SUPPLEMENT A34
TO THE AIRPLANE FLIGHT MANUAL

DA 62
ELECTRONIC STABILITY AND PROTECTION (ESP)

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Signature : A HARTONO

Authority : Chief Flight Test
Transport Canada Civil Aviation

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DIAMOND AIRCRAFT INDUSTRIES INC.
1560 Crumlin Sideroad
London, ON, Canada
N5V 1S2

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1. GENERAL

1.5 DEFINITIONS AND ABBREVIATIONS

(a) Airspeeds

v_{SW}	Stall Warning Speed

(g) Equipment

AFCS	Automatic Flight Control System
CWS	Control Wheel Steering Switch
ESP	Electronic Stability and Protection System
USP	Underspeed Protection System

1.8 G1000 AVIONICS SYSTEM

5. ELECTRONIC STABILITY AND PROTECTION (ESP)

The Electronic Stability and Protection System (ESP) is an optional part of the Garmin G1000 Integrated Avionics System. This information supplements the information presented in the AFM.

The ESP system provides automatic stability augmentation and envelope protection for the airplane through the use of a control force feedback system. This will aid pilot recognition and recovery from inadvertent excessive pitch, roll, and airspeed excursions when the autopilot is switched off.

The ESP system can be enabled and disabled on the AUX - SYSTEM SETUP 2 page on the MFD. Once the flight has ended and power is removed from the Garmin G1000 system, ESP will default to “Enabled” on the next power-up.

For further details, refer to the Garmin G1000 Pilot’s Guide.

6. AUTOPILOT UNDERSPEED PROTECTION (USP)

For airplanes that have ESP installed, the AFCS is able to detect and protect against underspeed situations while the autopilot is engaged.

When the AFCS is engaged in a non-altitude critical mode (LVL, PIT, FLC, VS, VNV) and airspeed falls below the minimum threshold of 90 KIAS, the AFCS automatically enters the minimum airspeed mode. A MINSPD annunciation appears above the airspeed tape, and the AFCS causes the airplane to pitch down to maintain 90 KIAS. An aural AIRSPEED alert will sound once.

If the AFCS is engaged in an altitude critical mode (ALT, GS, GP, and GA) and the aural stall warning is played for more than 1 second, the AFCS will maintain a wings-level roll attitude, and pitch the airplane down to maintain an airspeed that will cause the aural stall warning to stop playing, plus 2 KIAS. Also, an aural AIRSPEED alert will sound every 5 seconds.

All underspeed protection modes are exited automatically when there is enough airplane performance to follow the originally selected flight director mode and reference.

7. COUPLED GO-AROUND

ESP-equipped airplanes are capable of flying fully coupled go-around maneuvers. Pressing the GA button on the left power lever will not disengage the autopilot. Instead, the autopilot will attempt to capture and track the flight director command bars. If insufficient airplane performance is available to follow the commands, the AFCS will enter altitude-critical underspeed protection mode when the stall warning sounds.

2. OPERATING LIMITATIONS

No change.

3. EMERGENCY PROCEDURES

3.4 G1000 SYSTEM WARNINGS

3.4.7 USP ACTIVE

USP ACTIVE	Underspeed protection is active.

The USP ACTIVE caution may also be accompanied by an amber MINSPD annunciator above the airspeed tape display, and the aural AIRSPEED alert.

1. Power levers . . . . . increase power as required to correct underspeed
2. Airplane attitude and altitude . . . . . monitor

NOTE

If a large power addition is made, expect distinctive transmission to a nose-up pitch attitude since the AP/FD aggressively returns to the original altitude or glidepath/slope. In case the airplane diverts significantly from the desired altitude or attitude, disconnect A/P or reselect vertical/lateral A/P mode.

After underspeed condition is corrected

3. AUTOPILOT. . . . . reselect vertical and lateral modes (if necessary)
4. Power levers . . . . . adjust as required

NOTE

Autopilot Minimum Airspeed Mode provides a pitch down command to maintain 2 KIAS above stall warning airspeed. Underspeed protection is not available below 200 feet AGL, except in go-around mode.

3.14 ESP OR USP MALFUNCTION

If an ESP or USP malfunction exists:

1. AP DISC switch or CWS button . . . . . press and hold
2. AFCS/ESP/USP circuit breaker . . . . . pull

4A. NORMAL OPERATING PROCEDURES

4A.6 CHECKLISTS FOR NORMAL OPERATING PROCEDURES

4A.6.2 BEFORE STARTING ENGINE

The following item is amended to read:

16. G1000 . . . . . wait until power-up completed. Verify splash screen shows ESP. Press ENT on MFD to acknowledge.

4A.6.4 BEFORE TAXIING

The following item is added:

16. MFD . . . . . select AUX page System SETUP 2, verify Stability & Protection status; DISABLE if desired

4A.6.8 CLIMB

If necessary, ESP may be manually disconnected using any of the following methods:

* AP DISC switch . . . . . press and hold
* CWS button . . . . . press and hold
* AUX-SYSTEM SETUP page 2 on MFD . . . . . disable stability and protection

4A.6.9 CRUISE

If necessary, ESP may be manually disconnected using any of the following methods:

* AP DISC switch . . . . . press and hold
* CWS button . . . . . press and hold
* AUX-SYSTEM SETUP page 2 on MFD . . . . . disable stability and protection

4A.6.10 DESCENT

If necessary, ESP may be manually disconnected using any of the following methods:

* AP DISC switch . . . . . press and hold
* CWS button . . . . . press and hold
* AUX-SYSTEM SETUP page 2 on MFD . . . . . disable stability and protection

4A.6.11 APPROACH & LANDING

If necessary, ESP may be manually disconnected using any of the following methods:

* AP DISC switch . . . . . press and hold
* CWS button . . . . . press and hold
* AUX-SYSTEM SETUP page 2 on MFD . . . . . disable stability and protection

4A.6.12 GO AROUND

Autopilot Coupled Go Around

1. Control stick . . . . . GRASP FIRMLY
2. GO AROUND button (left power lever) . . . . . PUSH - Verify GA/GA on PFD in lateral and vertical mode fields, autopilot will not disengage
3. Autopilot . . . . . VERIFY airplane pitches up following flight director command bars
4. Balked landing . . . . . EXECUTE
5. Mode control panel . . . . . PRESS NAV to fly published missed approach procedure. PRESS HDG to fly ATC assigned missed approach heading

NOTE

The pilot is responsible for initial missed approach guidance in accordance with published procedure. The G1000 may not provide correct guidance until the airplane is established on a defined leg of the procedure.

6. Altitude preselect . . . . . VERIFY set to appropriate altitude

NOTE

When the GA button is pressed, the Flight Director command bars will command 6° nose up and wings level, the HSI nav source automatically switches to GPS, the flight plan sequences to the first published missed approach leg, and automatic leg sequencing resumes. The autopilot will remain engaged, and fly the published missed approach procedure once the airplane is established on a segment of the missed approach procedure and NAV mode is selected.

The flight plan can only contain one approach procedure at a time. If the pilot attempts to load another instrument approach at this time, the airplane will depart from the missed approach procedure, and turn directly towards the first waypoint on the new approach.

Do not attempt to load or activate a new approach while flying the missed approach procedure until ready to fly the new approach.

Recommended procedures following a missed approach

1. To repeat the instrument approach procedure currently loaded into the flight plan:

   a. Activate Vectors-To-Final if being radar vectored by ATC

   OR

   b. If flying the entire instrument approach procedure, activate a DIRECT TO the desired initial waypoint. Follow the appropriate procedure for the instrument approach being flown.

2. To proceed to an alternate airport (this procedure will allow the pilot to enter the route to the alternate before leaving the missed approach holding fix):

   a. Highlight the first enroute waypoint in the flight plan.

   b. Begin entering waypoints in the desired route order. Do not attempt to load a new approach at this time.

   c. CLR all waypoints after the last waypoint in the route to the alternate and the currently loaded instrument approach header.

   d. When ready to proceed to the alternate, highlight the first enroute waypoint in the route to the alternate airport. ACTIVATE a DIRECT TO that waypoint.

   e. When enroute to the alternate, a new instrument approach may be loaded into the flight plan.

4B. ABNORMAL OPERATING PROCEDURES

4B.3 CAUTION-ALERTS ON THE G1000

4B.3.14 MINSPD

MINSPD	AFCS entered Minimum Airspeed Mode.

1. Power levers . . . . . increase power as required to correct underspeed
2. Airplane attitude, speed, altitude . . . . . monitor

After Minimum Airspeed Mode condition is corrected

3. AUTOPILOT. . . . . reselect vertical and lateral modes (if necessary)
4. Power levers . . . . . adjust as required

NOTE

Autopilot Underspeed Protection Mode provides a pitch down command to maintain 90 ± 2 KIAS or v_{sw} + 2 KIAS, depending on the vertical mode selected. Underspeed protection is not available below 200 feet AGL, except in go-around mode.

4B.11 WINDSHEAR ENCOUNTER

1. AP DISC switch . . . . . press and hold
2. Perform established windshear escape procedures.

After exiting windshear

3. AP DISC switch . . . . . release
4. Autopilot/Yaw damper . . . . . if required

4B.12 ESP DISENGAGEMENT

If ESP is erroneously activated, use one of the following methods to disconnect;

* AP DISC switch . . . . . press and hold
* CWS button . . . . . press and hold
* AUX-SYSTEM SETUP page 2 on MFD . . . . . disable stability and protection

If all three methods are NOT successful:

* AFCS/ESP/USP circuit breaker . . . . . pull

5. PERFORMANCE

No change.

6. MASS AND BALANCE

No change.

7. DESCRIPTION OF THE AIRPLANE AND ITS SYSTEMS

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For more information, refer to the Garmin G1000 Pilot’s Guide.

8. AIRPLANE HANDLING, CARE, AND MAINTENANCE

No change.