SUPPLEMENT A034
TO THE AIRPLANE FLIGHT MANUAL
DA 50 C

ELECTRONIC STABILITY AND PROTECTION (ESP) SYSTEM

Doc. No. : **9.01.01-E**
Date of Issue of the Supplement : **23-Jun-2021**
Design Change Advisory : **OÄM 50-009**

The technical information contained in this Supplement to the DA 50 C Airplane Flight Manual has been approved by EASA under EASA Approval Number 10076929.

DIAMOND AIRCRAFT INDUSTRIES GMBH
N.A. OTTO-STR. 5
A-2700 WIENER NEUSTADT
AUSTRIA

Intentionally left blank.

0.2 RECORD OF REVISIONS

Rev. No.	Reason	Chap-ter	Page(s)	Date of Revision	Approval Note	Date of Approval	Date Inserted	Signature
2	OÄM 50-009/a	All	All	07-Aug-2025	Rev. 2 to AFM Supplement A034 to AFM Doc. No. 9.01.01-E is approved under the authority of DOA ref. EASA 21J.052.	21-Aug-2025		

0.3 LIST OF EFFECTIVE PAGES

Chapter	Page	Date
0	9-A034-1 9-A034-2 9-A034-3 9-A034-4 9-A034-5	07-Aug-2025 07-Aug-2025 07-Aug-2025 07-Aug-2025 07-Aug-2025
1	9-A034-6 9-A034-7 9-A034-8	07-Aug-2025 07-Aug-2025 07-Aug-2025
2	EASA approved 9-A034-9	07-Aug-2025
3	9-A034-10 9-A034-11	07-Aug-2025 07-Aug-2025
3A	9-A034-12 9-A034-13 9-A034-14	07-Aug-2025 07-Aug-2025 07-Aug-2025
4	9-A034-15 9-A034-16 9-A034-17 9-A034-18	07-Aug-2025 07-Aug-2025 07-Aug-2025 07-Aug-2025
5	9-A034-19	07-Aug-2025
6	9-A034-19	07-Aug-2025
7	9-A034-20	07-Aug-2025
8	9-A034-20	07-Aug-2025

0.4 TABLE OF CONTENTS

Page

1. GENERAL

With OÄM 50-009 the installation and operation of the Electronic Stability and Protection (ESP) system is approved.

The Electronic Stability and Protection (ESP) is an optional part of the Garmin G1000 NXi Integrated Avionics System.

The information contained in this Supplement is to be used in conjunction with the complete AFM. The limitations and information contained herein either supplement or, in the case of conflict, override those in the Airplane Flight Manual.

This Supplement is a permanent part of the AFM and must remain in the AFM at all times, when the Electronic Stability and Protection (ESP) is installed.

1.5 DEFINITIONS AND ABBREVIATIONS

(a) Airspeeds

v_{sw}	Stall Warning Speed

(f) Equipment

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

1.8 G1000 NXi AVIONICS SYSTEM

1.8.1 ELECTRONIC STABILITY AND PROTECTION (ESP)

The Electronic Stability and Protection System (ESP) is an optional part of the Garmin G1000 NXi Integrated Avionics System.

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 NXi system, ESP willdefault to 'Enabled' on the next power-up.

For further details refer to the Garmin G1000 NXi Pilot's Guide.

1.8.2 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 and a non-altitude critical mode (LVL, PIT, FLC, VS, VNV) and airspeed falls below the minimum threshold, which is specific to each flap setting:

UP 80 KIAS

T/O 75 KIAS

LDG 70 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 a safe airspeed. 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 triggered, the AFCS will maintain a wingslevel 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.

1.8.3 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

3.2 AIRPLANE-RELATED G1000 NXi WARNINGS

3.2.13 USP ACTIVE

UNDERSPEED PROTECT ACTIVE	Underspeed Protection is active.

The UNDERSPEED PROTECT ACTIVE warning may also be accompanied by a yellow MINSPD annunciator above the airspeed tape display and the aural 'AIRSPEED' alert.

1. POWER lever. . . . . 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 lever. . . . . adjust as required

CONTINUED

NOTE

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

END OF CHECKLIST

3A. ABNORMAL OPERATING PROCEDURES

3A.1 AIRPLANE-RELATED G1000 NXi CAUTIONS

3A.1.14 MINSPD

MINSPD	AFCS entered Minimum Airspeed Mode

1. POWER lever. . . . . increase power as required to correct underspeed
2. Airplane attitude, speed and altitude . . . . . monitor

After Minimum Airspeed Mode Condition Is Corrected:

3. Autopilot. . . . . reselect vertical and lateral modes (if necessary)
4. POWER lever. . . . . adjust as required

NOTE

Autopilot Underspeed Protection Mode provides a pitch down command to maintain:

Flaps UP: 80 ± 2 KIAS,

Flaps T/O: 75 ± 2 KIAS,

Flaps LDG: 70 ± 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.

END OF CHECKLIST

3A.4 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. . . . . if required

END OF CHECKLIST

3A.5 ESP DISENGAGEMENT

If Necessary, ESP May Be Manually Disconnected Using One of the Following Methods:

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

If All Three Methods Are NOT Successful:

- AUTO PILOT circuit breaker . . . . . pull

END OF CHECKLIST

4. NORMAL OPERATING PROCEDURES

4.5 CHECKLISTS FOR NORMAL OPERATING PROCEDURES

4.5.2 BEFORE STARTING ENGINE

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

END OF CHECKLIST

4.5.4 BEFORE TAXIING

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

END OF CHECKLIST

4.5.8 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 2 page on MFD. . . . . disable stability and protection

END OF CHECKLIST

4.5.9 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 2 page on MFD . . . . . disable stability and protection

END OF CHECKLIST

4.5.10 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 2 page on MFD . . . . . disable stability and protection

END OF CHECKLIST

4.5.11 APPROACH AND 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 2 page on MFD . . . . . disable stability and protection

END OF CHECKLIST

4.5.12 GO AROUND

Autopilot Coupled Go Around

1.	Control Stick	GRASP FIRMLY
2.	GA button	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 NXi may not provide correct guidance until the airplane is established on a defined leg of the procedure.

6.	Altitude Preselect (ALT).	verify Set to appropriate altitude

CONTINUED

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 in 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.

CONTINUED

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.

END OF CHECKLIST

5. PERFORMANCE

No change.

6. MASS AND BALANCE

No change.

7. DESCRIPTION OF THE AIRPLANE AND ITS SYSTEMS

7.16 ELECTRONIC STABILITY AND PROTECTION SYSTEM (ESP)

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

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

8. AIRPLANE HANDLING, CARE AND MAINTENANCE

No change.