



**適航指令發布單**  
**Airworthiness Directive Issuance Form**

民航局 AD 編號 AD number	CAA-2015-07-005B	發布日期 Date issued	2018/3/6												
適用之航空產品 Applied to (models, serial numbers or part numbers, as applicable)	Airbus A318-111, A318-112, A318-121, A318-122, A319-111, A319-112, A319-113, A319-114, A319-115, A319-131, A319-132, A319-133, A320-211, A320-212, A320-214, A320-215, A320-216, A320-231, A320-232, A320-233, A321-111, A321-112, A321-131, A321-211, A321-212, A321-213, A321-231 and A321-232 aeroplanes, all manufacturer serial numbers.														
主旨摘要	Navigation - Angle of Attack Sensors - Replacement														
民航局 CAA <input type="checkbox"/> 本國產品 Native products  <input type="checkbox"/> 其他個案 Other	設計國民航主管機構 Original Authorities <table style="width: 100%;"><tr><td><input type="checkbox"/> FAA</td><td><input type="checkbox"/> Germany LBA</td></tr><tr><td><input checked="" type="checkbox"/> EASA</td><td><input type="checkbox"/> CAA-NL</td></tr><tr><td><input type="checkbox"/> Brazil</td><td><input type="checkbox"/> UK CAA</td></tr><tr><td><input type="checkbox"/> Transport Canada Civil Aviation</td><td><input type="checkbox"/> Japan CAB</td></tr><tr><td><input type="checkbox"/> DGAC</td><td><input type="checkbox"/> CAA of Israel</td></tr><tr><td></td><td><input type="checkbox"/> Other _____</td></tr></table>			<input type="checkbox"/> FAA	<input type="checkbox"/> Germany LBA	<input checked="" type="checkbox"/> EASA	<input type="checkbox"/> CAA-NL	<input type="checkbox"/> Brazil	<input type="checkbox"/> UK CAA	<input type="checkbox"/> Transport Canada Civil Aviation	<input type="checkbox"/> Japan CAB	<input type="checkbox"/> DGAC	<input type="checkbox"/> CAA of Israel		<input type="checkbox"/> Other _____
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	設計國 AD 編號 Original AD number	2015-0135R2													
	1. 直接採用原 AD 之內容?(Is the original AD directly adopted?) <input checked="" type="checkbox"/> 是(Yes) <input type="checkbox"/> 否(No) _ a. 生效日期另訂為(Re-specify the effective date as) : _____ b. 執行時限另訂為(Re-specify the compliance time or period as) : _____ 2. 使用人是否需要將 AD 執行結果向民航局提出報告?(Do Users need to report the status of compliance to the CAA?) <input type="checkbox"/> 是(Yes) <input checked="" type="checkbox"/> 否(No)														
備註 Note	ATA 34. This AD revises EASA AD 2015-0135R1(CAA-2015-07-005A) dated 11 January 2018. The original issue of this AD superseded EASA AD 2015-0087 dated 22 May 2015.														
註： 1. AD 內容後附。 2. 航空器產品使用人得向民航局提出豁免、替代符合方法、執行時限之展延之申請。 3. 如有任何問題，請聯絡交通部民用航空局初始適航科。Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail： <a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a> Note： 1. The AD text is enclosed. 2. Exemption, an alternative method of compliance or adjustment of the compliance time may be proposed to the CAA for approval. 3. For further information, please contact Civil Aeronautics Administration on Tel：(02)2349-6331~3, Fax：(02)2545-8464, e-mail： <a href="mailto:adcaa@mail.caa.gov.tw">adcaa@mail.caa.gov.tw</a>															





## Airworthiness Directive

**AD No.:** 2015-0135R2

**Issued:** 23 February 2018

Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) 216/2008 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with Regulation (EU) 748/2012, Part 21.A.3B. In accordance with Regulation (EU) 1321/2014 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD, unless otherwise specified by the Agency [Regulation (EU) 1321/2014 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [Regulation (EC) 216/2008, Article 14(4) exemption].

**Design Approval Holder's Name:**

AIRBUS

**Type/Model designation(s):**

A318, A319, A320 and A321 aeroplanes

**Effective Date:** Revision 2: 23 February 2018  
Revision 1: 11 January 2018  
Original issue: 15 July 2015

**TCDS Number(s):** EASA.A.064

**Foreign AD:** Not applicable

**Revision:** This AD revises EASA AD 2015-0135R1 dated 11 January 2018. The original issue of this AD superseded EASA AD 2015-0087 dated 22 May 2015.

### ATA 34 – Navigation – Angle of Attack Sensors – Replacement

#### Manufacturer(s):

Airbus (formerly Airbus Industrie)

#### Applicability:

Airbus A318-111, A318-112, A318-121, A318-122, A319-111, A319-112, A319-113, A319-114, A319-115, A319-131, A319-132, A319-133, A320-211, A320-212, A320-214, A320-215, A320-216, A320-231, A320-232, A320-233, A321-111, A321-112, A321-131, A321-211, A321-212, A321-213, A321-231 and A321-232 aeroplanes, all manufacturer serial numbers.

#### Reason:

An occurrence was reported where an Airbus A321 aeroplane encountered a blockage of two Angle of Attack (AOA) probes during climb, leading to activation of the Alpha Protection (Alpha Prot) while the Mach number increased. The flight crew managed to regain full control and the flight landed uneventfully.

When Alpha Prot is activated due to blocked AOA probes, the flight control laws order a continuous nose down pitch rate that, in a worst case scenario, cannot be stopped with backward sidestick inputs, even in the full backward position. If the Mach number increases during a nose down order, the AOA value of the Alpha Prot will continue to decrease. As a result, the flight control laws will





continue to order a nose down pitch rate, even if the speed is above minimum selectable speed, known as VLS.

This condition, if not corrected, could result in loss of control of the aeroplane.

Investigation results indicated that A320 family aeroplanes equipped with certain UTC Aerospace (UTAS, formerly known as Goodrich) AOA sensors, or equipped with certain SEXTANT/THOMSON AOA sensors, appear to have a greater susceptibility to adverse environmental conditions than aeroplanes equipped with the latest Thales AOA sensor, Part Number (P/N) C16291AB, which was designed to improve A320 aeroplane AOA indication behaviour in heavy rain conditions.

Having determined that replacement of these AOA sensors was necessary to achieve and maintain the required safety level of the aeroplane, EASA issued AD 2015-0087, retaining the requirements of EASA AD 2012-0236R1, AD 2013-0022 (partially), and AD 2014-0266-E, which were superseded, and requiring the insertion of an Emergency Procedure in the Aircraft Flight Manual (AFM), modification of the aeroplanes by replacement of the affected P/N sensors, and, after modification, prohibiting (re-)installation of those P/N AOA sensors. That AD also required repetitive detailed visual inspections (DET) and functional heating tests of certain Thales AOA sensors and provided an optional terminating action for those inspections.

After EASA AD 2015-0087 was issued, based on further analysis results, Airbus issued Operators Information Transmission (OIT) Ref. 999.0015/15 Revision 1, instructing operators to speed up the removal from service of UTAS P/N 0861ED2 AOA sensors. Consequently, EASA issued AD 2015-0135, retaining the requirements of EASA AD 2015-0087, which was superseded, but reducing the compliance times for aeroplanes with UTAS P/N 0861ED2 AOA sensors installed.

EASA AD 2015-0135 was revised to remove the requirement for repetitive DET of certain Thales AOA sensors, and to allow, for certain configurations of AOA sensors and Elevator Aileron Computer (ELAC), the removal of the Emergency Procedure from the AFM.

Since EASA AD 2015-0135R1 was issued, it was determined that the AFM Emergency Procedure can also be removed for other AOA sensors and ELAC configurations. This AD revises paragraph (20) accordingly, also introducing Table 4 for that purpose.

#### **Required Action(s) and Compliance Time(s):**

Required as indicated, unless accomplished previously:

#### **Modification:**

- (1) For aeroplanes fitted with Thales Avionics P/N C16291AA AOA sensors: Within 12 months after 27 October 2011 [the effective date of EASA AD 2011-0203], replace each P/N C16291AA AOA sensor installed on the aeroplane, if identified to have a serial number (s/n) as listed in Thales Avionics Service Bulletin (SB) C16291A-34-007 Revision 04, in accordance with the instructions of Airbus SB A320-34-1452.

A review of aeroplane maintenance records is acceptable to determine the P/N and s/n of the installed AOA sensors, provided the P/N and s/n of the installed AOA sensors can be conclusively identified from that review.





- (2) For aeroplanes fitted with P/N C16291AB AOA sensors with s/n listed in Thales Avionics SB C16291A-34-007 Revision 04: Within 3 months after 23 November 2012 [the effective date of EASA AD 2012-0236 at original issue], replace each P/N C16291AB AOA sensor installed on the aeroplane, in accordance with the instructions of Airbus SB A320-34-1452, unless it can be demonstrated by maintenance records that the affected AOA sensor has passed the inspection in accordance with the instructions of Thales Avionics SB C16291A-34-007 Revision 01.

**Credit:**

- (3) An aeroplane on which Airbus modification (mod) 150006 (installation of AOA sensors P/N C16291AB) or mod 26934 (installation of AOA sensors P/N 0861ED) has been embodied in production is not affected by the requirements of paragraphs (1) and (2) of this AD, provided it is determined that no AOA sensor has been replaced on that aeroplane since its date of manufacture.

**Parts Installation:**

- (4) From 23 November 2012 [the effective date of EASA AD 2012-0236 at original issue], do not install on any aeroplane a P/N C16291AA or P/N C16291AB AOA sensor having a s/n as listed in Thales Avionics SB C16291A-34-007 Revision 04, unless it has passed the inspection in accordance with the instructions of Thales Avionics SB C16291A-34-007 Revision 01, or in accordance with the instructions of Thales Avionics SB C16291A-34-009 Revision 01.

**Modification:**

- (5) Within 5 months after 15 February 2013 [the effective date of EASA AD 2013-0022], remove from service all AOA sensor conic plates P/N F3411060200000 and P/N F3411060900000 and install AOA sensor flat plates, as required by paragraph (5.1) or (5.2) of this AD.

(5.1) P/N D3411013520200 in accordance with the instructions of Airbus SB A320-34-1564.

(5.2) P/N D3411007620000, or P/N D3411013520000, in accordance with approved aeroplane modification instructions.

**Credit:**

- (6) An aeroplane on which Airbus mod 154863 (installation of AOA sensor flat plate) and mod 154864 (coating protection) have been embodied in production is not affected by the requirements of paragraph (5) of this AD, provided that, since first flight, no AOA sensor conic plate P/N F3411060200000 or P/N F3411060900000 has been installed on that aeroplane.

**Parts Installation:**

- (7) From 15 February 2013 [the effective date of EASA AD 2013-0022], do not install on any aeroplane an AOA sensor conic plate having P/N F3411060200000 or P/N F3411060900000, and do not use on any aeroplane an AOA protection cover P/N 98D34203003000.

**AFM Amendment:**

- (8) Before next flight after 11 December 2014 [the effective date of EASA Emergency AD 2014-0266-E], amend the applicable AFM by inserting a copy of Airbus AFM A320 TR 502 "Abnormal V alpha Prot", issue 1.





Alternatively, amending the applicable AFM can be accomplished by inserting of a copy of Appendix 1 of this AD into the Section “Emergency Procedures”.

- (9) Concurrent with the AFM amendment as required by paragraph (8) of this AD, inform all flight crews and, thereafter, operate the aeroplane accordingly.

**Modification:**

- (10) For aeroplanes on which UTAS (formerly Goodrich) P/N 0861ED or P/N 0861ED2 AOA sensors are installed, within the compliance time defined in Table 1 of this AD, as applicable, replace the Captain and First Officer AOA sensors with Thales P/N C16291AB AOA sensors in accordance with the instructions of Airbus SB A320-34-1610.
- (11) For aeroplanes on which SEXTANT/THOMSON P/N 45150320 or P/N 16990568 AOA sensors are installed, within the compliance time defined in Table 1 of this AD, as applicable, replace each SEXTANT/THOMSON P/N 45150320 and P/N 16990568 AOA sensor with a Thales P/N C16291AB AOA sensor in accordance with the instructions of Airbus SB A320-34-1444, as applicable.

Table 1 – AOA Sensors Replacement

<b>Aeroplanes</b> (all models)	<b>P/N AOA Sensor(s)</b> <b>installed</b>	<b>Compliance Time</b> (after 01 June 2015, the effective date of EASA AD 2015-0087)
A318 and A321	P/N 0861ED, P/N 45150320, or P/N 16990568	7 months
A319 and A320		22 months
A318 and A321	P/N 0861ED2	4 months
A319 and A320		7 months

**Repetitive Functional Heating Tests:**

- (12) For an aeroplane on which one or more Thales P/N C16291AA AOA sensors are installed, before exceeding 5 200 flight hours (FH) accumulated by each Thales AOA sensor since its first installation on an aeroplane, or within 6 months after 01 June 2015 [the effective date of EASA AD 2015-0087], whichever occurs later, and thereafter at intervals not to exceed 2 000 FH, accomplish a functional heating test of each P/N C16291AA AOA sensor in accordance with the instructions of Airbus SB A320-34-1415 Revision 03.

**Corrective Action(s):**

- (13) If, during any functional heating test as required by paragraph (12) of this AD, discrepancies are detected, before next flight, replace all affected AOA sensors with Thales P/N C16291AA AOA sensors that have passed a functional heating test in accordance with the instructions of Airbus SB A320-34-1415 Revision 03, or with Thales P/N C16291AB AOA sensors, in accordance with the instructions of Airbus SB A320-34-1415 Revision 03.

**Conditional Credit:**

- (14) An aeroplane with Airbus mod 150006 (installation of Thales P/N C16291AB AOA sensors) but without mod 26934 (installation of UTAS P/N 0861ED AOA sensors) embodied in production is





not affected by the requirements of paragraphs (10) through (13) of this AD, provided it is determined that no AOA sensor having a P/N as listed in Table 2 of this AD has been installed on that aeroplane since its date of manufacture.

#### Terminating Actions:

- (15) Modification of an aeroplane by replacing each Thales P/N C16291AA AOA sensor with a Thales P/N C16291AB AOA sensor in accordance with the instructions of Airbus SB A320-34-1444 constitutes terminating action for the repetitive functional heating tests as required by paragraph (12) of this AD for that aeroplane.

#### Parts Installation:

- (16) For an aeroplane on which only Thales P/N C16291AB AOA sensors are installed, from 01 June 2015 [the effective date of EASA AD 2015-0087], or after optional modification of the aeroplane as specified in paragraph (15) of this AD, as applicable, do not install a Thales P/N C16291AA AOA sensor on that aeroplane.
- (17) For an aeroplane on which Thales P/N C16291AA and/or Thales P/N C16291AB AOA sensors are installed, from 01 June 2015 [the effective date of EASA AD 2015-0087], or after modification of the aeroplane as required by paragraph (11) of this AD, as applicable, do not install any AOA sensor with a P/N as listed in Table 2 of this AD on that aeroplane.
- (18) After modification of an aeroplane as required by paragraph (10) of this AD, do not install any AOA sensor with a P/N as listed in Table 2 of this AD on that aeroplane, with the exception that it remains allowed to install a UTAS P/N 0861ED AOA sensor in the standby position of that aeroplane.

Table 2 – AOA Sensors

AOA Sensor Manufacturer	P/N
SEXTANT/THOMSON	45150320
	16990568
UTAS (formerly Goodrich)	0861ED
	0861ED2

- (19) Installation of AOA sensors having a P/N approved after 01 June 2015 [the effective date of EASA AD 2015-0087] is equal to compliance with the requirements of paragraph (10) or (11) of this AD, as applicable, provided the conditions as specified in paragraphs (19.1) and (19.2) of this AD are met.

(19.1) The AOA sensor P/N must be approved by EASA, or approved under Airbus DOA; and

(19.2) The installation must be accomplished in accordance with aeroplane modification instructions approved by EASA, or approved under Airbus DOA.





**AFM Amendment:**

- (20) For an aeroplane fitted with an ELAC configuration as identified in Table 3 of this AD, or later, and with an AOA sensors configuration as identified in Table 4 of this AD, it is allowed to amend the applicable AFM by removing the copy of Airbus AFM A320 TR 502 “Abnormal V alpha Prot”, issue 1, or the copy of Appendix 1 of AD 2015-0135, as applicable, previously inserted in the AFM as required by paragraph (8) of this AD for that aeroplane. After amendment of the AFM, inform all flight crews and operate the aeroplane accordingly.

Table 3 – Minimum ELAC Configuration

Aeroplane applicability	ELAC P/N	Configuration introduced by:	
		Airbus mod	Airbus SB
A320	3945129109 (L97+)	156546	A320-27-1243
	3945128215 (L97+)	156550	A320-27-1244
A318/A319/A321	3945129111 (L99)	161843	A320-27-1263
	3945128217 (L99)	159979	A320-27-1264

Table 4 – AOA Sensor Installation configurations

AOA Sensor P/N - Pilot	AOA Sensor P/N - First Officer	AOA Sensor P/N - Standby
C16291AA or C16291AB	C16291AA or C16291AB	C16291AA, C16291AB or 0861ED





**Ref. Publications:**

Airbus OIT 999.0015/15 Revision 01 dated 29 June 2015.

Airbus SB A320-34-1415 Revision 03 dated 08 July 2010, or Revision 04 dated 30 July 2015.

Airbus SB A320-34-1444 original issue dated 07 October 2009, or Revision 01 dated 17 March 2011.

Airbus SB A320-34-1452 original issue dated 29 January 2010, or Revision 01 dated 16 September 2013.

Airbus SB A320-34-1564 original issue dated 25 January 2013, or Revision 01 dated 26 August 2013.

Airbus SB A320-34-1610 original issue dated 31 March 2015, or Revision 01 dated 30 July 2015.

Thales SB C16291A-34-007 Revision 01 dated 03 December 2009, or Revision 02 dated 16 December 2011, or Revision 03 dated 10 April 2012, or Revision 04 dated 11 October 2012.

Thales SB C16291A-34-009 original issue dated 10 September 2009, or Revision 01 dated 07 January 2010.

Airbus AFM A320 TR 502 issue 1, EASA approved 05 December 2014.

The use of later approved revisions of the above mentioned documents is acceptable for compliance with the requirements of this AD.

**Remarks:**

1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD.
2. Based on the required actions and the compliance time, EASA have decided to issue a Final AD with Request for Comments, postponing the public consultation process until after publication.
3. Enquiries regarding this AD should be referred to the Safety Information Section, Certification Directorate, EASA. E-mail: [ADs@easa.europa.eu](mailto:ADs@easa.europa.eu).
4. For any question concerning the technical content of the requirements in this AD, please contact: AIRBUS – Airworthiness Office – EIAS; Fax +33 5 61 93 44 51; E-mail: [account.airworth-eas@airbus.com](mailto:account.airworth-eas@airbus.com).





## Appendix 1 – AFM Procedure

- **At any time, with a speed above VLS, if the aircraft goes to a continuous nose down pitch rate that cannot be stopped with backward sidestick inputs, immediately:**  
Keep on one ADR.  
Turn off two ADRs.
- **If the Alpha Max strip (red) hides completely the Alpha Prot strip (black and amber) in a stabilized wings-level flight path (without an increase in load factor):**  
Keep on one ADR.  
Turn off two ADRs.

*In case of dispatch with one ADR inoperative, switch only one ADR to OFF.*

**CAUTION** RISK OF ERRONEOUS DISPLAY OF THE VSW STRIP (RED AND BLACK)

Consider using the Flight Path Vector (FPV).

- **If the Alpha Prot strip (black and amber) rapidly moves by more than 30 kt during flight maneuvers (with an increase in load factor), with AP ON and speed brakes retracted:**  
Keep on one ADR.  
Turn off two ADRs.

*In case of dispatch with one ADR inoperative, switch only one ADR to OFF.*

**CAUTION** RISK OF ERRONEOUS DISPLAY OF THE VSW STRIP (RED AND BLACK)

Consider using the Flight Path Vector (FPV).

