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Flight Manual Supplement

Garmin G500H TXi Flight Display System

Bell 212

FMS-212-003

Revision A

April 5, 2023



Aircraft Registration: _____

Aircraft Serial Number: _____

Sections 1 to 4 inclusive of this document comprises the approved Flight Manual Supplement. Compliance with Section 1, "Limitations", is mandatory.

Sections 5 and 6 are unapproved and for information only.

The information and data contained in this document supersedes or supplements that contained in the basic Approved Flight Manual for the Eagle Single Bell 212 Models only in the areas listed herein when modified in accordance with STC SH21-44. For Limitations, Procedures and Performance data not contained in this supplement, refer to the Approved Flight Manual or other applicable Approved Flight Manual Supplements.

This Supplement must be attached to the Approved Flight Manual for the aircraft with the subject design change incorporated.


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Revision Record

Rev	Date	Description of Revision
A	See Cover Page	Initial Release. This document supersedes FMS21011-1 Rev B.

Prepared: 

Reviewed: 
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Released: 
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General Information

This flight manual supplement (FMS) is intended to supplement Eagle Single Flight Manual Supplement FMS-D212-725-1.

The base installation of this modification consists of the following systems / equipment:

- Garmin GDU 1060 PFD/MFD (Qty 2)
- Garmin GSU 75 ADAHRS (Qty 2)
- Garmin GMU 44 Magnetometer (Qty 2)
- Garmin GTP 59 OAT Sensor (Qty 2)
- Mid-Continent MD302 Series Standby Attitude Monitor (SAM) (Qty 2)
- Garmin GDL 69AH SXM Satellite Receiver (QTY 1)

This flight manual is divided into seven sections as follows:

- Section 1: Limitations
- Section 2: Normal Procedures
- Section 3: Emergency and Malfunction Procedures
- Section 4: Performance Data
- Section 5: Weight and Balance Data
- Section 6: Systems Description
- Appendix A Optional Equipment Supplements

Sections 1 through 4 contain Transport Canada approved data necessary to operate the helicopter in a safe and efficient manner.

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Section 1. Limitations

The Limitations of Section 1 remain applicable with the following changes and additions:

1.21. Instrument Markings

Airspeed Indicator

The airspeed indicator markings are the same with the following changes and additions :

Below 25 knots : White Band

CAUTION:

Airspeed indications below 25 KIAS are unreliable. Airspeed indications should be ignored below 25 KIAS.

1.22. Avionics Systems

Garmin G500H TXi Flight Display System

1. Rotorcraft equipped with the G500H TXi Flight Display System is limited to VFR ONLY operations. The standby altimeter, standby airspeed and magnetic compass must be installed and operational.
2. The G500H TXi must utilize the following approved software versions:

COMPONENT	IDENTIFICATION	SOFTWARE VERSION (or later FAA approved)
GDU 1060	PFD/MFD	3.12

Table 1 - Software Versions

G500H Helicopter Synthetic Vision

1. The synthetic vision presentation must not be used as the sole reference for rotorcraft control (without reference to the primary flight instruments).
2. The synthetic vision presentation must not be used as the sole reference for navigation or obstacle/terrain/traffic avoidance.

ADAHRS Limitations

1. ADAHRS operation is not assured north of 72°N and south of 70°S latitudes. In addition, ADAHRS operation is not assured in the following four regions:
 - a. North of 65° North latitude between longitude 75°W and 120°W;
 - b. North of 70° North latitude between longitude 70°W and 128°W;
 - c. North of 70° North latitude between longitude 85°E and 114°E;
 - d. North of 55° South latitude between longitude 120°E and 165°E;

Loss of the G500H TXi heading and attitude may occur near the poles and in areas where the magnetic variation is greater than 99.9°, East or West. This will not affect the GPS track.

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OAT Limitations

1. Use of the G500H TXi information for performance calculations is prohibited. Use the OAT display for performance calculations.

Terrain Proximity Limitations

1. Rotorcraft manoeuvres and navigation shall not be predicated upon the use of the terrain display.

Traffic Display Limitations

1. The display of traffic is an aid to visual acquisition and is not to be utilized for aircraft manoeuvring.

Headset/Helmet Limitation

1. Compatible headset or helmet must be used when operating the G500H TXi Flight Display System.

GDL 69AH SXM Datalink Weather Display

1. Datalink weather is not to be solely used for weather information. Datalink weather provides a snapshot in time. It may not accurately reflect the current weather conditions.
2. Datalink weather is not intended to replace weather briefings or in-flight weather reports from ATC.

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Section 2. Normal Procedures

The Normal Procedures of Section 2 remain applicable with the following changes and additions:

2.3. Preflight Check

2.3.2. Exterior Check

Add the following areas to be inspected:

2A. Area 2A – Forward Belly

Antenna(s) – Condition and security.

3A. Area 3A – Belly

Condition of OAT Probe.

7A. Area 7A – Tailboom Underside

Antenna(s) – Condition and security.

10A. Area 10A – Cabin Top

Antenna(s) – Condition and security

2.6. Systems Check

Add the following check.

2.6.8. G500H Display Cold Weather Check

If ambient temperature is below -20°C:

The PFD/MFD displays must be warmed up until they are operational.

2.7. Before Takeoff

PFD/MFD Displays – Operational

MD302 Standby Attitude – Verify Battery Warning is not displayed

If the battery capacity test fails during the start-up process, a warning message will be displayed on the MD302. Failure of the battery capacity test may indicate less than 60 minutes of MD302 Standby Attitude emergency operation on the internal battery. Acknowledging YES will allow start-up process to continue. Acknowledging NO will result in a re-start of the start-up process. The warning message will be displayed until the battery capacity is charged to at least 80% of its capacity.

“Terrain System Test Okay” Aural Message – Verify

If aural message is not heard:

Terrain Test – Initiate

“Terrain System Test Okay” Aural Message – Verify

If aural message is not heard, TAWS is considered inoperative.

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2.9. In-Flight Operation

NOTE:

The secondary instrument lights should be used under normal night flight conditions since their use could affect the brightness of the PFD/MFD Display when the PLT INST/CPLT INST/PED dimmers are set to dim settings. The use of secondary instrument lights should be reserved for when primary instrument panel lighting fails.

(The following section is added after Section 2.13 Post Flight Check)

2.14. Normal Operation

2.14.1. Navigation Sources Available on the PFD/MFD

The PFDs can display the following navigation sources:

Navigation Source	PFD Annunciation	
Pilot GPS	GPS 1	
Copilot GPS	GPS 2	
Pilot NAV	VOR 1	LOC 1
Copilot NAV	VOR 2	LOC 2

Table 2 - PFD Navigation Sources

2.14.2. Bearing Pointer Sources Available on the PFD

The PFDs can display the following bearing pointer sources:

Bearing Source	PFD Annunciation
Pilot GPS	GPS 1
Copilot GPS	GPS 2
Pilot NAV	NAV 1
Copilot NAV	NAV 2

Table 3 - Bearing Pointer Sources

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Section 3. Emergency and Malfunction Procedures

The Emergency and Malfunction procedures of Section 3 remain applicable with the addition of the following:

3.12. Warning and Caution Messages

3.12.1. Terrain-FLTA Warnings

Red annunciator and aural "TERRAIN" or "OBSTACLE"

Aircraft Controls – Initiate Escape Maneuver

3.12.2. Terrain-FLTA Cautions

Yellow annunciator and aural "TERRAIN" or "OBSTACLE"

Aircraft Flight Path – Verify and correct if required

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Section 4. Performance Data

No change.

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Section 5. Weight and Balance Data

No change.

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Section 6. System Description

Operating instructions for the systems contained in this supplement are contained in the following manual:

- Garmin G500(H)/G600/G700 TXi Pilot's Guide, P/N 190-01717-10 revision L, dated July 23, 2021 (or later applicable revision).

6.1. Systems Description

6.1.1. Garmin G500H TXi Flight Display System

The Garmin G500TXi Flight Display System is an integrated display system made up of two 10 inch GDU 1060 displays installed in the RH and LH instrument panels.

Each GDU presents primary flight instrumentation, navigation and a moving map to the pilot though the 10 inch GDU 1060 which is a combination PFD/MFD.

The PFD supports the electronic flight instrument display system (EFIS) on a dedicated screen, whilst the MFD supports map and navigation displays. Each display contains the necessary display symbol generators, interface controls, display control processors and software to perform either PFD or MFD functions. Each function is designated to a portion of the display. The MFD can be selectively hidden or shown. When hidden, the PFD expands into the MFD space.

The PFD displays the following:

- Primary Attitude and Heading;
- Airspeed, Altitude and Vertical Speed;
- Radar Altitude;
- CDI; HSI; ADI;
- Synthetic Vision;
- Terrain Avoidance

The MFD displays the following information:

- Navigation Map / Flight Plan / Waypoint Information / Charts
- System Advisories
- Traffic
- Terrain
- Terrain Avoidance

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6.1.2. Garmin GSU 75 Air Data, Attitude and Heading Reference Systems (ADAHRS)

The Garmin GSU 75 ADAHRS is made up of remote mounted devices that provide flight altitude, airspeed, attitude and heading data for flight instrumentation. It provides the following information:

- Aircraft Altitude and Airspeed
- Aircraft Vertical Speed, Mach, and Air Temperature
- Aircraft Heading, Pitch, and Roll
- Aircraft Yaw, Pitch, and Roll rates
- Aircraft Body-axis Accelerations
- Rates of Change of Heading, Pitch, and Roll
- Aircraft Accelerations Expressed in a Local Level Frame of Reference
- Density Altitude
- Pressure Altitude
- Indicated Airspeed
- True Airspeed

The GSU 75 ADAHRS has no user controls or indicators. All user interface is accomplished through the PFD/MFD displays. The GSU 75 ADAHRS provides flight altitude, airspeed, attitude, and heading data that is communicated to the display device. Loss of any of this data is communicated to the pilot by system messages. Upon system power up, the absence of GSU 75 ADAHRS system messages indicate that the GSU 75 ADAHRS is fully operational. There are no further GDU 75 ADAHRS specific operational procedures.

6.1.3. MD302 Standby Attitude Module

Two MD302 Standby Attitude Modules are installed to serve as a backup to the G500H TXi displays.

The MD302 is a digital instrument system that provides backup attitude, altitude, airspeed, slip, vertical trend and heading information in a 2-Inch format. The heading data is displayed as received from the Garmin ADAHRS and not computed within the MD302.

The Single Push / Turn control knob on the front of the MD302 is used for setting the Baro Set and accessing display menus.

The MD302 contains an internal rechargeable battery that can power the unit for up to two hours if main aircraft power is lost.

When the MD302 is operating on internal battery, a green battery icon is displayed in the top of the attitude display.

When the MD302 is operating on internal battery and the battery charge is low, the battery icon will change to the low battery icon. This is identified by a black battery icon with a red X on it. This indicates there may be less than 10 minutes of backup power available.

6.1.4. Garmin GDL 69AH SXM Satellite Radio and Weather

The GDL 69AH is a SiriusXM Satellite Radio and data link receiver. It is comprised of a single antenna and receiver. The antenna receives satellite signal and passes it to the GDL 69AH, providing weather data and audio entertainment. Weather data can be displayed on the G500H TXi system via a High Speed Data Bus (HSDB) from the GDL 69AH, and audio is routed as required.

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6.1.5. Power

The Garmin G500H Txi Integrated Display System and its' associated components are protected by the following circuit breakers:

CB Label	Amps	Location	Bus
PILOT GDU	5A	Overhead Console	Essential Avionics Buss
COPLT GDU	5A	Overhead Console	Non-Essential Avionics Buss
PILOT ADAHRS	3A	Overhead Console	Essential Avionics Buss
COPLT ADAHRS	3A	Overhead Console	28 VDC Non-Essential Buss
PILOT ESI	1A	Overhead Console	Main DC Bus
COPLT ESI	1A	Overhead Console	Main DC Bus
SXM PWR	5A	Overhead Console	28 VDC Non-Essential Buss

Table 4 - G500H TXi Circuit Breakers

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Appendix A

A.1 Optional Equipment

When the following optional systems/equipment are installed on the helicopter, the latest applicable revision of the indicated approved Flight Manual Supplement for that system/equipment must be carried in the helicopter at all times.

System / Equipment	Flight Manual Supplement
Garmin GTN 750Xi / GTN 650Xi Navigators	FMS-212-002
Garmin GTX 345R Transponder	
Garmin GTS 855 Traffic Collision Awareness System	FMS-212-004

Table 5 - Optional Equipment

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