



## *SkyView* HDX

# Airplane Flight Manual Supplement

*(or Supplemental Airplane Flight Manual)*

STC SA02594SE

For Software Version 16.4.6

103272-000

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## FAA Approval

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Airplane Registration: \_\_\_\_\_

Airplane Manufacturer: \_\_\_\_\_

Airplane Model: \_\_\_\_\_

Airplane Serial Number: \_\_\_\_\_

This document serves as a supplement to the aircraft flight manual, or as a supplemental flight manual. It must be attached to the FAA Approved Airplane Flight Manual (AFM) or, when no AFM exists, used as a supplemental aircraft operating manual when the SkyView HDX system is installed in accordance with STC SA02594SE.

The information contained herein supplements the information of the basic Airplane Flight Manual. For Limitations, Procedures, and Performance information not contained in this Supplement consult the basic Airplane Flight Manual or the placards and markings in the aircraft.

The following sections of this document are FAA APPROVED:

- 2: Limitations
- 3: Emergency & Non-Normal Procedures
- 4: Normal Operations
- 5: Performance
- 9: Appendix 1: Cessna Models 172F through 172S
- 10: Appendix 2: Cessna Models 182E-T, T182, R/TR182
- 11: Appendix 3: Beechcraft Bonanza P35 through V35B
- 12: Appendix 4: Beechcraft Bonanza 36
- 13: Appendix 5: Piper PA-34 Seneca
- 14: Appendix 6: Beechcraft Baron 58, 58A

Alan W Wilson, for 12/13/2023  
Manager, Flight Test and Human Factors Branch, AIR-710      Approved Date  
Federal Aviation Administration

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## Revision History

See Revision History Appendix at end of document for previous revision changes.

REV	DYNON SUBMITTAL DATE	FAA ACCEPTANCE DATE	CHANGE DESCRIPTION
A	03/05/2018	Not Accepted	<ul style="list-style-type: none"> <li>Initial Submission.</li> </ul>
B	06/08/2018	<b>Accepted by Seattle AIR-715 on 7/20/2018</b>	<ul style="list-style-type: none"> <li>Added 91.227 Language</li> </ul>
C	07/10/2018	<b>Accepted by Seattle AIR-715 on 10/11/2018</b>	<ul style="list-style-type: none"> <li>Added knob modules and updated operating limitation.</li> </ul>
D	04/01/2019 ECO 324900	Not Accepted	<ul style="list-style-type: none"> <li>Added 6-cylinder EGT/CHT, Flaps and Landing Gear functionality,</li> <li>Revised illustrations,</li> <li>Moved Airplane Limitations to section 8, and Emergency Procedures to Section 9,</li> <li>Revised format of Emergency Procedure checklist,</li> <li>Deleted the appendix.</li> <li>Revised limitations section for new models</li> </ul>
E	04/10/2019 ECO 326715	Not Accepted	<ul style="list-style-type: none"> <li>Added autopilot slip, trim, slip/trim, airspeed high/low message.</li> <li>Added autopilot VNAV engagement caution.</li> <li>Formatted emergency procedures for improved clarity.</li> <li>Added autopilot servo jam emergency procedure.</li> <li>Clarified language on FAA approval signature page.</li> <li>Formatted section 5.5 (Autopilot Operation) for improved clarity.</li> </ul>
F	04/29/2019 ECO 327677	Not Accepted	<ul style="list-style-type: none"> <li>Changed section 3.6 to reference "14 CFR 23.1545" instead of "FAR 23.1545".</li> <li>Changed wording in section 5.5 to read "pull" instead of "turn off" with reference to circuit breakers.</li> <li>Updated Figure 18</li> </ul>
G	07/02/2019 ECO 331341	<b>Accepted by Seattle AIR-715 on 7/2/2019</b>	<ul style="list-style-type: none"> <li>Changed name of document to "SkyView HDX Airplane Flight Manual Supplement".</li> <li>Added note regarding use of this document as an SAFM.</li> </ul>
H	03/03/2020 ECO 344060	Not Accepted	<ul style="list-style-type: none"> <li>Applied new document template.</li> <li>Added information in Section 3.7, 3.10, 3.11 for twin engine airplanes / Dual EMS.</li> <li>Added Section 4.5: Temperature Indicators.</li> <li>Added Section 4.6: Synchroscope.</li> <li>Added Section 6.4.2: Trim Messages.</li> <li>Added Section 6.4.3: Slip Trim Messages.</li> <li>Revision to Section 6.9: Yaw Damper behavior.</li> <li>Added Section 9.6.4: Piper Aircraft PA-34 Seneca.</li> </ul>

REV	DYNON SUBMITTAL DATE	FAA ACCEPTANCE DATE	CHANGE DESCRIPTION
I	04/10/2020 ECO 346079	Not Accepted	<ul style="list-style-type: none"> <li>• Addressed FAA review comments on Rev H, including: <ul style="list-style-type: none"> <li>▪ Update Section 2: System Overview to better distinguish between Primary, Secondary, and Standby EFIS displays.</li> <li>▪ Replace Section 3: Flight Crew Alerting System with new, updated information.</li> <li>▪ Updated the following sections of Section 4: Indications for technical accuracy: <ul style="list-style-type: none"> <li>○ 4.1 Airspeed Indicator</li> <li>○ 4.3 Landing Gear Position Indicators</li> </ul> </li> <li>▪ Updated the following sections of Section 6: Autopilot for technical accuracy: <ul style="list-style-type: none"> <li>○ 6.1: Protective Features</li> <li>○ 6.4.2: Trim Messages</li> <li>○ 6.4.3: Slip Trim Messages</li> <li>○ 6.5: Autopilot Controls</li> <li>○ 6.6: Vertical Guidance Source Loss</li> <li>○ 6.9: Yaw Damper</li> </ul> </li> <li>▪ Updated the following sections of Section 7: Normal Operations for technical accuracy: <ul style="list-style-type: none"> <li>○ 7.10: Course (OBS) Setting</li> <li>○ 7.11: HDX Backup Power Check</li> <li>○ 7.13: Backup EFIS-D10A Battery Condition Check</li> <li>○ 7.16: Yaw Damper</li> <li>○ 7.10: Course (OBS) Setting</li> <li>○ 7.11: HDX Backup Power Check</li> <li>○ 7.13: Backup EFIS-D10A Battery Condition Check</li> <li>○ 7.16: Engage Autopilot</li> <li>○ 7.17: Engage Flight Director</li> <li>○ 7.18: Disengage Autopilot</li> <li>○ 7.22: Go Around</li> <li>○ 7.25: Approaches</li> <li>○ 7.26: Autopilot Operational Check</li> </ul> </li> <li>▪ Updated the following sections of Section 9: Limitations for technical accuracy: <ul style="list-style-type: none"> <li>○ 9.1: General</li> <li>○ 9.2: Backup Power</li> <li>○ 9.6.4: Piper Aircraft PA-34 Seneca</li> </ul> </li> <li>▪ Updated Section 10:1: Airspeed, Altitude and/or Attitude Unreliable for technical accuracy.</li> </ul> </li> <li>• Proofread document and fixed language, layout, and linking issues.</li> <li>• Removed outdated links and references.</li> </ul>
J	05/01/2020 ECO 346986	Not Accepted	<ul style="list-style-type: none"> <li>• Addressed FAA review feedback on Rev H: <ul style="list-style-type: none"> <li>▪ Re-ordered Table 1: Warnings, Table 2 Cautions, and Table 3: Messages. Ordering is by 1) core system, 2) component, 3) function per type of alert.</li> <li>▪ Updated Section 4.2.1, 4.2.3, and 4.2.3 with additional screenshots and verbiage to clearly differentiate single- and twin-engine EMS indications.</li> <li>▪ Updated Section 4.5 with new screenshot.</li> <li>▪ Added Table 4: Autopilot Fail Down Modes in Section 6.1, describing Autopilot fail down modes. Subsequent tables renumbered.</li> <li>▪ Re-arranged screenshots in Section 6.4 for readability. Updated screenshot in Section 6.4.4 to reflect UI.</li> <li>▪ Removed table from Section 6.4, as information was outdated. Updated Sections 6.4.1 through 6.4.4 to sync with info in Section 3.</li> <li>▪ Updated procedure in Section 7.14 to disable Dual Mode.</li> <li>▪ Updated verbiage in Section 7.18 to be clearer.</li> <li>▪ Added new Section 7.26.2: Yaw Axis Operation Check. Subsequent sections renumbered.</li> <li>▪ Removed 2 limitations from Section 9: Limitations per FAA request.</li> </ul> </li> <li>• Updated Section 10.6: Autopilot / Yaw Damper Servo Jam to clearly describe role of frangible link.</li> </ul>

REV	DYNON SUBMITTAL DATE	FAA ACCEPTANCE DATE	CHANGE DESCRIPTION
K	08/11/2020 ECO 353760	Not Accepted	<ul style="list-style-type: none"> <li>• Reorganized document according to GAMA 1 guidelines.</li> <li>• Aircraft-specific information moved to separate Appendices to aid technical reviews of document as more Autopilots are added to airplanes on the AML.</li> <li>• Failure Modes (now Section 3.2) renamed to Non-Normal Procedures and content converted to GAMA style procedures. Emergency Procedures: Autopilot Disconnect and Yaw Damper Disconnect moved from Emergency Procedures to Non-Normal Procedures.</li> <li>• Engage Autopilot (now Section 4.4.1) updated per feedback from FAA/Dynon meeting.</li> <li>• Warning Alerts (now Section 7.8.2) updated per Dynon software developer input.</li> <li>• Caution Alerts (now Section 7.8.3) updated per feedback from FAA/Dynon meeting and Dynon software development input.</li> <li>• Message Alerts (now Section 7.8.4) updated per Dynon software developer input.</li> <li>• Airspeed Indicators (now Section 7.9.1) updated per feedback from FAA/Dynon meeting.</li> <li>• Engine Monitoring (now Section 7.9.2) updated per feedback from FAA/Dynon meeting.</li> <li>• Autopilot Protective Features (now Section 9.1.1) updated to include servo break-away information.</li> </ul>
L	9/14/2020 ECO 356791	Not Accepted	<ul style="list-style-type: none"> <li>• Updated document footers per GAMA 1 guidelines (all pages affected).</li> <li>• Updated FAA Approval section (Page X) per FAA feedback.</li> <li>• Updated Tables 2, 3, 4 (Pages 7-4 through 7-20) with new column heads and some language/terminology changes per FAA feedback.</li> <li>• Updated Sections 10 (Page 10-1), 11 (Page 11-1), 12 (Page 12-1) to use prohibitive language per FAA feedback.</li> </ul>
M	10/08/2020 ECO 358194	Not Accepted	<ul style="list-style-type: none"> <li>• Moved FAA Approval page to first page per GAMA 1 guidelines.</li> <li>• Moved References page to Section 1: General</li> <li>• Added new Section 2.2: Engine Monitoring Visibility to Section 2: Limitations. Subsequent Section 2 headings renumbered.</li> <li>• Moved old Section 3.1.2: Autopilot / Yaw Damper Override to new Section 9.1.1. Subsequent Section 6 headings renumbered.</li> <li>• Updated language in new Section 3.1.3 Autopilot / Yaw Damper Servo Jam.</li> <li>• Updated language in Table 2: Warning Alerts, Table 3: Caution Alerts, Table 4: Messages per FAA feedback.</li> <li>• Updated language in 7.9.2: Engine Monitoring per FAA feedback.</li> </ul>
N	10/23/2020 ECO 360164	<b>Accepted by Seattle AIR-715 on 10/29/2020</b>	<ul style="list-style-type: none"> <li>• Moved FAA Approval page per FAA request. (page iii)</li> </ul>

REV	DYNON SUBMITTAL DATE	FAA ACCEPTANCE DATE	CHANGE DESCRIPTION
O	10/14/2021 ECO 360038	Not Accepted	<ul style="list-style-type: none"> <li>• Revised format of Revision History table per FAA feedback.</li> <li>• All but one instance of "Frangible Link" changed to "Shear Screw" to standardize nomenclature across Dynon documentation.</li> <li>• Revised format of Section 2.1: IFR Operations to standardize format with other subsections.</li> <li>• Added Section 2.6: Autopilot per FAA feedback.</li> <li>• Revised Section 3.1.1: Airspeed, Altitude, and/or Attitude Unreliable for clarity and usability.</li> <li>• Added Section 3.1.4: Trim Runaway.</li> <li>• Added Section 4.1.11: G Meter. Subsequent sections renumbered.</li> <li>• Updated Section 4.4.1: Engage Autopilot with info about Auto-Trim.</li> <li>• Revised Section 4.4.2: Disengage Autopilot.</li> <li>• Revised Section 4.4.3: AP DISC Button.</li> <li>• Added Section 4.4.4: AP POWER Switch. Subsequent sections renumbered.</li> <li>• Added Section 4.4.5: TRIM POWER Switch. Subsequent sections renumbered.</li> <li>• Revised Section 6: Weight and Balance per FAA feedback.</li> <li>• Revised format of Section 7: System Overview to remove installation info.</li> <li>• Revised format of Section 7.4: Map for clarity and usability.</li> <li>• Added Section 7.6: Traffic Information. Subsequent sections renumbered.</li> <li>• Added Section 7.6.1: Traffic Targets.</li> <li>• Added Section 7.6.2: Target Symbols.</li> <li>• Added Section 7.6.3: Traffic Alerts.</li> <li>• Added Section 7.7: Weather Information. Subsequent sections renumbered.</li> <li>• Updated external links in Section 7.8 Navigation Databases.</li> <li>• Updated external links in Section 7.9 Operational Software.</li> <li>• Revised Section 7.10: Flight Crew Alerting System per FAA feedback.</li> <li>• Revised Section 7.10.1: Notification Methods per FAA feedback.</li> <li>• Revised and updated Section 7.10.2: Warning Alerts per FAA feedback and to add new alerts and alerts that were shown elsewhere in doc.</li> <li>• Revised and updated Section 7.10.3: Caution Alerts per FAA feedback and to add new alerts and alerts that were shown elsewhere in doc.</li> <li>• Revised and updated Section 7.10.4: Messages per FAA feedback and to add new messages and messages that were shown elsewhere in doc.</li> <li>• Revised format of Section 8: Handling, Service, and Maintenance to remove installation info.</li> <li>• Updated Section 9.1.4.1: Autopilot Indications to show all AP activity in the AP Info Bar.</li> <li>• Added Section 9.1.5: Auto-Trim. Subsequent sections renumbered.</li> <li>• Added Section 9.1.6.5: G Limit Alert.</li> <li>• Added new Section 12: Appendix 3: Beechcraft Bonanza 36. Subsequent appendices renumbered.</li> </ul>



REV	DYNON SUBMITTAL DATE	FAA ACCEPTANCE DATE	CHANGE DESCRIPTION
P	10/28/2021 ECO 360038	Not Accepted	<ul style="list-style-type: none"> <li>• Revised following sections per feedback received during Dynon/FAA meeting on 10/27/2021:               <ul style="list-style-type: none"> <li>▪ 1: General, revised verbiage about optional autopilot.</li> <li>▪ 2.6: Autopilot, added two new limitations.</li> <li>▪ 3.1.1: Airspeed, Altitude, and/or Attitude Unreliable, revised emergency procedure to sync with Alerting tables.</li> <li>▪ 3.1.4: Trim Runaway, revised emergency procedure to sync with Alerting tables.</li> <li>▪ 3.2.1: Loss of Airspeed, Altitude, Attitude, and/or Heading Display, revised non-normal procedure to sync with Alerting tables.</li> <li>▪ 3.2.4: GPS # Fail, revised verbiage to sync with Alerting tables.</li> <li>▪ 3.2.5: GPS Position # Fail, revised verbiage to sync with Alerting tables.</li> <li>▪ 3.2.6: Autopilot Disconnect, revised verbiage to sync with Alerting tables.</li> <li>▪ 3.2.7: Yaw Damper Disconnect, revised verbiage to sync with Alerting tables.</li> <li>▪ 4.1.11: G Meter, revised verbiage about G Meter being automatically removed.</li> <li>▪ 4.4: Autopilot Controls, revised verbiage about optional autopilot.</li> <li>▪ 4.4.1: Engage Autopilot, revised verbiage about SkyView Auto-trim.</li> <li>▪ 4.4.3: AP DISC (Autopilot Disconnect) Button, revised verbiage about SkyView Auto-trim.</li> <li>▪ 4.5: Autopilot Operation Check, revised verbiage about optional yaw damper.</li> <li>▪ 7.10.2: Warning Alerts and Table 2, revised verbiage to sync with emergency and non-normal procedures.</li> <li>▪ 7.10.3: Caution Alerts and Table 3, revised verbiage to sync with emergency and non-normal procedures.</li> <li>▪ 7.10.4: Messages and Table 4, revised verbiage to sync with emergency and non-normal procedures.</li> <li>▪ 7.12.2: Protective Features, revised verbiage to make autopilot bank limit clearer.</li> <li>▪ 7.12.5: SkyView Auto-trim, revised verbiage about SkyView Auto-trim and trim power switch.</li> <li>▪ 7.12.11: Yaw Damper, revised verbiage about yaw damper function.</li> <li>▪ 9: Supplements (old section removed from document)</li> <li>▪ 9.1: Autopilot (old section and subsections moved to Section 7.12)</li> </ul> </li> <li>• 9.1, 10.1, 11.1, 12.1: Autopilot Limitations, added new limitation.</li> </ul>
Q	11/05/2021 ECO 360038	<b>Accepted by Seattle AIR-715 on 11/08/2021</b>	<ul style="list-style-type: none"> <li>• Revised Contact Information section and links within doc with current info and locations.</li> <li>• Revised following sections per feedback received from FAA 11/04/2021:               <ul style="list-style-type: none"> <li>▪ 1.1: Document Control, added verbiage about what revision of doc is posted.</li> <li>▪ 3.2.1: Loss of Airspeed, Altitude, Attitude, and/or Heading Display, revised procedure to clarify the aural annunciation.</li> <li>▪ 4.5: Autopilot Operation Check, moved note to Section 4.5.2.</li> <li>▪ 7.10.3: Caution Alerts and Table 3, revised procedures to sync with emergency and non-normal procedures.</li> </ul> </li> <li>• 7.12: Autopilot, added verbiage about autopilot not controlling throttle.</li> </ul>
R	9/8/2022 ECO 377682	<b>Accepted by Northwest AIR-715 on 10/06/2022</b>	<ul style="list-style-type: none"> <li>• Added Cessna 182E-T, T182, R/TR182 to FAA Approval Section.</li> <li>• Added new Section 10: Appendix 2: Cessna 182 E-T, T182, R/TR182. Subsequent sections renumbered.</li> </ul>
S	6/28/2023 ECO 387323	<b>FAA APPROVED Al Wilson Manager, AIR-710 6/28/2023</b>	<ul style="list-style-type: none"> <li>• Updated the title block in FAA Approval section.</li> <li>• Removed reference to EFIS-D10A and added references to new Dynon D30 standby display in Sections 2.1, 4.3, and 7.2.</li> </ul>

REV	DYNON SUBMITTAL DATE	FAA ACCEPTANCE DATE	CHANGE DESCRIPTION
T	7/12/2023 ECO 376163	<b>FAA APPROVED</b> <b>Al Wilson</b> <b>Manager, AIR-710</b> <b>8/24/2023</b>	<ul style="list-style-type: none"> <li>• Added STC # to cover page per FAA feedback.</li> <li>• Revised first paragraph in Section 1: General per FAA feedback on similar documents.</li> <li>• Added SkyView HDX System Functional Overview document to Section 1.5: Reference Documents.</li> <li>• Revised procedures in Section 3: Emergency &amp; Non-Normal Procedures per DER feedback on similar document.</li> <li>• Revised Section 7.9: Operational Software to point to SkyView HDX Installation document.</li> <li>• Revised and updated alert artwork in Section 7.10: Flight Crew Alerting System per latest S/W and per DER feedback on similar document. (No change bars if change was only new artwork.)</li> <li>• Revised Section 7.9: Operational Software to point to SkyView HDX Installation document.</li> <li>• Revised and updated screenshots in Section 7.11.2: Engine Monitoring per latest S/W and DER feedback.</li> <li>• Updated screenshots in Section 7.12: Autopilot per latest software.</li> <li>• Revised Section 7.12.6.2: Trim Alerts to list all possible alerts.</li> <li>• Added Section 7.12.6.6: Servos Offline per latest software. Subsequent sections renumbered.</li> <li>• Added Section 7.12.6.7: Servo Errors per latest software. Subsequent sections renumbered.</li> </ul>
U	12/13/2023 ECO 388468	<b>FAA APPROVED</b> <b>Al Wilson</b> <b>Manager, AIR-710</b> <b>12/13/2023</b>	<ul style="list-style-type: none"> <li>• Added Beechcraft Baron 58, 58A to FAA Approval Section.</li> <li>• Added Section 14: Appendix 6: Beechcraft Baron 58, 58A.</li> </ul>

*Technical changes since previous revision are tracked with change bars in margins. Formatting and style changes are not tracked.*

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# 1 General

This document is the Airplane Flight Manual Supplement (AFMS) for the Dynon SkyView HDX system. The information herein is applicable to all airplanes on the Approved Model List (AML) of Supplemental Type Certificate (STC) SA02594SE.

SkyView is an integrated system that aggregates air, engine, traffic, and navigation information for display to the pilot. The information is portrayed on the SkyView HDX display, which is a touchscreen, coupled with mechanical knobs and buttons. The SkyView HDX display provides Primary Flight Information (PFI) on the Primary Flight Display (PFD), Map with current position, and optionally Engine Monitoring information. Subsystems, such as the Autopilot, Communications, Transponder, as well as third-party equipment integrate with SkyView HDX to perform their functions. (See the *103014-000 Skyview HDX System Functional Overview* document at [dynoncertified.com/docs](https://dynoncertified.com/docs) for additional information about all SkyView components, feature, and functions.)

## 1.1 Document Control

This document is released, archived, and controlled according to the Dynon Avionics document control system. To revise this document, a letter is submitted to the FAA with the revision. The FAA then accepts and approves any revision to the content listed in the FAA Approval section. After FAA acceptance/approval, Dynon posts the revised document for customer use at [dynoncertified.com/docs](https://dynoncertified.com/docs). Only the latest revision of the document is made available. STC owners and installers are notified of the new revision via an official Dynon Marketing email release.

## 1.2 Using this Document

To reduce paper, Dynon does not provide a printed version of this manual. However, Dynon grants permission to third parties to print this manual, as necessary. The most recent PDF version is available for download at [dynoncertified.com/docs](https://dynoncertified.com/docs). This manual is updated periodically. It is mandatory to keep a printed copy of the most recent revision in the airplane.

## 1.3 Intended Audience

This document is intended for owners and/or operators of aircraft retrofitted with a Dynon SkyView HDX system.

## 1.4 Manual Iconography

This manual uses the following iconography:



*Alerts reader to important information that mitigates potential unsafe conditions and/or equipment damage.*



Alerts reader to noteworthy technical information.



Alerts reader to helpful tips or suggestions.

## 1.5 Reference Documents

- 103014-000 Skyview HDX System Functional Overview
- 102949-000 SkyView HDX Pilot's User Guide (current revision)
- 103261-000 SkyView HDX System Installation Manual (current revision)
- 103221-000 SkyView HDX System General Maintenance Manual (current revision)
- 104004-000 D30 Airplane Flight Manual Supplement (current revision)

## 2 Limitations

The limitations listed in this section apply to all airplanes with a SkyView HDX system.

### 2.1 IFR Operations

SkyView HDX system must have at least one of each of the following components in fully functioning condition, with no error messages displayed:

- SkyView HDX display unit,
- SV-ADAHRS-200 module,
- SV-BAT-320 backup battery,
- EFIS-D10A or D30 standby display,
- Functioning external navigation source, either an IFR GPS Navigator or NAV radio.

IFR flight with Yellow or Red Backup Battery indicator status displayed is prohibited.

### 2.2 Engine Monitoring Visibility

For all airplanes equipped with an Engine Monitoring System (EMS):

- Configuring the screen layout of a SkyView HDX display unit so the primary engine instruments are not visible to the pilot is prohibited.

For twin-engine airplanes with an EMS:

- A secondary (non-PFD) Skyview HDX display unit must be installed and dedicated to present Engine Monitoring information.
- The SkyView HDX display unit dedicated to present Engine Monitoring information must be configured to always show (no exceptions) EMS information in either 100% or 50% display page layout during takeoffs and landings.

### 2.3 Synthetic Vision

SkyView HDX Synthetic Vision feature is advisory in nature and must not be used as the sole means of terrain and obstacle avoidance.

### 2.4 Map

The SkyView HDX Map and Flight Planning function is advisory in nature and must not be used as the sole means of terrain and obstacle avoidance.

## 2.5 Autopilot

Autopilot limitations for specific airplane makes/models are listed in separate appendices at the end of this document.

For all airplanes equipped with the SkyView Autopilot system:

- Use of the autopilot when any servo shear screw is broken is prohibited.
- Use of the autopilot without a successful preflight operations check is prohibited. (See Section 4.5: [Autopilot Operation Check](#) for instructions)

For airplanes equipped with the Yaw Damper function:

- Use of the Yaw Damper function during takeoff and landing is prohibited.



## 3 Emergency & Non-Normal Procedures

### 3.1 Emergency Procedures

#### 3.1.1 Airspeed, Altitude, and/or Attitude Unreliable

**CONDITION:** Airspeed, Vertical Speed, and/or Altimeter indications are not consistent with Pitch Attitude. CHECK PITOT HEAT or CROSS CHECK ATTITUDE alert may be displayed.

1. Fly by reference to Standby Flight Display and Whiskey Compass.
2. Autopilot \_\_\_\_\_ DISCONNECT.
3. Standby Flight Display \_\_\_\_\_ MONITOR.
4. Pitot Heat Switch \_\_\_\_\_ ON.
5. Alternate Static Air Source \_\_\_\_\_ ON.
6. Maneuver aircraft to avoid icing conditions.
7. Alternate Static Air Source no longer needed \_\_\_\_\_ OFF.

#### 3.1.2 Autopilot / Yaw Damper Disable

**CONDITION:** One or more autopilot servos are operating in a confusing or un-commanded fashion.

1. AP Power Switch \_\_\_\_\_ OFF.
2. Fly Manually.
  - Power has been removed from the Autopilot servos.

### 3.1.3 Autopilot / Yaw Damper Servo Jam

**CONDITION:** One or more flight controls fail to move as expected and are jammed by an autopilot servo.

1. Autopilot \_\_\_\_\_ DISCONNECT.
2. Flight Controls \_\_\_\_\_ APPLY BREAK-AWAY FORCE.
3. Flight Controls \_\_\_\_\_ OPERATE.
4. AP POWER Switch \_\_\_\_\_ OFF.
5. Plan to land at nearest suitable airport.
  - When pilot applies force to flight control system, shear screw will break and safely disconnect flight controls from malfunctioning Autopilot servo.
  - Once shear screw breaks, pilot needs to relax flight control input to avoid over correction. The flight controls will then operate normally.
  - Autopilot operation is prohibited until the cause of the malfunction has been determined and corrected.

### 3.1.4 Trim Runaway

**CONDITION:** TRIM RUNAWAY alert is displayed.

1. AP DISC Button \_\_\_\_\_ PRESS AND HOLD.
2. TRIM POWER Switch \_\_\_\_\_ OFF.
3. Mechanical Pitch Trim \_\_\_\_\_ MOVE AS NEEDED.
4. Fly Manually.
  - In the event of a trim runaway event the pilot should be prepared to apply significant forces to the flight controls upon autopilot disconnect. The autopilot can mask out-of-trim conditions associated with a trim runaway.
  - Power has been removed from the Trim motor.
  - *DO NOT* use electric Trim system until cause of malfunction has been determined and corrected.

## 3.2 Non-Normal Procedures

### 3.2.1 Loss of Airspeed, Altitude, Attitude, and/or Heading Display

**CONDITION:** Red X replaces the airspeed, altitude, attitude and/or heading indicators.

If autopilot is engaged, "AUTOPILOT DISCONNECT" alert is annunciated.

1. Fly by reference to Standby Flight Display and Whiskey Compass.
2. Autopilot \_\_\_\_\_ DISCONNECT.
3. Standby Flight Display \_\_\_\_\_ MONITOR.
4. Aircraft Attitude \_\_\_\_\_ MAINTAIN / REGAIN AIRCRAFT CONTROL.
5. Plan to land at nearest suitable airport.

### 3.2.2 Loss of Electrical Power

**CONDITION:** AIRCRAFT POWER LOST message is displayed, and the Main Menu indicates STAY ON and POWER OFF.

1. STAY ON Button \_\_\_\_\_ PRESS.
2. Plan to land at nearest suitable airport.
  - The system is operating on the Backup Battery.
  - The system will continue to operate normally until the Backup Battery is depleted.
  - There is no indicator for Backup Battery power or time remaining. A fully charged Backup Battery provides 45 minutes of operation at a minimum.

### 3.2.3 Engine Monitoring System Failure

**CONDITION:** Red X replaces all engine and fuel indications.

1. Control engine power by sound and control lever position. Monitor engine performance using airspeed and vertical speed.
2. Plan to land at nearest suitable airport.

### 3.2.4 GPS # Fail

**CONDITION:** GPS # FAIL alert is displayed. ("#" being the configured GPS source (1, 2, 3, etc.)).

- The GPS position source has failed.
- The system is operating on the next available GPS position source.

### 3.2.5 GPS Position Source # Fail

**CONDITION:** POSITION SOURCE # FAIL alert is displayed. ("#" being the configured position source (1, 2, 3, etc.)).

1. Use other navigational means.

- The system has no remaining GPS position sources available.
- The Map is no longer available.

### 3.2.6 Autopilot Disconnect

**CONDITION:** The autopilot needs to be disconnected for any reason.

1. Disconnect Autopilot:

- Press and release AP DISC Button (either yoke- or panel-mounted).
- OR–
- Press AP Button on the Autopilot Control Panel.
- OR–
- Press the AP Button on the Autopilot Control Menu.
- OR–
- Turn AP POWER switch/breaker OFF.

2. Fly manually.

### 3.2.7 Yaw Damper Disconnect

**CONDITION:** The yaw damper needs to be disconnected for any reason.

1. Disconnect Yaw Damper:

- Press and release AP DISC Button (either yoke- or panel-mounted).
- OR–
- Press the YD Button on the Autopilot Control Menu.

2. Fly manually.

## 4 Normal Operations

### 4.1 General

Although operation of the primary functions of the SkyView HDX system is intuitive, it does require a reasonable degree of familiarity to utilize all its functions without compromising attention to other flying tasks. Users are encouraged to read the *SkyView Pilot's User Guide* thoroughly before flight and to take advantage of the training videos available on [youtube.com/DynonAvionics](https://www.youtube.com/DynonAvionics).

#### 4.1.1 Knobs and Buttons

Knobs are located on the left and right sides of the display. They can be rotated both directions and pushed. The current knob function is indicated by the "soft" label above the knob. Knob function is contextual and can change when the contents of the screen are changed by the pilot (see Figure 1).

Eight buttons are located across the bottom of each display. The area immediately above the buttons is the Main Menu, which shows "soft" labels that identify the function of each button. Buttons have different functions depending on the information being shown on the display. The labels for each button on the Main Menu will change accordingly (see Figure 1).



**Figure 1: SkyView HDX Hardware Controls**

### 4.1.2 Touch Controls

SkyView HDX displays contain touchscreen functionality. Touching various items on the display allows for the item to be selected and the value adjusted. For example, touching the HSI data source allows for alternate sources to be selected.

Pilot-selectable choices for the layout of each screen can be selected by pressing DISPLAY button on Main Menu. This allows the pilot to choose whether a display should show PFD, Map, or Engine information, or some combination thereof.

See [Figure 2](#) for details for the touchable screen areas of main flight functions. Additionally, the Timer function has touchscreen control, and if a compatible NAV device is connected, the Course (CRS) functions as well.



- |                                |                             |
|--------------------------------|-----------------------------|
| 1. Autopilot Menu Selector     | 6. Heading Bug Selector     |
| 2. Transponder Menu Selector   | 7. BARO Selector            |
| 3. Speed Bug Selector          | 8. Density Altitude Display |
| 4. Altitude Bug Selector       | 9. HSI Source Selector      |
| 5. Vertical Speed Bug Selector |                             |

**Figure 2: HDX Touch Controls**

### 4.1.3 Synthetic Vision

Synthetic Vision can be turned on or off by pressing the MENU button on the Main Menu, touching the PFD TOOLS screen icon, and then touching the SYNVIS screen icon. A green highlight on the SYNVIS icon means it is turned on. No highlight means it is turned off.

#### 4.1.4 HSI Data Source

To cycle through the available sources of navigation data for display on HSI:

- Press MENU button on Main Menu, then select PFD TOOLS > HSI SRC. Repeated touches of HSI SRC will cycle through available HSI data sources.

Or,

- Touch HSI SRC area near lower right corner of the PFD and beneath the Altimeter. Repeated touches of HSI SRC area will cycle through available HSI data sources.

#### 4.1.5 Adjusting Values and Bugs

To adjust bug values using the left knob:

1. Touch applicable area on screen (see [Figure 2](#)). The function is shown and highlighted above knob.
2. Rotate left knob as needed to set value.

Or,

1. Push left knob to enter Knob Function Menu.
2. Rotate knob as needed to set value.
3. Push left knob to close menu (menu will also close automatically after 5 seconds). This assigns function to knob.
4. Rotate knob as needed to set value. The value is shown and highlighted on screen.



If a function is not present in the Knob Function Menu, then it does not have a touchable screen area and cannot be assigned to the left knob. To add or remove bugs to/from the Knob Function Menu, go to MENU > PFD TOOLS > BUGS.

#### 4.1.6 BARO Setting

The Barometer setting can be adjusted with the left knob on the display or the BARO knob on the optional Knob Control Panel (see [Section 4.1.12](#)). Using the knob on the control panel simplifies the adjustment by eliminating the need to assign the function to the left knob.

To change the Barometer setting:

1. Push left knob to enter Knob Function Menu.
2. Rotate knob to highlight BARO.
3. Push knob to close menu (menu will also close automatically after 5 seconds). This assigns BARO Bug to knob, and BARO is shown above knob. The Barometer area on the PFD is also outlined to show that it is selected.
4. Rotate knob to adjust Barometer setting. While Barometer setting is changing, screen area is highlighted in Cyan to draw attention to it.
5. To synchronize Altimeter with the Barometer settings in [Table 1](#), push and hold BARO knob (on display or control panel) until a SYNC message appears on PFD. The following occurs:
  - Altimeter is set to the nearest METAR (when ADS-B is available in-flight).

- Standard pressure is set (29.92 inHg or 1013 millibars when at/above 18k feet or no ADS-B on board).
- Altimeter is set to match the published airport elevation (when on the ground).
- Altimeter is set to match GPS altitude (when on the ground).

If none of the conditions in [Table 1](#) are met, the Altimeter will not synchronize, and a NO SYNC message appears on the PFD.

**Table 1: BARO Settings**

	With SV-ADSB-472 Installed	Without SV-ADSB-472 Installed
<b>On the Ground:</b>	Adjusts the altimeter based on the current GPS Altitude. After the (BARO) is synchronized a GPSALT message will appear in the altimeter box on the PFD.	
<b>In the Air:</b>	Adjusts the altimeter based on the METAR of the flight plan's destination airport if within 20nm. If there is no flight plan waypoint or it is too far away, then the altimeter is set to the nearest ADS-B METAR within 100nm with a valid altimeter setting. After the (BARO) is synchronized a SYNC message will appear in a window above the knob and the airport identifier will appear in the altimeter box on the PFD.	Adjusts the altimeter to the standard pressure setting <i>(i.e., 29.92 in Hg, 1013 mbar, or 760 mm Hg)</i>
<b>Above 18,000 ft indicated altitude</b>	Resets the altimeter to standard pressure altitude for use in the flight levels (i.e., 29.92 in Hg, 1013 mbar, or 760 mm Hg).	

#### 4.1.7 Altitude Bug

The Altimeter can be adjusted with the left knob on the display or the ALT knob on the optional Knob Control Panel (see Section [4.1.12](#)). Using the knob on the control panel simplifies the adjustment by eliminating the need to assign the function to the left knob.

To change the Altitude bug:

1. Push left knob to enter the Knob Function Menu.
2. Rotate knob to highlight ALT.
3. Push knob to close menu (menu will also close automatically after 5 seconds). This assigns ALT to knob, and ALT is shown above knob. The Altimeter area on the PFD is also outlined to show that it is selected.
4. Rotate knob to adjust ALT bug. While ALT bug is changing, screen area is highlighted in Cyan to draw attention to it.
5. To synchronize Altimeter to airplane's current altitude, push and hold ALT knob (on display and control panel) until SYNC message appears above left knob on display.



### 4.1.8 Minimum Altitude Bug

To set the Minimum Altitude bug:

1. Push left knob to enter Knob Function Menu.
2. Rotate knob to highlight MIN.
3. Push knob to close menu (menu will also close automatically after 5 seconds). This assigns MIN to knob, and MIN is shown above knob. The Minimum Altimeter area on the PFD is also outlined to show that it is selected.
4. Rotate knob to adjust MIN bug. While MIN bug is changing, screen area is highlighted in Cyan to draw attention to it.

### 4.1.9 HDG/TRK Bug

Heading/Track can be adjusted with the left knob on the display or the HDG/TRK knob on the optional Knob Control Panel (see Section 4.1.12). Using the knob on the control panel simplifies the adjustment by eliminating the need to assign the function to the left knob.

To set the Heading/Track bug:

1. Press left knob to enter Knob Function Menu.
2. Rotate knob to highlight HDG or TRK.
3. Push knob to close menu (menu will also close automatically after 5 seconds). This assigns HDG or TRK to knob, and HDG or TRK is shown above knob. The Heading or Track area on the PFD is also outlined to show that it is selected.
4. Rotate knob to adjust HDG or TRK bug. While HDG or TRK bug is changing, screen area is highlighted in Cyan to draw attention to it.
5. To synchronize Heading and Track to airplane's current heading/track, push and hold HDG/TRK knobs (on display or control panel) until SYNC message appears above left knob on display.

### 4.1.10 Course (OBS) Setting

To set the HSI course (OBS):

1. Press left knob to enter Knob Function Menu.
2. Rotate knob to highlight CRS.
3. Push knob to close menu (menu will also close automatically after 5 seconds). This assigns CRS to knob, and CRS is shown above knob. The HSI course area on the PFD is also outlined to show that it is selected.
4. Rotate knob to adjust CRS setting. While CRS setting is changing, screen area is highlighted in Cyan to draw attention to it.



The CRS value for each available HSI source is retained when that source is deselected and will be used when that HSI source is re-selected.

### 4.1.11 G Meter

When triggered or enabled by the pilot, the G Meter replaces the HSI on the PFD (see [Figure 3](#)). The G Meter has an analog needle that indicates the G loading of the aircraft. Digital G information is also instantaneously shown in the center of the gauge. Depending on how the G Meter is configured, the analog range may have yellow and/or red ranges to indicate that the aircraft's G limits are being approached. The numerical magnetic heading above the HSI area remains displayed when the G Meter is displayed.

The G Meter is automatically displayed when the aircraft's G loading reaches the yellow threshold configured during initial system setup. (See the *103261-000 SkyView HDX System Installation Manual* document for more information). If the G Meter was automatically displayed, it will be removed when the aircraft's G loading returns to normal range, and the HSI will be restored. Pilots can also choose to display the G Meter at any time by selecting MENU (Button #6) > PFD TOOLS icon > G METER icon. The G METER icon toggles the indicator on/off.

The smaller digital numbers above and below the Digital G information are the maximum (top) and minimum (bottom) Gs that the aircraft has experienced since the G Meter was last reset. These can be reset at any time by selecting MENU (Button #6) > PFD TOOLS icon > RESET G icon.



**Figure 3: Example of G Meter Being Displayed**

#### 4.1.12 Knob Control Panel

The Knob Control Panel (see [Figure 4](#)) is an optional panel-mounted module for SkyView. This control panel has three knobs dedicated to the most common SkyView bug functions – ALT, BARO, and HDG/TRK. This module is particularly useful in systems with the SkyView Autopilot installed because it directly controls the bugs that allow the selection of Altitude (ALT), Heading (HDG) or Track (TRK), and Barometric Setting (BARO).

Rotating the knob change the value of the associated bug. Pushing and holding the ALT and HDG/TRK knobs synchronizes the bugs with current values. Pushing and holding the BARO knob sets the Altimeter to match the GPS altitude, standard pressure if above 18,000 feet, or (if SV-ADSB-472 is installed), the nearest appropriate METAR station.



**Figure 4: Knob Control Panel (Horizontal and Vertical Configurations)**

#### 4.1.13 VHF COM Radio

The optional COM Radio Control Panel (see [Figure 5](#)) tunes frequencies by airport and station type and allows the simultaneous reception of two frequencies, referred to as Dual Mode. To use the radio:

1. Press the APT button and use the knob to scroll through nearby airports.
2. Press the knob to select an airport.
3. TWR, ATIS, GND, and ATC will now select appropriate frequencies for the selected airport.
4. Press the knob to toggle the selected active and standby frequencies.
5. Press and hold the knob to monitor both active and standby frequencies (i.e., Dual Mode). The active frequency will have priority.
6. To exit Dual Mode, push and hold the knob again, or press DUAL on the Radio Menu.
7. Adjust frequencies with the labeled buttons or manually with the dual concentric knob.



**Figure 5: COM Control Panel (Horizontal and Vertical Configurations)**

## 4.2 SkyView HDX Backup Power Check

When the SkyView HDX system detects that it is not moving, and power is removed from a display connected to a backup battery, the system will automatically run an additional 30 seconds on backup battery power. This is so it can complete a battery condition test. The result of the test will appear in the battery status indicator at next system startup.

The battery icon is displayed next to the clock to indicate battery status:

- No icon: Last battery check was satisfactory.
- Yellow battery icon:
  - The manual battery test has not been accomplished within the last 365 days. Refer to the SkyView installation manual for instructions on performing the manual battery test.
  - The automatic condition test failed during the last three attempts. Perform the manual battery test according to the SkyView installation manual.
- Red X battery icon: battery check or annual test failed, or the battery is not connected



IFR flight with a yellow or red back up battery status indicator displayed is prohibited.

### 4.3 Standby Flight Display Backup Battery Condition Check

The charge on the EFIS-D10A or D30 backup battery needs to be checked prior to IFR flight.

#### To check the charge on the EFIS-D10A backup battery:

1. Enter menu system by pressing any button (except far left and right buttons) on an EFIS page, and then press EFIS > MORE > INFO > LEFT > VMETER.
2. Make sure backup battery is charged to at least 16.0 volts.

#### To check the charge on the D30 backup battery:

Refer to the *D30 Airplane Flight Manual Supplement* document at [dynoncertified.com/docs](https://dynoncertified.com/docs).

### 4.4 Autopilot Controls

This section covers the primary means of operating the optional SkyView Autopilot. Additional methods and shortcuts can be found in the *Pilot's User Guide*. The primary means of controlling the autopilot is via the Autopilot Control Menu (see [Figure 41](#)).

- On the HDX primary page, press MENU, then AUTOPILOT to display the Autopilot Control Menu.
- Or touch the Autopilot Mode Display to enter the Autopilot Control Menu.

In the Autopilot Control Menu:

- A green bar indicates the function is active.
- A white bar indicates the function is armed.
- A black bar indicates the function is off or not selected.
- Gray button labels indicate the mode is not available (e.g., gray NAV indicates no valid NAV source).
- HSI source color indicates the type of source. Magenta indicates a GPS-based source; Green indicates a radio-based source (VOR or localizer).

The optional Autopilot Control Panel (see [Figure 6](#)) for the SkyView Autopilot provides dedicated buttons for engaging the Flight Director, autopilot, and all control modes, including coupled approaches, VNAV, IAS Hold, and mode sequencing (provided that IFR navigation sources are installed). It also has a Level button to immediately return the airplane to straight and level flight.

The "ALT" and "SRC" buttons on the control panel are abbreviations for "ALT HOLD" and "HSI SRC" in the Autopilot menu.



The control panel buttons are illuminated for low-light visibility, but do not indicate autopilot operation status. Use the autopilot mode display and/or the autopilot menu to determine autopilot operation status.



**Figure 6: SV-AP-PANEL (Horizontal and Vertical Configurations)**

#### 4.4.1 Engage Autopilot

Press the AP button to engage the servos. The Flight Director is automatically engaged. SkyView Auto-trim is also automatically engaged if the airplane is equipped with an electric trim system and an SV-AP-TRIMAMP Trim Motor Adapter is installed.

If an AP mode or modes have been preselected, that mode will become active when the AP button is pressed, and the servos will engage. See below to pre-select an AP mode.

If no mode has been selected, the Autopilot will turn on and engage the servos in Roll Hold mode and Vertical Speed mode with the targets set to the current aircraft roll attitude and vertical speed. Different modes may then be selected.



Normally, the Autopilot will not engage if airspeed is outside the normal speed range configured by the installer during initial system setup. The only exception is LEVEL Mode, which will engage at any speed.

#### 4.4.2 Disengage Autopilot

The Autopilot is disengaged by the following:

- Pressing "AP" button on the Autopilot Control Panel (see [Figure 6](#)).
- Pressing "AP" button on the Autopilot Control Menu (see [Figure 41](#)).
- Pressing AP DISC button (see [Section 4.4.3](#) below):
  - Press button once to disengage the autopilot servos but leave Modes and Flight Director active.
  - Press button twice (i.e., double-click) to disengage the autopilot servos and cancel all Modes and Flight Director.
- Turning AP POWER switch/breaker OFF (see [Section 4.4.4](#) below).

#### 4.4.3 AP DISC (Autopilot Disconnect) Button

SkyView HDX systems with SkyView Autopilot will have a button labeled, AP DISC, mounted either on the wheel/yoke or prominently on the instrument panel. This button, when pressed, will immediately disengage the autopilot. If the SkyView Auto-trim feature is installed, it will also temporarily interrupt power to the trim motor(s).



If the SkyView Auto-trim feature is installed, releasing the AP DISC button restores power to the trim motor(s). To permanently disable electric trim, turn the TRIM POWER switch OFF.

Where the AP DISC button is mounted depends upon the autopilot installation:

- If the SkyView Auto-trim feature is installed, the AP DISC button will be on the yoke/wheel grip, opposite the throttle control.
- If the airplane does not have SkyView Auto-trim, the AP DISC button will be on either the yoke/wheel grip or prominently on the instrument panel.

#### 4.4.4 AP POWER Switch

SkyView HDX systems with SkyView Autopilot will have a switch/breaker labeled AP POWER that is mounted prominently on the instrument or circuit breaker panel. This switch/breaker, when turned OFF, immediately removes power from all autopilot servos.

#### 4.4.5 TRIM POWER Switch

SkyView HDX systems with SkyView Auto-trim will have a switch/breaker labeled TRIM POWER that is mounted prominently on the instrument or circuit breaker panel. This switch/breaker, when turned OFF, immediately removes power from all electric trim motors.

#### 4.4.6 Engage Flight Director

The Flight Director is engaged by pressing the "FD" button instead of the "AP" button. To subsequently engage the servos, press the "AP" button.

#### 4.4.7 Level Mode

Press the LEVEL button on the panel to engage Level Mode. Level Mode can be selected at any time, even if Autopilot is disconnected.



The level function cannot guarantee recovery below  $V_{NE}$  in all starting attitudes due to G limiting and servo effort limiting. Recoveries have only been demonstrated from 45 degrees of bank and 10 degrees nose down pitch.

#### 4.4.8 Climb or Descend to a New Altitude at a Set Vertical Speed

1. Adjust the altitude bug to the new desired altitude.
2. Press the VS button.



If ALT HOLD is currently engaged VS bug will be set to zero. If no vertical mode is currently engaged, the VS bug will synchronize with the current vertical speed.

3. Adjust the vertical speed bug using the NOSE UP / DN buttons.



In ALT HOLD mode, the NOSE UP / NOSE DOWN buttons may be used to command a vertical speed transition without pressing the VS button. The initial press of NOSE UP/DN selects the default vertical speed of 500 fpm in the desired direction.



The AP limits airspeed to a safe value if the commanded vertical speed would over-speed or under-speed the aircraft.

4. ALT capture is automatically armed.
5. Engage the servos if not already engaged by pressing the AP button. ALT capture is automatically activated as the airplane approaches the target altitude.

#### 4.4.9 Climb or Descend to a New Altitude at a Set Airspeed

1. Adjust the altitude bug to the new desired altitude.
2. Press the IAS button.



The IAS bug will synchronize to the current airspeed.

3. NOSE UP / DN buttons to adjust the Autopilot's target airspeed.



Airspeed command is limited to the Autopilot minimum and maximum limits configured by the installer during initial system setup.

4. ALT capture is automatically armed.
5. Engage the servos if not already engaged by pressing the AP button. ALT capture is automatically activated as the airplane approaches the target altitude.

#### 4.4.10 Go Around

The Go Around function is available when the Autopilot is engaged in vertical guidance and is tracking a vertical deviation (i.e., status bar shows "VNAV" or "GS" as the active mode). To engage the Go Around function, press the NOSE UP button on the AP Control panel. Pressing Go Around (NOSE UP) at any time automatically switches Pitch and Roll Modes to:

1. TRK Mode, with value defaulting to the current GPS track, and
2. One of the following, depending upon how owner/pilot configured system in Autopilot Setup menu:
  - VS Mode defaulting to the default climb rate, or
  - IAS Mode, defaulting to the current airspeed



The need for airplane trim changes during the go-around may cause the autopilot servos to slip. The pilot must adjust the pitch trim to prevent the pitch servo from slipping.



#### 4.4.11 HDG and TRK Hold

1. Adjust the HDG/TRK bug to the desired value.
2. Select HDG to follow a magnetic heading equal to the bug value.
3. Select TRK to follow a GPS referenced ground track equal to the bug value.
4. Engage the servos if not already engaged.

#### 4.4.12 Enroute Lateral Navigation - VOR or GPS

This procedure is identical whether you are tracking using an enroute navigation source (GPS or VOR) or a non-precision approach (GPS, VOR or LOC).

1. Select a navigation source on the HSI (MENU > AUTOPILOT > HSI SRC). The navigation source must be providing valid course and deviation information.
2. Press the NAV button. If the CDI is already near-centered NAV mode will immediately become active. Otherwise, NAV mode will arm. If NAV mode is armed, adjust the current mode's target (heading, track, or roll) to establish the desired intercept with the navigation source. NAV mode will become active once the navigation source CDI can be captured by the autopilot.

#### 4.4.13 Approaches

1. While navigating on a course intercepting the approach course, select a navigation source on the on the HSI (MENU > AUTOPILOT > HSI SRC).
2. If appropriate, tune and identify the station and set the OBS appropriately via the CRS setting. The external navigation source must be providing valid course and deviation information.
3. When cleared for the approach:
  - a. Press the NAV button in the Roll Menu to arm the NAV mode.
  - b. Press the VNAV button in the Pitch Menu to arm VNAV mode.



NAV and VNAV modes arm and activate independently from each other. There is no limitation upon the order the modes can be armed or activated.



Autopilot pitch authority may be exceeded when lowering the flaps. Trim appropriately during changes in flap settings.



If a precision GPS approach is being flown with an approach approved GPS navigator and the autopilot is already in NAV mode (i.e. not flying vectors to final) arming of NAV mode is not necessary. Only VNAV will need to be armed when cleared for the approach.



VNAV mode will only capture vertical approach guidance from below. Plan your glide slope or a glide path capture accordingly.

If an ILS approach is being flown with another navigation source being used in the transition, for example an approach approved GPS navigator, upon being cleared for and activating the approach the SkyView HDX's HSI source must be switched from GPS to NAV. This may happen one of two ways:

1. If the GPS Navigator does not support auto-switching from GPS to NAV, you must manually perform this action by using AUTOPILOT > HSI SRC.
2. Some devices, such as the Garmin 430, 430W, and GTN series, can automatically change from the GPS to the localizer and send a signal to the SkyView to automatically change the HSI source at the appropriate time.



If the external GPS/NAV device is configured with this behavior enabled, one important detail is that such devices ALWAYS control whether its GPS or NAV radio is providing guidance. Thus, when configured for auto-switching, you must use that navigators' CDI or NAV/GPS toggle to change whether NAV or GPS guidance is shown on SkyView HDX's HSI. SkyView HDX's own HSI SRC button can only see EITHER the GPS or NAV side of the navigator at any time.

## 4.5 Autopilot Operation Check

Perform the following on the ground (i.e., during a pre-flight inspection) to test the functionality of the optional SkyView Autopilot.

### 4.5.1 Pitch and Roll Axis Operation Check

With master switch and autopilot servo power switches ON:

1. Center flight control yoke, and lightly hold in place.



The weight of an unbalanced elevator may cause the servo to slip. Lightly hold the controls in the centered position when operating the autopilot on the ground to offset this effect.

2. Align HDG/TRK bug with current heading.
3. Select ALT and HDG.
4. Engage Autopilot.
5. Set Vertical Speed +1000.
6. Set Altitude 1000 feet above current. Feel yoke move in "Nose Up" direction.
7. Press and hold ALT button to return altitude bug to current. Feel yoke move to neutral.
8. Change HDG/TRK bug to right of current heading. Feel yoke move in "Right Roll" direction.
9. Change HDG/TRK bug to left of current heading. Feel yoke move in "Left Roll" direction.

### 4.5.2 Yaw Axis Operation Check



If the autopilot is a two-axis (pitch and roll) control system, do not perform the following check. Autopilot systems without a Yaw Damper will not have Yaw Damper (YD) controls in the Autopilot Control Menu (see [Figure 41](#)).

With master switch and autopilot servo power switches ON:

1. Move rudder pedals left and right to feel operation.
2. Center rudder pedals, and lightly hold in place.
3. Engage Yaw Damper.
4. Move rudder pedals to the left. Rudder pedals should encounter some resistance to movement; the servo may slip.
5. Move rudder pedals to the right. Rudder pedals should encounter some resistance to movement; the servo may slip.
6. Disconnect Yaw Damper.
7. Move rudder pedals left and right to feel operation. Resistance should not occur.



The resistance offered by the servo indicates that the system is operating normally.

### 4.5.3 Autopilot Disconnect Check

With master switch and autopilot servo power switches ON:

1. Engage Autopilot.
2. Accomplish all that apply:
  - Press the AP button in the Autopilot Control menu, and ensure the autopilot disconnects. "AUTOPILOT DISCONNECT" aural should be heard.
  - Turn the AP Servo Power switch to OFF, and ensure the autopilot disconnects. "AUTOPILOT DISCONNECT" aural should be heard.
  - Press the AP button on the Autopilot Control Panel (if installed), and ensure the autopilot disconnects. "AUTOPILOT DISCONNECT" aural should be heard.
  - Press the panel mounted disconnect button (if installed), and ensure the autopilot disconnects. "AUTOPILOT DISCONNECT" aural should be heard.
  - Press the yoke mounted disconnect button (if installed), and ensure the autopilot disconnects. "AUTOPILOT DISCONNECT" aural should be heard.

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## 5 Performance

Use of the SkyView HDX system has no effect on the airplane's performance.

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## 6 Weight and Balance

Installation of a SkyView HDX system impacts the airplane's level weight and balance once, during initial installation. Certified installers must add new empty weight and balance information to airplane's Aircraft Flight Manual.

Refer to the airplane's Pilot's Operating Handbook and associated Aircraft Flight Manual and supplements. Pilots manage loading weight and balance according to the Aircraft Flight Manual. SkyView HDX has no impact on operational loading.

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## 7 System Overview

### 7.1 SkyView HDX Display Units

The SkyView HDX display unit installed in the pilot's position is designated the Primary Display. It is configured during initial setup to always present PFD. It can also present Map and Engine Monitoring. Additional installed display units (referred to as Secondary Displays) have no PFD restrictions and can present any combination of PFD, Map, or Engine Monitoring. A Secondary Display may also function as a backup should the Primary Display fail.



Primary Displays and Secondary Displays share attitude, air data and engine data. However, SkyView HDX systems include a Standby Display to provide instant attitude and air data. The standby display is a separate system from the SkyView HDX system.

### 7.2 Standby Display System

SkyView HDX-equipped airplanes always include a Standby Display that provides a display screen and an ADAHRS in a single component with a back-up battery to present attitude, altitude, and airspeed information. The approved Standby Display for the SkyView HDX system is either the Dynon EFIS-D10A or Dynon D30. (If your aircraft is equipped with a D30, see the *D30 Airplane Flight Manual Supplement* document at [dynoncertified.com/docs](https://dynoncertified.com/docs)).

### 7.3 Synthetic Vision

SkyView HDX provides a synthetic vision representation of the local terrain and obstacles. This display is for advisory purposes only and must not be used as the sole means of avoidance.

### 7.4 Map

SkyView HDX can present a Map to display airport, airspace, obstacle, and other available aviation data using navigation databases (FAA Obstacle/Terrain and Airport) databases and GPS-derived airplane position data. The Map can also be used for flight planning and plot navigational course guidance.



The Map is for advisory purposes only and must not be used as a sole means of avoidance, nor is it an IFR-approved navigation source.

## 7.5 Terrain Alerts

Terrain clearance alerts are provided based on the predicted path of the airplane relative to the terrain database and the proximity of the aircraft to terrain. The synthetic vision alert is based both on altitude and on flight path. Terrain shown in red is an immediate threat to the aircraft. The map alert is based solely on GPS altitude.

- Yellow terrain is between 100 and 1000 feet below aircraft GPS altitude.
- Red terrain is above the aircraft, or 100 feet or less below the aircraft.



Terrain advisories are configured per pilot preference during initial system setup, and they are enabled from the MENU under MAP LAYERS. When enabled, terrain alerts are suppressed prior to takeoff and are enabled approximately 200 feet above the takeoff altitude. Terrain alerts are provided any time they are enabled, even if topographical relief is not shown on the map.

## 7.6 Traffic Information

SkyView HDX can display traffic information on the PFD and on the Map. The presentation of traffic information is for advisory purposes only and must not be used as a sole means of avoidance.



The display of traffic information is enabled and configured during initial system setup by installers per aircraft owner/operator request and preference.



**Figure 7: Example of Traffic Displayed on Map**

### 7.6.1 Traffic Targets

Traffic targets are presented with symbols and information commonly used in aviation for traffic/TCAS systems. SkyView HDX can display up to 8 targets simultaneously. If there are more than 8 potential threats, the TIS ground station determines the highest priority targets.



**Figure 8: Example of a Traffic Target**

A traffic target includes the following:

- A symbol that depicts the type of traffic target: Traffic Advisory (TA) target, Proximity Advisory target, or Non-threat target. See Section 7.6.2 for more information.
- Relative altitude in hundreds of feet. This is displayed above the target symbol as a signed integer. In Figure 8, the target is +14, or 1400 feet higher than your aircraft. This area is blank if the altitude of a target is not known.
- An up or down arrow to the right of the target symbol that indicates whether the target aircraft is climbing or descending.
- Depending upon target aircraft equipment, an orange vector arrow that points in the target aircraft's direction of travel. The length of arrow represents where the aircraft is expected to be in one minute based on its current trajectory. SkyView HDX assumes that all TIS targets are travelling at 150 knots. The target's direction is shown to the nearest 45° increment (0°, 45°, 90°, etc.).
- Depending upon target aircraft equipment, the aircraft's tail number will be shown below target symbol.

### 7.6.2 Target Symbols

This section describes the types and significance of the symbols that SkyView HDX displays on the PFD and Map for traffic targets.

#### Traffic Advisory (TA) Targets:

These targets have a high chance of ending up near the aircraft. They often start as lower priority targets and become TA targets as they approach. SkyView HDX considers an aircraft a threat if the traffic device in the target aircraft is reporting that it is a threat. TIS reports a threat if a target aircraft is within a 1/4 mile of your aircraft and converging within 30 seconds. This calculation is 20 seconds if the target aircraft is not reporting altitude. ADS-B reports also use a 20 second calculation.



**Figure 9: TA Target Symbol (On-screen)      Figure 10: TA Target Symbols (Off-screen)**

If a TA target cannot be displayed on the screen because its location is beyond the edge of the Map at its current range, it will appear at the edge of the Map with shading, as shown in [Figure 10](#). The shaded area of the symbol always points towards the edge of the screen. This provides threat awareness regardless of Map range level.

**Proximity Advisory and Non-Threat Targets:**

Proximity Advisory targets have less of a chance of being a factor based on their position. They are not considered TA targets because they are not converging with your aircraft within the next 30 seconds. A Proximity Advisory target is shown on the Map when it is closer than 5 nm and within +/- 1200 ft. of your altitude but does not meet the criteria to trigger a TA alert.

Non-threat targets are any other detectable aircraft that are neither TA targets nor Proximity Advisory targets.



**Figure 11: Proximity Advisory Target**



**Figure 12: Non-Threat Target**

**7.6.3 Traffic Alerts**

"Traffic" is an aural and visual caution alert that notifies pilots that there are Traffic Advisory (TA) targets present. The visual notification is shown on the PFD (near Airspeed tape) and on the Map (lower right corner), as shown in [Figure 13](#).



**Figure 13: Traffic Alert Notification**

## 7.7 Weather Information

SkyView HDX can display weather information on the Map, including lightning and PIREPS. Display of traffic information is for advisory purposes only and must not be used as a sole means of avoidance.



The display of weather information is enabled from the IN-FLIGHT MENU under WEATHER OPTIONS.

## 7.8 Navigation Databases

SkyView HDX uses a variety of databases containing navigation and obstacle related information. Depending on the database, these may be updated as frequently as every month. SkyView components should be kept updated with the latest available databases. These may be downloaded to a USB flash drive in accordance with the instructions found at [dynoncertified.com/data](https://dynoncertified.com/data).

## 7.9 Operational Software

Software is updated using a USB flash drive in accordance with the instructions in the *SkyView HDX System Installation Manual* document at [dynoncertified.com/download](https://dynoncertified.com/download).

Updating the SkyView software will automatically update all components connected to the SkyView Network as appropriate.

## 7.10 Flight Crew Alerting System

The Flight Crew Alerting System is a central feature of the SkyView HDX system. This system provides the pilot and crew with system information organized by condition priority for all installed SkyView components. The alerts and messages will vary depending upon the installed equipment. This section describes all possible alerts and messages.

System information is delivered in the form of flight crew alerts and messages that are organized by severity into one of three categories:

1. **WARNING** Warning Alerts:

Warning alerts are for conditions that require immediate flight crew awareness and immediate flight crew response.

Most warning alerts are displayed in the Alert Notification Window (see [Figure 15](#)) and are identified with Red and have both visual and aural annunciations. Some warning alerts (see [Table 2](#)) are aural only when the display already presents a related indication. If a warning alert is flightpath or autopilot related, its visual annunciation is displayed directly on the PFD or on/near the AP Info Bar.

2. **CAUTION** Caution Alerts:

Caution alerts are for conditions that require immediate flight crew awareness and subsequent flight crew response.

Most caution alerts are displayed in the Alert Notification Window (see [Figure 15](#)) and are identified with Yellow and have both visual and aural annunciations. Some caution alerts (see [Table 3](#)) are aural only when the display already presents a related indication. If a caution alert is flightpath or autopilot related, its visual annunciation is displayed directly on the PFD and Map or on/near the AP Info Bar.

3. **MESSAGE** Messages

Messages are for conditions that require immediate flight crew awareness and may require subsequent flight crew response.

Most messages are displayed in the Alert Notification Window (see [Figure 15](#)) and are identified with Grayscale and have both visual and aural annunciations. Some messages (see [Table 4](#)) are aural only when the display already presents a related indication. If a message is flightpath or autopilot related, its visual annunciation is displayed directly on the PFD or on/near the AP Info Bar.

### 7.10.1 Notification Methods

Whenever a new non-flightpath alert is triggered, the Alert Notification Indicator (i.e., button label) shown in [Figure 14](#), flashes Red for Warning alerts, Yellow for Caution alerts, and Gray for Messages. A corresponding voice aural annunciates a spoken word such as "WARNING", "CAUTION" or "MESSAGE" depending on the alert type. Some alerts and messages will announce the actual name, such as "OIL PRESSURE", or "AUTOPILOT DISCONNECT".



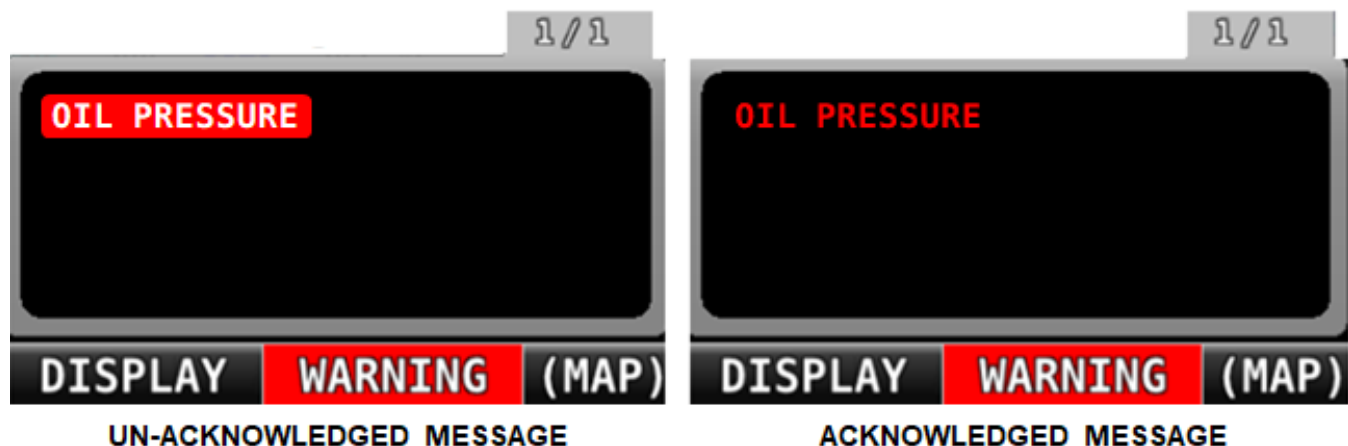
**Figure 14: Warning Notification Indication**

Pressing the WARNING, CAUTION, or MESSAGE button (i.e., Button #8) opens the Alert Notification Window. This window displays text associated with each active alert. After pressing the button, the alerts present in the window are considered acknowledged and the indicator stops flashing. The indicator color corresponds with highest alert level that is currently being triggered. Individual alerts may be configured by the installer to require acknowledgement after they have been triggered for the alert to disappear.

The appearance of alerts within the Alert Notification Window change when first triggered and after acknowledgement. The difference between an un-acknowledged and acknowledged message is shown in [Figure 15](#). This difference is consistent with all alerts, regardless of color. When no alerts are active, the Alert Indicator states, "NO MSG".



When the Alert Notification Window is open, the displayed information is frozen and does not change. If a new alert or message is triggered or cleared, the pilot must re-open the window to refresh the information.



**Figure 15: Alert Notification Window, Alert Appearance**

### 7.10.2 Warning Alerts

Table 2 lists all SkyView system warning alerts alphabetically by 1) visual and 2) aural annunciation. Alerts are dependent upon installed systems and components.

**Table 2: Warning Alert Conditions and Associated Crew Responses**

WARNING ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>ADAHRS CAL CORRUPT</b></p> <p>"WARNING"</p>	The calibration of the ADAHRS module is corrupt.	Do not fly.	Monitor Standby Display System.
<p><b>ADAHRS FAIL</b></p> <p>"WARNING"</p>	SkyView has detected a problem with the ADAHRS module.	Do not fly.	Monitor Standby Display System.
<p><b>ADAHRS INTERNAL ERROR</b></p> <p>"WARNING"</p>	System sensor tests performed on the ADAHRS module failed.	Do not fly.	Monitor Standby Display System.
<p><b>AMPS HIGH</b></p> <p>"ELECTRICAL CURRENT"</p>	Electrical current indicator has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>AMPS LOW</b></p> <p>"ELECTRICAL CURRENT"</p>	Electrical current indicator has entered configured red low range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>ARINC-429 OFFLINE</b></p> <p>"WARNING"</p>	The ARINC-429 module is not communicating with the SkyView HDX display unit.	Do not fly if flight requires external navigation sources.	SkyView will not display navigation from external sources. Use internal source, or follow navigation information on external devices.
<p><b>AUDIO OUTPUT FAIL</b></p> <p>"WARNING"</p>	The audio alert system has failed.  AoA system not operating.	Do not fly.	Use visual alerts to monitor status.



WARNING ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p>Near AP Info Bar:</p> <p><b>ASPD HIGH</b></p> <p>"AUTOPILOT AIRSPEED HIGH"</p>	<p>The autopilot is applying nose up inputs to protect the airplane from exceeding the configured maximum autopilot airspeed.</p> <p>Visual annunciation appears immediately; aural after 10 seconds.</p>	No action.	Take command to manually decrease airplane's speed.
<p>Near AP Info Bar:</p> <p><b>ASPD LOW</b></p> <p>"AUTOPILOT AIRSPEED LOW"</p>	<p>The autopilot is applying nose down inputs to protect the airplane from slowing below the configured autopilot minimum airspeed.</p> <p>Visual annunciation appears immediately; aural after 10 seconds.</p>	No action.	Take command to manually increase airplane's speed.
<p>On AP Info Bar:</p> <p>Status bar changes color and temporarily flashes.</p> <p>"AUTOPILOT DISCONNECT"</p>	Both pitch and roll autopilot axes have been disconnected.	No action.	Take command to fly manually.
<p>On AP Info Bar:</p> <p>Status bar changes color and temporarily flashes.</p> <p>"AUTOPILOT PITCH DISCONNECT"</p>	The autopilot pitch axis has been disconnected.	No action.	Take command to fly manually.
<p>On AP Info Bar:</p> <p>Status bar changes color and temporarily flashes.</p> <p>"AUTOPILOT ROLL DISCONNECT"</p>	The autopilot roll axis has been disconnected.	No action.	Take command to fly manually.

WARNING ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>BACKUP BATT LOW</b></p> <p>"WARNING"</p>	The backup battery connected to the SkyView HDX display unit is in use and has entered a low charge state.	Do not fly if flight requires Instrument Flight Rules (IFR). Allow backup battery to fully charge before flight.	Avoid operations in Instrument Meteorological Conditions (IMC). Land at nearest suitable airport.
<p><b>BATT VOLTS HIGH</b></p> <p>"VOLTAGE"</p>	Voltage indicator has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>BATT VOLTS LOW</b></p> <p>"VOLTAGE"</p>	Voltage indicator has entered configured red low range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><i>On PFD:</i></p> <p><b>CHECK PITOT HEAT</b></p> <p>"WARNING"</p>	Airspeed is no longer available, or is unreliable.	Do not fly.	Refer to Section 3.1.1: <a href="#">Airspeed, Altitude, and/or Attitude Unreliable.</a>
<p><b>CHT # HIGH</b></p> <p>"CYLINDER HEAD TEMPERATURE"</p>	CHT indicator for identified sensor has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>CHT # LOW</b></p> <p>"CYLINDER HEAD TEMPERATURE"</p>	CHT indicator for identified sensor has entered configured red low range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><i>On PFD:</i></p> <p><b>CROSS CHECK ATTITUDE</b></p> <p>"WARNING"</p>	Airspeed is no longer available, or is unreliable. All GPS sources have failed.	Do not fly.	Refer to Section 3.1.1: <a href="#">Airspeed, Altitude, and/or Attitude Unreliable.</a>
<p><b>DEMO MODE</b></p> <p>"WARNING"</p>	The SkyView HDX display unit is in Demo Mode and is not airworthy.	Do not fly.	Monitor Standby Display System.
<p><b>EGT # HIGH</b></p> <p>"EXHAUST GAS TEMPERATURE"</p>	EGT indicator for identified sensor has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual

WARNING ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>EGT # LOW</b></p> <p>"EXHAUST GAS TEMPERATURE"</p>	EGT indicator for identified sensor has entered configured red low range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>EMS # FAIL</b></p> <p>"WARNING"</p>	The identified EMS module has failed.	Do not fly.	Use control position(s) and aural cues to operate engine(s).
<p><i>Visual indication varies by configuration.</i></p> <p>"ENGINE MONITOR"</p>	A system monitored by EMS and configured as a general purpose input has entered the configured red range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><i>No visual indication.</i></p> <p>"FLAPS OVERSPEED"</p>	The value configured for $V_{FE}$ has been exceeded with flaps extended.	No action.	Take command to manually decrease airplane's speed until the flaps have been fully retracted.
<p><b>FUEL FLOW HIGH</b></p> <p>"FUEL FLOW"</p>	Fuel flow indicator has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>FUEL FLOW LOW</b></p> <p>"FUEL FLOW"</p>	Fuel flow indicator has entered configured red low range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>FUEL PRES HIGH</b></p> <p>"FUEL PRESSURE"</p>	Fuel pressure indicator has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>FUEL PRES LOW</b></p> <p>"FUEL PRESSURE"</p>	Fuel pressure indicator has entered configured red low range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual

WARNING ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><i>Near AP Info Bar.</i></p> <p><b>G LIMIT</b></p> <p><i>No aural indication.</i></p>	Autopilot is engaged and vertical acceleration has exceeded the 0.5G to 1.5G range.	No action.	Monitor autopilot performance.  If airplane departs from intended flight path, disconnect autopilot and take command to fly manually.
<p><i>No visual indication.</i></p> <p>"GEAR OVERSPEED"</p>	The value configured for V <sub>LE</sub> has been exceeded with gear extended.	No action.	Take command to manually decrease airplane's speed until the landing gear has been fully retracted.
<p><b>LEVEL HIGH</b></p> <p>"FUEL QUANTITY"</p>	Fuel quantity indicator has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>LEVEL LOW</b></p> <p>"FUEL QUANTITY"</p>	Fuel quantity indicator has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>OIL PRES HIGH</b></p> <p>"OIL PRESSURE"</p>	Oil pressure indicator has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>OIL PRES LOW</b></p> <p>"OIL PRESSURE"</p>	Oil pressure indicator has entered configured red low range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>OIL TEMP HIGH</b></p> <p>"OIL TEMPERATURE"</p>	Oil temperature indicator has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>OIL TEMP LOW</b></p> <p>"OIL TEMPERATURE"</p>	Oil temperature indicator has entered configured red low range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual

WARNING ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><i>No visual indication.</i></p> <p>"OVER GEES"</p>	The G-Meter has entered the configured red range.	No action.	Reduce loads acting on airplane using pitch and power as appropriate.
<p><i>No visual indication.</i></p> <p>"OVERSPEED"</p>	The value configured for $V_{NE}$ has been exceeded.	No action.	Take command to manually decrease airplane's speed below $V_{NE}$
<p><i>On right side of AP Info Bar:</i></p> <p><b>PTCH ERR</b></p> <p><i>No aural indication.</i></p>	An internal servo error has occurred or ADAHRS data is unreliable.	<p>Turn autopilot power OFF.</p> <p>Autopilot is disabled and must not be used until issue has been corrected.</p>	<p>Turn autopilot power OFF.</p> <p>Do not use autopilot for remainder of flight.</p>
<p><i>On left side of AP Info Bar:</i></p> <p><b>ROLL ERR</b></p> <p><i>No aural indication.</i></p>	An internal servo error has occurred or ADAHRS data is unreliable.	<p>Turn autopilot power OFF.</p> <p>Autopilot is disabled and must not be used until issue has been corrected.</p>	<p>Turn autopilot power OFF.</p> <p>Do not use autopilot for remainder of flight.</p>
<p><b>RPM HIGH</b></p> <p>"ENGINE SPEED"</p>	Tachometer indicator has entered configured red high range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>RPM LOW</b></p> <p>"ENGINE SPEED"</p>	Tachometer indicator has entered configured red low range.	Refer to Airplane Flight Manual	Refer to Airplane Flight Manual
<p><b>SKYNET POWER FAULT</b></p> <p>"WARNING"</p>	<p>A fault has been detected in wiring that provides power to SkyView Network.</p> <p>Failure of Flight, Engine, and/or Navigation information may be imminent.</p>	Do not fly.	Monitor Standby Display System.

WARNING ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p>Near AP Info Bar:</p> <p><b>SLIP TRIM NOSE DOWN</b></p> <p><i>No aural indication.</i></p>	<p>The autopilot has carried a large trim load for an extended period, and the affected servo is slipping.</p>	<p>No action.</p>	<p>Turn trim motor power <i>OFF</i>.</p> <p>Trim airplane using mechanical pitch trim control.</p>
<p>Near AP Info Bar:</p> <p><b>SLIP TRIM NOSE UP</b></p> <p><i>No aural indication.</i></p>	<p>The autopilot has carried a large trim load for an extended period, and the affected servo is slipping.</p>	<p>No action.</p>	<p>Turn trim motor power <i>OFF</i>.</p> <p>Trim airplane using mechanical pitch trim control.</p>
<p><b>TRIM FEEDBACK STUCK</b></p> <p>"WARNING"</p>	<p>The trim feedback monitor received a positive activity signal during system boot.</p>	<p>Do not fly.</p> <p>Electric trim system must not be used until fault has been corrected.</p>	<p>1) Turn trim motor power <i>OFF</i>.</p> <p>2) Trim airplane manually.</p> <p>Electric trim system must not be used until fault has been corrected.</p>
<p>On PFD:</p> <p><b>TRIM RUNAWAY</b></p> <p>"TRIM RUNAWAY"</p>	<p>SkyView detected electric trim motor activity that was not commanded.</p>	<p>Do not fly.</p> <p>Electric trim system must not be used until fault has been corrected.</p>	<p>Refer to Section <a href="#">3.1.4: Trim Runaway</a>.</p> <p>Electric trim system must not be used until fault has been corrected.</p>

### 7.10.3 Caution Alerts

Table 3 lists all SkyView system caution alerts alphabetically by 1) visual and 2) aural annunciation. Alerts are dependent upon installed systems and components.

**Table 3: Caution Alert Conditions and Associated Crew Responses**

CAUTION ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>ACTV ADAHRS VIBRATION</b></p> <p>"CAUTION"</p>	<p>ADAHRS module has detected vibration that affects performance of G-Meter, attitude indicator, and autopilot.</p>	<p>Do not fly.</p>	<p>Cross check and monitor instruments.</p> <p>If autopilot is engaged, disengage, and turn AP Power switch OFF.</p> <p>Do not use autopilot for remainder of flight.</p>
<p><b>ADAHRS CAL OLD</b></p> <p>"CAUTION"</p>	<p>Calibration of the ADAHRS module is out-of-date.</p>	<p>Do not fly.</p>	<p>Avoid operations in Instrument Meteorological Conditions (IMC).</p>
<p>On PFD:</p> <p><b>ADD POWER</b></p> <p>"GO AROUND"</p>	<p>The autopilot Go Around function has been engaged.</p>	<p>No action.</p>	<p>Set power for Go-Around.</p>
<p><b>AP DISCONNECT BROKEN</b></p> <p>"CAUTION"</p>	<p>The autopilot disconnect monitor has detected a wiring fault.</p>	<p>Turn autopilot power OFF.</p> <p>Autopilot is disabled and must not be used until fault has been corrected.</p>	<p>Turn autopilot power OFF.</p> <p>Do not use autopilot for remainder of flight.</p>
<p><b>AP DISCONNECT STUCK</b></p> <p>"CAUTION"</p>	<p>The autopilot disconnect monitor has detected a wiring fault.</p>	<p>Turn autopilot power OFF.</p> <p>Autopilot is disabled and must not be used until fault has been corrected.</p>	<p>Turn autopilot power OFF.</p> <p>Do not use autopilot for remainder of flight.</p>

CAUTION ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>AP PANEL OFFLINE</b></p> <p>"CAUTION"</p>	<p>Autopilot Control Panel is not communicating with SkyView.</p>	<p>Autopilot control panel unavailable. Use SkyView Control Menu.</p> <p>Trim airplane manually.</p>	<p>Autopilot control panel unavailable. Use SkyView Control Menu.</p> <p>Trim airplane manually.</p>
<p><b>AP TRIM MALFUNCTION</b></p> <p>"CAUTION"</p>	<p>SkyView sent a command to move the trim motor, but did not receive feedback that the motor is moving.</p> <p>A trim switch was held <i>ON</i> continuously for more than 5 seconds while SkyView Auto-trim was enabled.</p>	<p>1) Turn trim motor power <i>OFF</i>.</p> <p>2) Trim airplane manually.</p> <p>Electric trim system must not be used until fault has been corrected.</p>	<p>1) Turn trim motor power <i>OFF</i>.</p> <p>2) Trim airplane manually.</p> <p>Electric trim system must not be used until fault has been corrected.</p>



CAUTION ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>BACKUP BATT IN USE</b></p> <p>"CAUTION"</p>	<p>The SkyView HDX display unit presenting the alert has switched to backup battery power.</p>	<p>Do not fly.</p>	<p>Choose one:</p> <p>a) Alert appears on all displays, and airplane Master Switch is OFF: Turn airplane Master Switch ON, Confirm message(s) stop.</p> <p>b) Alert appears on one display, and airplane Master Switch is ON: Affected display will operate for 45 minutes. Remaining displays continue to function normally.</p> <p>c) Alert appears on all displays, and airplane Master Switch is ON: Displays will operate for 45 minutes. Plan to land at nearest suitable airport.</p>
<p><b>BACKUP BATT UNAVAIL</b></p> <p>"CAUTION"</p>	<p>The SkyView HDX display unit presenting the message no longer detects the backup battery.</p>	<p>Do not fly</p>	<p>Avoid operations in Instrument Meteorological Conditions (IMC).</p>
<p><b>BACKUP BATT TEST FAIL</b></p> <p>"CAUTION"</p>	<p>Backup battery test did not pass.</p>	<p>Perform successful backup battery test prior to flight.</p>	<p>N/A</p>
<p><i>No visual indication.</i></p> <p>"CHECK GEAR"</p>	<p>Gear is not DOWN, and airspeed is below configured Landing Gear Check Speed.</p>	<p>Not Applicable.</p>	<p>Confirm correct landing gear position.</p>

<b>CAUTION ALERTS</b>			
<b>VISUAL &amp; AURAL ANNUNCIATION</b>	<b>CONDITION</b>	<b>PRE-FLIGHT ACTION</b>	<b>IN-FLIGHT ACTION</b>
<p><b>CPU TEMP CRITICAL</b></p> <p>"CAUTION"</p>	<p>The SkyView HDX display unit presenting the message has critically high internal temperature.</p> <p>The display will automatically shutdown.</p>	<p>Do not fly.</p> <p>Ensure nothing is obstructing airflow around affected display.</p> <p>If alert persists, contact Dynon Technical Support.</p>	<p>Monitor remaining SkyView display and/or Standby Display System.</p> <p>Increase airflow or reduce ambient temperature near affected display.</p>
<p><b>EMS SFG FILE MISMATCH</b></p> <p>"CAUTION"</p>	<p>EMS configuration files in SkyView HDX display units do not match.</p>	<p>Update configuration file to most current version in all displays in SETUP MENU &gt; SYSTEM SOFTWARE.</p>	<p>No in-flight action.</p>
<p><b>EXT LEVEL BUTTON STUCK</b></p> <p>"CAUTION"</p>	<p>The system has detected a wiring fault in the LEVEL button.</p>	<p>Turn AP POWER switch <i>OFF</i>.</p> <p>Autopilot is disabled and must not be used until fault has been corrected.</p>	<p>Turn AP POWER switch <i>OFF</i>.</p> <p>Do not use Autopilot for remainder of flight.</p>
<p><i>On PFD:</i></p> <p style="text-align: center;"><i>G-Meter is displayed.</i></p> <p style="text-align: center;">"GEES"</p>	<p>The G-Meter has entered the configured yellow range.</p>	<p>Do not fly.</p>	<p>Operate elevator control to reduce G loading.</p>
<p><b>GPS ## FAIL</b></p> <p>"CAUTION"</p>	<p>The identified GPS position source has failed.</p> <p>SkyView has switched to the next available GPS position source.</p>	<p>Be aware that GPS redundancy has been reduced.</p>	<p>Be aware that GPS redundancy has been reduced.</p>
<p><b>HEADING SOURCE FAIL</b></p> <p>"CAUTION"</p>	<p>The Remote Magnetometer module has failed or is not communicating with SkyView.</p> <p>Heading information is unavailable.</p>	<p>Use magnetic compass and GPS track for directional reference.</p> <p>Do not fly if flight requires Instrument Flight Rules (IFR).</p>	<p>Use magnetic compass and GPS track for directional reference.</p> <p>Avoid operations in Instrument Meteorological Conditions (IMC).</p>

CAUTION ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>KNOB PANEL OFFLINE</b></p> <p>"CAUTION"</p>	Knob Control Panel is not communicating with SkyView.	Use SkyView display unit knob controls.	Use SkyView display unit knob controls.
<p><b>MAG FACT CAL CORRUPT</b></p> <p>"CAUTION"</p>	<p>The Remote Magnetometer's factory calibration is no longer valid.</p> <p>Heading information is unavailable.</p>	<p>Use magnetic compass and GPS track for directional reference.</p> <p>Do not fly if flight requires Instrument Flight Rules (IFR).</p>	<p>Use magnetic compass and GPS track for directional reference.</p> <p>Avoid operations in Instrument Meteorological Conditions (IMC).</p>
<p><b>NEED COMPASS CAL</b></p> <p>"CAUTION"</p>	Compass calibration for ADAHRS module not performed.	Do not fly if flight requires Instrument Flight Rules (IFR).	Avoid operations in Instrument Meteorological Conditions (IMC).
<p><b>NEED USER AOA CAL</b></p> <p>"CAUTION"</p>	Angle of Attack (AoA) calibration for ADAHRS module not performed.	Do not fly if flight requires Instrument Flight Rules (IFR).	Avoid operations in Instrument Meteorological Conditions (IMC).
<p><b>NO HI-RES TERRAIN</b></p> <p>"CAUTION"</p>	No high-resolution terrain database is installed for airplane's current position.	Install high-resolution database.	Be aware that Synthetic Vision and Terrain Map resolution is degraded.
<p><b>OTHER DISPLAY OFFLINE</b></p> <p>"CAUTION"</p>	In a multi-display SkyView system, one HDX display unit is offline.	<p>Ensure power is supplied to offline display unit.</p> <p>If display continues to remain offline, contact Dynon Technical Support.</p>	Monitor operating HDX display unit and/or Standby Display System.
<p><b>POSITION SOURCE # FAIL</b></p> <p>"CAUTION"</p>	The identified position source has failed.	<p>Verify that all navigation equipment is powered ON.</p> <p>If message persists, use other navigational means.</p>	<p>Use other navigational means.</p> <p>The system has no remaining GPS position sources available.</p> <p>The Map is no longer available.</p>

CAUTION ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>SOFTWARE MISMATCH</b></p> <p>"CAUTION"</p>	Software versions in SkyView HDX display units do not match.	Before flight, update software to most current version in all displays in SETUP MENU > SYSTEM SOFTWARE.	Do not use SkyView HDX display unit presenting Red Xs over indicators.
<p><b>STANDBY NETWORK ERROR</b></p> <p>"CAUTION"</p>	SkyView Network has lost a redundant network connection to one or more system components.	Do not fly if flight requires Instrument Flight Rules (IFR).	Avoid operations in Instrument Meteorological Conditions (IMC).
<p><b>TOUCH PANEL FAULT</b></p> <p>"CAUTION"</p>	Touch screen functionality of affected SkyView HDX unit display not working.	Use SkyView display unit knob controls.	Use SkyView display unit knob controls.
<p><i>On PFD and Map:</i></p> <p><b>TRAFFIC</b></p> <p>"TRAFFIC"</p>	A new Traffic Advisory (TA) target has been identified.	No action, alert is suppressed on the ground.	Pilot awareness only.
<p><i>Near AP Info Bar:</i></p> <p><b>TRIM NOSE DOWN</b></p> <p>"TRIM NOSE DOWN"</p>	<p>The autopilot requires pitch trim in direction indicated.</p> <p>Visual annunciation appears immediately; aural after 10 seconds.</p>	No action.	Apply pitch trim until the message stops.
<p><i>Near AP Info Bar:</i></p> <p><b>TRIM NOSE UP</b></p> <p>"TRIM NOSE UP"</p>	<p>The autopilot requires pitch trim in direction indicated.</p> <p>Visual annunciation appears immediately; aural after 10 seconds.</p>	No action.	Apply pitch trim until the message stops.

CAUTION ALERTS			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><i>Near AP Info Bar.</i></p> <p><b>TRIM ROLL LF</b></p> <p>"TRIM ROLL LEFT"</p>	<p>The autopilot requires roll trim in direction indicated.</p> <p>Visual annunciation appears immediately; aural after 10 seconds.</p>	<p>No action.</p>	<p>Apply roll trim until the message stops.</p>
<p><i>Near AP Info Bar.</i></p> <p><b>TRIM ROLL RT</b></p> <p>"TRIM ROLL RIGHT"</p>	<p>The autopilot requires roll trim in direction indicated.</p> <p>Visual annunciation appears immediately; aural after 10 seconds.</p>	<p>No action.</p>	<p>Apply roll trim until the message stops.</p>
<p><b>TRIM SWITCH STUCK</b></p> <p>"CAUTION"</p>	<p>The system has detected a wiring fault in the Trim switch.</p>	<p>Do not fly.</p> <p>Electric trim system must not be used until fault has been corrected.</p>	<p>1) Turn trim motor power <i>OFF</i>.</p> <p>2) Trim airplane manually.</p> <p>Electric trim system must not be used until fault has been corrected.</p>
<p><i>Near AP Info Bar.</i></p> <p><b>TRIM YAW LF</b></p> <p>"TRIM YAW LEFT"</p>	<p>The autopilot requires yaw trim in direction indicated.</p> <p>Visual annunciation appears immediately; aural after 10 seconds.</p>	<p>No action.</p>	<p>Apply yaw trim until the message stops.</p>
<p><i>Near AP Info Bar.</i></p> <p><b>TRIM YAW RT</b></p> <p>"TRIM YAW RIGHT"</p>	<p>The autopilot requires yaw trim in direction indicated.</p> <p>Visual annunciation appears immediately; aural after 10 seconds.</p>	<p>No action.</p>	<p>Apply yaw trim until the message stops.</p>




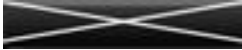

### 7.10.4 Messages

Table 4 lists all SkyView system messages alphabetically by 1) visual and 2) aural annunciation. Messages are dependent upon installed systems and components.


**Table 4: Messages and Associated Crew Responses**

MESSAGES			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>ADS-B IN OFFLINE</b></p> <p>"MESSAGE"</p>	ADS-B module has failed or not communicating with SkyView.	Traffic and Weather is no longer available, Use alternate sources for traffic and weather information.	Traffic and Weather is no longer available, Use alternate sources for traffic and weather information.
<p><i>No visual indication.</i></p> <p>"APPROACHING ALTITUDE"</p>	The airplane is approaching the bugged altitude.	No action.	Pilot awareness only.
<p><i>No visual indication.</i></p> <p>"APPROACHING MINIMUMS"</p>	The airplane's altitude is 200 feet above the selected MINIMUM altitude.	No action.	Pilot awareness only.
<p><i>No visual indication.</i></p> <p>"APPROACHING WAYPOINT"</p>	The airplane is within 30 seconds of crossing flight plan enroute waypoint.	No action.	Pilot awareness only.
<p><i>On AP Info Bar.</i></p> <p><i>Status bar flashes momentarily</i></p> <p>"AUTOPILOT"</p>	The autopilot has been engaged.	Pilot awareness only.	Pilot awareness only.
<p><i>On AP Info Bar.</i></p> <p><i>Status bar flashes momentarily</i></p> <p>"AUTOPILOT MODE"</p>	An autopilot mode has changed either manually or automatically since it was engaged.	Pilot awareness only.	Pilot awareness only.
<p><b>BACKUP BATTERY LOW CHARGE</b></p> <p>"MESSAGE"</p>	The backup battery connected to the SkyView HDX display unit has a low charge, but is not in use.	Do not fly if flight requires Instrument Flight Rules (IFR). Allow backup battery to fully charge before flight.	Avoid operations in Instrument Meteorological Conditions (IMC).

MESSAGES			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<b>BATTERY TEST NEEDED</b> "MESSAGE"	A year has passed since the previous backup battery test.	Perform successful battery test prior to flight.	N/A
<b>CHECK BARO SETTING</b> "MESSAGE"	The current BARO setting and the nearest METAR-based altimeter setting are more than 0.1 INHG apart; or, the airplane has descended below FL180 and the BARO should be reset.	Adjust BARO to field elevation.	Adjust BARO setting as appropriate.
<b>COM RADIO PNL OFFLINE</b> "MESSAGE"	COM Control Panel is not communicating with SkyView.	If Dynon COM radio required for flight, do not fly.	Use alternate communication equipment. If none available, use Lost Comms Procedures.
<b>COM XCEIVER OFFLINE</b> "MESSAGE"	COM Radio receiver is not communicating with SkyView.	If Dynon COM radio required for flight, do not fly.	Use alternate communication equipment. If none available, use Lost Comms Procedures.
<b>CPU TEMP HIGH</b> "MESSAGE"	The SkyView HDX display unit's internal temperature is high.	Do not fly. Ensure nothing is obstructing airflow around affected display.	Increase airflow or reduce ambient temperature near affected display.
<i>No visual indication.</i> "FLIGHT PLAN UPDATED"	A new flight plan has been received by SkyView from the external flight plan source.	Pilot awareness only.	Pilot awareness only.
<i>No visual indication.</i> "LEAVING ALTITUDE"	The airplane is leaving the bugged altitude.	No action.	Pilot awareness only.

MESSAGES			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p>On PFD:</p> <div style="text-align: center;">  <p><b>MINIMUMS</b></p> </div> <p>Minimums bug appears on Altimeter.</p>	<p>Airplane has descended below set MINIMUM altitude.</p>	<p>No action.</p>	<p>Pilot awareness only.</p>
<div style="text-align: center;">  <p><b>NO ADS-B OUT: GPS LOST</b></p> <p>"MESSAGE"</p> </div>	<p>The Transponder's GPS source is not communicating with SkyView.</p> <p>ADS-B Out is not available.</p>	<p>If ADS-B Out is required, request clearance online using FAA's ADS-B Deviation Authorization Preflight Tool (ADAPT).</p>	<p>Continue to destination.</p> <p>Be aware that ATC or other aircraft may not be able to determine your position.</p>
<div style="text-align: center;">  <p><b>PITCH SERVO OFFLINE</b></p> <p>"MESSAGE"</p> </div> <p>On left side of AP Info Bar:</p> <div style="text-align: center;">  </div>	<p>The autopilot pitch servo is not communicating or is not powered on.</p>	<p>a) If AP POWER switch is <i>OFF</i>, turn AP POWER switch <i>ON</i>.</p> <p>b) If AP POWER switch is <i>ON</i> and message persists, turn AP POWER Switch <i>OFF</i>.</p> <p>Autopilot is disabled and must not be used until fault has been corrected.</p>	<p>a) If AP POWER switch is <i>OFF</i>, turn AP POWER switch <i>ON</i>.</p> <p>b) If AP POWER switch is <i>ON</i> and message persists, turn AP POWER switch <i>OFF</i>.</p> <p>Do not use Autopilot for remainder of flight.</p>
<p>Near AP Info Bar:</p> <div style="text-align: center;">  <p><b>PITCH SLIP</b></p> <p>"PITCH SLIP"</p> </div>	<p>Autopilot servo is unable to move controls in direction commanded by autopilot.</p> <p>Slip messages are generally transient.</p>	<p>Not Applicable.</p>	<p>Monitor autopilot performance.</p> <p>If alert persists, take command to fly manually.</p>



MESSAGES			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>ROLL SERVO OFFLINE</b></p> <p>"MESSAGE"</p> <p><i>On right side of AP Info Bar:</i></p> 	<p>The autopilot roll servo is not communicating or is not powered on.</p>	<p>a) If AP POWER switch is <i>OFF</i>, turn AP POWER switch <i>ON</i>.</p> <p>b) If AP POWER switch is <i>ON</i> and message persists, turn AP POWER Switch <i>OFF</i>.</p> <p>Autopilot is disabled and must not be used until fault has been corrected.</p>	<p>a) If AP POWER switch is <i>OFF</i>, turn AP POWER switch <i>ON</i>.</p> <p>b) If AP POWER switch is <i>ON</i> and message persists, turn AP POWER switch <i>OFF</i>.</p> <p>Do not use Autopilot for remainder of flight.</p>
<p><i>Near AP Info Bar:</i></p> <p><b>ROLL SLIP</b></p> <p>"ROLL SLIP"</p>	<p>Autopilot servo is unable to move controls in direction commanded by autopilot.</p> <p>Slip messages are generally transient.</p>	<p>Not Applicable.</p>	<p>Monitor autopilot performance.</p> <p>If alert persists, take command to fly manually.</p>
<p><b>SWITCH FUEL TANK</b></p> <p>"SWITCH FUEL TANK"</p>	<p>A reminder to switch fuel tanks at a user-selectable elapsed time or quantity.</p>	<p>Not Applicable.</p>	<p>Pilot determined.</p>
<p><b>SYSTEM EVENT #: SEE SETUP</b></p> <p>"MESSAGE"</p>	<p>SkyView has logged a system event for the Dynon Diagnostic file.</p> <p>The airplane can be flown.</p>	<p>Contact Dynon Technical Support for instructions on how to provide Dynon with a Diagnostic File for review.</p>	<p>No action.</p>
<p><b>TAIL # MISMATCH</b></p> <p>"MESSAGE"</p>	<p>Tail numbers entered in SkyView HDX display units do not match.</p>	<p>Before flight, enter correct tail number in all displays in <b>SETUP MENU &gt; SYSTEM SETUP</b>.</p>	<p>Pilot awareness only.</p>
<p><b>TIMER EXPIRED</b></p> <p>"TIMER EXPIRED"</p>	<p>A user-determined timer has expired.</p>	<p>Pilot determined.</p>	<p>Pilot determined.</p>

MESSAGES			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<i>No visual indication.</i> "TRAFFIC NOT AVAILABLE"	Traffic information is no longer available.	Revert to alternative traffic avoidance methods.	Revert to alternative traffic avoidance methods.
<b>XPNDR ALT ENCODER FAIL</b> "MESSAGE"	The transponder is not communicating with the altitude source.	If Mode C Altitude Encoding is required, do not fly.	Advise ATC, continue to destination.
<b>XPNDR ERROR</b> "MESSAGE"	The transponder has detected a problem and notified SkyView.  The transponder may not function correctly.	If Transponder is required, do not fly.	Advise ATC, continue to destination.
<b>XPNDR FAIL</b> "MESSAGE"	Transponder has failed.	If Transponder is required, do not fly.	Advise ATC, continue to destination.
<b>XPNDR HEX CODE NOT SET</b> "MESSAGE"	Transponder hex code is not entered in SkyView HDX display units.	If Transponder is required, do not fly.  Enter Transponder hex code in SETUP MENU > TRANSPONDER SETUP.	Advise ATC, continue to destination.
<b>XPNDR NOT IN ALT MODE</b> "MESSAGE"	Airplane is in the air and transponder is not set to ALT Mode.	No action	Set transponder mode as required.
<i>On PFD:</i> <i>Slip/Skid indicator turns green with "YD".</i> "YAW DAMPER"	The autopilot yaw damper has been engaged.	Pilot awareness only.	Pilot awareness only.
<i>On PFD:</i> <i>Slip/Skid indicator turns white.</i> "YAW DAMPER DISCONNECT"	The autopilot yaw damper has been disengaged.	Pilot awareness only.	Pilot awareness only.

MESSAGES			
VISUAL & AURAL ANNUNCIATION	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
<p><b>YAW SERVO OFFLINE</b></p> <p>"MESSAGE"</p> <p><i>On PFD:</i></p> <p><i>Slip/Skid indicator turns white.</i></p>	<p>The autopilot yaw damper servo is not communicating or is not powered on.</p>	<p>a) If AP POWER switch is <i>OFF</i>, turn AP POWER switch <i>ON</i>.</p> <p>b) If AP POWER switch is <i>ON</i> and message persists, turn AP POWER Switch <i>OFF</i>.</p> <p>Autopilot is disabled and must not be used until fault has been corrected.</p>	<p>a) If AP POWER switch is <i>OFF</i>, turn AP POWER switch <i>ON</i>.</p> <p>b) If AP POWER switch is <i>ON</i> and message persists, turn AP POWER switch <i>OFF</i>.</p> <p>Do not use Autopilot for remainder of flight.</p>
<p><i>On PFD near Slip/Skid indicator:</i></p> <p><b>YAW SLIP</b></p> <p>"YAW SLIP"</p>	<p>Autopilot servo is unable to move controls in direction commanded by autopilot.</p> <p>Slip messages are generally transient.</p>	<p>Not Applicable.</p>	<p>Monitor autopilot performance.</p> <p>If alert persists, take command to fly manually.</p>

## 7.11 Indications

### 7.11.1 Airspeed Indicators

Installation of SkyView HDX does not necessitate changes to airplane's airspeed limitations. Refer to the Aircraft Limitations in the airplane's Aircraft Flight Manual (AFM) for the airspeed limitations. Configuration values for airspeed markings are entered into SkyView HDX during initial system setup.

The following airspeed indicator provides 14 CFR 23.1545 compliant airspeed markings for vertical tape-style displays:

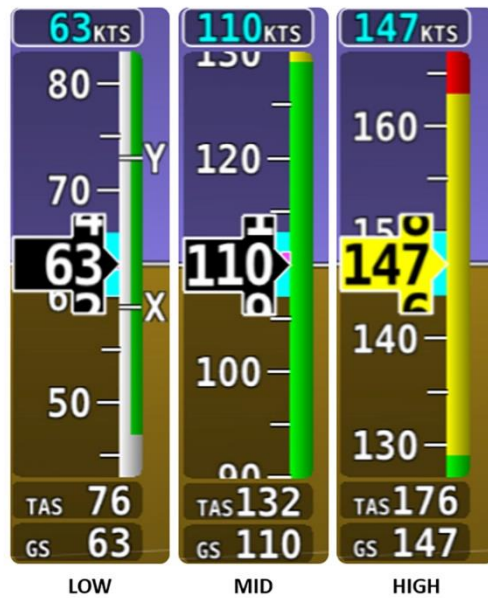
- RED BAND: Indicates speeds at and above the never exceed speed ( $V_{NE}$ ).
- RED LINE: Indicates minimum control speed ( $V_{MC}$ ) – twin-engine airplanes.
- YELLOW BAND: Indicates the range of speeds below the never exceed speed ( $V_{NE}$ ), and above the maximum normal operations speed ( $V_{NO}$ ).
- GREEN BAND: Indicates the range of speeds at or below the maximum normal operations speed ( $V_{NO}$ ), and above the flaps up stall speed ( $V_{S1}$ ).
- WHITE BAND: Indicates the range of speeds above the minimum flight speed in landing configuration ( $V_{S0}$ ) and below the maximum flaps extended speed ( $V_{FE}$ ).
- CYAN LINE: Indicates best rate of climb with a single engine ( $V_{YSE}$ ) – twin-engine airplanes.

Other, optional indications can include:

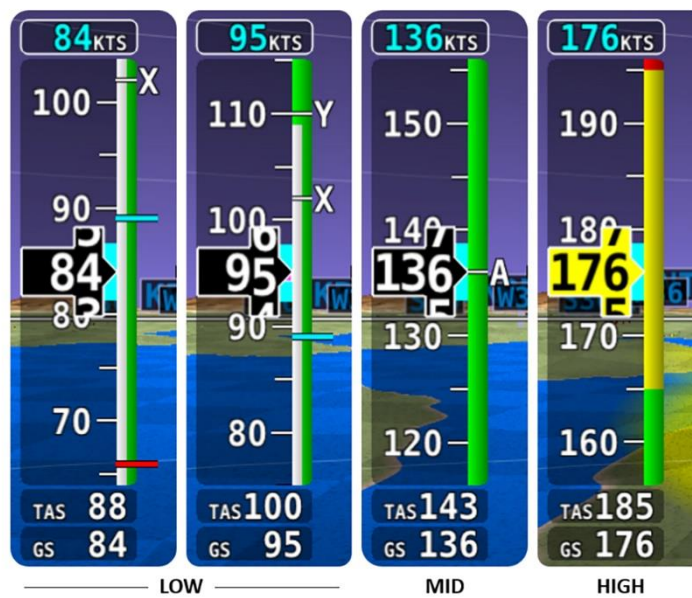
- WHITE X: Indicates best angle of climb ( $V_X$ ).
- WHITE Y: Indicates best rate of climb ( $V_Y$ ).
- WHITE A: Indicates maneuvering speed ( $V_A$ ).

Reference [Figure 16](#) for an example of airspeed markings typical across the airspeed range.

### Single-engine Airplane



### Twin-engine Airplane



**Figure 16: Airspeed Marking Examples**

## 7.11.2 Engine Monitoring

The optional SkyView HDX Engine Monitoring System (EMS) provides engine and airplane system information to the pilot.

During initial system installation or maintenance, SkyView HDX display units are configured by a certified technician to present EMS information in three different screen formats, depending upon owner/pilot preference and requirements of airplane type. These screen formats are:

- 100% display page (see Section 7.11.2.1 for examples),
- 50% display page (see Section 7.11.2.2 for examples),
- Bottom Band (see Section 7.11.2.3 for examples).

During initial system installation, SkyView HDX display units are configured by a certified technician to indicate aircraft limitations described in the Airplane's Flight Manual (AFM). The only colors used to express these limitations are:

- RED: Do not exceed,
- YELLOW: Caution range,
- GREEN: Normal Operating range.

During initial system installation or maintenance of a twin-engine airplane, SkyView HDX display units are configured by a certified technician to present EMS information as follows:

- During takeoffs and landings, a secondary (non-PFD) display unit must always present EMS information in either 100% or 50% display page layout with no exceptions.
- During normal flight operations a secondary (non-PFD) display is configured to present EMS information in either 100% or 50% display page layout, with the following exception:
  - If the pilot selects to present the Map on 50% display page instead of EMS information, then minimum required EMS information (i.e., fuel level, manifold pressure, and condensed engine health indications) must be presented on the Bottom Band.



To present the minimum required EMS information on the Bottom Band, the pilot needs to turn on the Bottom Band from the Main Menu (i.e., press DISPLAY > SETUP > ENGINE BOTTOM BAND).

### 7.11.2.1 100% Display Page

The 100% display page fills an entire display screen. On Single-engine airplanes, the 100% page (see Figure 17) is used only when a display unit has been dedicated to EMS, or when operating the engine on the ground for maintenance reasons. On Twin-engine airplanes, the 100% page (see Figure 18 and Figure 19) is used for all normal flight operations.



**Figure 17: Example of 100% Page Layout for Single-engine Monitoring**

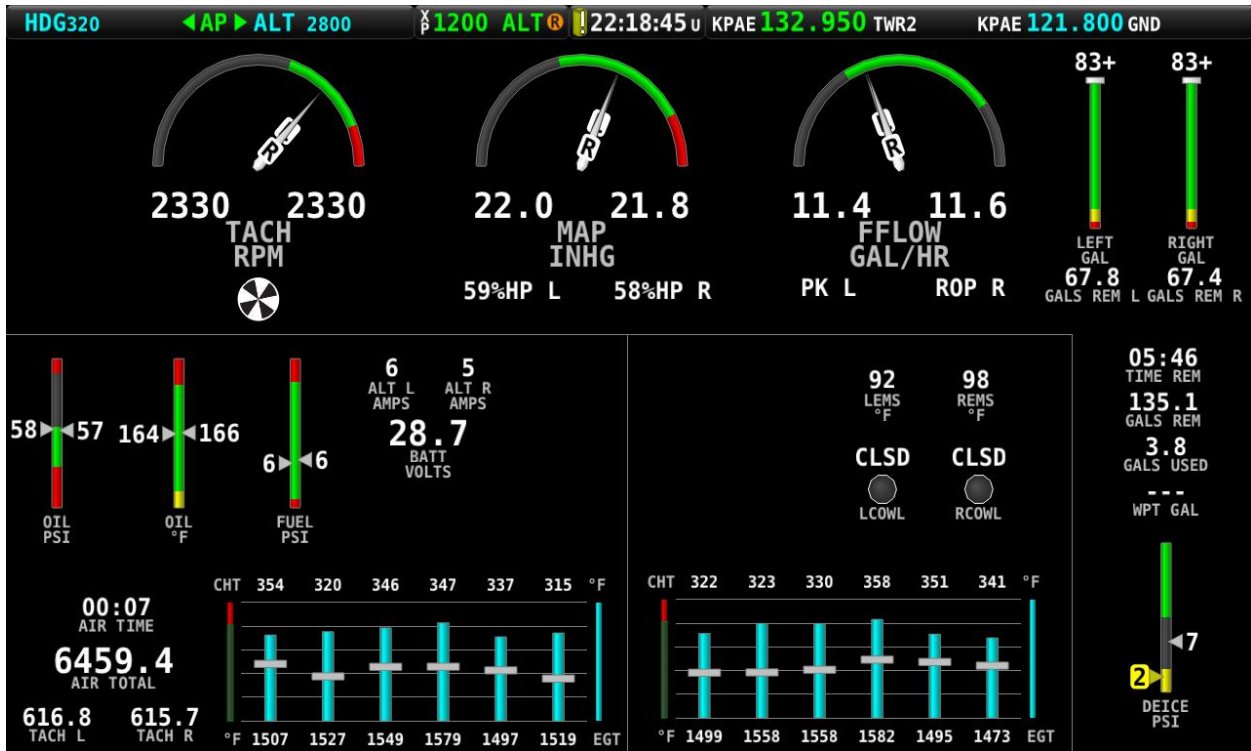


Figure 18: Example of 100% Page Layout with Combined Indicators for Twin-engine Monitoring



Figure 19: Example of 100% Page Layout with Individual Indicators for Twin-engine Monitoring



### 7.11.2.2 50% Display Page

The 50% display page fills one-half of a display screen. On Single-engine airplanes, the 50% page (see Figure 20) is used to provide additional information beyond what is needed for engine operations, such as timers and counters. On Twin-engine airplanes, the 50% page (see Figure 21) is used to show the required information if the dedicated EMS display unit fails.



**Figure 20: Example of 50% Page Layout with Timers/Counters and Engine Bottom Band**



**Figure 21: Example of 50% Page Layout with PFD for Twin-engine Monitoring**

### 7.11.2.3 Bottom Band

The Bottom Band allows EMS information to be displayed along with the PFD and/or Map on one display screen. On Single-engine airplanes, the Bottom Band (see Figure 22) is used for all normal flight operations unless a dedicated EMS display is installed. This is because the required information can be displayed in the Bottom Band, and the remainder of the display screen can be used for the PFD and/or Map displays, especially if the airplane only has one display. On Twin-engine airplanes, the Bottom Band (see

Figure 23) can be used to show the required information if the dedicated EMS display unit fails.



Figure 22: Example of Engine Bottom Band Layout for Single-engine Monitoring

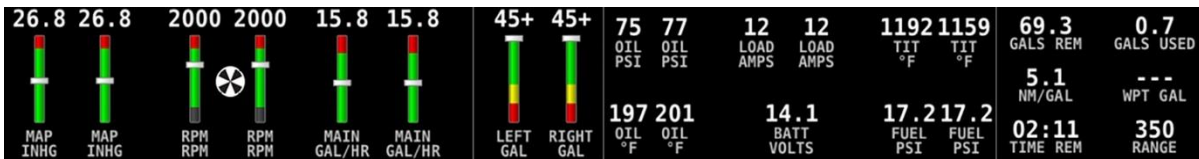


Figure 23: Example of Engine Bottom Band Layout for Twin-engine Monitoring



Figure 24: Example of Engine Bottom Band with PFD and MAP for Twin-engine Monitoring

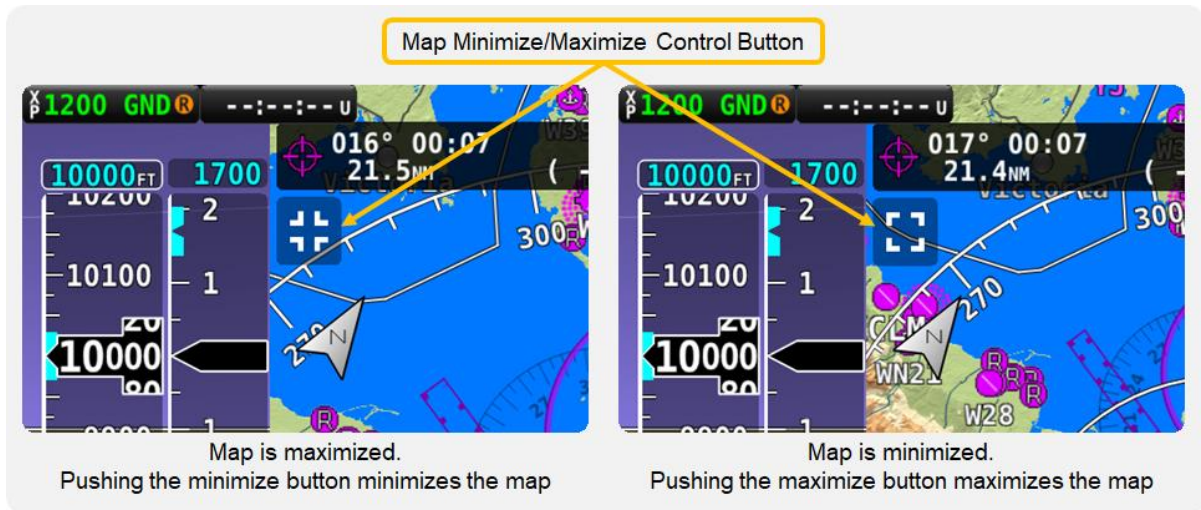
The Bottom Band can be partially obscured by the Map page. The result is a partial Bottom Band (see Figure 25) with primary engine instruments. A full Bottom Band (see Figure 26) is available for primary and secondary engine instruments by controlling the Map page size. The Map page size is controlled by the operation of the Map Minimize/Maximize control button that appears on the Map page (see Figure 27). Pressing the map button toggles the map to maximize or minimize the page. Engine and system alerts continue to function even if the Map is maximized.



**Figure 25: Example of Partial Bottom Band Display**



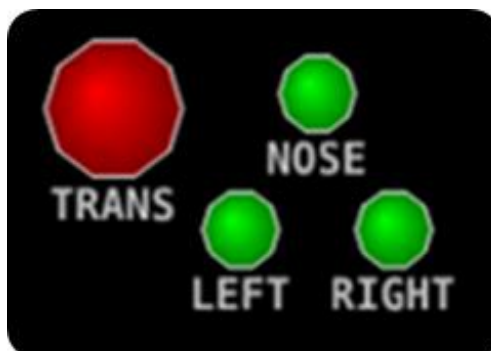
**Figure 26: Example of Full Bottom Band Display**



**Figure 27: Map Minimize/Maximize Control Button**

### 7.11.3 Landing Gear Position Indicators

If connected to the EMS module, landing gear can have position visual indicators (see [Figure 28](#)) and aural annunciations ("CHECK GEAR" and "GEAR OVERSPEED") to alert the pilot to landing gear conditions.



**Figure 28: Example Landing Gear Position Indicator**

The landing gear's visual indicators and the aural annunciations are optional and are configured to function during initial system setup. Visual indicators and aural annunciations function independently and are configured separately.

### 7.11.4 Flaps Position Indicator

If connected to the EMS module, flaps can have a position visual indicator (see [Figure 29](#)) and aural annunciation ("FLAPS OVERSPEED") to alert the pilot to flap conditions.

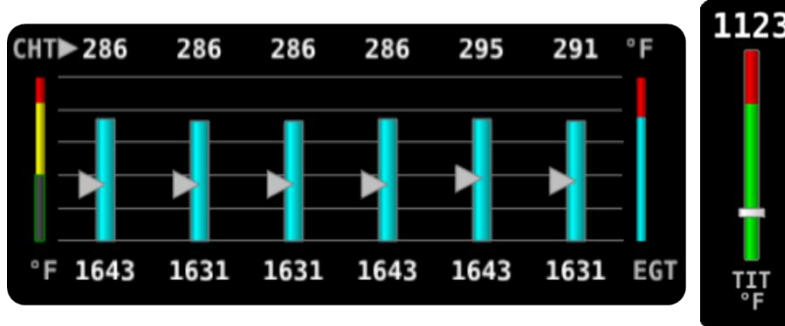


**Figure 29: Example Flap Position Indicator**

The flaps' visual indicators and the aural annunciations are optional and are configured to function during initial system setup. Visual indicators and aural annunciations function independently and are configured separately.

### 7.11.5 Temperature Indicators

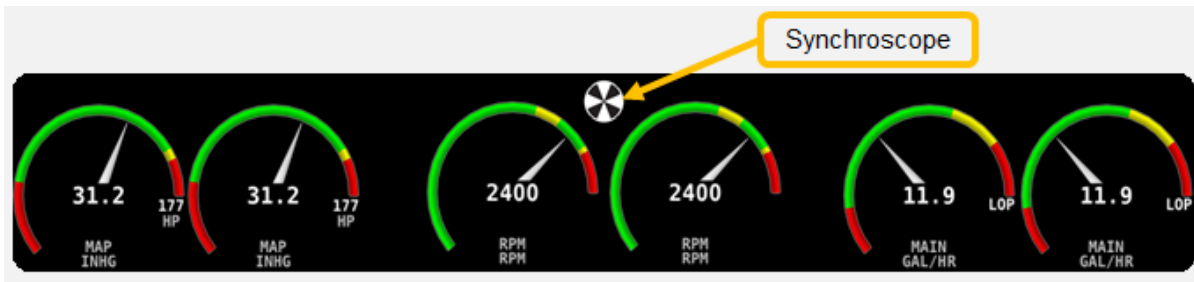
Cylinder Head Temperatures (CHT) and Exhaust Gas Temperatures (EGT) can be displayed in separate indicators or combined (see [Figure 30](#)). The CHT function is depicted as a symbol, and the EGT function is depicted as a bar. Turbine Inlet Temperature (TIT) can also be indicated using a variety of indicator styles.



**Figure 30: Example Combined CHT/EGT and TIT Indicators**

### 7.11.6 Synchroscope

Twin-engine airplanes require the ability to exactly match the left and right engine RPM to prevent discomfort to the occupants, and fatigue to the airframe structure. To aid the pilot's task, the Synchroscope is used to match the engine RPM to be the same. The Synchroscope is located between the RPM indicators on all the engine displays. When the Synchroscope is rotating clockwise, the right engine is turning faster than the left. When the Synchroscope is rotating counterclockwise, the left engine is turning faster than the right. To synchronize the engines simply adjust the propeller controls as required to stop the Synchroscope from rotating.



**Figure 31: Example Synchroscope**

## 7.12 Autopilot

The SkyView Autopilot system is an optional, digitally controlled two-axis (roll and pitch) or three-axis (roll, pitch, and yaw) control system that provides flight path control functions to the pilot. The autopilot can follow a heading by reference to the compass, follow direction over the ground by reference to GPS track information, or navigate according to a CDI when coupled to SkyView's internal VFR GPS navigation data, or when coupled to external navigation source providing VOR, localizer, cross track error or GPS navigation data.

The autopilot can hold altitude, and transition between altitudes at either a selected climb rate or airspeed. The autopilot will also follow vertical guidance including glideslope and glidepath information when coupled to an external navigation source. SkyView Autopilot does not control throttle; pilot action is required to modulate throttle.

On some airplanes, the autopilot may also have an optional third servo connected to the rudder. The rudder servo acts as a yaw damper to reduce and prevent yaw excursions while cruising or maneuvering, whenever the autopilot is engaged. The Yaw Damper (YD) function may also be activated during manual flight (see Section 7.12.11: [Yaw Damper](#) for more information).

All autopilot modes are annunciated visually on the PFD in a space reserved specifically for this purpose called the Autopilot Information Bar (see [Figure 33](#)). Visual and voice aural alerts are provided when the autopilot is engaged, disengaged, the autopilot mode is changed, or the autopilot encounters a limit condition.

The autopilot may be activated and deactivated by the pilot by several means, including on-screen AP icons, an optional push button mounted on the panel or control yoke, as well as the optional Autopilot Control Panel (see [Figure 43](#)).

In the event of a mechanical jam or failure in the servo motor, there is a frangible link called a shear screw for each servo that can be broken by the pilot (see Section 3.1.3: [Autopilot / Yaw Damper Servo Jam](#) for more information.). This frees the controls from the servo so that the airplane can continue to be flown manually.

If for any reason the pilot wishes to stop the autopilot from functioning, the servos can be electrically disabled via the AP Power switch mounted to the instrument panel.

### 7.12.1 Autopilot / Yaw Damper Override

If the airplane flight path needs to be temporarily adjusted from the current autopilot and/or yaw damper trajectory, then simply maneuver the airplane using the flight controls. Doing so will make the autopilot servos slip, and while maneuvering, servo forces will be felt in the flight controls. Upon release of the flight controls, the autopilot and/or yaw damper resumes normal operation.

### 7.12.2 Protective Features

The autopilot automatically protects the aircraft envelope while the autopilot is engaged. The autopilot will not, however, self-engage to protect the aircraft envelope while flying manually. The autopilot provides the following protective features:

1. G LIMIT PROTECTION:

- Keeps total vertical acceleration of aircraft between 0G and +2G.
- Overrides all vertical axis control modes.

2. AIRSPEED PROTECTION:

- Limits the maximum airspeed to:  $V_{NE} - 5\%$ .
- Limits the minimum airspeed to:  $V_{S0} + 30\%$ .
- Overrides all vertical axis modes except G limit.
- Prevents autopilot from being engaged outside of the minimum and maximum control speeds.

3. BANK LIMIT PROTECTION:

- Control inputs will not exceed  $35^\circ$  or a lower maximum that is configured based on aircraft model during system installation.
- Overrides all lateral axis modes.

4. TAKE OFF PROTECTION:

- Autopilot disengages if engaged when airspeed comes alive (~20 kts) to prevent the airplane from taking off with the autopilot engaged.
- This allows the autopilot to be engaged on the ground for test and maintenance.

5. FAIL-DOWN FEATURE:

- Autopilot will fail down to a less complex mode if the current or requested function is no longer possible (see [Table 5](#) for more information).
- for the corresponding fail-down mode for all autopilot modes.
- Prevents autopilot from disconnecting when data from an external source is lost.
- When such a fail-down occurs, the autopilot mode flashes and is replaced with the new mode. A visual and audio cue is generated for such mode changes.



**Table 5: Autopilot Fail Down Modes**

Engaged Mode	Primary Fail Down Mode	Secondary Fail Down Mode
NAV	TRK	HDG
TRK	HDG	Autopilot Disconnects
HDG	TRK	Autopilot Disconnects
IAS	ALT	Autopilot Disconnects
VNAV	ALT	Autopilot Disconnects
VS	Autopilot Disconnects	Not Applicable
ALT	Autopilot Disconnects	Not Applicable

**6. SERVO BREAK-AWAY:**

- Each autopilot servo has a shear screw that will break-away when applied force to the control reaches a certain value. (Refer to the Aircraft-Specific Appendices at end of document for break-away force values.)
- The shear screw provides protection from the condition of a flight control becoming jammed by an Autopilot servo malfunction.
- The pilot must overcome the servo break-away force if a flight control fails to move as expected and is jammed by the autopilot servo (see Section 3.1.3: Autopilot / Yaw Damper Servo Jam).
- Always hold the elevator control at or near the neutral position when the autopilot is engaged on the ground.

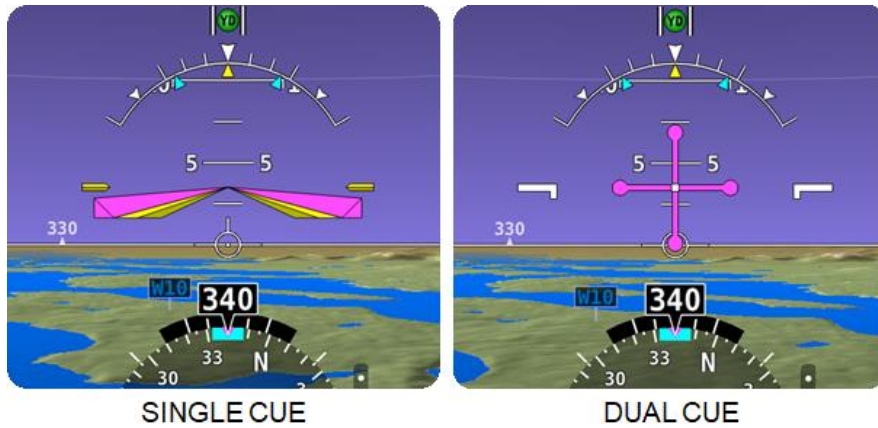


The weight of an unbalanced elevator may cause the servo to slip. Lightly hold the controls in the centered position when operating the autopilot on the ground to offset this effect.

**7.12.3 Flight Director**

Autopilot control modes can be used without engaging the servos by manually flying and following the commands provided by the Flight Director. Autopilot enforced limits on Airspeed and G are honored by the Flight Director. For example, if a descent rate is selected that reaches the maximum autopilot operation speed the flight director will indicate a pitch up to reduce speed and limit descent rate.

Single or Dual cue symbols (see Figure 32) are available to select as options in SETUP MENU > PFD SETUP > FLIGHT DIRECTOR.



**Figure 32: Flight Director Cues**

### 7.12.4 Autopilot Information Bar

The Autopilot Information Bar (AP Info Bar) provides indications of when the autopilot is active, and what lateral and/or vertical control modes are active, and which are armed. The AP Info Bar is in the upper left corner of the PFD (see Figure 33). Touching the bar will open the Autopilot Control Menu (see Figure 41).




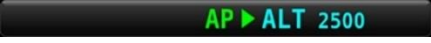




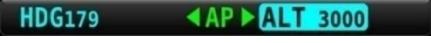


**Figure 33: Autopilot Information Bar**

### 7.12.4.1 Autopilot Indications

Table 6 identifies and describes the visual indications provided in the AP Info Bar. The layout of the bar is standardized to always show autopilot (AP) status in the center with roll servo indication immediately to left, and pitch servo indication immediately to the right, of AP status. Additionally, lateral control modes and values are always shown left of AP/servo status, and vertical control modes and values are always shown to the right of AP/servo status.

**Table 6: AP Info Bar – Autopilot Indications**

INDICATION	STATUS SHOWN	NOTES
	Autopilot is OFF. Flight Director is OFF.	'AP' is white and no other indications are shown.
	Autopilot is OFF. Flight Director is OFF. Airspeed is outside of configured autopilot airspeed range.	'SPD' is yellow and no other indications are shown. Autopilot cannot be engaged.
	Autopilot is OFF. Flight Director is ON with HDG and ALT modes active.	'AP' is white and active lateral and vertical modes and pilot-set values are cyan.
	Autopilot is ON with pitch servo engaged and roll servo disengaged. Flight Director is ON with ALT mode active.	'AP' is green and pitch servo arrow is green.
	Autopilot is ON with pitch and roll servos engaged. Flight Director is ON with HDG and ALT modes active.	'AP' is green and roll and pitch servo arrows are green.
	Autopilot recently disconnected.	'AP' and servo arrows are yellow and flash (i.e., highlight on/off) for 10 seconds after disconnect.
	Autopilot is ON with pitch and roll servos engaged. Flight Director is ON with HDG and ALT modes active. Auto-Trim has commanded pitch trim.	Pitch servo arrow scrolls up or down to indicate Trim activity. Arrow scrolls up to indicate Nose Up trim; arrow scrolls down to indicate Nose Down trim.
	Autopilot is ON with pitch and roll servos engaged. Flight Director is ON with HDG and VS modes active. ALT mode is armed.	Armed lateral and vertical modes are white with white arrows, indicating automatic mode transition when capture value is met.
	Autopilot is ON with pitch and roll servos engaged. Vertical mode recently changed.	Lateral and vertical modes and pilot-set values flash (i.e., highlight on/off) for 10 seconds after mode transition from armed to active.

### 7.12.5 SkyView Auto-trim

The optional SkyView Auto-trim feature automatically trims the pitch axis of the airplane while the autopilot is engaged. When SkyView Auto-trim is active:

- The trim system is commanded to maintain a near zero elevator control load force to the pitch servo.
- Trim activity is indicated in the AP Info Bar (see Section 7.12.4).
- SkyView HDX alerts (See 7.10: Flight Crew Alerting System) when the trim system operates in an unexpected manner
- SkyView HDX also alerts when a trim switch is held ON continuously for more than 5 seconds. If this safety function is triggered by the pilot inadvertently, it is reset by releasing the trim control momentarily, and then re-commanding trim with the switch.



When pushed and held, the Autopilot Disconnect Button will interrupt all trim commands for conditions such as a Trim Runaway.



The pilot or co-pilot trim switches on the yoke always override the SkyView Auto-trim commands to the airplane's electric trim system. Additionally, pilot switches override co-pilot switches.

### 7.12.6 Autopilot Annunciations

The autopilot will annunciate a variety of alerts to inform the pilot of conditions affecting the autopilot's performance. This section describes all autopilot performance related alerts, their associated voice aural annunciations, and the conditions that cause them to annunciate.

#### 7.12.6.1 Servo Slip Messages

Servo Slip messages display on the PFD (see Figure 34 for examples and locations) whenever a servo is unable to move the controls in the direction commanded by the autopilot. Servo Slip alerts are generally transient (i.e., come and go) and usually occur when control loads are increased by turbulent air, the pilot overriding the flight controls, or out-of-adjustment trim for affected control.



**Figure 34: Servo Slip Message Examples**

### 7.12.6.2 Trim Alerts

In airplanes with manual trim systems, when the autopilot detects it is carrying trim load, a Trim alert is displayed near the AP Info Bar (see [Figure 35](#)). The following alerts indicate to the pilot that trim adjustment is necessary:

- TRIM NOSE DOWN
- TRIM NOSE UP
- TRIM ROLL LF
- TRIM ROLL RT
- TRIM YAW LF
- TRIM YAW RT

After being displayed for 10 seconds, an aural annunciation will also commence to further alert the pilot. The pilot should adjust the trim in the direction indicated in the alert until the alert is removed.



If SkyView Auto-Trim fails to properly trim the aircraft within 10 seconds of a trim request, the aural annunciation will still trigger to alert the pilot that the autopilot has detected an out-of-trim condition.



**Figure 35: Trim Alert Examples**

### 7.12.6.3 Slip Trim Alerts

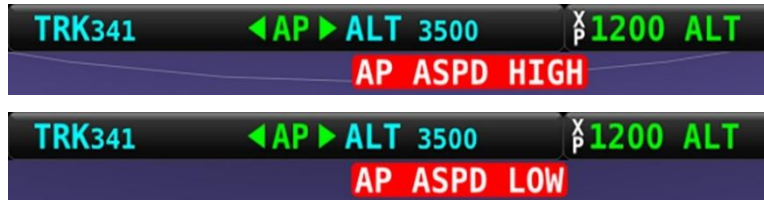
When the autopilot carries a large trim load for an extended period, the affected servo may begin to slip. When this occurs, the autopilot triggers a Slip Trim alert near the AP Info Bar for the affected axis (see [Figure 36](#)). If the alert persists, the aircraft is likely severely out of trim. In this situation disconnect the autopilot, trim the aircraft appropriately, and then re-engage the autopilot.



**Figure 36: Slip Trim Alert Examples**

#### 7.12.6.4 Airspeed High / Low Alerts

When the airplane reaches the minimum or maximum limit speeds configured in the autopilot, the autopilot will pitch the nose up or down as required to prevent the airplane from exceeding these limit speeds. Whenever this protective feature is active, the autopilot informs the pilot by displaying AP Airspeed alerts near the AP Info Bar (see [Figure 37](#)). After being displayed for 10 seconds, an aural annunciation will also commence to further alert the pilot.



**Figure 37: Airspeed High/Low Alert Examples**

#### 7.12.6.5 G Limit Alert

When autopilot is engaged and vertical acceleration has exceeded the normal G load range (0.5G to 1.5G), the autopilot immediately begins reducing elevator input and displays the G Limit alert near the AP Info Bar (see [Figure 38](#)). The alert remains active until the G load returns to the normal range.



**Figure 38: G Limit Alert Example**

#### 7.12.6.6 Servos Offline

When a servo is offline (for example, when the autopilot circuit breaker has been pulled), white Xs are displayed in AP Info Bar for the affected axis (see [Figure 39](#)). Additionally, an accompanying Message is generated. Press the MESSAGE button once to view and twice to acknowledge this error. After the error is acknowledged, the white Xs are suppressed so that Flight Director can continue to be used for guidance.



**Figure 39: Servo Offline Examples**

#### 7.12.6.7 Servo Errors

When a servo has failed (for example, when an internal error has occurred or ADAHRS data is unreliable), a Servo Error alert (see [Figure 40](#)) is displayed in the AP Info Bar.



**Figure 40: Servo Error Examples**

### 7.12.7 Autopilot Control

Operating the autopilot requires the selection of the correct control mode to accomplish the desired autopilot task. The lateral and vertical servos can be engaged individually or simultaneously. The servos can be engaged using the Autopilot Control Menu (see [Figure 41](#)), located on the display, or by using the optional instrument panel mounted Autopilot Control Panel (see [Figure 43](#)). Both controls provide the same buttons and functions, with two exceptions:

1. The *Autopilot Control Menu* does not provide the LEVEL button or function.
2. The *Autopilot Control Panel* does not provide the Yaw Damper button or function.

Only the AP and the LEVEL buttons will engage the autopilot servos. All other control mode selections only arm the servos for engagement directly into the selected mode. The servos will remain armed in the selected mode until the AP button is pushed. Pushing the AP button will engage the servos into the armed mode currently displayed on the AP Info Bar (see [Section 7.12.4](#)).

The Autopilot can be *engaged* using the following methods:

1. Press and release the AP button on the Autopilot Control Menu screen,
2. Press and release the AP button on the optional Autopilot Control Panel,
3. Press the LEVEL button on the optional Autopilot Control Panel.

The autopilot can be *disengaged* using the following methods:

1. Press and release the red Autopilot Disconnect Button,
2. Press and release the AP button on the Autopilot Control Menu screen,
3. Press and release the AP button on the optional Autopilot Control Panel,
4. Turn off the Autopilot master switch OR pull circuit breaker.



Pressing the AP button *DOES NOT* disable the Flight Director.



The AP DISC button may either be panel mounted or mounted on the control wheel/yoke.



If the SkyView Autopilot installation includes the SkyView Auto-trim feature, then the AP DISC button must be mounted on the side of control wheel/yoke opposite of the throttle controls.

For a functional description of the of each autopilot control mode, refer to [Table 7](#).

**Table 7: Autopilot Control Modes**

CONTROL MODE	FUNCTIONALITY DESCRIPTION
LEVEL	Rolls wings level, simultaneously raises nose above horizon, then holds zero vertical speed.
HDG	Turns toward and holds compass heading as selected by HDG/TRK bug.
TRK	Turns toward and holds ground track as selected by HDG/TRK bug.
ROLL	<p>Holds current bank angle, within bank angle limits.</p> <p><b>NOTE:</b> This mode can only be activated when the autopilot is activated and no other lateral mode (HDG, TRK, or NAV) has been selected at the moment of engagement.</p>
NAV	<p>Intercepts course by turning towards CDI needle, then maintains selected OBS course.</p> <p>VOR/LOC: Reverts to HDG mode if CDI is lost with HDG target set to OBS value, or to current HDG if OBS is not set.</p> <p>GPS: Reverts to TRK mode if CDI is lost with TRK target set to OBS value, or to current GPS ground track if OBS is not set.</p>
ALT	<p>Holds altitude commanded in the Autopilot status bar.</p> <p><b>NOTE:</b> When activating this mode, commanded altitude is automatically set to the current indicated altitude.</p>
VS	<p>Maintains the selected vertical speed as airplane performance allows, until approaching the altitude bug, then transitions to ALT mode.</p> <p><b>NOTE:</b> If VS mode is selected when altitude is near the selected altitude the Autopilot will not automatically capture altitude. This allows the pilot to initiate a VS climb/descent away from the altitude bug.</p> <p><b>NOTE:</b> A VS setting of 0 will not maintain a specific altitude. However, if a specific altitude is not required, a VS setting of 0 can provide a more comfortable ride quality than ALT mode in turbulent conditions.</p>
IAS	Maintains the selected air speed during climb (if not aircraft performance limited) until the selected altitude approaches, then transitions to ALT to maintain selected altitude.
VNAV	<p>Automatically captures and tracks a glideslope or glidepath when intercepted from below, regardless of selected lateral mode. It will not capture if descending from above the glideslope or glidepath.</p> <p><b>CAUTION:</b> It is possible for the Autopilot to capture and track a glideslope or glidepath prior to the airplane reaching the final approach course of an instrument approach. If this is not desired, do not arm VNAV mode until established on the final approach course.</p>





**Figure 41: Autopilot Control Menu**

### 7.12.8 Vertical Guidance Source Loss

If vertical guidance information is lost, the autopilot reverts to ALT hold at the altitude at which the vertical guidance source was lost. The aural AUTOPILOT MODE message will annunciate, and the new mode will indicate flashing on the AP Info Bar.

### 7.12.9 Go Around

The Go Around function is available when the autopilot is engaged in vertical guidance and is tracking a vertical deviation. To engage the Go Around function, press the NOSE UP button on the Autopilot Control Panel. The autopilot will annunciate the "Go Around" display the ADD POWER alert on the PFD (see [Figure 42](#)).

Pressing the NOSE UP button at any time automatically switches Pitch and Roll modes to the following:

1. TRK Mode, with value defaulting to the current GPS track, and,
2. Depending on pilot preference and autopilot system setup:
  - VS Mode, defaulting to the preset vertical speed value.
  - IAS Mode, defaulting to the current airspeed.



**Figure 42: ADD POWER Alert**

### 7.12.10 Autopilot Control Panel

The optional Autopilot Control Panel (Figure 43) includes dedicated buttons for engaging the Flight Director, Autopilot, and all modes, including setting up fully coupled approaches; VNAV; IAS Hold; and mode sequencing (provided that the necessary IFR navigation sources are installed). It also has a LEVEL button to immediately return the airplane to straight and level flight.



**Figure 43: Autopilot Control Panel**

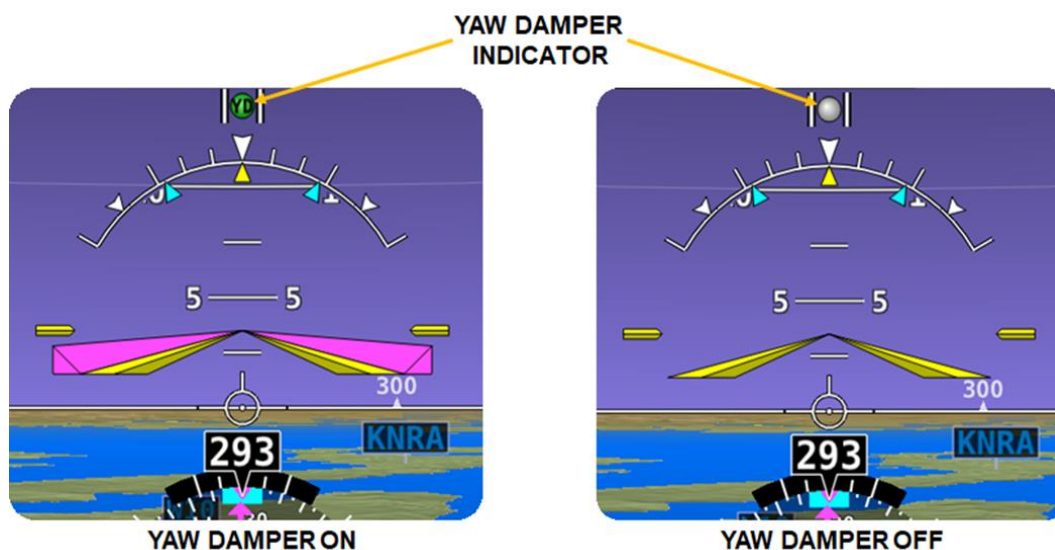
### 7.12.11 Yaw Damper

The optional Yaw Damper feature dampens yaw oscillations induced by turbulence, which improves the airplanes ride quality. The function will also keep the Slip/Skid Indicator centered during maneuvers.

The Yaw Damper may be engaged independently from the autopilot and can be engaged when the autopilot is not engaged. The Yaw Damper control appears only on the Autopilot Control Menu (see Figure 41). To independently engage the Yaw Damper, select the YD button. The YD button light will turn green when engaged, and the Slip/Skid Indicator will appear green, with the letters YD in black, as shown in Figure 44.

Because the Yaw Damper provides active control of the rudder, it should be deactivated when manual flight maneuvering is required, such as when entering an airport traffic pattern. Disengaging the Yaw Damper requires a pilot action such as those described in Table 8. However, if forgotten, applying pressure on a rudder pedal when the Yaw Damper is engaged will just override the Yaw Damper and cause the Yaw Damper servo to slip, just as do the Autopilot servos.

The Yaw Damper function is not available on all airplanes.



**Figure 44: Yaw Damper Engaged Indication**

**Table 8: Yaw Damper Disconnect Methods**

DISCONNECT METHOD	AP ENGAGED?	RESULT
Press YD button on AP Control Menu	YES or NO	Yaw Damper servo disengages (autopilot is not affected)
AP Disconnect Switch	YES	Yaw Damper and Autopilot servos disengage
	NO	Yaw Damper servo disengages

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## 8 Handling, Service, and Maintenance

Maintain and service SkyView HDX in accordance with the *SkyView HDX General Maintenance Manual* document and the *Autopilot Servo Installation and Maintenance Manual* document associated with the airplane.

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## 9 Appendix 1: Cessna 172F–S

### 9.1 Autopilot Limitations

#### Maximum Flap Setting:

- Use of the autopilot with flaps extended beyond 10 degrees is prohibited.

#### Minimum Altitude:

- Use of the autopilot below 250 feet AGL is prohibited.

#### Servo Shear Screw:

- Use of the autopilot when any servo shear screw is broken is prohibited.
- Use of the autopilot without a successful preflight operations check is prohibited.  
(See Section 4.5: [Autopilot Operation Check](#) for instructions)

### 9.2 Autopilot Servo Shear Screw Break-Away Forces

#### Pitch Servo:

63 lbs.

#### Roll Servo:

21 lbs.

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## 10 Appendix 2: Cessna 182E–T, T182, R/TR182

### 10.1 Autopilot Limitations

#### Use of Flaps:

- Use of the autopilot while changing flap settings is prohibited.

#### Maximum Flap Setting:

- Use of the autopilot with flaps extended beyond 10 degrees is prohibited.

#### Minimum Airspeed

- Use of the autopilot while speed is less than 60 KIAS is prohibited.

#### Minimum Altitude:

- Use of the autopilot below 200 feet AGL is prohibited.

#### Servo Shear Screw:

- Use of the autopilot when any servo shear screw is broken is prohibited.
- Use of the autopilot without a successful preflight operations check is prohibited.  
(See Section 4.5: [Autopilot Operation Check](#) for instructions)

### 10.2 Autopilot Servo Shear Screw Break-Away Forces

#### Pitch Servo:

56 lbs.

#### Roll Servo:

32 lbs.

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## 11 Appendix 3: Beechcraft Bonanza Models P35–V35B

### 11.1 Autopilot Limitations

#### Maximum Flap Setting:

- Use of the autopilot with flaps extended beyond 15 degrees is prohibited.

#### Minimum Altitude:

- Use of the autopilot below 425 feet AGL is prohibited.

#### Servo Shear Screw:

- Use of the autopilot when any servo shear screw is broken is prohibited.
- Use of the autopilot without a successful preflight operations check is prohibited.  
(See Section 4.5: [Autopilot Operation Check](#) for instructions)

### 11.2 Autopilot Servo Shear Screw Break-Away Forces

#### Pitch Servo:

73 lbs.

#### Roll Servo:

24 lbs.

#### Yaw Servo:

91 lbs.

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## 12 Appendix 4: Beechcraft Bonanza 36

### 12.1 Autopilot Limitations

#### Maximum Flap Setting:

- Use of the autopilot with flaps extended beyond 15 degrees is prohibited.

#### Minimum Altitude:

- Use of the autopilot below 200 feet AGL is prohibited.

#### Maximum Climb/Descend Rate:

- Use of the autopilot when exceeding a climb or descent rate of 2000 FPM is prohibited.

#### Servo Shear Screw:

- Use of the autopilot when any servo shear screw is broken is prohibited.
- Use of the autopilot without a successful preflight operations check is prohibited.  
(See Section 4.5: [Autopilot Operation Check](#) for instructions)

### 12.2 Autopilot Servo Shear Screw Break-Away Forces

#### Pitch Servo:

66 lbs.

#### Roll Servo:

30 lbs.

#### Yaw Servo:

77 lbs.

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## 13 Appendix 5: Piper Seneca PA-34

### 13.1 Autopilot Limitations

#### Minimum Engine Operation:

- Use of the Autopilot when both engines are not operating at the same power setting is prohibited.

#### Maximum Flap Setting:

- Use of the Autopilot with flaps extended beyond 10 degrees is prohibited.

#### Minimum Altitude:

- Use of the Autopilot below 200 feet AGL is prohibited.

#### Maximum Climb/Descend Rate:

- Use of the Autopilot when exceeding a climb or descent rate of 2,000 FPM is prohibited.

#### Servo Shear Screw:

- Use of the autopilot when any servo shear screw is broken is prohibited.
- Use of the autopilot without a successful preflight operations check is prohibited.  
(See Section 4.5: [Autopilot Operation Check](#) for instructions)

### 13.2 Autopilot Servo Shear Screw Break-Away Forces

#### Pitch Servo:

68 lbs.

#### Roll Servo:

38 lbs.

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## 14 Appendix 6: Beechcraft Baron 58, 58A

### 14.1 Autopilot Limitations

#### Minimum Engine Operation:

- Use of the Autopilot when both engines are not operating at the same power setting is prohibited.

#### Maximum Flap Setting:

- Use of the autopilot with flaps extended beyond 15 degrees is prohibited.

#### Minimum Altitude:

- Use of the autopilot below 300 feet AGL is prohibited.

#### Maximum Climb/Descend Rate:

- Use of the autopilot when exceeding a climb or descent rate of 2000 FPM is prohibited.

#### Servo Shear Screw:

- Use of the autopilot when any servo shear screw is broken is prohibited.
- Use of the autopilot without a successful preflight operations check is prohibited.  
(See Section 4.5: [Autopilot Operation Check](#) for instructions)

### 14.2 Autopilot Servo Shear Screw Break-Away Forces

#### Pitch Servo:

68 lbs.

#### Roll Servo:

35 lbs.

#### Yaw Servo:

107 lbs.

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