft shear web forming a torsion box that carries all of the wing bending and torsion loads. The rear shear webs are similar in construction but do not carry through the fuselage. The main spar is laminated epoxy/carbon fiber in a C-section, and is continuous from wing tip to wing tip. The wing spar passes under the fuselage below the two front seats and is attached to the fuselage in two locations. Lift and landing loads are carried by the single carry-through spar, plus a pair of rear shear webs (one on each wing) attached to the fuselage.

G3 Wingspan is increase by three feet and wing geometry is slightly changed with an 1° increase in dihedral which allows for the elimination of the aileron-rudder interconnect system. Because of the wingspan and geometry changes, aircraft performance data has been updated and included in Section 5 - Performance.

The main landing gear is moved slightly inboard and the strut angle increased to achieve an increase in airplane height of 1.5 inches.

Other G3 Wing updates include:

- wing tip with integral, leading edge recognition lights.
- relocation of the fresh air inlets to the engine cowl and related environmental system changes,
- improved trailing edge aerodynamics
- improved wing root fairings,
- relocation of the stall warning port,

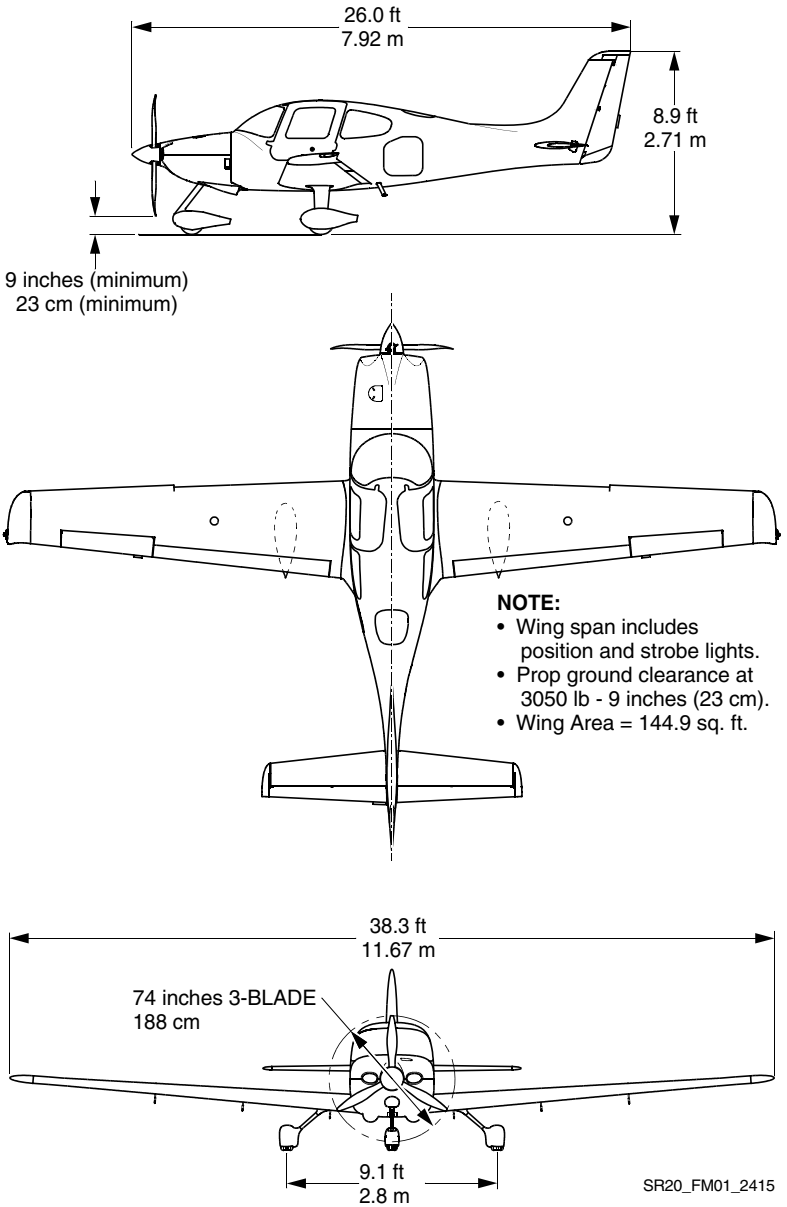
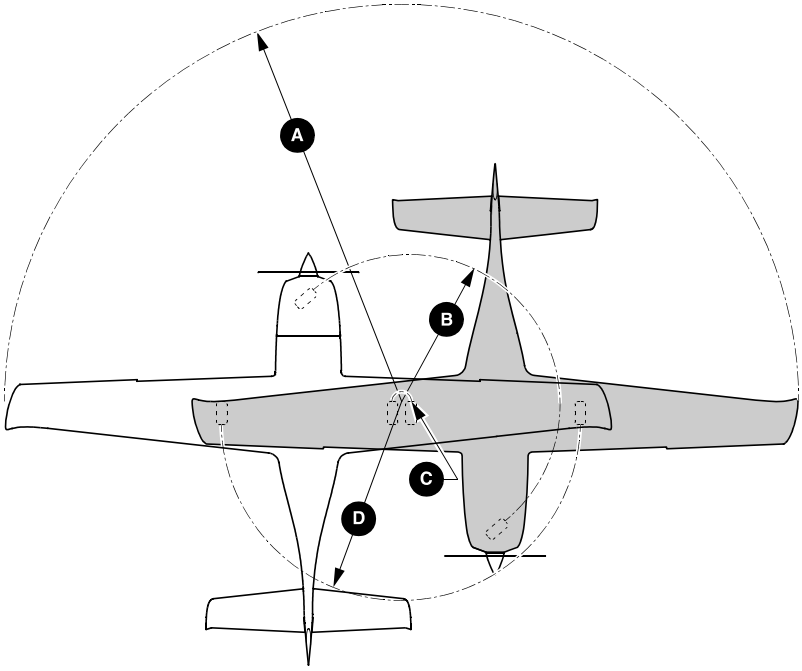


Figure - 1
Turning Radius



GROUND TURNING CLEARANCE

A	RADIUS FOR WING TIP	24.3 ft.	(7.41 m)
B	RADIUS FOR NOSE GEAR	7.0 ft.	(2.16 m)
C	RADIUS FOR INSIDE GEAR	0.5 ft.	(0.15 m)
D	RADIUS FOR OUTSIDE GEAR	9.1 ft.	(2.77 m)

TURNING RADII ARE CALCULATED USING ONE BRAKE AND PARTIAL POWER. ACTUAL TURNING RADIUS MAY VARY AS MUCH AS THREE FEET.

SR20_FM01_2413

Figure - 2
Airplane Three View

The Airplane

Fuel

Total Capacity .....58.5 U.S. Gallons (221.0 L)

Total Usable .....56.0 U.S. Gallons (212.0 L)

Maximum Certificated Weights

Maximum Gross for Takeoff ..... 3050 lb (1383 Kg)

Maximum Useful Load ..... 1000 lb (454 Kg)

Full Fuel Payload ..... 671 lb (304 Kg)

Section 2 - Limitations

Airspeed Limitations

The indicated airspeeds in the following table are based upon Section 5 Airspeed Calibrations using the normal static source. When using the alternate static source, allow for the airspeed calibration variations between the normal and alternate static sources.

Speed	KIAS	KCAS	Remarks
V_{NE}	200	204	**Never Exceed Speed** is the speed limit that may not be exceeded at any time.
V_{NO}	163	166	**Maximum Structural Cruising Speed** is the speed that should not be exceeded except in smooth air, and then only with caution.
V_O 3050 Lb	130	131	**Operating Maneuvering Speed** is the maximum speed at which full control travel may be used. Below this speed the airplane stalls before limit loads are reached. Above this speed, full control movements can damage the airplane.
V_{FE} 50% Flaps 100% Flaps	 119 104	 120 104	**Maximum Flap Extended Speed** is the highest speed permissible with wing flaps extended.
V_{PD}	133	135	**Maximum Demonstrated Parachute Deployment Speed** is the maximum speed at which parachute deployment has been demonstrated.

Airspeed Indicator Markings

The airspeed indicator markings are based upon Section 5 Airspeed Calibrations using the normal static source. When using the alternate static source, allow for the airspeed calibration variations between the normal and alternate static sources.

Marking	Value (KIAS)	Remarks
White Arc	61 - 104	Full Flap Operating Range. Lower limit is the most adverse stall speed in the landing configuration. Upper limit is the maximum speed permissible with flaps extended.
Green Arc	69 - 163	Normal Operating Range. Lower limit is the maximum weight stall at most forward C.G. with flaps retracted. Upper limit is the maximum structural cruising speed.
Yellow Arc	163 - 200	Caution Range. Operations must be conducted with caution and only in smooth air.
Red Line	200	Never exceed speed. Maximum speed for all operations.

Weight Limits

Maximum Takeoff Weight ..... 3050 lb (1383 Kg)

Maximum Landing Weight ..... 3050 lb (1383 Kg)

Center of Gravity Limits

Reference Datum ..... 100 inches forward of firewall

Forward ..... *Refer to Figure 3*

Aft ..... *Refer to Figure 3*

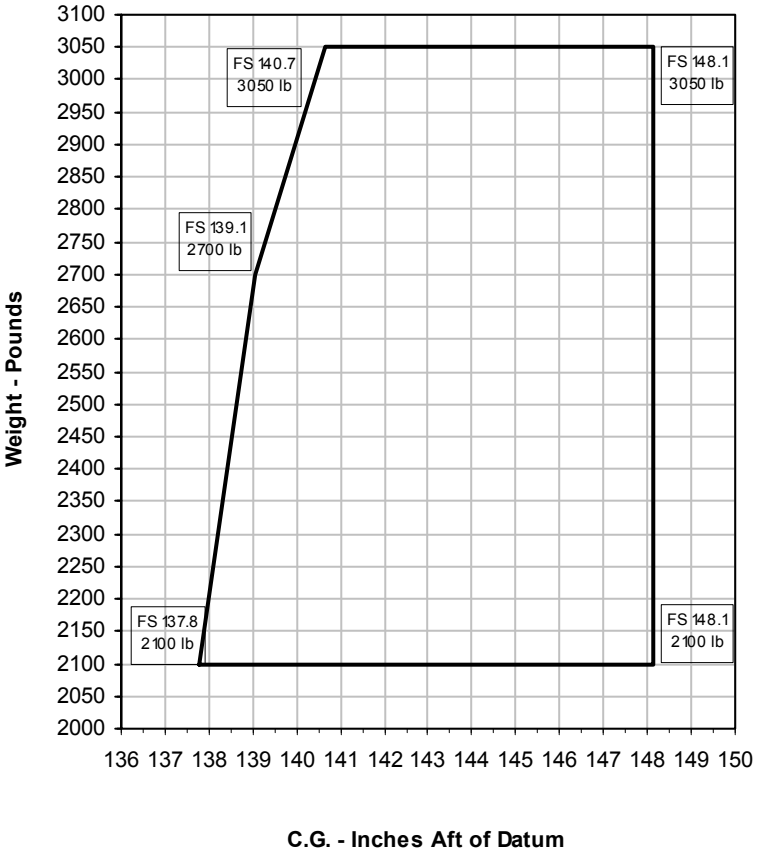


Figure - 3
C.G. Envelope

Flight Load Factor Limits

Flaps UP (0%), 3050 lb.....+3.8g, -1.9g

Flaps 50%, 3050 lb. .....+1.9g, -0g

Flaps 100% (Down), 3050 lb. .....+1.9g, -0g

Fuel Limits

The maximum allowable fuel imbalance is 7.5 U.S. gallons (¼ tank).

Approved Fuel ..... Aviation Grade 100 LL (Blue) or 100 (Green)

Total Fuel Capacity ..... 58.5 U.S. gallons (229.0 L)

Total Fuel Each Tank ..... 29.3 U.S. gallons (114.5 L)

Total Usable Fuel (all flight conditions) ..... 56.0 U.S. gallons (212.0 L)

Cirrus Airframe Parachute System (CAPS)

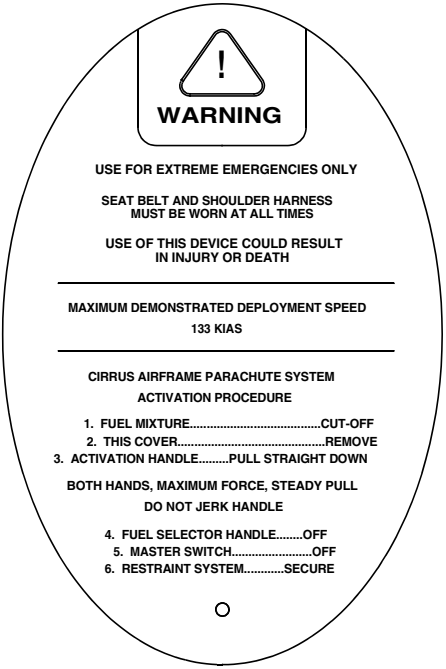
V_{PD} Maximum Demonstrated Deployment Speed.....133 KIAS

• Note •

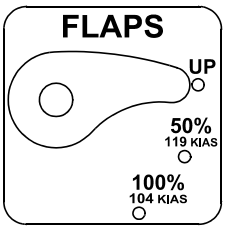
Refer to Section 10 – Safety Information, for additional CAPS guidance.

Placards

CAPS Deployment Handle Cover, above pilot's right shoulder:



Engine control panel, flap control:



Instrument Panel, left :

MANEUVERING
SPEED: Vo 130 KIAS
NORMAL CATEGORY AIRPLANE
NO ACROBATIC MANEUVERS,
INCLUDING SPINS, APPROVED

SR20_FM09_2769A

Intentionally Left Blank

Section 3 - Emergency Procedures

Airspeeds for Emergency Operations

Maneuvering Speed:

- 3050 lb ..... 130 KIAS
- 2600 lb ..... 120 KIAS
- 2200 lb ..... 110 KIAS

Best Glide:

- 3050 lb ..... 99 KIAS
- 2500 lb ..... 95 KIAS

Emergency Landing (Engine-out):

- Flaps Up ..... 87 KIAS
- Flaps 50% ..... 82 KIAS
- Flaps 100% ..... 76 KIAS

Maximum Glide

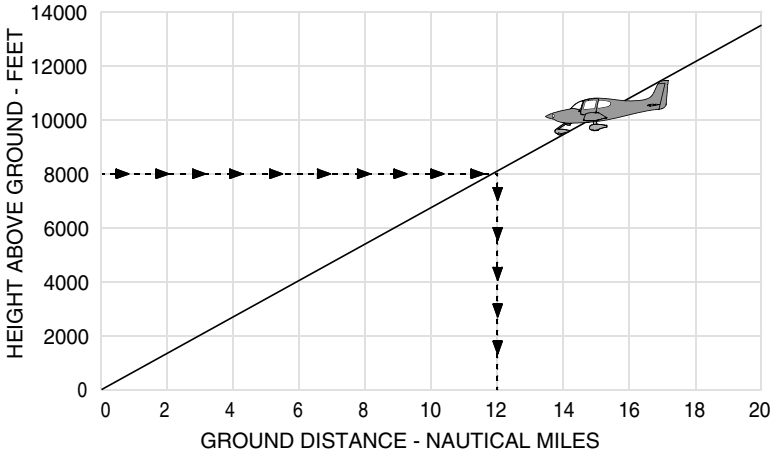
Conditions		Example:	
Power	OFF	Altitude	8,000 ft. AGL
Propeller	Windmilling	Airspeed	Best Glide
Flaps	0% (UP)	Glide Distance	12.0 NM
Wind	Zero		

Best Glide Speed

99 KIAS at 3050 lb

95 KIAS at 2500 lb

Maximum Glide Ratio ~ 9 : 1



Emergency Descent

1. Power Lever ..... IDLE
2. Mixture ..... AS REQUIRED

• Caution •

If significant turbulence is expected do not descend at indicated airspeeds greater than V_{NO} (163 KIAS)

3. Airspeed ..... V_{NE} (200 KIAS)

Section 4 - Normal Procedures

Airspeeds for Normal Operation

Unless otherwise noted, the following speeds are based on a maximum weight of 3050 lb. and may be used for any lesser weight. However, to achieve the performance specified in Section 5 for takeoff and landing distance, the speed appropriate to the particular weight must be used.

Takeoff Rotation:

- Normal, Flaps 50%.....65 - 70 KIAS
- Short Field, Flaps 50%.....65 KIAS
- Obstacle Clearance, Flaps 50%.....77 KIAS

Enroute Climb, Flaps Up:

- Normal, SL .....96 KIAS
- Normal, 10,000'.....92 KIAS
- Best Rate of Climb, SL .....96 KIAS
- Best Rate of Climb, 10,000.....92 KIAS
- Best Angle of Climb, SL.....83 KIAS
- Best Angle of Climb, 10,000 .....87 KIAS

Landing Approach:

- Normal Approach, Flaps Up .....88 KIAS
- Normal Approach, Flaps 50% .....83 KIAS
- Normal Approach, Flaps 100% .....78 KIAS
- Short Field, Flaps 100%.....78 KIAS

Go-Around, Flaps 50%:

- Full Power.....78 KIAS

Maximum Recommended Turbulent Air Penetration:

- 3050 Lb .....131 KIAS
- 2600 Lb .....122 KIAS
- 2200 Lb .....111 KIAS

Maximum Demonstrated Crosswind Velocity:

- Takeoff or Landing.....20 Knots

Airspeeds for Normal Operation

Short Field Takeoff

7. Airspeed at Obstacle.....77 KIAS

Landing

Short Field Landing

For a short field landing in smooth air conditions, make an approach at 78 KIAS with full flaps using enough power to control the glide path (slightly higher approach speeds should be used under turbulent air conditions).

Section 5 - Performance

Airspeed Calibration: Normal Static Source

Conditions:

- Power for level flight or maximum continuous, whichever is less.
- Weight ..... 3050 LB

• Note •

Indicated airspeed values assume zero instrument error.

KIAS	KCAS		
	Flaps 0%	Flaps 50%	Flaps 100%
60	57	56	57
70	68	68	70
80	79	80	80
90	89	91	89
100	100	101	99
110	111	111	
120	121	121	
130	132		
140	142		
150	152		
160	163		
170	173		
180	183		
190	193		
200	204		

Airspeed Calibration: Alternate Static Source

Conditions:

- Power for level flight or maximum continuous, whichever is less.
- Heater, Defroster & Vents ..... ON
- Weight ..... 3050 LB

• Note •

Indicated airspeed values assume zero instrument error.

KIAS	KCAS		
	Flaps 0%	Flaps 50%	Flaps 100%
60	61	58	54
70	68	66	63
80	77	74	72
90	85	83	82
100	94	92	92
110	103	102	101
120	112	112	
130	121	122	
140	131		
150	141		
160	150		
170	160		
180	170		
190	179		
200	189		
210	198		

Altitude Correction: Normal Static Source

Conditions:

- Power for level flight or maximum continuous, whichever is less.
- Weight ..... 3050 LB

• Note •

Add correction to desired altitude to obtain indicated altitude to fly.

Indicated airspeed values assume zero instrument error.

Flaps	Press Alt	CORRECTION TO BE ADDED - FEET									
		Normal Static Source - KIAS									
		60	70	80	90	100	120	140	160	180	200
0%	S.L		12	9	5	0	-11	-23	-36	-49	-59
	5000		13	10	5	0	-13	-27	-42	-56	-69
	10000		16	12	6	0	-15	-32	-49	-66	-80
	15000		18	14	7	0	-17	-37	-58	-77	-94
50%	S.L		9	2	-4	-10	-16				
	5000		11	3	-5	-12	-18				
	10000		12	3	-6	-14	-22				
100%	S.L	10	1	-1	2	6					
	5000	10	-1	1	6	6					
	10000	37	45	48	50	56					

Altitude Correction: Alternate Static Source

Conditions:

- Power for level flight or maximum continuous, whichever is less.
- Heater, Defroster, & Vents ..... ON
- Weight ..... 3050 LB

• Note •

Add correction to desired altitude to obtain indicated altitude to fly.

Indicated airspeed values assume zero instrument error.

Flaps	Press Alt	CORRECTION TO BE ADDED - FEET									
		Normal Static Source - KIAS									
		60	70	80	90	100	120	140	160	180	200
0%	S.L		12	28	43	57	82	104	126	148	172
	5000		16	35	54	71	104	136	168	203	242
	10000		20	43	66	87	128	169	211	258	311
	15000		23	51	78	103	152	200	251	308	373
50%	S.L		43	65	87	108	148				
	5000		21	32	39	42	26				
	10000		36	54	70	82	88				
100%	S.L	42	56	67	80	95					
	5000	37	45	48	50	56					
	10000	61	81	99	119	148					

Stall Speeds

Conditions:

- Weight ..... 3050 LB
- C.G. ..... Noted
- Power ..... Idle
- Bank Angle ..... Noted

• Note •

Altitude loss during wings level stall may be 250 feet or more.

KIAS values may not be accurate at stall.

Weight	Bank Angle	STALL SPEEDS					
		Flaps 0% Full Up		Flaps 50%		Flaps 100% Full Down	
LB	Deg	KIAS	KCAS	KIAS	KCAS	KIAS	KCAS
3050 Most FWD C.G.	0	69	67	66	63	61	59
	15	70	68	67	65	62	60
	30	74	72	70	68	64	63
	45	81	80	76	75	70	70
	60	95	95	89	90	83	83
3050 Most AFT C.G.	0	69	67	63	60	59	56
	15	75	68	64	61	60	57
	30	77	72	66	64	62	60
	45	83	79	72	71	68	67
	60	99	94	85	85	79	79

Takeoff Distance

Conditions:

- Winds.....Zero
- Runway.....Dry, Level, Paved
- Flaps.....50%
- Power..... Maximum, set before brake release

The following factors are to be applied to the computed takeoff distance for the noted condition:

- Headwind - Subtract 10% from computed distance for each 12 knots headwind.
- Tailwind - Add 10% for each 2 knots tailwind up to 10 knots.
- Grass Runway, Dry - Add 20% to ground roll distance.
- Grass Runway, Wet - Add 30% to ground roll distance.
- Sloped Runway - Increase table distances by 22% of the ground roll distance at Sea Level, 30% of the ground roll distance at 5000 ft, 43% of the ground roll distance at 10,000 ft for each 1% of upslope. Decrease table distances by 7% of the ground roll distance at Sea Level, 10% of the ground roll distance at 5000 ft, and 14% of the ground roll distance at 10,000 ft for each 1% of downslope.

• Caution •

The above corrections for runway slope are required to be included herein. These corrections should be used with caution since published runway slope data is usually the net slope from one end of the runway to the other. Many runways will have portions of their length at greater or lesser slopes than the published slope, lengthening (or shortening) takeoff ground roll estimated from the table.

- If brakes are not held while applying power, distances apply from point where full throttle and mixture setting is complete.
- For operation in outside air temperatures colder than this table provides, use coldest data shown.
- For operation in outside air temperatures warmer than this table provides, use extreme caution.

Takeoff Distance: 3000 LB

WEIGHT: 3050 LB
Speed at Liftoff: 71 KIAS
Speed over 50 Ft. Obstacle: 77 KIAS
Flaps: 50%
Power: Takeoff Power
Runway: Dry, Paved

Headwind: Subtract 10% for each 12 knots headwind.
Tailwind: Add 10% for each 2 knots tailwind up to 10 knots.
Runway Slope: Ref. Factors.
Dry Grass: Add 20% to Ground Roll.
Wet Grass: Add 30% to Ground Roll

PRESS ALT FT	DISTANCE FT	TEMPERATURE ~ °C 0	10	20	30	40	ISA
SL	Grnd Roll	1319	1424	1534	1648	1767	1478
	50 ft	1996	2145	2300	2460	2626	2221
1000	Grnd Roll	1448	1563	1684	1809	1940	1599
	50 ft	2183	2346	2515	2691	2872	2396
2000	Grnd Roll	1590	1717	1850	1988	2131	1730
	50 ft	2389	2568	2753	2945	3144	2586
3000	Grnd Roll	1748	1888	2034	2185	2343	1874
	50 ft	2616	2812	3015	3226	3444	2792
4000	Grnd Roll	1923	2077	2237	2404	2577	2030
	50 ft	2868	3082	3305	3536	3775	3017
5000	Grnd Roll	2117	2287	2463	2647	2837	2201
	50 ft	3145	3381	3625	3879	4141	3262
6000	Grnd Roll	2333	2519	2714	2916	3126	2388
	50 ft	3452	3711	3980	4258	4546	3529
7000	Grnd Roll	2572	2777	2992			2592
	50 ft	3792	4076	4371			3820
8000	Grnd Roll	2837	3064	3300			2815
	50 ft	4167	4480	4805			4137
9000	Grnd Roll	3132	3383	3644			3059
	50 ft	4584	4928	5285			4483
10000	Grnd Roll	3460	3737				3326
	50 ft	5045	5424				4860

Takeoff Distance: 2500 LB

WEIGHT: 2500 LB
Speed at Liftoff: 68 KIAS
Speed over 50 Ft Obstacle: 75 KIAS
Flaps: 50%
Power: Takeoff Power
Runway: Dry, Paved

Headwind: Subtract 10% for each 12 knots headwind.
Tailwind: Add 10% for each 2 knots tailwind up to 10 knots.
Runway Slope: Ref. Factors.
Dry Grass: Add 20% to Ground Roll.
Wet Grass: Add 30% to Ground Roll.

PRESS ALT FT	DISTANCE FT	TEMPERATURE ~ °C 0	10	20	30	40	ISA
SL	Grnd Roll	787	850	915	983	1054	882
	50 ft	1215	1306	1400	1497	1598	1353
1000	Grnd Roll	864	933	1005	1079	1157	954
	50 ft	1329	1428	1531	1637	1748	1459
2000	Grnd Roll	949	1025	1104	1186	1271	1032
	50 ft	1454	1563	1676	1792	1913	1574
3000	Grnd Roll	1043	1126	1213	1304	1398	1118
	50 ft	1593	1712	1835	1963	2095	1700
4000	Grnd Roll	1147	1239	1335	1434	1537	1211
	50 ft	1745	1876	2011	2151	2296	1836
5000	Grnd Roll	1263	1364	1469	1579	1693	1313
	50 ft	1914	2057	2206	2359	2518	1985
6000	Grnd Roll	1392	1503	1619	1739	1865	1424
	50 ft	2101	2258	2421	2589	2764	2147
7000	Grnd Roll	1534	1657	1785			1546
	50 ft	2307	2479	2658			2324
8000	Grnd Roll	1692	1828	1969			1679
	50 ft	2535	2725	2922			2516
9000	Grnd Roll	1868	2018	2174			1825
	50 ft	2788	2997	3213			2727
10000	Grnd Roll	2064	2229				1984
	50 ft	3068	3298				2956

Takeoff Climb Gradient

Conditions:

- Power ..... Full Throttle
- Mixture ..... Full Rich
- Flaps 50%
- Airspeed ..... Best Rate of Climb

• Note •

Climb Gradients shown are the gain in altitude for the horizontal distance traversed expressed as Feet per Nautical Mile.

Cruise climbs or short duration climbs are permissible at best power as long as altitudes and temperatures remain within those specified in the table.

For operation in air colder than this table provides, use coldest data shown.

For operation in air warmer than this table provides, use extreme caution.

Weight	Press Alt	Climb Speed	CLIMB GRADIENT ~ Feet per Nautical Mile				
			Temperature ~ °C				
LB	FT	KIAS	-20	0	20	40	ISA
3050	SL	89	678	621	568	518	581
	2000	88	587	532	481	433	504
	4000	87	500	447	398	351	430
	6000	86	416	365	318	274	358
	8000	85	336	287	241	199	289
	10000	84	259	212			224
2500	SL	88	957	880	808	741	826
	2000	87	841	767	698	634	729
	4000	86	730	659	593	531	636
	6000	85	624	555	492		545
	8000	84	522	456	396		459
	10000	83	425	362			377

Takeoff Rate of Climb

Conditions:

- Power..... Full Throttle
- Mixture..... Full Rich
- Flaps..... 50%
- Airspeed ..... Best Rate of Climb

• Note •

Rate-of-Climb values shown are change in altitude for unit time expended expressed in Feet per Minute.

Cruise climbs or short duration climbs are permissible at best power as long as altitudes and temperatures remain within those specified in the table.

For operation in air colder than this table provides, use coldest data shown.

For operation in air warmer than this table provides, use extreme caution.

Weight	Press Alt	Climb Speed	RATE OF CLIMB ~ Feet per Minute				
			Temperature ~ °C				
LB	FT	KIAS	-20	0	20	40	ISA
3050	SL	89	905	862	817	771	828
	2000	88	807	761	712	663	734
	4000	87	707	657	606	554	639
	6000	86	607	553	499	444	545
	8000	85	504	447	390	333	450
	10000	84	401	341			356
2500	SL	88	1256	1201	1144	1086	1158
	2000	87	1136	1077	1017	955	1044
	4000	86	1014	952	888	824	929
	6000	85	892	825	758		815
	8000	84	768	698	627		701
	10000	83	643	569			587

Enroute Climb Gradient

Conditions:

- Power ..... Full Throttle
- Mixture ..... Full Rich
- Flaps ..... 0% (UP)
- Airspeed ..... Best Rate of Climb

• Note •

Climb Gradients shown are the gain in altitude for the horizontal distance traversed expressed as Feet per Nautical Mile.

Cruise climbs or short duration climbs are permissible at best power as long as altitudes and temperatures remain within those specified in the table.

For operation in air colder than this table provides, use coldest data shown.

For operation in air warmer than this table provides, use extreme caution.

The Maximum Operating Altitude of 17,500 feet MSL may be obtained if the airplane's gross weight does not exceed 2900 lb and the ambient temperature is -20° C or less.

Weight	Press Alt	Climb Speed	CLIMB GRADIENT - Feet per Nautical Mile				
			Temperature ~ °C				
LB	FT	KIAS	-20	0	20	40	ISA
3050	SL	96	650	589	533	481	549
	2000	96	560	502	448	398	474
	4000	95	474	418	367	319	402
	6000	94	392	338	289	244	332
	8000	93	313	216	214	171	265
	10000	92	237	188			200
	12000	91	164	118			139
	14000	90	95	51			80
2500	SL	93	846	777	712	652	728
	2000	93	741	674	612	554	640
	4000	92	640	576	516	461	555
	6000	91	543	482	425		473
	8000	91	451	392	337		395
	10000	90	363	306			320
	12000	89	279	224			248
	14000	88	198	147			180

Enroute Rate of Climb

Conditions:

- Power..... Full Throttle
- Mixture..... Full Rich
- Flaps.....0% (UP)
- Airspeed ..... Best Rate of Climb

• Note •

Rate-of-Climb values shown are change in altitude in feet per unit time expressed in Feet per Minute.

For operation in air colder than this table provides, use coldest data shown.

For operation in air warmer than this table provides, use extreme caution.

Cruise climbs or short duration climbs are permissible at best power as long as altitudes and temperatures remain within those specified in the table.

The Maximum Operating Altitude of 17,500 feet MSL may be obtained if the airplane's gross weight does not exceed 2900 lb and the ambient temperature is -20° C or less.

Weight	Press Alt	Climb Speed	RATE OF CLIMB ~ Feet per Minute				
			Temperature ~ °C				
LB	FT	KIAS	-20	0	20	40	ISA
3050	SL	96	1007	949	890	830	905
	2000	96	868	808	748	688	775
	4000	95	756	693	630	567	671
	6000	94	642	576	510	445	566
	8000	93	527	458	389	321	462
	10000	92	411	339			357
	12000	91	294	218			252
	14000	90	175	97			148
2500	SL	93	1231	1175	1117	1058	1132
	2000	93	1109	1050	988	926	1016
	4000	92	987	923	858	793	900
	6000	91	863	796	727		785
	8000	91	738	667	595		670
	10000	90	612	537			555
	12000	88	484	405			440
	14000	88	355	273			325

Time, Fuel and Distance to Climb

Conditions:

- Power ..... Full Throttle
- Mixture ..... Full Rich
- Weight ..... 3050 LB
- Winds ..... Zero
- Climb Airspeed ..... Noted

• Note •

Taxi Fuel - Add 1 gallon for start, taxi, and takeoff.

Temperature - Add 10% to computed values for each 10° C above standard.

Cruise climbs or short duration climbs are permissible at best power as long as altitudes and temperatures remain within those specified in the table.

Press Alt FT	OAT (ISA) °C	Climb Speed KIAS	Rate Of Climb FPM	TIME, FUEL, DISTANCE ~ From Sea Level		
				Time Minutes	Fuel U.S. Gal	Distance NM
SL	**15**	**96**	**880**	0.0	0.0	0
1000	**13**	**96**	**828**	1.3	0.3	2
2000	**11**	**96**	**775**	2.4	0.6	4
3000	**9**	**95**	**723**	3.8	1.0	6
4000	**7**	**95**	**671**	5.2	1.3	8
5000	**5**	**95**	**618**	6.7	1.7	11
6000	**3**	**94**	**566**	8.4	2.0	14
7000	**1**	**94**	**514**	10.3	2.4	17
8000	**-1**	**93**	**462**	12.3	2.9	21
9000	**-3**	**93**	**409**	14.6	3.3	25
10000	**-5**	**92**	**357**	17.2	3.8	29
11000	**-7**	**92**	**305**	20.3	4.4	35
12000	**-9**	**91**	**252**	23.8	5.0	41
13000	**-11**	**91**	**200**	28.3	5.8	49
14000	**-13**	**90**	**148**	34.0	6.8	60

Balked Landing Climb Gradient

Conditions:

- Power..... Full Throttle
- Mixture..... Full Rich
- Flaps..... 100% (DN)
- Climb Airspeed ..... Best Rate of Climb

• Note •

Balked Landing Climb Gradients shown are the gain in altitude for the horizontal distance traversed expressed as Feet per Nautical Mile.

Dashed cells in the table represent performance below the minimum balked landing climb requirements.

For operation in air colder than this table provides, use coldest data shown.

For operation in air warmer than this table provides, use extreme caution.

This chart is required data for certification. However, significantly better performance can be achieved by climbing at Best Rate of Climb speeds shown with flaps down or following the Go-Around / Balked Landing procedure in Section 4.

Weight	Press Alt	Climb Speed	CLIMB GRADIENT ~ Feet per Nautical Mile				
			Temperature ~ °C				
LB	FT	KIAS	-20	0	20	40	ISA
3050	SL	84	654	588	527	470	542
	2000	81	569	504	444	388	470
	4000	78	484	420	361	306	399
	6000	75	399	335	277		326
	8000	72	313	250	193		253
	10000	69	225	164			179
2500	SL	84	878	796	720	650	739
	2000	81	779	698	624	556	657
	4000	78	680	601	528	461	575
	6000	75	582	504	433		493
	8000	72	485	408	338		412
	10000	69	387	311			329

Balked Landing Rate of Climb

Conditions:

- Power ..... Full Throttle
- Mixture ..... Full Rich
- Flaps ..... 100% (DN)
- Climb Airspeed ..... Noted

• Note •

Balked Landing Rate of Climb values shown are the full flaps change in altitude for unit time expended expressed in Feet per Minute.

Dashed cells in the table represent performance below the minimum balked landing climb requirements.

For operation in air colder than this table provides, use coldest data shown.

For operation in air warmer than this table provides, use extreme caution.

This chart is required data for certification. However, significantly better performance can be achieved by climbing at Best Rate of Climb speeds shown with flaps down or following the Go-Around / Balked Landing procedure in Section 4.

Weight	Press Alt	Climb Speed	RATE OF CLIMB ~ Feet per Minute				
			Temperature ~ °C				
LB	FT	KIAS	-20	0	20	40	ISA
3050	SL	84	854	798	741	684	756
	2000	81	744	685	625	565	652
	4000	78	633	571	508	446	549
	6000	75	521	455	390		445
	8000	72	407	339	271		342
	10000	69	293	221			239
2500	SL	84	1140	1076	1010	944	1027
	2000	81	1014	946	877	808	908
	4000	78	886	815	743	671	790
	6000	75	759	683	608		672
	8000	72	630	552	474		556
	10000	69	502	420			440

Landing Distance

Conditions:

- Technique .....Normal
- Winds.....Zero
- Runway.....Dry, Level, Paved
- Flaps.....100%
- Power.....3° Power Approach to 50 FT obstacle, then reduce power passing the estimated 50 foot point and smoothly continue power reduction to reach idle just prior to touchdown.

• Note •

The following factors are to be applied to the computed landing distance for the noted condition:

- Headwind - Subtract 10% from table distances for each 13 knots headwind.
- Tailwind - Add 10% to table distances for each 2 knots tailwind up to 10 knots.
- Grass Runway, Dry - Add 20% to ground roll distance.
- Grass Runway, Wet - Add 60% to ground roll distance.
- Sloped Runway - Increase table distances by 27% of the ground roll distance for each 1% of downslope. Decrease table distances by 9% of the ground roll distance for each 1% of upslope.

• Caution •

The above corrections for runway slope are required to be included herein. These corrections should be used with caution since published runway slope data is usually the net slope from one end of the runway to the other. Many runways will have portions of their length at greater or lesser slopes than the published slope, lengthening (or shortening) landing ground roll estimated from the table.

- For operation in outside air temperatures colder than this table provides, use coldest data shown.
- For operation in outside air temperatures warmer than this table provides, use extreme caution.

Landing Distance

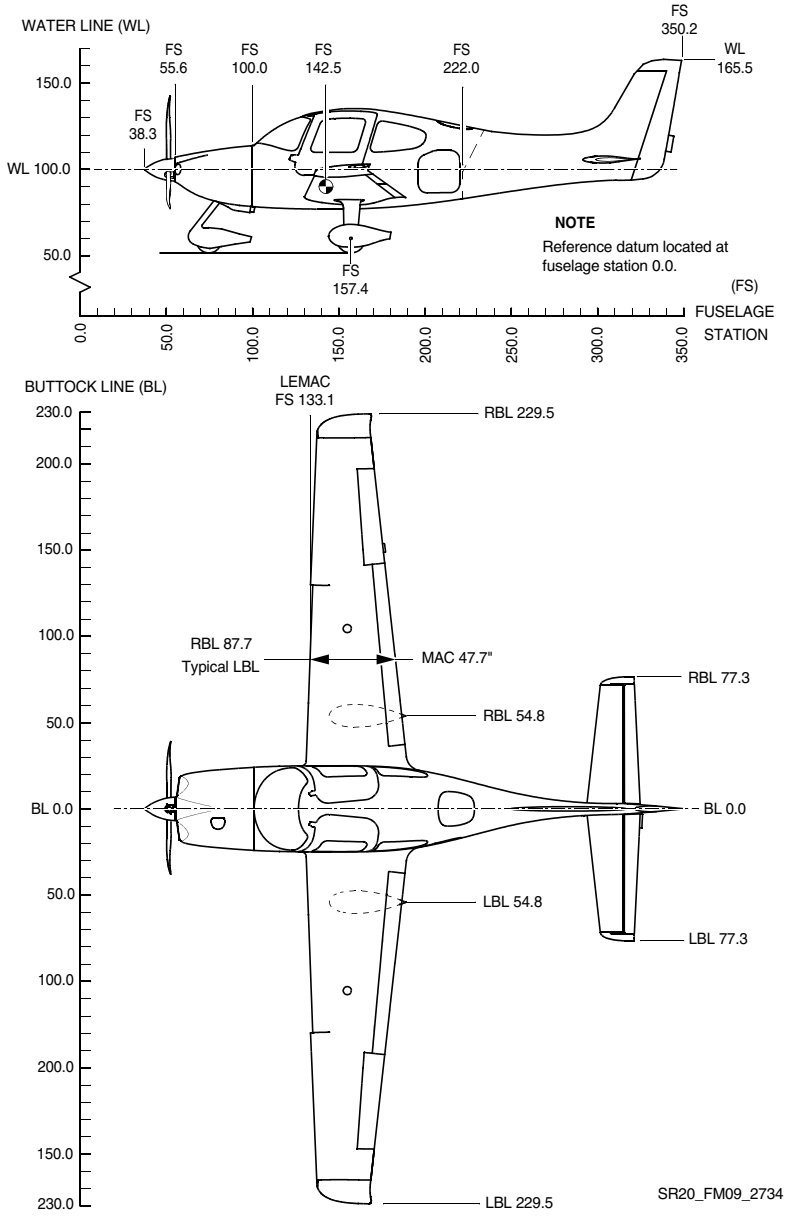
WEIGHT: 3050 LB
Speed over 50 Ft Obstacle: 78 KIAS
Flaps: 100%
Power: Idle
Runway: Dry, Level Paved Surface

Headwind: Subtract 10% per each 13 knots headwind.
Tailwind: Add 10% for each 2 knots tailwind up to 10 knots.
Runway Slope: Ref. Factors.
Dry Grass: Add 20% to Ground Roll
Wet Grass: Add 60% to Ground Roll

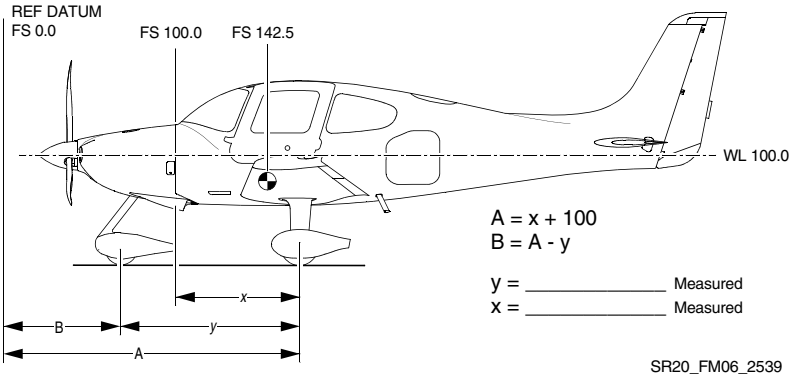
PRESS ALT FT	DISTANCE FT	TEMPERATURE ~ °C 0	10	20	30	40	ISA
SL	Grnd Roll	809	838	868	897	927	853
	Total	2557	2609	2663	2717	2773	2636
1000	Grnd Roll	838	869	900	931	961	878
	Total	2610	2665	2722	2779	2838	2682
2000	Grnd Roll	870	901	933	965	997	905
	Total	2666	2725	2785	2846	2907	2731
3000	Grnd Roll	902	935	968	1001	1034	932
	Total	2726	2788	2852	2916	2981	2782
4000	Grnd Roll	936	971	1005	1039	1073	960
	Total	2790	2856	2923	2991	3060	2837
5000	Grnd Roll	972	1007	1043	1079	1114	990
	Total	2858	2928	2999	3070	3143	2894
6000	Grnd Roll	1009	1046	1083	1120	1157	1021
	Total	2931	3004	3079	3155	3232	2954
7000	Grnd Roll	1048	1086	1125	1163	1201	1052
	Total	3008	3086	3165	3245	3326	3017
8000	Grnd Roll	1089	1128	1168	1208	1248	1085
	Total	3091	3173	3256	3341	3427	3084
9000	Grnd Roll	1131	1173	1214	1255	1297	1119
	Total	3179	3265	3353	3443	3533	3154
10000	Grnd Roll	1176	1219	1262	1305	1348	1155
	Total	3272	3364	3457	3551	3646	3228

Intentionally Left Blank

Section 6 - Weight and Balance



Airplane Weighing Form



Weighing Point	Scale Reading	- Tare	= Net Weight	X Arm	= Moment
L Main				A=	
R Main				A=	
Nose				B=	
Total **As Weighed**				CG=	
CG = Total Moment / Total Weight *Space below provided for additions or subtractions to as weighed condition*					
Empty Weight				CG=	
Engine Oil (if oil drained) *15 lb at FS 78.4, moment = 1176*					
Unusable Fuel			15.0	154.9	2324
Basic Empty Weight				CG=	

Figure - 4
Airplane Dimensional Data

Airplane Weighing Procedures

A basic empty weight and center of gravity were established for this airplane when the airplane was weighed just prior to initial delivery. However, major modifications, loss of records, addition or relocation of equipment, accomplishment of service bulletins, and weight gain over time may require re-weighing to keep the basic empty weight and center of gravity current. The frequency of weighing is determined by the operator. All changes to the basic empty weight and center of gravity are the responsibility of the operator. *Refer to Section 8 for specific servicing procedures.*

1. Preparation:
    a. Inflate tires to recommended operating pressures.
    b. Service brake reservoir.
    c. Drain fuel system.
    d. Service engine oil.
    e. Move crew seats to the most forward position.
    f. Raise flaps to the fully retracted position.
    g. Place all control surfaces in neutral position.
    h. Verify equipment installation and location by comparison to equipment list.
2. Leveling:
    a. Level longitudinally with a spirit level placed on the pilot door sill and laterally with of a spirit level placed across the door sills. Alternately, level airplane by sighting the forward and aft tool holes along waterline 95.9.
    b. Place scales under each wheel (minimum scale capacity, 500 pounds nose, 1000 pounds each main).
    c. Deflate the nose tire and/or shim underneath scales as required to properly center the bubble in the level.

3. Weighing:
   a. With the airplane level, doors closed, and brakes released, record the weight shown on each scale. Deduct the tare, if any, from each reading.
4. Measuring:
   a. Obtain measurement ‘x’ by measuring horizontally along the airplane center line (BL 0) from a line stretched between the main wheel centers to a plumb bob dropped from the forward side of the firewall (FS 100). Add 100 to this measurement to obtain left and right weighing point arm (dimension ‘A’). Typically, dimension ‘A’ will be in the neighborhood of 157.5.
   b. Obtain measurement ‘y’ by measuring horizontally and parallel to the airplane centerline (BL 0), from center of nosewheel axle, left side, to a plumb bob dropped from the line stretched between the main wheel centers. Repeat on right side and average the measurements. Subtract this measurement from dimension ‘A’ to obtain the nosewheel weighing point arm (dimension ‘B’).
5. Determine and record the moment for each of the main and nose gear weighing points using the following formula:

   Moment = Net Weight x Arm

6. Calculate and record the as-weighed weight and moment by totaling the appropriate columns.
7. Determine and record the as-weighed C.G. in inches aft of datum using the following formula:

   C.G. = Total Moment / Total Weight

8. Add or subtract any items not included in the as-weighed condition to determine the empty condition. Application of the above C.G. formula will determine the C.G for this condition.
9. Add the correction for engine oil (15 lb at FS 78.4), if the airplane was weighed with oil drained. Add the correction for unusable fuel (15.0 lb at FS 154.9) to determine the Basic Empty Weight and Moment. Calculate and record the Basic Empty Weight C.G. by applying the above C.G. formula.

10. Record the new weight and C.G. values on the Weight and Balance Record.

The above procedure determines the airplane Basic Empty Weight, moment, and center of gravity in inches aft of datum. C.G. can also be expressed in terms of its location as a percentage of the airplane Mean Aerodynamic Cord (MAC) using the following formula:

$$C.G.\ \%\ MAC = 100 \times (C.G.\ Inches - LEMAC) / MAC$$

Where:

$$LEMAC = 133.1$$

$$MAC = 47.7$$

Weight & Balance Loading Form

Serial Num:_____Date:_____

Reg. Num: _____Initials: _____

Item	Description	Weight LB	Moment/ 1000
1.	**Basic Empty Weight** *Includes unusable fuel & full oil*		
2.	Front Seat Occupants *Pilot & Passenger (total)*		
3.	Rear Seat Occupants		
4.	Baggage Area *130 lb maximum*		
5.	**Zero Fuel Condition Weight** *Sub total item 1 thru 4*		
6.	Fuel Loading *56 Gallon @ 6.0 lb/gal. Maximum*		
7.	**Ramp Condition Weight** *Sub total item 5 and 6*		
8.	Fuel for start, taxi, and runup *Normally 6 lb at average moment of 922.8*	–	–
9.	**Takeoff Condition Weight** *Subtract item 8 from item 7*		

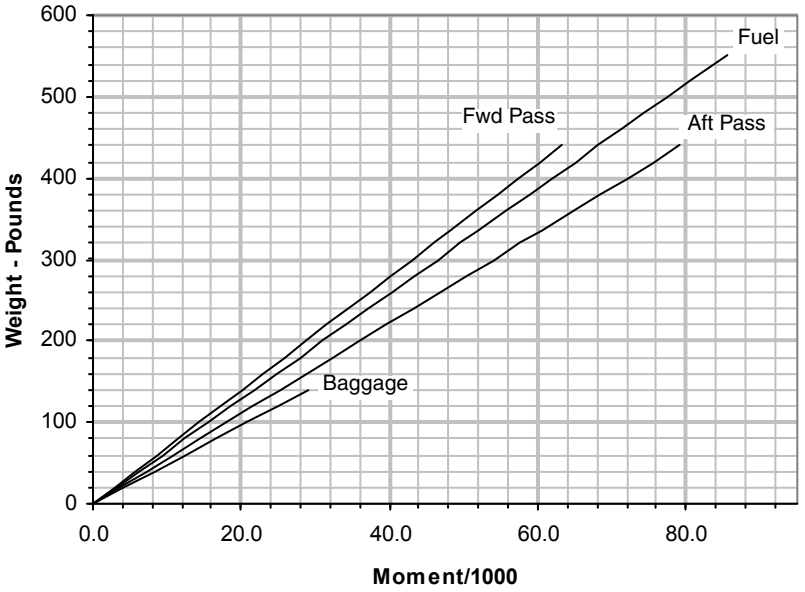
• Note •

The Takeoff Condition Weight must not exceed 3050 lb.

The Takeoff Condition Moment must be within the Minimum Moment to Maximum Moment range at the Takeoff Condition Weight. (Refer to Moment Limits graphs).

Loading Data

Use the following chart or table to determine the moment/1000 for fuel and payload items to complete the Loading Form



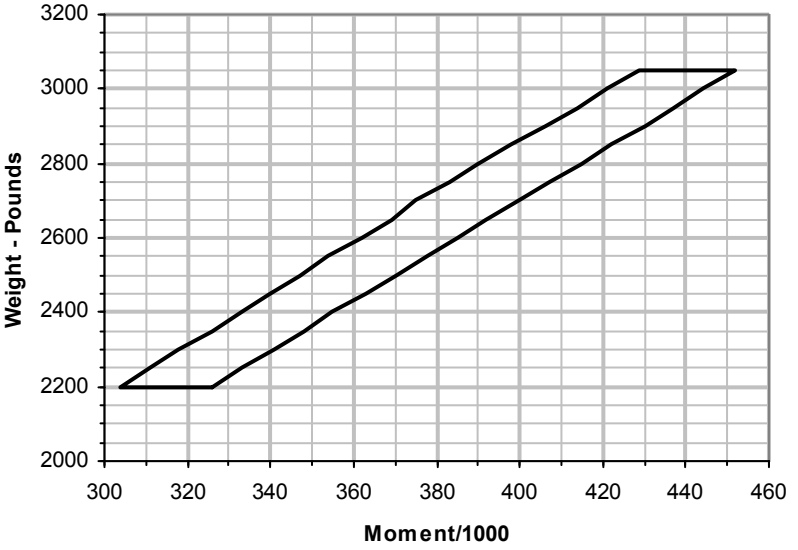
Weight LB	Fwd Pass FS 143.5	Aft Pass FS 180.0	Baggage FS 208.0	Fuel FS 153.8	Weight LB	Fwd Pass FS 143.5	Aft Pass FS 180.0	Fuel FS 153.8
20	2.87	3.60	4.16	3.10	220	31.57	39.60	34.08
40	5.74	7.20	8.32	6.20	240	34.44	43.20	37.18
60	8.61	10.80	12.48	9.29	260	37.31	46.80	40.27
80	11.48	14.40	16.64	12.39	280	40.18	50.40	43.37
100	14.35	18.00	20.80	15.49	300	43.05	54.00	46.47
120	17.22	21.60	24.96	18.59	320	45.92	57.60	49.57
140	20.09	25.20	(27.04)*	21.69	336**	48.79	61.20	52.05
160	22.96	28.80		24.78	360	51.66	64.80	
180	25.83	32.40		27.88	380	54.53	68.40	
200	28.70	36.00		30.98	400	57.40	72.00	

*130 lb Maximum

**56 U.S Gallons Usable

Moment Limits

Use the following chart or table to determine if the weight and moment from the completed Weight and Balance Loading Form are within limits.



Weight	Moment/1000		Weight	Moment/1000	
LB	Minimum	Maximum	LB	Minimum	Maximum
2200	304	326	2700	375	398
2250	311	333	2750	383	406
2300	318	341	2800	390	414
2350	326	348	2850	398	421
2400	333	354	2900	406	429
2450	340	362	2950	414	437
2500	347	369	3000	421	444
2550	354	375	3050	429	452
2600	362	383	2700	375	398
2650	369	390			

Section 7 - Systems Description

Airframe

Wings

The wing structure is constructed of composite materials producing wing surfaces that are smooth and seamless. The wing cross section is a blend of several high performance airfoils. A high aspect ratio results in low drag. Each wing provides attach structure for the main landing gear and contains a 29.3-gallon fuel tank.

The G3 Wing is constructed in a conventional spar, rib, and shear section arrangement. The upper and lower skins are bonded to the spar, ribs, and aft shear web forming a torsion box that carries all of the wing bending and torsion loads. The rear shear webs are similar in construction but do not carry through the fuselage. The main spar is laminated epoxy/carbon fiber in a C-section, and is continuous from wing tip to wing tip. The wing spar passes under the fuselage below the two front seats and is attached to the fuselage in two locations. Lift and landing loads are carried by the single carry-through spar, plus a pair of rear shear webs (one on each wing) attached to the fuselage.

Rudder System

G3 Wing geometry is slightly changed with an increase in dihedral of 1° which allows for the elimination of the aileron-rudder interconnect system.

Fuel System

A 56-gallon usable wet-wing fuel storage system provides fuel for engine operation. The system consists of a 29.3-gallon capacity (28 gallon usable) vented integral fuel tank and a fuel collector/sump in each wing, a three position selector valve, an electric boost pump, and an engine-driven fuel pump. Fuel is gravity fed from each tank to the associated collector sumps where the engine-driven fuel pump draws fuel through a filter and selector valve to pressure feed the engine fuel injection system. The electric boost pump is provided for engine priming and vapor suppression.

Each integral wing fuel tank has a filler cap in the upper surface of each wing for fuel servicing. Access panels in the lower surface of each wing allow access to the associated wet compartment (tank) for inspection and maintenance. Float-type fuel quantity sensors in each wing tank supply fuel level information to the fuel quantity indicators. Positive pressure in the tank is maintained through a vent line from each wing tank. Fuel, from each wing tank, gravity feeds through strainers and a flapper valve to the associated collector tank in each wing. Each collector tank/sump incorporates a flush mounted fuel drain and a vent to the associated fuel tank.

The engine-driven fuel pump pulls filtered fuel from the two collector tanks through a three-position (LEFT-RIGHT-OFF) selector valve. The selector valve allows tank selection. From the fuel pump, the fuel is metered to a flow divider, and delivered to the individual cylinders. Excess fuel is returned to the selected tank.

A dual-reading fuel-quantity indicator is located in the center console next to the fuel selector in plain view of the pilot. Fuel shutoff and tank selection is positioned nearby for easy access.

Fuel system venting is essential to system operation. Blockage of the system will result in decreasing fuel flow and eventual engine fuel starvation and stoppage. Venting is accomplished independently from each tank by a vent line leading to a NACA-type vent mounted in an access panel underneath the wing near each wing tip.

The airplane may be serviced to a reduced capacity to permit heavier cabin loadings. This is accomplished by filling each tank to a tab visible below the fuel filler, giving a reduced fuel load of 13.0 gallons usable in each tank (26 gallons total usable in all flight conditions).

Drain valves at the system low points allow draining the system for maintenance and for examination of fuel in the system for contamination and grade. The fuel must be sampled prior to each flight. A sampler cup is provided to drain a small amount of fuel from the wing tank drains, the collector tank drains, and the gascolator drain. If takeoff weight limitations for the next flight permit, the fuel tanks should be filled after each flight to prevent condensation.

Section 8 - Handling, Servicing, and Maintenance

Servicing

Tire Inflation

Inflate nose tire to 30 psi (207 kPa) and main wheel tires to 62 psi (427kPa).

Intentionally Left Blank

Pilots Operating Handbook and

FAA Approved Airplane Flight Manual

Supplement
For

Garmin 400W-Series GPS Navigator

When a Garmin 400W-Series GPS Navigator is installed in the Cirrus Design SR20, this Supplement is applicable and must be inserted in the Supplements Section (Section 9) of the Cirrus Design SR20 Pilot's Operating Handbook. This document must be carried in the airplane at all times. Information in this supplement either adds to, supersedes, or deletes information in the basic SR20 Pilot's Operating Handbook.

• Note •

This POH Supplement Change, dated Revision 01: 11-11-07, supersedes and replaces the original release of this POH Supplement dated 08-15-07.

FAA Approved Joseph C Mieso Date 11 Nov 2007

for Royace H. Prather, Manager
Chicago Aircraft Certification Office, ACE-115C
Federal Aviation Administration

Section 1 - General

The WAAS-enabled, Garmin 400W-Series GPS Navigator is capable of providing primary navigation information for enroute, terminal, non-precision, and precision approaches with typical position accuracies of 1 meter horizontally and 2 meters vertically.

The Wide Area Augmentation System (WAAS) consists of ground reference stations positioned across the United States that monitor GPS satellite data. Two master stations, located on either coast, collect data from the reference stations and create a GPS correction message. This correction accounts for GPS satellite orbit and clock drift plus signal delays caused by the atmosphere and ionosphere. The corrected data is then broadcast through geostationary satellites.

WAAS also provides the capability of quickly determining when signals from a given satellite are wrong and removing that satellite from the navigation solution using Receiver Autonomous Integrity Monitoring (RAIM), a technology developed to assess the integrity of GPS signals.

• Note •

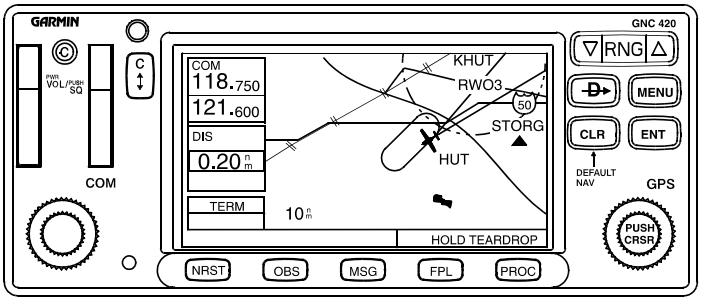
WAAS satellite coverage is only available in North America. User in other parts of the world can receive WAAS data, however, the signal has not been corrected and thus does not improve the accuracy of your receiver.

Models Covered

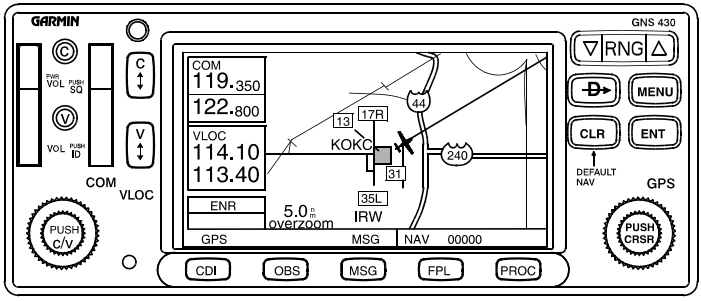
Two Garmin 400W-Series GPS Navigators are covered in this publication; the GNC 420W and GNS 430W. Generally, both models will be referred to as the Navigator, except where there are physical or operational differences.

• Note •

For detailed descriptions and full operation instructions for the GNC 420W or GNS 430W Navigators, *refer to the Garmin 400W-Series GPS Navigator Pilot's Guide and Reference, P/N 190-00356-00, September 2011 or later revision*.



SR20_FM09_1285



SR20_FM09_1109

Figure - 1
GNC 420W and GNS 430W 400W-Series Navigators

Section 2 – Limitations

1. The Garmin 400W-Series GPS Navigator Pilot's Guide and Reference, P/N 190-00356-00, September 2011 or later must be immediately available to the pilot during flight. The software status stated in the pilot's guide must match that displayed on the equipment.
2. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the database or verifies each selected waypoint for accuracy by reference to current approved data.
3. The Garmin 400W-Series GPS Navigator meets RNP5 (BRNAV) requirements of AC 90-96 and is in accordance with AC 20-138, and JAA AMJ 20X2 Leaflet 2 Revision 01, provided it is receiving usable navigation information from the GPS receiver.
4. Do not use the TERRAIN Interface for navigation of the aircraft. The Terrain Display does not provide TAWS capability and is intended to serve as a situational awareness tool only and does not provide the accuracy fidelity on which to solely base terrain or obstacle avoidance maneuvering decisions.

Section 3 - Emergency Procedures

1. If GPS Navigator information is not available or is invalid, utilize remaining operational navigation equipment as required.
2. If a “Loss of Integrity” (INTEG) or RAIM POSITION WARNING message is displayed during:
   a. Enroute/Terminal; continue to navigate using GPS equipment and periodically cross-check the GPS guidance to other approved means of navigation.
   b. GPS Approach; GPS approaches are not authorized under INTEG - execute a missed approach or revert to alternate navigation.

Section 4 - Normal Procedures

Refer to the Systems Description Section of this supplement for integration differences when single and dual units are installed. Normal operating procedures are outlined in the Garmin 400W-Series GPS Navigator Pilot's Guide and Reference, P/N 190-00356-00, September 2011 or later.

Activate Navigator

1. Battery Master Switch.....ON
2. Avionics Power Switch .....ON
3. Navigator COM/ Power Switch..... Rotate ON

   The Navigator will display a welcome page while the self-test is in progress. When the self test is successfully completed, the Navigator asks for NavData database confirmation, acquires position, and then displays the acquired position on the Navigators display and on the MFD.

   • Note •

   The Navigator is not coupled to an air and fuel data computer. Manual fuel-on-board and fuel flow entries must be made in order to use the fuel planning function of the AUX pages.

   The GPS Navigator utilizes altitude information from the altitude encoders altitude digitizer to enhance altitude information.

Deactivate Navigator

1. Navigator COM/ Power Switch.....Rotate CCW OFF

Section 5 - Performance

No change from basic Handbook.

Section 6 - Weight & Balance

No change from basic Handbook.

Section 7 - Systems Description

• Note •

This section provides general description and aircraft integration information for the Garmin GNC 420W and GNS 430W 400W-Series Navigators. For detailed descriptions and operational instructions, *refer to the Garmin 400W-Series GPS Navigator Pilot's Guide and Reference, P/N 190-00356-00, September 2011 or later revision*

GNC 420W

The GNC 420W, designated as the secondary navigator (GPS 2), is a GPS Navigator and VHF communications transceiver. The GPS Navigator consists of a GPS receiver, a navigation computer, and a Jeppeson NavData database all contained in the GNC 420W control unit mounted in the center console. Additionally, a VHF communications receiver, designated COM 2, is also integrated into the unit.

GPS Navigator

The GNC 420W navigator is coupled to the airplane's CDI. The GPS 2 antenna is located on top of the fuselage slightly aft of the rear window along the airplane centerline. The navigator is powered by 28 VDC through the 5-amp GPS2 and 7.5-amp COM 2 circuit breakers on the Avionics Non-Essential Bus.

Communication (COM) Transceiver

The GNC 420W includes a digitally-tuned integrated VHF communications (COM) transceiver. The COM 2 antenna is located below the cabin on the airplane centerline.

28 VDC for transceiver operating is controlled through the Avionics Master Switch and supplied through the 7.5-amp COM 2 circuit breaker on the Avionics Non-Essential Bus.

GNS 430W

The GNS 430W, designated as the primary navigator (GPS 1), includes all of the features of the GNC 420W with the addition of IFR certified VOR/Localizer and Glideslope receivers. In the event a second GNS 430W is installed, the second unit will function as described below except that the GPS Navigator is designated GPS 2, the NAV receiver is designated NAV 2, and the VHF communications receiver is designated COM 2.

GPS 2 Navigator and VHF NAV is powered by 28 VDC through the Avionics Master Switch and the 5-amp GPS 2 circuit breaker on the Avionics Non-essential Bus. 28 VDC for transceiver operation is supplied through the Avionics master Switch and the 7.5-amp COM 2 circuit breaker on the Avionics Non-Essential Bus.

The following describes a single GNS 430W unit and its functions.

GPS Navigator

The GNS 430W Navigator is coupled to the airplanes HSI and MFD. Typically, the second GPS Navigator provides backup and is approved for VFR use only. If the second GPS is also a GNS 430W, it will be coupled to the CDI and is also approved for IFR use.

The GPS 1 antenna is located on top of the fuselage slightly aft of the rear window along the airplane centerline and the GPS 2 antenna is located on top of the fuselage slightly forward of the rear window along the airplane centerline. The GNS 430W Navigator is powered by 28 VDC through the 5-amp GPS 1 circuit breaker on the Avionics Essential Bus.

Navigation (NAV) Receiver

The GNS 430W provides an integrated Navigation (NAV) receiver with VHF Omnirange/Localizer (VOR/LOC) and Glideslope (G/S) capability. The NAV antenna is mounted on top of the vertical tail.

28 VDC for navigation receiver operation is controlled through the Avionics Master Switch on the bolster switch panel and supplied through the 5-amp GPS 1 circuit breaker on the Avionics Essential Bus.

Communication (COM) Transceiver

The GNS 430W includes a digitally-tuned integrated VHF communications (COM) transceiver. The COM 1 antenna is located above the cabin on the airplane centerline.

28 VDC for transceiver operating is controlled through the Avionics Master Switch and supplied through the 7.5-amp COM 1 circuit breaker on the Avionics Essential Bus.

Avionics Integration

The GNS 430W Navigator is integrated into the airplane avionics installation in three configurations:

1. Single GNS 430W (GPS 1) interfaced with the PFD and MFD and a single Garmin GNC 250XL (GPS 2) interfaced with the PFD and MFD.
   - GPS 1 in this configuration is a GNS 430W Navigator with VHF COM interfaced with the PFD and MFD as GPS 1/VLOC 1. Select NAV Source to GPS 1 or VLOC 1 through the PFD's NAV select button. With source set to GPS 1 or VLOC 1, it can be alternately set between GPS or VLOC by the CDI button on the navigator. The active source is identified on the PFD.
   - GPS 2 in this configuration is a GNC 250XL Navigator interfaced with the PFD and MFD as GPS 2. Select NAV Source to GPS 2 through the PFD's NAV select button. The active source is identified on the PFD.
2. Single GNS 430W (GPS 1) interfaced with the PFD and MFD and a single GNC 420W (GPS 2) interfaced with the MFD (VOR/LOC) indicator.
   - GPS 1 in this configuration is a GNS 430W Navigator with VHF COM interfaced with the PFD and MFD as GPS 1/VLOC 1. Select NAV Source to GPS 1 or VLOC 1 through the PFD's NAV select button. With source set to GPS 1 or VLOC 1, it can be alternately set between GPS or VLOC by the CDI button on the navigator. The active source is identified on the PFD.
   - GPS 2 in this configuration is a GNS 420W Navigator with VHF COM interfaced with the PFD and MFD as GPS 2. Select NAV Source to GPS 2 through the PFD's NAV select button. The active source is identified on the PFD.

3. Dual GNS 430W units are installed. GPS 1 in this configuration is the uppermost GNS 430W unit in the console and GPS 2 is the lower GNS 430W unit.
   - GPS 1 in this configuration is a GNS 430W Navigator with VHF COM interfaced with the PFD and MFD as GPS 1/VLOC 1. Select NAV Source to GPS 1 or VLOC 1 through the PFD's NAV select button. With source set to GPS 1 or VLOC 1, it can be alternately set between GPS or VLOC by the CDI button on the navigator. The active source is identified on the PFD.
   - GPS 2 in this configuration is a GNS 430W Navigator with VHF COM interfaced with the PFD and MFD as GPS 2/VLOC 2. Select NAV Source to GPS 2 or VLOC 2 through the PFD's NAV select button. With source set to GPS 2 or VLOC 2, it can be alternately set between GPS or VLOC by the CDI button on the navigator. The active source is identified on the PFD.

TERRAIN Interface

• Note •

TERRAIN functionality is a standard feature found in GNS 430W units with main software version 5.01 or above and valid terrain and obstacle databases installed.

Garmin TERRAIN is a terrain awareness system incorporated into GNS 430W units to increase situational awareness and aid in reducing controlled flight into terrain. The TERRAIN function displays altitudes of terrain and obstructions relative to the aircraft's altitude and are advisory in nature only. Individual obstructions may be shown if available in the database, however, not all obstructions may be available in the database and data may be inaccurate. TERRAIN information should be used as an aid to visual acquisition and not use to navigate or maneuver to avoid terrain.

For for a more detailed description of the TERRAIN function, *refer to the Garmin 400W-Series GPS Navigator Pilot's Guide and Reference, P/N 190-00356-00, September 2011 or later revision*.