Garmin International, Inc.
1200 E. 151st Street
Olathe, Kansas 66062 USA

FAA APPROVED

ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
Garmin G500H as installed in Bell 407

Registration Number: _____ Serial Number: _____

This supplement shall be attached to the Bell 407 Rotorcraft Flight Manual when the Garmin G500H Flight Display System has been installed in accordance with **STC SR02295LA**.

The information contained herein supplements or supersedes the basic Rotorcraft Flight Manual only in those areas listed herein. For limitations, procedures and performance information not contained in this document, consult the basic FAA approved Rotorcraft Flight Manual.

FAA Approved By: JR Brownell
JR Brownell
ODA STC Unit Administrator
GARMIN International, Inc.
ODA-240087-CE

DATE: 2/11/2020

LOG OF REVISIONS				
	Page			
Revision Number	Date	No.	Description	FAA Approved
A Original	May 5, 2010	All	Complete Supplement	***Seyed-Joussef Hashemi*** Mgr. Flt. Test Br., ANM-160L Federal Aviation Administration Los Angeles Aircraft Certification Office Transport Airplane Directorate Date May 5, 2010
B		All	Added new Limitations section – Instrument Markings and Placards.	_____ Mgr. Flt. Test Br., ANM-160L Federal Aviation Administration Los Angeles Aircraft Certification Office Transport Airplane Directorate Date: April 20, 2011
C	November 4, 2014	6	Table 1-1: GDU software was 4.00 GRS 77H software was 3.50 GDC 74H software was 3.06	*Michael Warren* Michael Warren ODA STC Unit Administrator
		6	Table 1-2: Added GTN 6XX and 7XX along with note	

LOG OF REVISIONS				
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Revision Number	Date	No.	Description	FAA Approved
C cont.		9	1.14: Added Radar Altimeter Display	Garmin International, Inc. ODA-240087-CE Date: November 14, 2014
		10	Table 1-3: Added GTN 6XX and GTN 7XX	
		22	Added to Interfaced Equipment: Radar Altimeter and GTN 6XX/7XX Series Navigator	
		23	Added: Radar Altimeter	
		25	Updated Figure 6	
D	January 5, 2016	All	Complete Rewrite	Michael Warren ODA STC Unit Administrator GARMIN International, Inc. ODA-240087-CE Date: January 7, 2016
E	February 11, 2020	27	Updated System Block Diagram	See page 1
		8	Added traffic Soft Key functionality	
		11	Added EDO VNAV	
		6	Updated software versions	
		6, 7, 18, 19, 20	Added GDC 72H ADC, GRS 79H AHRS and GSU 75H ADAHRS	
		10	Added alert indication verification	
		19	Added ADAHRS breaker label	
		28	Added ADAHRS to definitions	

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Section 1. LIMITATIONS

1.1 Types of Operation

Rotorcraft equipped with the G500H Avionics Display System are limited to VFR ONLY operations in accordance with 14 Code of Federal Regulations Part 91 and Part 135.

1.2 System Software Requirements

The G500H must utilize the following or later FAA approved software versions for this AFMS revision to be applicable:

Component	Identification	Software Version (or later FAA approved)
GDU 620	PFD/MFD	7.36
GRS 77H	AHRS	3.52
GRS 79H	AHRS	2.07
GDC 74H	Air Data Computer	3.11
GDC 72H	Air Data Computer	2.06
GSU 75H	ADAHRS	2.06 / 2.07
GMU 44	Magnetometer	2.05

Table 1-1 G500H Software Versions

1.3 Equipment Requirements

Table 1-2 below lists the minimum fully functional G500H System Elements required for VFR flight operations:

Equipment	Number installed	VFR
Primary/Multi Flight Display	1	1
Attitude / Heading Unit (AHRS or ADAHRS)	1	0
Air data computer (ADC)	1	1
Magnetometer (GMU)	1	0
Standby Altimeter	1	1
Magnetic Compass	1	1
GTN 6XX, GTN 7XX, GNS 400W, 500W, or 480 series navigator	1	0

Table 1-2 G500H Equipment Requirements

1.4 AHRS Operational Area

The GRS 77H / 79H (GSU 75H) AHRS used in the G500H is limited in its operational area: AHRS Operation is not assured north of 72°N and south of 70°S latitudes. In addition, AHRS operation is not assured in the following four regions:

1) North of 65° North latitude between longitude 75° W and 120° W
2) North of 70° North latitude between longitude 70° W and 128° W
3) North of 70° North latitude between longitude 85° E and 114° E
4) South of 55° South latitude between longitude 120° E and 165° E

Loss of the G500H heading and attitude may occur near the poles, but this will not affect the GPS track.

1.5 AHRS Operation

The GRS 77H / 79H (GSU 75H) AHRS used in the G500H uses GPS data, air data, and magnetometer inputs to improve availability. The AHRS will operate in reversionary modes that do not require these inputs.

When operating in no magnetometer or no magnetometer/no air data modes rapid pitch or roll movements may result in temporary loss of attitude indication.

1.6 Airspeed Limitations and Indicator Markings

The original type design approved airspeed limitations remain in effect. The airspeed limitations stated in the AFM/POH, standby airspeed indicator and/or airspeed limitation placards must be observed.

1.7 Navigation Angle

The GDU 620 Navigation Angle, which defines whether the GDU 620 headings are referenced to True or Magnetic North can be set to either True or Magnetic on the AUX page. The Navigation Angle set in the GDU 620 shall be set by the pilot to match that which is set on all GPS/SBAS navigators interfaced to the unit.

1.8 Helicopter Synthetic Vision Technology (HSVT)

Helicopter Synthetic Vision Technology (HSVT) is for situational awareness ONLY. The use of the synthetic vision display alone for aircraft control, navigation, or obstacle/terrain/traffic avoidance is prohibited.

1.9 Terrain and Obstacle Display

Terrain elevation information can be selected for display on the MFD as red, orange, yellow, green, and black tiles. Obstacles and wire information is displayed in red, yellow, and gray towers (obstacles). The information is depicted for advisory purposes only and shall not to be used for aircraft maneuvers or navigation. Terrain HSVT alerts are not equivalent to warnings provided by HTAWS.

The terrain display is intended to serve as a situational awareness tool only. By itself, it may not provide either the accuracy or the fidelity on which to base decisions and plan maneuvers to avoid terrain or obstacles.

1.10 Moving Map

The moving map on the MFD is advisory in nature and is shall not be used for course guidance. The moving map on the MFD must be cross checked for correctness against the PFD HSI, published charts, or other approved sources of navigation information.

1.11 Datalinked Weather Display (XM, GFDS, FIS-B weather)

This limitation applies to datalinked weather products from SiriusXM via a GDL 69/69A, FIS-B via a Garmin ADS-B receiver, and Connext via a GSR 56.

Do not use data link weather information for maneuvering in, near, or around areas of hazardous weather. Information provided by data link weather products may not accurately depict current weather conditions.

Do not use the indicated data link weather product age to determine the age of the weather information shown by the data link weather product. Due to time delays inherent in gathering and processing weather data for data link transmission, the weather information shown by the data link weather product may be significantly older than the indicated weather product age.

Do not rely solely upon data link services to provide Temporary Flight Restriction (TFR) or Notice to Airmen (NOTAM) information. Not all TFRs and NOTAMS may be depicted on the G500H.

1.12 Traffic Display

Traffic may be displayed on the G500H System when connected to an approved optional TCAS, TAS, TIS, or ADS-B traffic device. These systems are capable of providing traffic monitoring and alerting to the pilot. Traffic shown on the display may or may not result in traffic alerts. The display of traffic is an aid to visual acquisition and shall not be utilized for aircraft maneuvering.

CAUTION

Some TAS systems may not automatically transition to operate mode upon becoming airborne or may remain in standby mode if power to the TAS system is cycled in the air. The pilot must be aware of the operating status of the TAS traffic system by referring to the traffic icon on the map pages or the status annunciator on the traffic page. If the traffic system is in STANDBY mode use the traffic page softkeys to change to the OPERATE mode.

The STBY/OPER softkey will simultaneously toggle BOTH Active Traffic (if installed) and ADS Traffic, to their respective STANDBY/OFF or OPERATE/ON condition with one key press.

1.13 Surface Operations

SafeTaxi or Chartview functions shall not be used as the basis for ground maneuvering. SafeTaxi and Chartview functions do not comply with the requirements of AC 20-159 and are not qualified to be used as an airport moving map display (AMMD). SafeTaxi and Chartview use is limited to airport surface orientation to improve flight crew situational awareness during airport operations.

1.14 MFD Video Display

Video images displayed on the MFD are intended for use as an aid to situational awareness only. Aircraft maneuvering based solely on the MFD video display is prohibited.

Section 2. NORMAL PROCEDURES

Refer to the Garmin G500H PFD/MFD System Cockpit Reference Guide P/N 190-01150-03 or G500H Pilot's Guide P/N 190-01150-02, for detailed operating procedures. This includes all Primary Flight Display and Multi-Function Display information.

Although intuitive and user friendly, the G500H PFD/MFD System requires a reasonable degree of familiarity to avoid becoming too engrossed at the expense of situational awareness. Pilots should take full advantage of training tools to enhance familiarity with the G500H system.

- **Review displays for any abnormal warning, caution, or advisory indications**
- **If equipped with a terrain warning system, ensure that the terrain alert audio test can be heard clearly**

2.1 PFD Knob & PFD Soft Keys

The basic PFD controls are adjacent to and beneath the PFD display. The rotary knob performs the function annunciated on the display just to the upper left of the HSI: HDG, CRS, ALT, V/S, or BARO. If no function is annunciated, the knob is providing a HDG function. Assigning the function of the knob is done by pressing/releasing one of the dedicated function buttons adjacent to the PFD. The knob defaults back to HDG if it is not rotated for a period of 10 seconds. The Garmin G500H PFD/MFD System Cockpit Reference describes each function and its operation.

The soft keys at the bottom of the PFD display are used to configure the course data displayed in the HSI (CDI button, 1-2 button) and select the optional bearing pointers (BRG1 and BRG2 button) which may be overlaid in the HSI presentation on the PFD. The soft keys operate by press and release.

The ATT SYNC soft key synchronizes the miniature aircraft symbol to the horizon line at the time it is pressed. Pressing the soft key again will return the miniature aircraft symbol to its zero reference. When ATT SYNC is active small marks will appear at the outboard edges of the attitude display that show the zero reference.

The units and markings on the PFD are not user configurable. They match the units as specified in the aircraft's FAA approved Rotorcraft Flight Manual and standby instruments. Display and control of the airspeed references are made via the AUX page of the MFD; consult the Garmin G500H Cockpit Reference Guide for description and operation of these references.

2.2 MFD Knobs & MFD Soft Keys

The MFD controls are adjacent to and beneath the MFD display. The rotary knobs are used to scroll through various pages/page groups of the MFD. Pressing the knob will activate a cursor and allow for the user to enter data and manipulate settings.

Soft keys at the bottom of the display allow for the rapid selection of pre-defined functions to be performed on each page. The soft keys operate by press and release. More detailed configuration is typically available by pressing the MENU button, located on the right side of the display.

Pressing and holding down the CLR key will display the main map page on the MFD. Details of the functions available on the MFD are explained in the Garmin G500H Cockpit Reference Guide.

2.3 Helicopter Synthetic Vision Technology (HSVT)

The HSVT function may be turned on or off, as desired. To access the HSVT soft key menu, press the PFD soft key on the GDU 620, followed by the SYN VIS soft key. Synthetic vision terrain, horizon headings, and airport signs can be toggled on and off from this menu. Press the BACK soft key to return to the root PFD menu.

2.4 HSVT Terrain

When the G500H has SVT enabled aural and visual terrain, obstacle, and wire alerting will be provided by the Terrain HSVT function of the G500H system. Terrain HSVT modes (normal, RP, and inhibit) can be selected via soft key on the Terrain page on the G500H MFD.

2.5 Altitude Alerter

The Altitude Bug Setting will flash when approaching within 1000 feet of the selected altitude, and an audio tone is played when approaching or deviating within 200 feet of the selected altitude.

2.6 EDO VNAV

If equipped with GTN, enroute VNAV vertical guidance can be displayed on the GDU620 PFD. The Enhanced Descent-Only Vertical Navigation (EDO VNAV) function provides a target altitude digital readout, which appears near the top of the pressure altitude tape on the PFD, with a single altitude value and horizontal lines indicating constraint type (above, below, or at). A magenta vertical speed required caret (‘<’) on the VSI and vertical deviation caret (‘<’) on the VDI provide vertical guidance during the VNAV descent. A magenta “V” (indicating VNAV) will be displayed at the top of the VDI to indicate the source.

Section 3. EMERGENCY AND MALFUNCTION PROCEDURES

3.1 Emergency Procedures

3.1.1 Loss of Electrical Power

In the event of a total loss of electrical power, the G500H system will cease to operate and the pilot must utilize the standby instruments and visual references to fly the aircraft.

3.2 Malfunction Indications and Procedures

These procedures supersede those presented as markings or placards, or documented in the aircraft's FAA approved Rotorcraft Flight Manual as a result of the installation of the G500H system. All other emergency procedures remain in effect.

3.2.1 Primary Flight Display

If primary flight information (Heading, Altitude or Airspeed) on the PFD is not available or appears invalid, utilize the standby instruments installed and visual references as required.

3.2.2 AHRS Failure

A failure of the Attitude and Heading Reference System (AHRS) is indicated by a removal of the sky/ground presentation, a red X over the attitude indicator, and a yellow "AHRS FAILURE" shown on the PFD. A heading failure will also be indicated.

1. Use visual references for aircraft control
2. Set course datum using CRS selection of the PFD knob

The Attitude, Heading and Reference System (AHRS) requires at least one GPS *or* air data input to function properly. In the unlikely event that GPS data *and* air data is not received by the AHRS, the system will not provide Attitude, Heading, Altitude, or Airspeed information; however, if the PFD is receiving valid GPS information, the reversionary data on the PFD provides GPS Track and GPS Altitude data along with course information and deviations which are still valid and may be used to navigate.

3.2.3 Heading Failure

Heading failure is indicated by replacement of the digital heading display with amber "HDG" text and a red X.

If valid GPS ground track is available, it will automatically be displayed in place of heading. The HSI heading bug and course pointer will continue to function normally, using GPS ground track as a reference instead of magnetic heading.

If GPS track is not available:

1. Use standby compass for heading reference.
2. Verify selected course using “CRS” button and PFD knob.

CAUTION

No directional references will be displayed on HSI. The heading bug will be removed, and the course pointer will remain fixed at the top of the HSI regardless of aircraft heading. Course deviation indications will behave similar to a traditional CDI. VOR deviations will be relative the selected course with a TO/FROM indication. Localizer deviations will not be affected by the selected course, and reverse sensing will occur when tracking inbound on a localizer back course.

3.2.4 Air Data Computer (ADC) Failure

Complete loss of the Air Data Computer is indicated by a red X and yellow text over the airspeed, altimeter, vertical speed, TAS and OAT displays. Some derived functions, such as true airspeed and wind calculations, will also be lost.

1. Use Standby Altimeter, visual references, and secondary cues

3.2.5 GPS Data Failure

GPS data failure may be indicated by any or all of following:

- Loss of GPS course deviation information on HSI
- Amber “LOI” text on the HSI
- Amber “NO GPS POSITION” text on the MFD moving map
- Loss of waypoint bearing or distance information

1. Select alternate GPS source, if available, by pressing “1-2” softkey on PFD.

If alternate GPS source is not available:

2. Select alternate navigation source using “CDI,” “1-2,” or “BRG” softkeys on PFD, or refer directly to external navigation data.

3.2.6 Navigation Data Failure (VOR/LOC/GS/ADF)

Navigation data failure may be indicated by any or all of following:

- Loss of course deviation information on HSI
- Loss of glideslope/glidepath information on PFD

- Loss of bearing pointer on HSI

1. Select alternate navigation source using “CDI,” “1-2,” or “BRG” softkeys on PFD, or refer directly to external navigation data.

3.2.7 Synthetic Vision

The synthetic vision display of terrain uses several data sources (GPS, terrain database, attitude information, etc.) in order to accurately display terrain. If any of these data sources become unreliable or unavailable, the display of synthetic terrain will automatically revert to the non-SVT PFD display of blue over brown. If there is a discrepancy between actual terrain around the aircraft and terrain shown on the SVT display, the display of synthetic vision should be manually turned off manually.

To turn off SVT:

1. Press the “PFD” softkey on the PFD.
2. Press the “SYN VIS” softkey to turn off SVT.

3.2.8 Display Dimming

When operating at high Outside Air Temperatures, typically in excess of 20°C, the GDU 620 display may automatically dim to reduce equipment temperatures. The display will return to full brightness when operating temperatures are reduced.

3.2.9 Warnings, Cautions, and Advisory Annunciations

The following tables show the color and significance of the warning, caution, and advisory messages which may appear on the G500H displays.

NOTE

The G500H Cockpit Reference Guide and the G500H Pilot’s Guide contain detailed descriptions of the annunciator system and all warnings, cautions and advisories.

Annunciation	*Pilot Action*	*Cause*
ATTITUDE FAIL	Use visual references	Display system is not receiving attitude data from the AHRS; accompanied by the removal of sky/ground presentation and a red X over the attitude area.
AIRSPEED FAIL	Use visual references	Display system is not receiving airspeed data from the air data computer; accompanied by a red X through the airspeed display.
ALTITUDE FAIL	Use Standby Altitude	Display system is not receiving altitude data from the air data computer; accompanied by a red X through the altimeter display.
VERT SPD FAIL	Cross check instruments	Display system is not receiving vertical speed data from the air data computer; accompanied by a red X through the vertical speed display.
HDG	Use Standby Magnetic Compass or GPS track information	Display system is not receiving valid heading data from the AHRS; accompanied by a red X through the digital heading display.
Red X	Reference the data source or alternate equipment	A red X through any display field, indicates that display field is not receiving data or is corrupted.
TERRAIN	Visually acquire the terrain and avoid	SVT Terrain has determined that nearby terrain poses a collision hazard.
OBSTACLE	Visually acquire the obstacle and avoid	SVT Terrain has determined that a nearby obstacle poses a collision hazard.
WIRE	Visually acquire the wire and avoid	HSVT Terrain has determined that a nearby wire poses a collision hazard.

Table 1 Warning Annunciations – Red

Annunciation	*Pilot Action*	*Cause*
AHRS Aligning – Keep Wings Level	Limit rotorcraft bank to less than 10 degrees as AHRS Aligns	Attitude and Heading Reference System is aligning. Keep attitude level using outside references. AHRS will not align if bank angle remains over 10 degrees.
NO GPS POSITION	If the system is configured with dual GPS, press the 1-2 button	GPS data on the selected system is no longer valid. The Moving Map and associated data are not updating.
TRAFFIC	Visually acquire the traffic to see and avoid	The configured traffic system has determined that nearby traffic may be a threat to the aircraft.
No Traffic Data	Use vigilance, as the traffic sensor is not able to detect traffic	The configured traffic system is not able to detect traffic and / or provide the pilot with any traffic awareness.
TERRAIN	Visually acquire the terrain and avoid	HSVT Terrain has determined that nearby terrain may pose a collision hazard.
OBSTACLE	Visually acquire the obstacle and avoid	HSVT Terrain has determined that a nearby obstacle may pose a collision hazard.
TER N/A, TER FAIL	Use vigilance, terrain depiction is no longer provided.	Database errors or lack of required GPS position.
NO DATA	Displayed on dedicated display pages. Indicates that data from the interfaced sensor is not available	Loss of connection or failure of interfaced sensor.

Table 2 Caution Annunciations – Yellow

Annunciation	*Pilot Action*
Various Alert Messages may appear under the MFD - ALERTS soft key.	View and understand all advisory messages. Typically, they indicate communication issues within the G500H System. Refer to the G500H Cockpit Reference for appropriate pilot or service action.

Table 3 Advisories – White

Section 4. PERFORMANCE

No change.

Section 5. WEIGHT AND BALANCE

Reference most current aircraft weight and balance.

GENERAL INFORMATION

Garmin G500H Flight Display System

Reference Garmin G500H PFD/MFD System Cockpit Reference Guide P/N 190-01150-03 for basic operational aspects of the system. For a complete detailed explanation of all the G500H's capabilities see the G500H Pilot's Guide P/N 190-01150-02.

The G500H Flight Display System consists of a Primary Flight Display (PFD) and Multi- Function Display (MFD) housed in a single Garmin Display Unit (GDU 620), an Air Data Computer (GDC 74H / GDC 72H), Attitude and Heading Reference System (GRS 77H / GRS 79H), or combination Air Data/Attitude and Heading Reference System (GSU 75H ADAHRS).

The G500H interfaces with other installed systems in the aircraft, including Garmin GPS/SBAS navigators, VHF navigation radios, datalinks, traffic systems, weather radars, audio panels, video sources, and radar altimeters.

The G500H system can optionally provide Terrain Alerting functions and display of Terminal Procedures.

The primary function of the PFD is to provide attitude, heading, air data and navigation information to the pilot. . The primary function of the MFD is to provide data which will facilitate the pilot's awareness with respect to surrounding factors that may affect the overall conduct of the flight.

Figure 4 - GDU 620 Displays

The standby instruments (altimeter and magnetic compass) are completely independent from the PFD and will continue to operate in the event the PFD is inoperative. These standby instruments should be included in the pilot's normal instrument scan and must be utilized if the PFD data is in question.

System Power Sources

The G500H system depends on electrical power to function. The Garmin Display Unit (GDU), Attitude and Heading Reference System (AHRS), and Air Data Computer (ADC) are connected to the aircraft main bus.

The major components of the G500H are circuit breaker protected with reset-able type circuit breaker available to the pilot. These breakers are located on the overhead circuit breaker panel and are labeled as follows:

Circuit Breaker Label	Equipment
PFD	Garmin Display Unit (PFD/MFD), GDU 620
AHRS	Attitude and Heading Reference System
ADC	Air Data Computer
ADAHRS	Air Data / Attitude and Heading Reference System

Pitot-Static System

The pitot-static system supplies pitot-static pressure to the GDC 72H/74H, (GSU 75H) standby altimeter, and standby airspeed indicator.

Databases

The G500H utilizes several databases. Database titles display in yellow if expired or in question (Note: the G500H receives the calendar date from the GPS, but only after acquiring a position fix.). Database cycle information is displayed at power up on the MFD screen, but more detailed information is available on the AUX pages. Internal database validation prevents incorrect data from being displayed.

The upper Secure Digital (SD) data card slot is typically vacant as it is used for software maintenance and navigational database updates. The lower data card slot should contain a data card with the system's terrain / obstacle information and optional data including Safe Taxi, FliteCharts and ChartView electronic charts.

The terrain databases are updated periodically and have no expiration date. Coverage of the terrain database is between North 75° latitude and South 60° latitude in all longitudes.

The obstacle database contains data for obstacles and wires that pose a potential hazard to aircraft. It is very important to note that not all obstacles are necessarily charted and therefore may not be contained in the obstacle database. Coverage of the obstacle database includes the United States and Europe. This database is updated on a 56-day cycle.

The Garmin SafeTaxi database contains detailed airport diagrams for selected airports. These diagrams aid in following air traffic control instructions by accurately displaying the aircraft position on the map in relation to taxiways, ramps, runways, terminals, and services. This database is updated on a 56-day cycle.

The Garmin FliteCharts database contains procedure charts for the coverage area purchased. This database is updated on a 28-day cycle. If not updated within 180 days of the expiration date, FliteCharts will no longer function.

The Jeppesen ChartView electronic charts database contains procedure charts for the coverage area purchased. An own-ship position icon will be displayed on these charts. This database is updated on a 14-day cycle. If not updated within 70 days of the expiration date, ChartView will no longer function.

The airport directory database contains information on landing facilities, such as operating hours, services available, and transportation/lodging resources. Airport directory information may be available from multiple sources and coverage areas. This database is updated on a 56-day cycle.

AHRS Operation

The GRS 77H / 79H AHRS used in the G500H uses GPS data, air data, and magnetometer inputs to improve availability. The GRS 77H / 79H will operate in reversionary modes that do not require these inputs.

When operating in no magnetometer or no magnetometer/no air data modes rapid pitch or roll movements may result in temporary loss of attitude indication.

ADAHRS Operation

The GSU 75H ADAHRS used in the G500H is a single LRU containing the GRS 79H and GDC 72H. Its functionality is the same as the comprising individual units.

Airspeed Markings

The airspeed markings on the G500H PFD match those on the standby indicator regardless of operating altitude. This rotorcraft was originally equipped only

with a placard for determining maximum airspeed based on altitude; that placard remains as the means to determine maximum airspeed.

Navigation Sources

The G500H requires at least one Garmin GPS/SBAS navigation unit to be installed to ensure the integrity of the Attitude and Heading Reference System. The AHRS will still operate in reversionary mode if all GPS sources fail, and the PFD attitude display will still be presented.

The HSI on the G500H can display course deviation information from up to four sources: GPS 1, GPS 2, VLOC 1, or VLOC 2. In addition, the HSI can display two simultaneous bearing pointers sourced from GPS 1, GPS 2, VLOC 1, VLOC 2.

Course Pointer Auto Slewing

The G500H HSI will auto slew, i.e. automatically rotate the GPS course pointer to the desired course defined by each GPS leg. The system will also auto slew the VHF NAV course pointer when the CDI transitions to a LOC setting if an ILS, LOC, LOC BC, LDA, or SDF approach is activated in the GPS/SBAS navigator.

The VHF NAV (green) course pointer will only auto slew if the approach is active in the navigator, the LOC frequency is loaded in the active NAV frequency, and *then* the HSI source is changed to the corresponding VHF NAV for the approach. Back Course approaches will auto slew to the reciprocal course.

The system is not capable of automatically setting the inbound VHF NAV course pointer if an approach is not active in the GNS Navigation System.

The pilot should always double check the inbound course pointer prior to initiating any transition on any VHF NAV approach. Auto slewing the VHF NAV course pointer to the correct selected course is a database dependent function.

Helicopter Synthetic Vision Technology (Optional)

HSVT uses an internal terrain database and GPS location to present the pilot with a synthetic view of the terrain and obstacles in front of the aircraft. The purpose of the SVT system is to assist the pilot in maintaining situational awareness with regard to the terrain and traffic surrounding the aircraft. A typical HSVT display is shown below:

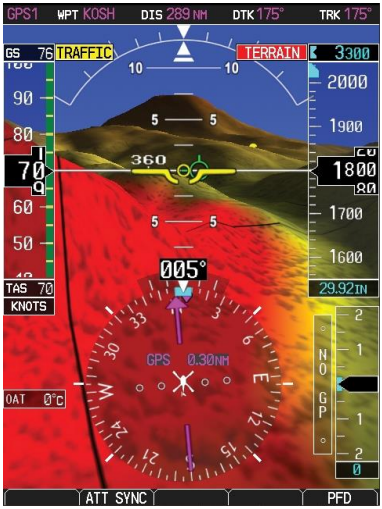


Figure 5 - Typical HSVT Display

HSVT provides additional features on the G500H primary flight display (PFD) which include the following information:

- **Synthetic Terrain**; an artificial, database derived, three dimensional view of the terrain ahead of the aircraft within a field of view of approximately 25 degrees left and 25 degrees right of the aircraft heading.
- **Obstacles**; obstacles such as towers, including buildings that are within the depicted synthetic terrain field of view.
- **Flight Path Marker (FPM)**; an indication of the current lateral and vertical path of the aircraft. The FPM is displayed when synthetic terrain is selected for display and ground speed is more than 30 knots.
- **Horizon Line**; a white line indicating the true horizon is always displayed on the SVT display.
- **Horizon Heading**; a pilot selectable display of heading marks displayed just above the horizon line on the PFD.
- **Airport Signs**; pilot selectable "signposts" displayed on the synthetic terrain display indicating the position of nearby airports that are in the G500H database.
- **Runway Highlight**; a highlighted presentation of the location and orientation of the runway(s) at the destination airport.
- **Traffic (Optional)**; a display on the PFD indicating the position of other aircraft detected by a traffic system interfaced to the G500H system.

The synthetic terrain depiction displays an area approximating the view from the pilot's eye position when looking directly ahead out the windshield in front of the pilot. Terrain features outside the field of view are not shown on the display.

The synthetic terrain display is intended to aid the pilot awareness of the terrain and obstacles in front of the aircraft. It may not provide either the accuracy or fidelity, or both, on which to solely base decisions and plan maneuvers to avoid terrain or obstacles. The synthetic vision elements are not intended to be used for primary aircraft control in place of the primary flight instruments.

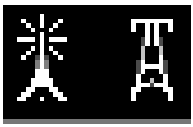
Depiction of Obstacles and Wires

Dedicated Terrain Page

The dedicated Terrain page will always depict point obstacles at zoom scales of 10 nm or less and depict wire obstacles at zoom scales of 5 nm or less. The obstacle or wire overlay icon, shown below, will be shown near the bottom of the display when the obstacle or wire depiction is active based on the zoom scale.

NOTE

The Obstacle or Wire Overlay Icon is displayed when wires or obstacles will be available on the Terrain Page based on the zoom scale. Only obstacles and wires within 2,000 ft vertically of the aircraft will be drawn on the Terrain Page.



Obstacle Overlay Icon (Left), Wire Overlay Icon (Right)

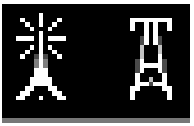
Map Page

The Map page may be configured to depict point obstacles and wire obstacles at various zoom scales by the pilot by using the Map page menu. The obstacle or wire overlay icon (shown below) will be shown near the bottom of the display when the obstacle or wire overlay is active based on the current zoom scale and setting selected by the pilot.

The settings chosen by the pilot on the Map page menu (including obstacle and wire display ranges) are saved over a power cycle.

NOTE

The Obstacle or Wire Overlay Icon is displayed when wires or obstacles will be available on the Map Page based on map setup and the zoom scale. Only obstacles and wires within 2,000 ft vertically of the aircraft will be drawn on the Map Page.



Obstacle Overlay Icon (Left), Wire Overlay Icon (Right)

NOTE

The Map page may be configured by the pilot to not show any obstacles or wires at any zoom scale.

INTERFACED EQUIPMENT

GTN 6XX or 7XX Series Navigator

The G500H requires an approved navigator such as a GTN 6XX/7XX or GNS 400W or 500W series navigator. The G500H can display annunciations received from the navigators.

Audio Panel

The G500H Avionics Display System is interfaced with the audio panel installed in the rotorcraft to provide aural altering generated by the G500.

Traffic Display

The G500H system can display traffic data from interfaced traffic systems. Sources of traffic data include TIS-A traffic via the Garmin GTX Series Mode-S Transponders, TAS/TCAS traffic from various active traffic awareness systems, and ADS-B traffic from Garmin ADS-B transceivers. The information from these systems is displayed on and controlled using the MFD.

Weather Data

The G500H system can display weather data from interfaced datalink systems. Sources of weather data include the Garmin GDL69 and GDL69A Sirius XM receivers, Garmin GSR 56 Iridium Transceiver, and Garmin ADS-B receivers. If one of these optional weather datalink receivers is installed, the pilot will be able to access graphical and text weather products using the MFD. Textual weather products may not be available in all regions of the world.

Video Display

The G500H can display images from up to 2 video inputs. Video images are displayed on the MFD. The G500H does not provide a means to control the

video source; however, the digital images from the video source can be adjusted using the G500H.

Radar Altimeter

The G500H provides the display of radar altitude on the PFD from certain radar altimeters.

High Speed Data Bus Interface

Some Garmin equipment connected to the G500H system utilizes the High Speed Data Bus (HSDB) interface. HSDB is similar to an Ethernet bus and provides a high-speed interface between Garmin avionics. Like Ethernet, data between two units may be passed through intermediate "hub" units. Interfaced equipment that uses HSDB includes the GTN 6XX/7XX navigators, GDL 69 datalink receiver, GDL 88 ADS-B transceiver, and GTS 8XX traffic systems.

The HSDB interfaces are installed to so that maximum data path redundancy is achieved. However, depending on the number of HSDB units installed, failure of one HSDB unit may result in loss of data on the G500H from "downstream" HSDB units. Any loss of data will be annunciated on the G500H.

HTAWS Annunciations on the PFD [from a Garmin navigator]

The G500H will display HTAWS (Helicopter Terrain Awareness and Warning System) annunciations on the PFD if the G500H is interfaced to a Garmin navigator with integrated HTAWS on GPS 1. The required HTAWS annunciations appear in the upper right of the PFD. These annunciations are not relative to the terrain displayed on the MFD or the yellow/red terrain shading of the Synthetic Vision displayed on the PFD of the G500H system. Refer to the Garmin navigator Airplane Flight Manual Supplement for proper pilot action and information on these alerts.

HTAWS alerts on the PFD of the G500H System are only displayed from the GPS/TAWS navigator interfaced as GPS 1 and are displayed regardless of the system 1-2 setting, which drives all other PFD and MFD data used by the G500H.

ADS-B Traffic System Interface

The G500H system can be interfaced to sources of ADS-B traffic. The *nose* of the ownship symbol on both the G500H main map page and dedicated traffic page serves as the actual location of your aircraft. The *center* of the traffic target icon serves as the reported location for the target aircraft. Motion vectors for traffic may be displayed in either absolute or relative motion. The location of the traffic targets relative to the ownship are the same, regardless of the selected motion vector.

Absolute motion vectors are colored white and depict the reported track of the traffic target referenced to the ground. An absolute motion vector pointed

towards your ownship symbol *does not* necessarily mean the traffic target is getting closer to your aircraft.

Relative motion vectors are colored green and depict the motion of the traffic target relative to your ownship symbol. The direction the traffic target is pointed may vary greatly from the motion vector and a target may be getting closer to your aircraft independent of the direction the target is pointed. A green relative motion vector pointed towards your ownship indicates that the traffic target *is* converging on your aircraft.

Traffic targets displayed on the dedicated traffic page may be selected using the MFD knobs in order to obtain additional information about a traffic target.

Flight Plan

The Flight Plan shown on the GDU 620 is the same as that provided by the GPS navigation source selected on the PFD. When waypoints are removed from the Flight Plan on the GPS navigator or when the entire flight plan is deleted it may take as long as 20 seconds for the change to be reflected on the G500/600 Flight Plan page and map.

5.1 System Block Diagram

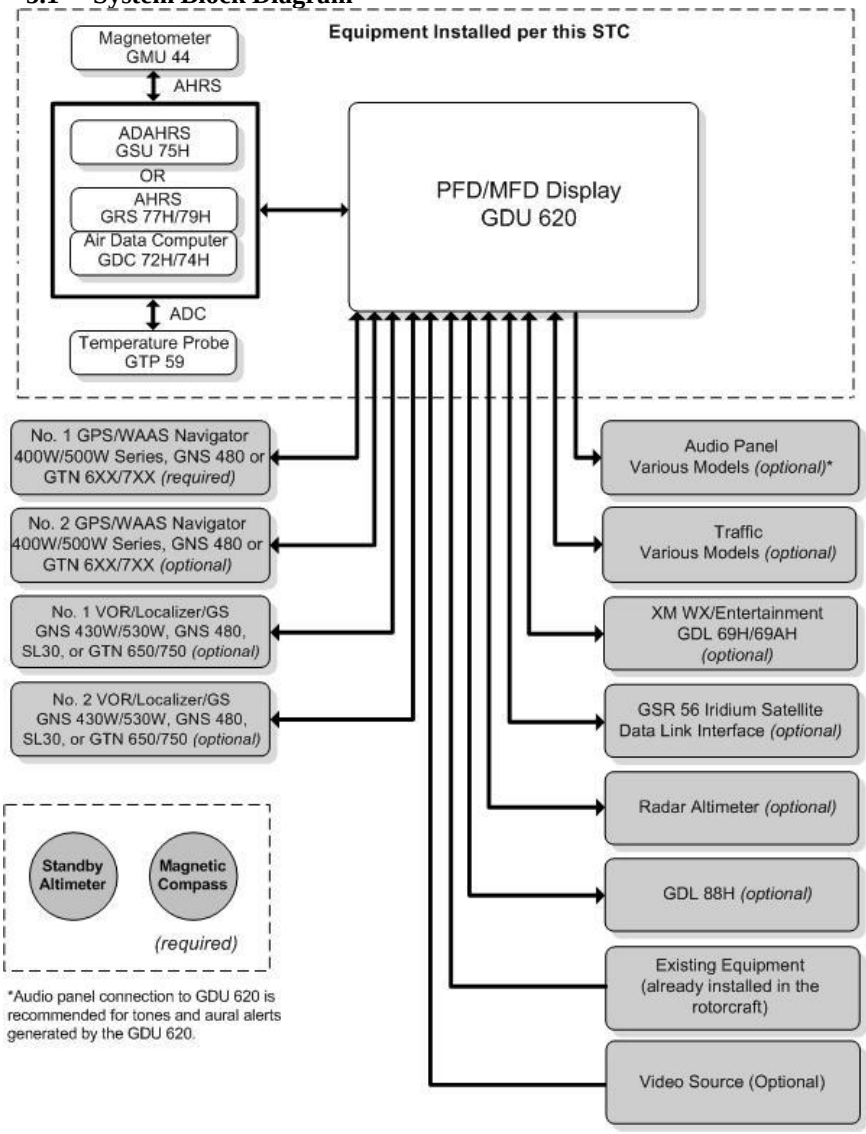


Figure 6 – System Block Diagram

DEFINITIONS

The following terminology is used within this document:

ADC:	Air Data Computer
ADS-B:	Automatic Dependent Surveillance Broadcast
AHRS:	Attitude & Heading Reference System
ADAHRS:	Air Data / Attitude & Heading Reference System
AUX:	Auxiliary
BARO:	Barometric Pressure
BRG:	Bearing
CDI:	Course Deviation Indicator
CRS:	Course
FPM:	Flight Path Marker
GDU:	Garmin Display Unit
GPS:	Global Positioning System
HDG:	Heading
HSI:	Horizontal Situation Indicator
HTAWS:	Helicopter Terrain Awareness and Warning System
ILS:	Instrument Landing System
LDA:	Localizer Directional Aid
LOC:	Localizer
LOC BC:	Localizer Backcourse
LOI:	Loss of Integrity
MFD:	Multi Function Display
PFD:	Primary Flight Display
SBAS:	Space-based Augmentation System
SD:	Secure Digital
SDF:	Simplified Directional Facility
SVT:	Synthetic Vision Technology
TAS:	Traffic Awareness System
TCAS:	Traffic Collision and Avoidance System
TIS:	Traffic Information Service
VFR:	Visual Flight Rules
VMC:	Visual Meteorological Conditions
V/S:	Vertical Speed