

DYNON

CERTIFIED

D30

Touchscreen Electronic Flight Display



Airplane Flight Manual Supplement

STC SA02594SE

For Software Version 1.1.0

104004-000

5/24/2023

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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 D30 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

_____, for
Manager, Flight Test and Human Factors Branch, AIR-710
Federal Aviation Administration

05/24/2023
Approved Date

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Revision History

REV	FAA APPROVAL	DESCRIPTION OF CHANGE
A	Al Wilson, Manager, AIR-710 5/24/2023	Initial Submission (ECO 360733)

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1 General

This document is the Airplane Flight Manual Supplement (AFMS) for the Dynon D30 Touchscreen Electronic Flight Display. For SkyView HDX systems installed under STC SA02594SE, the D30 serves as standby flight display for SkyView's primary flight display. The information herein is applicable to all airplanes on the Approved Model List (AML) of Supplemental Type Certificate (STC) SA02594SE.

This document is not the AFMS for the SkyView HDX system. That document, *103272-000 SkyView HDX Airplane Flight Manual Supplement*, is available at dynoncertified.com/docs.

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. 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. 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 D30 standby flight display.

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

- 104003-000 – D30 Installation and Maintenance Manual (*current revision*)
- 103272-000 – SkyView HDX Airplane Flight Manual Supplement (*current revision*)

2 Limitations

The limitations listed in this section apply to all aircraft with a Dynon D30.

2.1 System Installation

D30 must be installed in accordance with instructions in *D30 Installation and Maintenance Manual* document dynoncertified.com/docs.

2.2 System Software

D30 must utilize software version 1.1.0 or the latest FAA-approved software version.

2.3 Types of Operation Approved

No change to aircraft.

2.4 IFR Operations

Intentional IFR flight with a yellow or red backup battery icon displayed is prohibited (see Section 4.5: [Backup Battery Charge Check](#) for more information).

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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.

1. Fly by reference to primary flight instruments and whiskey compass.
2. Autopilot_____ DISCONNECT.
3. Pitot Heat Switch_____ ON.
4. Alternate Static Air Source_____ ON.
5. Maneuver away from icing conditions.
6. Alternate Static Air Source no longer needed_____ OFF.

3.2 Non-Normal Procedures

3.2.1 Loss of Airspeed, Altitude, and/or Attitude

CONDITION: Airspeed, Altitude, and/or Attitude indicators are replaced with Red Xs.

1. Fly by reference to primary flight instruments and whiskey compass.
2. Autopilot_____ DISCONNECT.
3. Aircraft Attitude_____ MAINTAIN / REGAIN AIRCRAFT CONTROL.
4. Plan to land at nearest suitable airport.

3.2.2 ADAHRS CAL CORRUPT

CONDITION: Airspeed, Altitude, and Attitude indicators are replaced with Red Xs, and ADAHRS CAL CORRUPT alert is displayed.

1. Fly by reference to primary flight instruments and whiskey compass.
2. Autopilot_____ DISCONNECT.
3. Aircraft Attitude_____ MAINTAIN / REGAIN AIRCRAFT CONTROL.
4. Plan to land at nearest suitable airport.

3.2.3 AIRCRAFT POWER LOST

CONDITION: Electrical power to unit has been lost, and AIRCRAFT POWER LOST alert is displayed.

1. Alert on screen _____ TOUCH.
2. Plan to land at nearest suitable airport.
 - System is operating on Backup Battery.
 - System will continue to operate normally until Backup Battery is depleted.
 - Battery icon on screen indicates charge status of Backup Battery. A fully charged Backup Battery provides at least 45 minutes of operation.

4 Normal Operations

Operation of the Dynon D30 is intuitive; however, users should have a reasonable degree of familiarity with the D30's flight indications and other functions before operation.

4.1 Flight Indications

The D30 provides the flight indications listed below. See [Figure 1](#) for locations of the D30's flight indications; see section [7: System Overview](#) for detailed information about indicator markings.

- Airspeed Tape
- Indicated Airspeed
- Bank Angle Indicator
- Turn Rate Indicator
- Slip/Skid Indicator
- Vertical Speed Indicator (VSI)
- Altimeter
- Barometer / Altimeter Setting

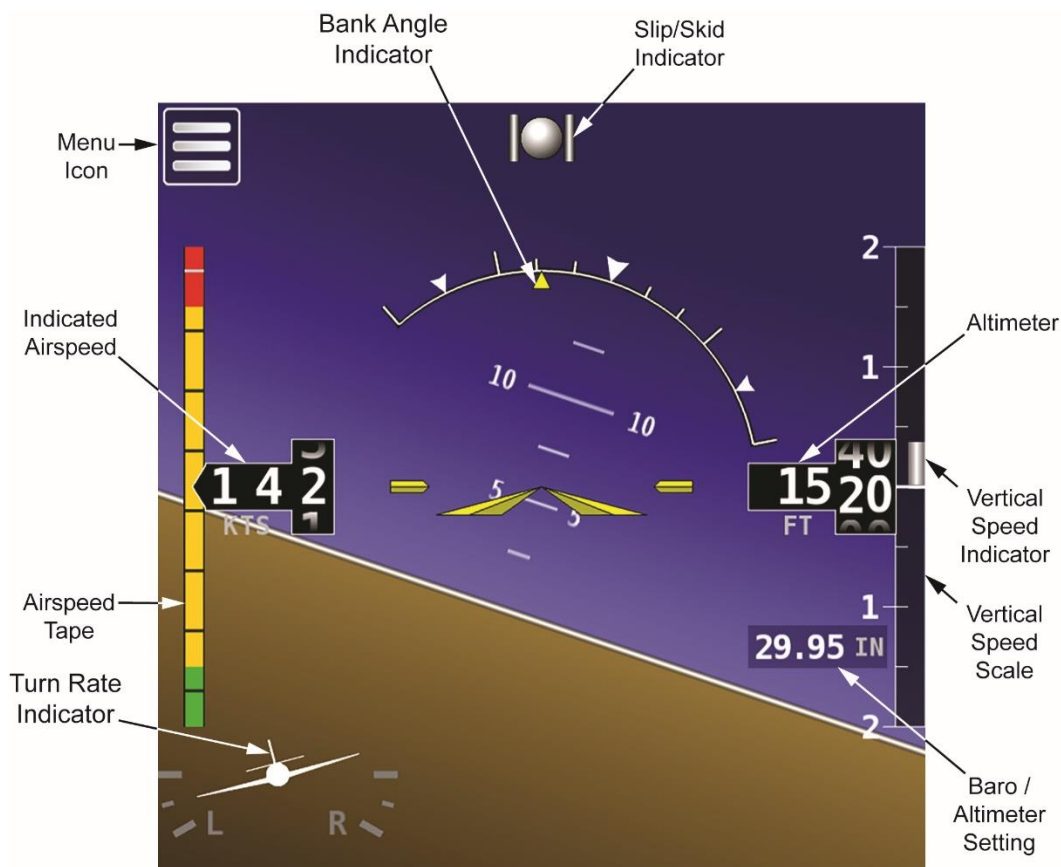


Figure 1: Flight Indications

4.2 Startup and Shutdown

To startup the D30:

1. Apply power to unit. Unit will startup.
2. If power is applied and unit does not startup, then press and hold bezel button for two seconds. Unit will startup.



Altitude is not displayed until 30 seconds after startup. If the D30 senses an airspeed or altimeter setting adjustment, then altitude is immediately displayed.

To shutdown the D30:

1. Remove power from unit. The Shutting down alert is displayed with a *30-second* countdown timer. After countdown, unit will shutdown.
2. Alternatively, press and hold bezel button for two seconds. The Shutdown alert is displayed with a *3-second* countdown timer. After countdown, unit will shutdown.



If unit last operated on backup battery power, and battery charge entered red indication, it is advised to shutdown unit using bezel button method.

4.3 Screen Brightness Control

To adjust the screen brightness on the D30:

1. Touch the Menu icon (Figure 1). Main Menu is displayed.
2. Use Brightness slider bar on Main Menu to set screen brightness level.
3. When done, tap 'arrow' icon to close Main Menu.

4.4 Altimeter Setting

To change the altimeter setting on the D30:

1. Touch the Barometer / Altimeter Setting indicator (Figure 1). The Altimeter Setting tool appears.
2. Tap + or - or use the slider bar to adjust the altimeter as needed.
3. When done, touch any other part of screen to close the Altimeter Setting tool.

4.5 Backup Battery Charge Check



Prior to IFR flight, the charge on the D30's backup battery must be checked.




To check the charge on the D30 backup battery:

1. Apply power to unit.
2. Remove power from unit. The Shutting down alert is displayed with a 30-second countdown timer.
3. Touch screen within 30 seconds and unit will operate on battery power. Battery icon will appear in upper right corner of screen:

Shutting down

**Touch the screen
to stay on.**

<timer>

- If battery icon is  (green), apply power to unit and proceed with IFR flight.
- If battery icon is  (yellow) or  (red), apply power to unit and allow battery to charge until green before IFR flight.

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5 Performance

Use of the Dynon D30 has no effect on the airplane's performance.

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6 Weight & Balance

Installation of a Dynon D30 impacts the aircraft's level weight and balance once, during initial installation. The certified technician that performed the installation must add new empty weight and balance information to airplane's Aircraft Flight Manual (AFM).

For weight and balance information, refer to the airplane's Pilot's Operating Handbook (POH) and associated AFM and supplements. Pilots manage loading weight and balance according to the AFM. The D30 has no impact on operational loading.

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7 System Overview

The Dynon D30 features internal calibrated solid-state sensors and a high-definition display to present Airspeed, Altitude, and Attitude data.



For SkyView HDX systems installed under STC SA02594SE, the D30 serves as a standby flight display for SkyView's Primary Flight Display (PFD).

The D30 provides pilots with immediate Primary Flight Information (PFI) in case of a SkyView HDX system failure. It also allows pilots to cross-compare the presented PFI to ensure data integrity.



Figure 2: Dynon D30

Operating the D30 is intuitive for people familiar with flight instrumentation. Basic operation happens via touching the actual indicators on the screen or the menu icon in the upper left corner of screen. The front bezel has an ON/OFF button (i.e., Bezel Button) and a USB-C port. See Section 4: [Normal Operations](#) for information about using the D30.

7.1 Airspeed Tape and Indicated Airspeed

The Airspeed Tape (Figure 3) is displayed on the left side of the screen and scrolls beneath the Indicated Airspeed (Figure 3). The indicated airspeed's digits scroll up and down, simulating an analog indicator and giving a sense of airspeed trend. The D30 is factory-calibrated to be accurate for airspeeds between 15 and 300 knots (17 to 345 mph). As airspeed increases from 0 knots, the indicator becomes active at 20 knots. The indicator remains active until airspeed drops below 15 knots. The D30 may display airspeeds above 300 knots, but they are not guaranteed to be accurate.

The airspeed tape also provides a graphical speed representation in relation to the aircraft's V-speed limits (see Section 7.1.1). V-speed values are configured during initial system setup according to the instructions in the *D30 Installation and Maintenance Manual* document.

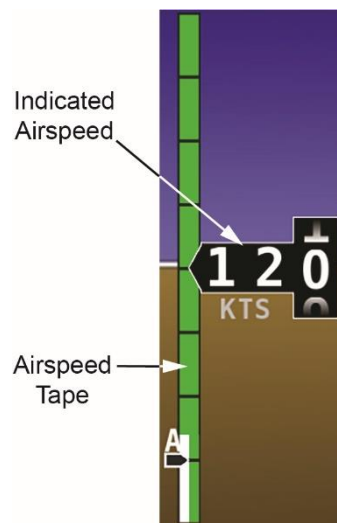


Figure 3: Airspeed Tape and Indicated Airspeed

7.1.1 Airspeed Indicators

The D30 presents the following airspeed indicators that provide 14 CFR 23.1545 compliant markings on the airspeed tape. See [Figure 4](#) for examples of airspeed indicator markings.

- Red Band: indicates speeds at and above the never exceed speed (V_{NE}).
- Red Line: indicates minimum control speed (V_{MC}) for 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}).
- Blue Line: Indicates best rate of climb with a single engine (V_{YSE}) for twin-engine airplanes.

The D30 can also present the following optional airspeed indicators:

- White X w/ Black Pointer: indicates best angle of climb (V_X).
- White Y w/ Black Pointer: indicates best rate of climb (V_Y).
- White A w/ Black Pointer: indicates design maneuvering speed (V_A).
- White G w/ Black Pointer: indicates best speed for maximum glide (V_G).
- White O w/ Black Pointer: indicates maximum operating maneuvering speed (V_o).

V-speed values are configured during initial system setup according to the instructions in the *D30 Installation and Maintenance Manual* document.

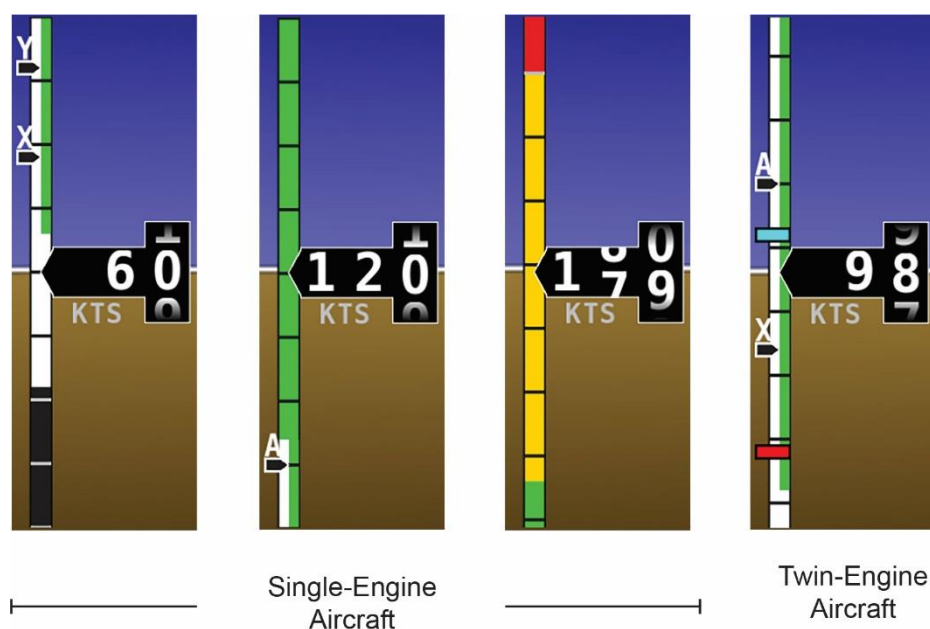


Figure 4: Examples of Airspeed Indicator Markings

7.2 Altimeter and Vertical Speed Indicator

The Altimeter (Figure 5) is displayed on the right side of the screen, alongside the Vertical Speed Indicator (VSI) (Figure 5). The altimeter's digits scroll up and down, giving a sense of the direction of movement. The D30 accurately displays altitudes from -1,200 to 27,000 ft (-365 to 8229 m).



Altitude is not displayed until 30 seconds after startup. However, altitude is immediately displayed if the D30 senses airspeed or the altimeter setting is adjusted.

The VSI's gray bar grows in the direction of (and in proportion to) the rate of climb or descent. The numbers on the altitude scale represent 1000 ft/min. The Altitude Scale is linear throughout the range. The VSI bar is scaled to indicate thousands of feet per minute.

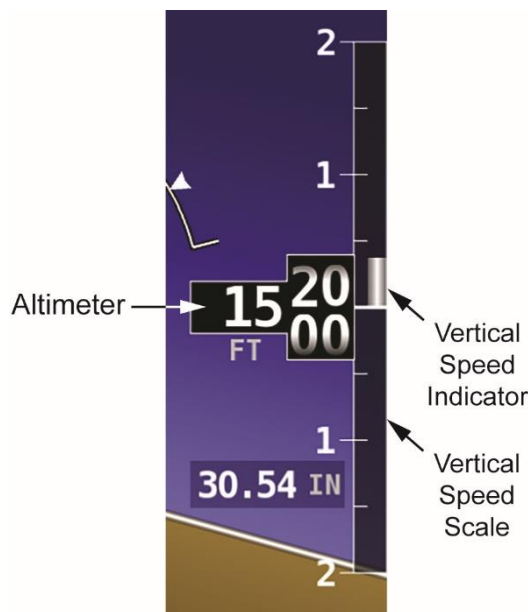


Figure 5: Altimeter and VSI

7.3 Horizon Line and Pitch / Roll Indicators

Bounded on the top by blue, and on the bottom by brown, the Horizon Line (Figure 6) behaves like a traditional gyro-based artificial horizon. The D30 horizon has no pitch or roll limitation. The horizon line stays parallel to the Earth's horizon line regardless of attitude. If the D30 rotates faster than 145 degrees per second or is powered on with airspeed applied, then the HORIZON RECOVERING alert is displayed. This indicates the artificial horizon is not currently a trusted source. The artificial horizon will recover within 5 seconds of coordinated flight.

The parallel lines above and below the horizon line are Pitch Indicator Lines (Figure 6). Each line indicates 2.5 degrees of pitch, and every 5-degree line is identified numerically to aid attitude awareness. The lines scroll up and down underneath the Fixed Attitude Pointer (Figure 6) to indicate current pitch angle. Additionally, directional red arrows (▲ ▼) are displayed to alert the pilot when the aircraft has exceeded ± 30 degrees of pitch.

The Roll Indicator Scale (Figure 6) has tick marks at 10, 20, 30, and 60 degrees and larger white triangles at 0 and 45 degrees. The scale rotates around a stationary, yellow arrow, which is the Bank Angle indicator (Figure 6). The indicator points to the current roll angle on the scale.

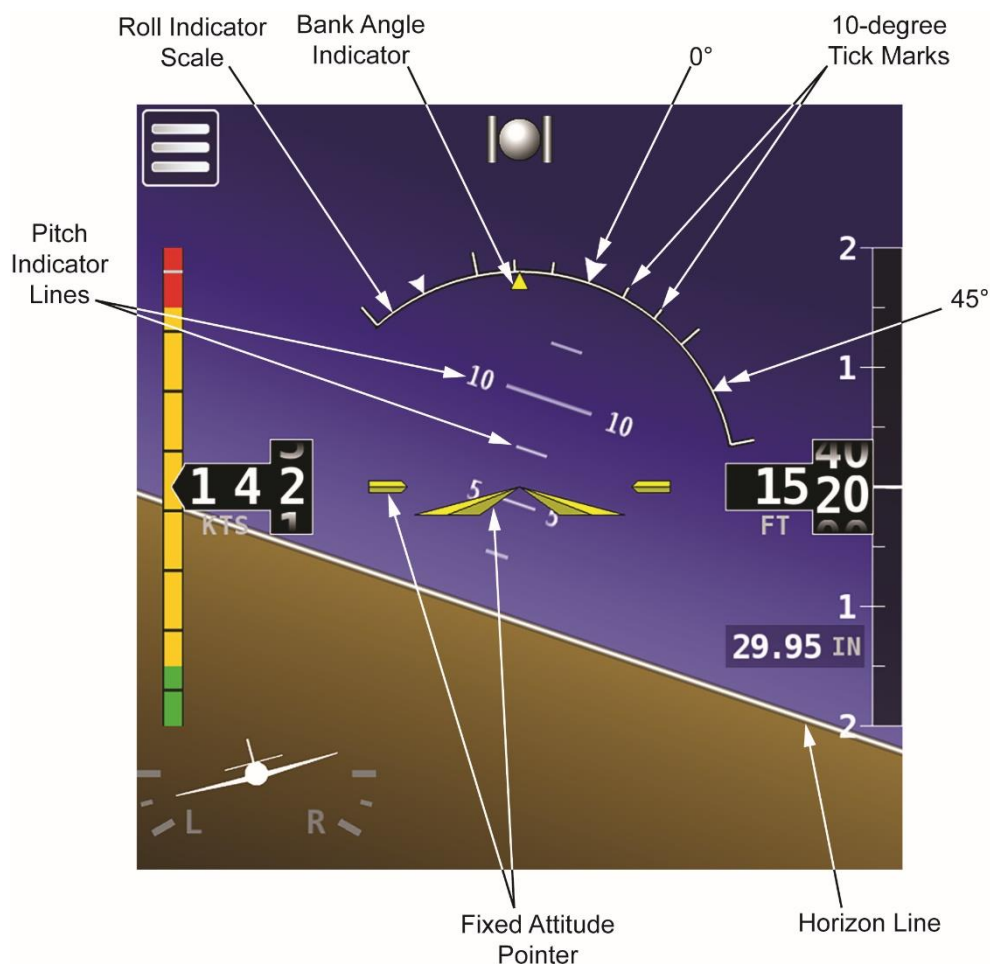


Figure 6: Horizon Line and Pitch / Roll Indicators

7.4 Turn Rate Indicator

Turn Rate is indicated with an airplane icon in the bottom left corner of the screen (Figure 7). It displays the aircraft's current rate of turn with respect to the ground. Tick marks indicate one-half and full standard turn rates.

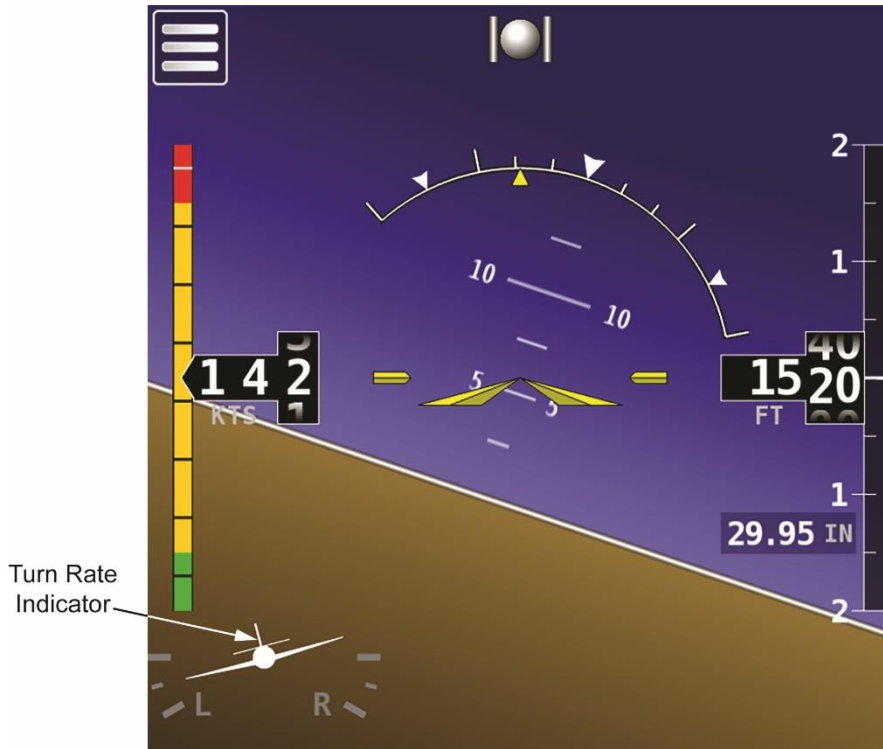


Figure 7: Turn Rate Indicator

7.5 Slip / Skid Ball

The slip/skid ball (Figure 8) is displayed at the top center of the screen. It works much like a standard mechanical gauge and provides a visual representation of lateral acceleration. If the ball is within the two vertical lines, then the aircraft is in coordinated flight.



Figure 8: Slip / Skid Ball

7.6 Barometer / Altimeter Setting

The current altimeter setting (Figure 9) is displayed next to the altitude scale, just below the altimeter. The value is shown in either inches of mercury or millibars depending upon installation configuration. See Section: 4.4: [Altimeter Setting](#) for setting instructions.

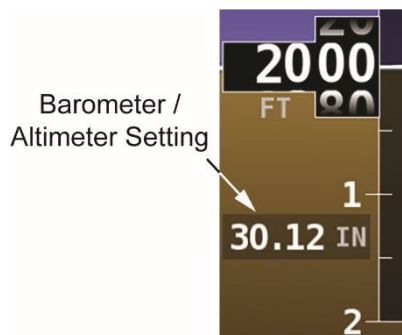







Figure 9: Barometer / Altimeter Setting

7.7 Alerts

System information is delivered to flight crew via visual annunciations (i.e., messages and icons) referred to as Alerts. See [Table 1](#) for a list of visual annunciations, their associated conditions, and appropriate flight crew responses.

Table 1: D30 Alerts, Conditions, and Responses

MESSAGE / ICON	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
Shutdown Hold Button to Shutdown <timer>	D30 shutdown was purposely initiated by pressing and holding bezel button.	N/A	DO NOT purposely initiate shutdown.
Shutting down Touch the screen to stay on. <timer>	Aircraft is on ground (i.e., IAS invalid) and electrical power to unit has been lost.	Touch alert on screen to allow D30 to run on backup power. Do not fly if flight requires Instrument Flight Rules (IFR).	N/A
AIRCRAFT POWER LOST	Aircraft is in flight and electrical power to unit has been lost.	N/A	See Section 3.2.3: AIRCRAFT POWER LOST .

MESSAGE / ICON	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
	D30 is running on backup battery power, and at least 45 minutes of battery life remains.	Determine why unit is not receiving power. Do Not Fly.	If using D30 as flight instrument, be prepared for it to shutdown. Navigate to visual meteorological conditions (VMC) and land at nearest suitable airport within 45 minutes.
	D30 is running on backup battery power, and less than 30 minutes of battery life remains.	Determine why unit is not receiving power. Do Not Fly. Allow backup battery to fully charge before flight.	If using D30 as flight instrument, be prepared for it to shutdown. Immediately navigate to visual meteorological conditions (VMC) and land at nearest suitable airport.
 (Flashing)	D30 is running on backup battery power and the battery capacity is critical. Device shutdown imminent.	Determine why unit is not receiving power. Do Not Fly. Allow backup battery to fully charge before flight.	If using D30 as flight instrument, be prepared for it to shutdown. Immediately navigate to visual meteorological conditions (VMC) and land at nearest suitable airport.
	The D30 is not detecting the backup battery.	Determine why backup battery is not detected. Do not fly. Contact Dynon Technical Support for a replacement backup battery.	If using D30 as flight instrument, be prepared for it to shutdown in the event of loss of aircraft electrical power.
	The D30 has detected an issue in its software. <i>This alert is not an emergency, nor does it make the D30 unairworthy.</i>	1. Touch Menu icon at top left of screen. 2. From Main Menu, touch System Event. 3. Follow on-screen instructions and contact Dynon Technical Support.	N/A

MESSAGE / ICON	CONDITION	PRE-FLIGHT ACTION	IN-FLIGHT ACTION
LCD WARMING UP	<p>During startup, the D30 detected its internal sensors are below -20°C and its internal heater is warming up the LCD screen.</p> <p>At extreme temperatures (below -40°C), the LCD screen may be white for up to 8 minutes while the internal heater is warming it up.</p>	<p>If LCD WARMING UP alert is displayed...</p> <p>Do Not Fly.</p>	N/A
HORIZON RECOVERING	<p>The D30 rotated at a rate faster than 145 degrees/second or the unit was powered on with airspeed applied.</p>	<p>No action.</p> <p>Wait 5 seconds for unit to recover.</p>	<p>Maintain coordinated flight; unit will recover within 5 seconds of coordinated flight.</p>
ADAHRS CAL CORRUPT	<p>The internal ADAHRS sensors are malfunctioning.</p>	<p>If ADAHRS CAL CORRUPT alert is displayed...</p> <p>Do Not Fly.</p> <p>Contact Dynon Technical Support.</p>	<p>See Section 3.2.2: ADAHRS CAL CORRUPT</p>

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8 Handling, Service, and Maintenance

Handling, service, and maintenance for the D30 is performed by a certified technician in accordance with the instructions in the *D30 Installation and Maintenance Manual* document.

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