

Airworthiness Directive Schedule

Engines

Arriel 2B, 2C, 2D, 2E and 2S Series

26 March 2020

- Notes:**
1. This AD schedule is applicable to Safran Helicopter Engines (formerly Turbomeca) Arriel 2 series engines manufactured under EASA Type Certificate Number E.001.

Engine Model:	
Arriel 2B	Arriel 2C2
Arriel 2B1	Arriel 2D
Arriel 2B1A	Arriel 2E
Arriel 2B1B	Arriel 2S1
Arriel 2C	Arriel 2S2
Arriel 2C1	

2. The European Aviation Safety Agency (EASA) is the National Airworthiness Authority (NAA) responsible for the issue of State of Design Airworthiness Directives (ADs) for these engines. State of Design ADs can be obtained directly from the EASA website at <http://ad.easa.europa.eu/>
 3. The date above indicates the amendment date of this schedule.
 4. New or amended ADs are shown with an asterisk *
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The State of Design ADs listed below are available directly from the National Airworthiness Authority (NAA) websites. Links to NAA websites are available on the CAA website at http://www.caa.govt.nz/airworthiness-directives/states-of-design/ If additional NZ ADs need to be issued when an unsafe condition is found to exist in an aircraft or aeronautical product in NZ, they will be added to the list below.		
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DCA/TUR/17 Fuel Pump Body - Inspection

Applicability: Arriel 2S1, 2B and 2C, all S/N.

Requirement: To prevent fuel seepage from the fuel pump body and possible engine bay fire, accomplish the following:-

1. Inspect engine bay floor per Turbomeca SB 292 73 2803, for presence of fuel. If fuel is detected, refer to the Maintenance Manual for rectification and perform the inspection per part 2 of this AD.
2. Inspect the area specified by SB 292 73 2803 for fuel seepage. If fuel seepage is detected, remove and replace the HP/LP pump assembly before further flight.
3. Check the pump body material thickness per SB 292 73 2803. If the measured thickness is less than the criteria per the SB, replace the pump assembly with a pump body having correct thickness before further flight. This constitutes terminating action for this AD.

(DGAC AD 1999-285(A) refers)

- Compliance:**
1. After the last flight of each day, until part 3 of this AD is accomplished. This inspection may be accomplished by the pilot following instruction by the engineer responsible for the maintenance of the helicopter.
 2. Within next 50 hours TIS and thereafter at intervals not to exceed 50 hours TIS, until part 3 of this AD is accomplished.
 3. By 1 May 2000.

Effective Date: 24 September 1999

DCA/TUR/21 Centrifugal Impeller - Modification

Applicability: Arriel 2 series engines, all S/N.

Requirement: To prevent excitation of the impeller vanes leading to release of a vane and possible engine failure, accomplish the following:-

1. Modify Arriel 2S1, 2B engines by installation of a sleeve in the bleed valve boss, per Turbomeca SB 292 72 2054.
2. For other Arriel engine variants, on which TU 54 modification is embodied, ensure the bonding of the sleeve in the bleed valve boss, per Turbomeca SB A 292 72 2070 Rev 1 (modification TU 70A).

(DGAC AD 2002-127(A) refers)

Compliance: Before 31 May 2002

Effective Date: 28 March 2002

DCA/TUR/33 Free Turbine Containment Shield – Inspection

Applicability: Arriel 2B and 2B1 engines fitted to Eurocopter AS 350 B3 and EC 130 helicopters and which do not have modification TU 22 embodied.

Requirement: Inspect the free turbine containment shield per paragraph 2 of Turbomeca Mandatory Service Bulletin No 292 72 2821. The free turbine containment shield must be replaced if the length or position of the crack(s) exceeds the criteria laid down in paragraph 2 of SB No. 292 72 2821.

(DGAC AD F-2005-162 refers)

Compliance: Within the next 10 hours TIS, and thereafter at intervals dependant on the inspection results per the inspection requirements of SB No. 292 72 2821.

Effective Date: 17 October 2005

DCA/TUR/50A Module 03 Turbine – Inspection

- Applicability:** Arriel 2B, 2B1, 2B1A engines not embodied with modification TU166.
These engines are known to be installed on, but not limited to, Eurocopter AS 350 B3 and EC 130 B4 aircraft.
- Note:** Revision A of this AD limits the applicability to those engines not embodied with modification TU166. This modification introduces HP blade dampers between the HP disc and the HP blade platform.
- Requirement:** To prevent the loss of blades on the HP turbine due to blade displacement and eventual blade fatigue, accomplish the following:
Inspect the HP turbine per the instructions in Turbomeca MSB No. 292 72 2825 version B dated 21 September 2009 or later EASA approved revisions.
If the inspections reveal rearward displacement of the HP turbine blades, accomplish the instructions in paragraph 2.B of MSB No. 292 72 2825.
(EASA AD 2007-0109R1 refers)
- Compliance:** Within the next 600 hours TIS or 500 cycles on the engine, whichever occurs sooner since the last HP turbine borescope inspection, unless previously accomplished, or
Within the next 100 hours TIS for module 03 HP turbines that have logged more than 600 hours TIS or 500 cycles since new, repair or overhaul and on which a borescope inspection was last performed more than 600 hours or 500 cycles ago, and
Thereafter repeat the inspection at intervals not to exceed 600 hours TIS or 500 cycles, whichever occurs sooner.
- Effective Date:** DCA/TUR/50 - 31 May 2007
DCA/TUR/50A - 26 November 2009

DCA/TUR/51 Cancelled – EASA AD Cancellation Notice 2007-0117-CN refers

- Note:** The requirements in superseded DCA/TUR/51 (EASA AD 2007-0117 refers) have been introduced in a Note in EASA TCDS E.001.
The Note in TCDS E.001 is applicable to Arriel 2B, 2B1, 2B1A, 2C, 2C1, 2C2, 2S1 and 2S2 engines turboshaft engines, which have previously been used by an operator (such as the military, customs, police or similar services), which have not been operated under the control of a National Civil Authority.
Before installing an affected engine in a civil registered aircraft, the engine must comply with the applicable Safran Helicopter Engines requirements specified in EASA TCDS No. E.001.
- Effective Date:** 22 February 2018

DCA/TUR/54 HMU Low Fuel Pressure Switch – Inspection

- Applicability:** Arriel 2B, 2B1 and 2B1A engines, all S/N
- These engines are known to be installed on, but not limited to Eurocopter AS 350 B3 and EC 130 B4 aircraft.
- Requirement:** To prevent failure of the Hydro Mechanical Unit (HMU) low fuel pressure switch which could result in the internal components from the failed switch to jam the HP-LP fuel pump and cause the pump drive pin to shear, accomplish the following:
1. Inspect the HMU per the instructions in paragraph 2 of Turboméca Mandatory Service Bulletin (MSB) No. 292 73 2826 and determine the P/N of the low fuel pressure switch fitted to the HMU.
 2. If a Hydra-Electric low fuel pressure switch P/N 9 550 17 956 0 is fitted, inspect the low fuel pressure switch and chamber of the HMU body.
 If any parts from the low fuel pressure switch are found missing, or found in the HMU chamber, replace the HMU with a new or overhauled HMU which is fitted with an IN-LHC low fuel pressure switch.
 If no parts are found missing, replace the low fuel pressure switch with an IN-LHC low fuel pressure switch.
 3. If a IN-LHC low fuel pressure switch P/N 9 550 17 199 0 or P/N 9 550 17 913 0 is fitted, inspect and determine if a Hydra-Electric switch P/N 9 550 17 956 0 is fitted.
 If a Hydra-Electric switch P/N 9 550 17 956 0 has been or may have been fitted, inspect the chamber of the HMU body. If any parts are found in the HMU chamber, replace the HMU with a new or overhauled HMU which is fitted with an IN-LHC low fuel pressure switch.
 If the IN-LHC low fuel pressure switch has been fitted since new, repair or overhaul, no further action is required.
- Note:** Accomplish these requirements per the instructions in Turboméca Mandatory Service Bulletin 292 73 2826 original issue, or later approved revisions.
 (EASA AD 2008-0077 refers)
- Compliance:** 1. 2. & 3. By 30 September 2009.
- Effective Date:** 29 May 2008

DCA/TUR/65A Module 04 Power Turbine – Life Limitation

- Applicability:** Arriel 1B, 1D and 1D1 engines, fitted with Modules M04 (Power Turbine) listed in figure 1 of Turboméca MSB A292 72 0827 version C.
 Model Arriel 2B, 2B1 and 2B1A turboshaft engines, fitted with Modules M04 listed in figure 1 of Turboméca MSB A292 72 2833 version C.
 Affected engines are installed on single engine helicopters. Arriel 1B, 1D and 1D1 turboshaft engines are known to be installed on, but not limited to, Eurocopter AS 350 B, AS 350 BA, AS 350 BB, AS 350 B1 and AS 350 B2 helicopters, and
 Arriel 2B, 2B1 and 2B1A turboshaft engines are known to be installed on, but not limited to, Eurocopter AS 350 B3 and EC 130 B4 helicopters.
- Note 1:** This AD revised to extend the life limit of the Module 04 power turbine blades from 2000 hours to 5000 hours TTIS and introduce later Turboméca MSB revisions which do not list any additional nonconforming turbine wheels.

Requirement: To prevent failure of the power turbine due to possible blade fatigue which could result in loss of engine power, accomplish the following:

1. For engines with 5000 or more cycles on the Module M04 Power Turbine (PT):

Replace the module M04, or the PT wheel assembly, or the PT blades per paragraph 2.B.(1)(b) of Turboméca MSB A292 72 0827 version C dated 15 July 2009 or later approved revisions for Arriel 1 engines and MSB A292 72 2833 version C dated 15 July 2009 or later approved revisions for Arriel 2 engines.

2. For engines with less than 5000 cycles on the Module M04 PT:

2.1 Change the cycle life limit of the PT blades in the engine log book to 5000 cycles per paragraph 2.B.(1)(a) of MSB A292 72 0827 for Arriel 1 engines and MSB A292 72 2833 for Arriel 2 engines.

2.2 Replace the module M04, or PT wheel assembly, or PT blades per paragraph 2.B.(1)(b) of MSB A292 72 0827 for Arriel 1 engines and A292 72 2833 for Arriel 2 engines.

Note 2: The S/N of affected PT wheel assemblies and Modules M04 (PT) are listed in figure 1 of the referenced MSB. These PT are known to be fitted with affected blades. The engine S/N are also provided where this information is available. If there is a conflict with S/N contact Turboméca for clarity.

(EASA AD 2009-0112R1 refers)

Compliance: 1. Before further flight unless previously accomplished

2.1 By 3 September 2009 unless previously accomplished.

2.2 Before accumulating 5000 cycles unless previously accomplished.

Effective Date: DCA/TUR/65 - 25 June 2009
DCA/TUR/65A - 27 August 2009

DCA/TUR/69 HMU Acceleration Control Axle – Inspection

Applicability: Arriel 2B engines not embodied with modification TU149.

These engines are known to be installed on, but not limited to, Eurocopter AS 350 B3 helicopters.

Note 1: This AD supersedes DCA/TUR/44 to introduce modification TU149 per Turbomeca SB 292 73 2149 version D dated 16 October 2009 to prevent the acceleration controller axle from sticking in its bearing.

Requirement: To prevent the acceleration controller axle from sticking in its bearing, which can result in difficulty or failure to control the fuel flow rate in manual or mixed mode, leading to unpredictable engine running which can cause gas generator or power turbine overspeed and in-flight engine shutdown, accomplish the following:

1. Perform a ground check in the mixed mode operation until accomplishment of paragraph 3 in Turboméca MSB A292 73 2814 version D dated 16 October 2009 or later EASA approved revisions. For the control system mixed mode refer to section 8 task 3C in the AS350 B3 AFM.

2. Inspect the fuel metering system and perform maintenance procedures per paragraph 2 of Turbomeca MSB A292 73 2814.

Note 2: Requirement 1 of this AD may be accomplished by adding the inspection requirement to the tech log. The ground check may be performed and certified under the provision in Part 43 Appendix A.1 (7) by the holder of a current pilot licence, if that person is rated on the aircraft, appropriately trained and authorised (Part 43, Subpart B refers), and the maintenance is recorded and certified as required by Part 43.

Note 3: The embodiment of modification TU149 is a terminating action to the requirements of this AD.

(EASA AD 2009-0246 refers)

Compliance:

1. Before the first flight of the day.
2. Within 20 hours TIS of receiving parts from Turbomeca, and thereafter at intervals not to exceed 200 hours TIS.

Effective Date: 26 November 2009

DCA/TUR/76 Hydromechanical Metering Unit (HMU) – Inspection

Applicability: Arriel 2B engines, all S/N fitted with HMU listed in Turboméca MSB A292 73 2841 version A.

These engines are known to be installed on, but not limited to Eurocopter AS 350 B3 helicopters.

Requirement: To correct possible incorrectly adjusted HMU which could result in loss of engine power in flight, accomplish the following:

1. Review the aircraft records or inspect the AMU installed on the aircraft and determine the P/N and S/N of the AMU.

If a HMU with P/N and S/N listed in Turboméca MSB A292 73 2841 version A is found fitted to the aircraft and the HMU is not already in compliance with SB 292 73 2840 version A, then accomplish either requirement 2 or 3 of this AD.

2. Replace the affected HMU with a serviceable HMU per the instructions in MSB A292 73 2841 version A.

3. Accomplish an engine functional test per the instructions in paragraph 2.B.(1)(a) of Turboméca MSB A292 73 2841 version A.

If the engine fails the functional test, replace the HMU with a serviceable part.

If the engine passes the functional test, accomplish the following actions:

- Within the next 4 months after the effective date of this AD, install software modification TU143 on the Engine Electronic Control Unit (EECU) per the instructions in Turboméca SB 292 73 2143, and
- Within the next 12 months after the effective date of this AD, replace the affected HMU with a serviceable HMU.

4. A HMU shall not be fitted on any aircraft or engine, unless the HMU is in compliance with the requirements of this AD.

Note 1: A serviceable HMU is a part which is not listed in MSB A292 73 2841 version A, or a HMU which has passed the inspection per the instructions in Turboméca SB 292 73 2840 version A.

Note 2: The replacement of an HMU with a serviceable HMU is a terminating action to the requirements of this AD.

Note 3: Turboméca MSB A292 73 2841 version A dated 04 July 2011, SB 292 73 2840 version A dated 28 June 2011 and SB 292 73 2143 initial issue dated 24 July 2007 and later approved revisions of these documents are acceptable to comply with the requirements of this AD.

(EASA AD 2011-0128-E refers)

Compliance:

1. 2. & 3. Before further flight.
4. From 9 July 2011.

Effective Date: 9 July 2011

DCA/TUR/85 Digital Engine Control Unit – Software Modification

Applicability: ARRIEL 2B1 and 2B1A engines, all S/N.

These engines are known to be installed on, but not limited to, Eurocopter AS 350 B3 and EC 130 B4 helicopters, and Changhe Aircraft Industries Corporation Z11 single-engine helicopters.

Note 1: This AD supersedes DCA/TUR/49 to expand the applicability to include ARRIEL 2B1A engines which require the embodiment of modification TU175 (software version 6). No AD action required for those ARRIEL 2B1 engines embodied with modification TU144C (software version 5.02).

Requirement: To prevent engine flame-out due to limitations of the Digital Engine Control Unit (DECU) software, accomplish the requirements in EASA AD 2012-0147.

Note 2: A copy of EASA AD 2012-0147 can be obtained from the EASA AD website at <http://www.easa.eu.int/certification/airworthiness-directives.php>

Note 3: Turboméca MSB A292 73 2144 original issue, dated 05 January 2007, and Turboméca MSB A292 73 2175 version A, dated 06 July 2012 or later approved revisions of these documents is acceptable for compliance with the requirements of this AD.

(EASA AD 2012-0147 refers)

Compliance: At the compliance times specified in EASA AD 2012-0147 unless previously accomplished.

Effective Date: 30 August 2012

The State of Design ADs listed below are available directly from the National Airworthiness Authority (NAA) websites. Links to NAA websites are available on the CAA website at <http://www.caa.govt.nz/airworthiness-directives/states-of-design/>
If additional NZ ADs need to be issued when an unsafe condition is found to exist in an aircraft or aeronautical product in NZ, they will be added to the list below.

2012-0124R1 Module M03 Gas Generator Turbine Blade – Modification

Effective Date: 2012-0124 - 23 July 2012
2012-0124R1 - 29 January 2013

2013-0170R1 Hydro-mechanical Metering Unit – Inspection

Effective Date: EASA AD 2013-0170 - 13 August 2013
EASA AD 2013-0170R1 – 25 April 2017

2013-0171 HMU Constant Delta Pressure Valve Diaphragm – Replacement

Effective Date: 13 August 2013

2014-0036 Accessory Gearbox (M01) – 41/23 Tooth Bevel Gear Assembly – Inspection

Effective Date: 25 February 2014

2015-0177 Cancelled – EASA AD 2017-0121 refers

Effective Date: 31 July 2017

2015-0213 Hydro Mechanical Unit - Inspection

Effective Date: 30 October 2015

2016-0004 (Correction)Hydro-Mechanical Metering Unit – Inspection

Effective Date: 2016-0004 - 20 January 2016
2016-0004 (Correction dated 5 Feb 2016) - 20 January 2016

2010-0215R1 Cancelled – EASA AD 2017-0102 refers

Effective Date: 29 June 2017

2016-0055R1 Accessory Gearbox Module M01 – Inspection

Effective Date: 2016-0055 - 31 March 2016
2016-0055R1 - 11 October 2016

2011-0218R1 Power Turbine Blades – Life Limitation

Effective Date: 2011-0218 - 24 November 2011
2011-0218R1 - 4 May 2016

2016-0098 Hydro-Mechanical Metering Unit – Modification

Effective Date: 6 June 2016

F-2004-192 Torque Confirmation Box – Inspection

Compliance: Before the issue of a New Zealand Certificate of Airworthiness, or at the next Review of Airworthiness (RA), whichever is the sooner, unless previously accomplished. Repetitive inspections (if applicable) to be accomplished at the intervals specified in the DGAC AD.

Effective Date: 27 October 2016

2007-0063 Hydro-Mechanical Metering Unit Fuel Filter Drain Screw – Inspection

Compliance: Before the issue of a New Zealand Certificate of Airworthiness, or at the next Review of Airworthiness (RA), whichever is the sooner, unless previously accomplished. Repetitive inspections (if applicable) to be accomplished at the intervals specified in the EASA AD.

Effective Date: 27 October 2016

2009-0010R1 Digital Engine Control Unit (DECU) Software – Modification

Compliance: Before the issue of a New Zealand Certificate of Airworthiness, or at the next Review of Airworthiness (RA), whichever is the sooner, unless previously accomplished. Repetitive inspections (if applicable) to be accomplished at the intervals specified in the EASA AD.

Effective Date: 27 October 2016

2011-0249 Digital Engine Control Unit (DECU) – Inspection

Compliance: Before the issue of a New Zealand Certificate of Airworthiness, or at the next Review of Airworthiness (RA), whichever is the sooner, unless previously accomplished. Repetitive inspections (if applicable) to be accomplished at the intervals specified in the EASA AD.

Effective Date: 27 October 2016

2016-0235 Engine Front Support – Inspection

Effective Date: 8 December 2016

2017-0102 HP/LP Fuel Pump Metering Unit – Inspection

Applicability: Arriel 2B, 2B1 and 2B1A engines, all S/N.

Effective Date: 29 June 2017

2017-0121 Airworthiness Limitations - Amendment

Applicability: Arriel 2C, 2C1, 2C2, 2S1 and 2S2 engines, all S/N.

Effective Date: 31 July 2017

2018-0273 Airworthiness Limitations - Amendment

Applicability: Arriel 2D, 2E and 2N engines, all S/N.

Effective Date: 27 December 2018

2019-0110 Torque Conformation Box - Inspection

Applicability: Arriel 2C, 2C1, 2S1 and 2S2 engines, all S/N.

These engines are known to be installed on, but not limited to, Airbus Helicopters AS 365 N3, EC 155 B and Sikorsky S-76C helicopters.

Effective Date: 4 June 2019

2019-0180 Fuel Filter Pre-blockage Pressure Switch - Inspection

Applicability: Arriel 2B, 2B1, 2B1A, 2C, 2C1, 2C2, 2S1 and 2S2 engines, all S/N.

These engines are known to be installed on, but not limited to, Airbus Helicopters AS 350 B3, EC 130 B4, AS 365 N3, EC 155 B and Sikorsky S-76C helicopters.

Note: The visual check as required by paragraph (1) of EASA AD 2019-0180 may be accomplished by adding the inspection requirement to the tech log. The visual inspection may be performed and certified under the provision in Part 43 Appendix A.1 (7) by the holder of a current pilot licence, if that person is rated on the aircraft, appropriately trained and authorised (Part 43, Subpart B refers), and the maintenance is recorded and certified as required by Part 43.

Effective Date: 8 August 2019

*** 2020-0046 Digital Engine Control Unit – Inspection**

Applicability: Arriel 2C and 2S1 engines, all S/N.

These engines are known to be installed on, but not limited to, Airbus Helicopters AS 365 N3 and Sikorsky S-76C helicopters.

Effective Date: 26 March 2020