
SERVICE BULLETIN

Modification



Recurring action



One-off action



No.

292 73 2096

ARRIEL 2 B - B1 - C - C-PM - C1- C2 - S1

Subject : Adjusted fuel valve assembly. Start electro-valve with improved internal seal.

Application of modification TU 96.

Date on which this SB becomes effective and must systematically be complied with, according to the conditions of application.

This is the date all resources (parts, tools, documentation, etc.) required for this procedure are available.

Applicable from AUGUST 2003

If resources (parts, tools, documentation, etc.) are available any earlier, the SB may be applied prior to the effectivity date.

Version : B

Reason for update:

Merger of SB No. 292 73 2096 and SB No. 292 73 2096M and deletion of the Log Card at the next return to the Repair Center.

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1. Compliance

A. Application

The manufacturer recommends this modification be incorporated as defined in this Service Bulletin.

| Validity | Code |
|---|-------|
| ARRIEL 2 B - B1 ARRIEL 2 C - C-PM - C1 - C2 ARRIEL 2 S1 | 2-A-1 |

Conditions of application for engines in service

(1) Application at the operator's site or at a Safran Helicopter Engines-approved Maintenance Center

If replacing start electro-valve.

(2) Application at a Safran Helicopter Engines-approved Repair Center

Upon first return to an approved Repair Center if repair/overhaul being performed provides access to start electro-valve.

B. Purpose

To improve sealing properties of the electro-valve to increase start reliability.

C. Description (see appendix 2)

This modification consists of increasing the bending radius: cylinder/rear plane surface of the magnetic core.

D. Approval

- ARRIEL 2 B - B1 - C - C1 - C2 - S1 variants:
The technical content of this document is approved under the authority of the DOA (Design Organisation Approval) ref. EASA.21J.070.
- ARRIEL 2 C-PM variant:
The technical information given in this document is approved by Safran Helicopter Engines.

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E. Manpower

- (1) **At the operator's site or at a Safran Helicopter Engines-approved Maintenance Center**
 - (a) **Personnel:** 1 mechanic.
 - (b) **Time required:** 1 man-hour (removal and installation of start electro-valve).
- (2) **At a Safran Helicopter Engines-approved Repair Center**
 - (a) **Personnel** of approved Repair Center.
 - (b) **Time** determined by the Repair Center as being appropriate for this level of intervention.

F. Material

Refer to paragraph 3.

G. Tooling

- (1) **At the operator's site or at a Safran Helicopter Engines-approved Maintenance Center**
 - (a) Mechanic's standard tooling.
 - (b) Sealing inspection tool P/N TM2230G001.
- (2) **At a Safran Helicopter Engines-approved Repair Center**
Refer to the applicable Component Maintenance Manual and ARRIEL 2 Overhaul Manual.

H. Weight and balance

Not applicable.

I. References

- | | |
|--|----------------------|
| (1) ARRIEL 2 B Maintenance Manual..... | Ref. X 292 M5 450 2. |
| (2) ARRIEL 2 B1 Maintenance Manual..... | Ref. X 292 N5 450 2. |
| (3) ARRIEL C Maintenance Manual..... | Ref. X 292 M1 450 2. |
| (4) ARRIEL 2 C-PM Maintenance Manual..... | Ref. X 292 P1 450 2. |
| (5) ARRIEL 2 C1 Maintenance Manual..... | Ref. X 292 N4 450 2. |
| (6) ARRIEL 2 C2 Maintenance Manual..... | Ref. X 292 N6 450 2. |
| (7) ARRIEL 2 S1 Maintenance Manual..... | Ref. X 292 L0 301 2. |
| (8) ARRIEL 2 B Component Maintenance Manual | Ref. X 73-23-03 2. |
| (9) ARRIEL 2 B1 Component Maintenance Manual | Ref. X 73-23-05 2. |
| (10) ARRIEL 2 C - C-PM Component Maintenance Manual..... | Ref. X 73-23-04 2. |
| (11) ARRIEL 2 C1 Component Maintenance Manual..... | Ref. X 73-23-13 2. |
| (12) ARRIEL 2 C2 Component Maintenance Manual..... | Ref. X 73-23-08 2. |
| (13) ARRIEL 2 S1 Component Maintenance Manual | Ref. X 73-23-01 2. |
| (14) ARRIEL 2 Overhaul Manual | Ref. X 292 R1 500 2. |
| (15) Applicable Helicopter Maintenance Manual. | |

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J. Other publications concerned

| | | |
|------|--|----------------------|
| (1) | ARRIEL 2 B Spare Parts Catalogue..... | Ref. X 292 M5 700 2. |
| (2) | ARRIEL 2 B1 Spare Parts Catalogue..... | Ref. X 292 N5 700 2. |
| (3) | ARRIEL 2 C Spare Parts Catalogue..... | Ref. X 292 M1 700 2. |
| (4) | ARRIEL 2 C-PM Spare Parts Catalogue..... | Ref. X 292 P1 700 2. |
| (5) | ARRIEL 2 C1 Spare Parts Catalogue..... | Ref. X 292 N4 700 2. |
| (6) | ARRIEL 2 C2 Spare Parts Catalogue..... | Ref. X 292 N6 700 2. |
| (7) | ARRIEL 2 S1 Spare Parts Catalogue..... | Ref. X 292 L0 700 2. |
| (8) | ARRIEL 2 B Illustrated Parts Catalogue..... | Ref. X 292 M5 600 2. |
| (9) | ARRIEL 2 B1 Illustrated Parts Catalogue..... | Ref. X 292 N5 600 2. |
| (10) | ARRIEL 2 C Illustrated Parts Catalogue..... | Ref. X 292 M1 600 2. |
| (11) | ARRIEL 2 C-PM Illustrated Parts Catalogue..... | Ref. X 292 P1 600 2. |
| (12) | ARRIEL 2 C1 Illustrated Parts Catalogue..... | Ref. X 292 N4 600 2. |
| (13) | ARRIEL 2 C2 Illustrated Parts Catalogue..... | Ref. X 292 N6 600 2. |
| (14) | ARRIEL 2 S1 Illustrated Parts Catalogue..... | Ref. X 292 L0 600 2. |

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2. Instructions to be incorporated

A. Implementation

This modification can be incorporated without removing the engine. Adjusted fuel valve assembly must be removed from engine.

(1) At the operator's site or at a Safran Helicopter Engines-approved Maintenance Center

Replace start electro-valve.

(2) At a Safran Helicopter Engines-approved Repair Center

Replace start electro-valve.

B. Operating instructions (see appendix 2)

CAUTION: MAKE SURE THAT POWER TO ELECTRICAL SYSTEM IS SWITCHED OFF.

CAUTION: READ AND OBSERVE SAFETY INSTRUCTIONS BEFORE CONDUCTING ANY INTERVENTION ON FUEL SYSTEM.

WARNING: DO NOT INHALE ENGINE FUEL FUMES. DO NOT ALLOW ENGINE FUEL TO REMAIN IN CONTACT WITH THE SKIN. WORK IN A WELL-VENTILATED AREA. FUEL IS POISONOUS AND CAN BE ABSORBED THROUGH THE SKIN DIRECTLY INTO YOUR BODY. WEAR SYNTHETIC RUBBER GLOVES AND A VISOR OR GOGGLES AT ALL TIMES

(1) At the operator's site or at a Safran Helicopter Engines-approved Maintenance Center

(a) Remove adjusted fuel valve assembly: refer to the applicable ARRIEL 2 Maintenance Manual, task 73-14-00-900-801.

(b) If necessary, cut lockwire (01-998) of two attaching screws (01-012) of start electro-valve (01-010).

(c) Discard lockwire (01-998) and warranty seal (01-999).

(d) Remove two attaching screws (01-012) from start electro-valve (01-010).

(e) Remove PRE TU 96 start electro-valve (01-010) from fuel valve assembly.

(f) Remove and discard o-rings (01-030), (01-040) and (01-050) from start electro-valve (01-010).

(g) Lubricate new o-rings (01-030), (01-040) and (01-050).

(h) Install o-rings (01-050), (01-040) and (01-030) on POST TU 96 start electro-valve (01-010).

(i) Install POST TU 96 start electro-valve (01-010) on fuel valve assembly. Position spigot according to detail F1 on appendix 2.

(j) Lubricate threads and underheads of screws (01-012).

(k) Install attaching screws (01-012) onto start electro-valve (01-010) and torque to 4.8 N.m.

(l) Lock screws (01-012) with stainless steel lockwire (dia. 0.6 mm).

(m) Engrave temporary marking on identification plate of TU 96 adjusted fuel valve assembly: refer to appendix 1.

Note: Part Number of adjusted fuel valve assembly will be modified when next returned to a Repair Center.

(n) Install TU 96 adjusted fuel valve assembly: refer to the applicable ARRIEL 2 Maintenance Manual, task 73-14-00-900-801.

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(2) At a Safran Helicopter Engines-approved Repair Center

- (a) Remove adjusted fuel valve assembly: refer to ARRIEL 2 Overhaul Manual.
- (b) Remove PRE TU 96 start electro-valve: refer to the applicable Component Maintenance Manual.
- (c) Install POST TU 96 start electro-valve: refer to the applicable Component Maintenance Manual.
- (d) Mark new Part Number of adjusted fuel valve assembly: refer to Common Techniques Book (procedure 300).
- (e) Conduct sealing inspection on adjusted fuel valve assembly: refer to the applicable Component Maintenance Manual.
- (f) Install POST TU 96 adjusted fuel valve assembly: refer to ARRIEL 2 Overhaul Manual.

C. Reconditioning and checks

CAUTION: READ AND OBSERVE SAFETY INSTRUCTIONS BEFORE CONDUCTING ANY INTERVENTION ON FUEL SYSTEM.

WARNING: DO NOT INHALE ENGINE FUEL FUMES. DO NOT ALLOW ENGINE FUEL TO REMAIN IN CONTACT WITH THE SKIN. WORK IN A WELL-VENTILATED AREA. FUEL IS POISONOUS AND CAN BE ABSORBED THROUGH THE SKIN DIRECTLY INTO YOUR BODY. WEAR SYNTHETIC RUBBER GLOVES AND A VISOR OR GOGGLES AT ALL TIMES.

(1) At the operator's site or at a Safran Helicopter Engines-approved Maintenance Center

- (a) Remove P3/adjusted fuel valve assembly pipe: refer to the applicable ARRIEL 2 Maintenance Manual, task 75-29-00-900-804.
- (b) Using blank of sealing inspection tool P/N TM2230G001, blank P3 air tapping point used for ventilation of starting injectors of intermediate casing.
- (c) Install union of sealing inspection tool P/N TM2230G001 onto adjusted fuel valve assembly in place of P3/fuel valve assembly pipe.
- (d) Install flexible pipe from union of sealing inspection tool P/N TM2230G001 in a drain pan.
- (e) Start engine, and increase up to ground idle. Verify that there is:
 - 1 No flow of fuel into drain pan from 0 to 48 % of N1 (start to cut-off of start electro-valve).
 - 2 A brief flow of fuel at 48 % of N1 (cut-off of start electro-valve). Quantity of fuel should be between 10 and 15 ml.
 - 3 No flow of fuel at end of starting phase or at ground idle.
 - Note: Seepage of 3 drops per minute is acceptable.
 - Note: In the event of a fuel flow at stage 1 and/or 2, or if there is fuel leakage at start electro-valve flange/adjusted fuel valve assembly interface, repeat removal/installation of start electro-valve: refer to paragraph 2. B. (1).
- (f) Remove union of sealing inspection tool P/N TM2230G001 from adjusted fuel valve assembly.
- (g) Remove blank of sealing inspection tool P/N TM2230G001.
- (h) Install P3/adjusted fuel valve assembly pipe: refer to the applicable ARRIEL 2 Maintenance Manual, task 75-29-00-900-804.

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(2) At a Safran Helicopter Engines-approved Repair Center

Refer to ARRIEL 2 Overhaul Manual.

D. Identification

(1) At the operator's site or at a Safran Helicopter Engines-approved Maintenance Center

(a) With log card

- 1** Update the log card of the removed adjusted fuel valve assembly and the log card of the installed adjusted fuel valve assembly.
- 2** Record the replacement of the adjusted fuel valve assembly in the engine log book.
- 3** Integrate the log card of the new adjusted fuel valve assembly in the engine log book.
- 4** Record the application of this SB in section E.
- 5** Update, if necessary, the availability status in section E.
- 6** Send back the completed certification given in appendix 3.

(b) Without log card

- 1** Record the application of this SB in sections A and E.
- 2** Send back the completed certification given in appendix 3.

(2) At a Safran Helicopter Engines-approved Repair Center

(a) Archive the log card.

(b) Record the application of this SB in section A.

(c) Send back the completed certification given in appendix 3.

E. Routine maintenance

Not applicable.

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3. Material information

A. Basic information

The parts list required for the incorporation of this Service Bulletin is for one engine.

B. List of parts

| New Part Number | Key | Qty | Description * | Old Part Number | Key | Qty |
|-----------------|-----|-----|--|-----------------|-----|-----|
| 0 292 95 509 0 | A | 1 | Fuel valve assembly | 0 292 95 505 0 | F | 1 |
| 0 292 95 806 0 | A | 1 | Adjusted fuel valve assembly | 0 292 95 805 0 | D | 1 |
| 9 550 17 907 0 | A | 1 | • Start electro-valve | 9 550 17 344 0 | C | 1 |
| 9 794 41 010 6 | B | 1 | • O-ring | | | |
| 9 794 41 011 8 | B | 1 | • O-ring | | | |
| 9 794 41 014 0 | B | 1 | • O-ring | | | |
| | B | | • Stainless steel lockwire (dia. 0.6 mm) | | | |

*Prices and delivery times are available upon request.

Key

A - Part incorporated by this modification.

B - Part not incorporated by this modification, but required for its incorporation

C - Part deleted by this modification.

D - Part to be modified at the operator's site or at a Safran Helicopter Engines -approved Repair Center.

F - Part to be modified at the manufacturer's site or at a Safran Helicopter Engines -approved Repair Center.

C. Supply conditions

Order supplies from:

your local Safran Helicopter Engines Support Center

or

SAFRAN HELICOPTER ENGINES

Direction Support et Service

Département Commercial

40220 TARNOS - France

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Marquage provisoire de la plaquette d'identification Temporary marking of the identification plate

| | | | |
|--|-------------------------------|------|----------------------|
| Matériel Equipment | <input type="text"/> | | |
| Référence Part Number | X XXX XX XXXX 2096 | | |
| N° Individuel Individual No. | <input type="text"/> | Date | <input type="text"/> |

Rayer les quatre derniers chiffres de la référence.

Engrave a line through the last four numbers of the Part Number.

Marquage des quatre derniers chiffres (2096) du Service Bulletin identifiant l'application de la modification TU 96.

Exécution : au crayon vibreur

Hauteur des chiffres : 1,5 mm

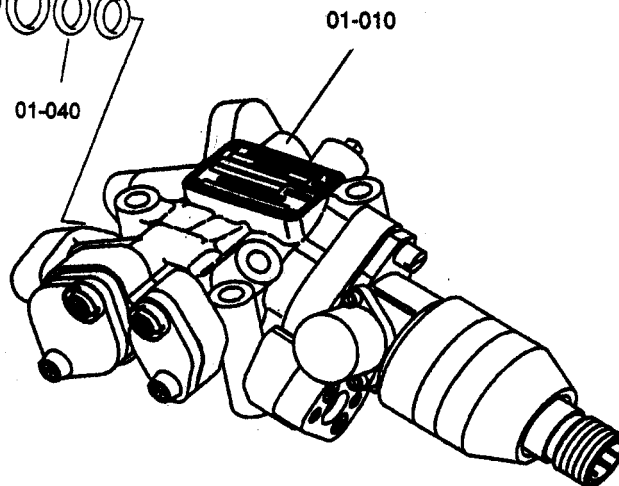
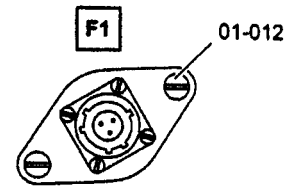
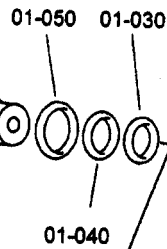
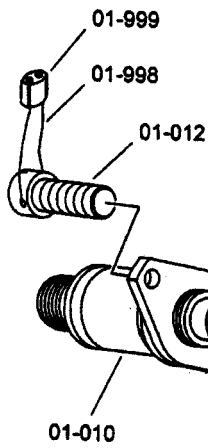
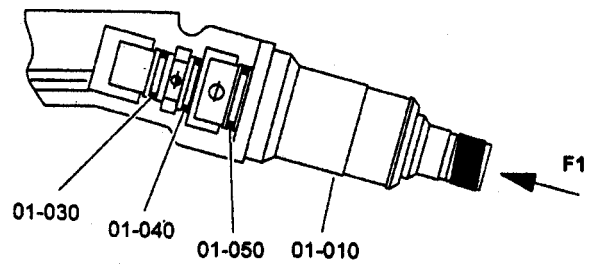
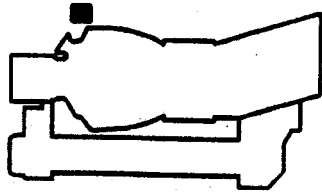
Engrave the last four numbers (2096) of the Service Bulletin referencing modification TU 96.

Engrave using a vibro pen.

Height of the numbers: 1.5 mm

ANNEXE 1 / APPENDIX 1

SERVICE BULLETIN



ANNEXE 2 / APPENDIX 2

SERVICE BULLETIN

Objet : Attestation de remplacement de l'ensemble clapets carburant réglé par application du SB n° 292 73 2096 (TU 96).

Subject: Compliance certificate for replacement of fuel valve assembly through application of the SB No. 292 73 2096 (TU 96).

Important / Important notice:

Après application des instructions spécifiées dans ce SB, veuillez compléter la présente attestation et la retourner par courrier ou courriel à :

After application of the instructions specified in this SB, please mail or email the fully-completed compliance certificate to:

SAFRAN HELICOPTER ENGINES
Equipe Administration Base installée / Fleet Data Administrator Team, BP 25
40220 TARNOS - France
Email: data-fleet.fr.she@safrangroup.com

| Information concernant le matériel / Equipment information | | | | | | |
|---|-----------|------------|------|-----------------------------|------|------|
| Utilisateur Customer | | | | N° Appareil Aircraft S/N | | |
| | N/S - S/N | Réf. - P/N | TSN* | TSO* | CSN* | CSO* |
| Moteur Engine | | | | | | |
| Ensemble clapets carburant déposé AVANT TU 96 Removed PRE TU 96 fuel valve assembly | | | | | | |
| Ensemble clapets carburant posé APRES TU 96 Installed POST TU 96 fuel valve assembly | | | | | | |

* **TSN = Time Since New** (Heures depuis neuf)
CSN = Cycles Since New (Cycles depuis neuf)

TSO = Time Since Overhaul (Heures depuis RG)
CSO = Cycles Since Overhaul (Cycles depuis RG)

Opération faite par / Work done by:

Je certifie que l'ensemble clapets carburant identifié ci-dessus a été modifié selon les directives de ce SB.

I certify that the above-mentioned fuel valve assembly has been installed according to the directives given in this SB.

| Date [JJ/MMMM (en lettre)/AAAA ou/or DD/MMMM (letter)/YYYY] | Nom / Name | Fonction / Job title |
|---|------------|----------------------|
| | | |

Signature :

ANNEXE 3 / APPENDIX 3