

COMMENT RESPONSE DOCUMENT

EASA PAD No.: 24-100

[Published on 05 August 2024 and officially closed for comments on 02 September 2024]

Commenter 1: Ian Jakeway – 05/08/2024

Comment #1

How does EASA satisfy itself about the veracity of the embodiment of a simple Technical Variance?

"(4) For Group 1 engines: Inspection(s) and corrective action accomplished in-shop or on-wing on an engine in accordance with the instructions of Rolls-Royce Technical Variance (TV) 277059 are acceptable to comply with the initial requirements of the paragraphs (1) and (3) of this AD for that engine."

EASA response:

EASA has reviewed Rolls-Royce Technical Variance (TV) 277059 and confirmed that its content may be used as acceptable method of inspection and corrective action.

No changes have been made to the Final AD in response to this comment.

Commenter 2: Delta Air Lines, Inc. - Sarah Moore – 30/08/2024

Comment #2

Reference:

- (A) EASA Proposed Airworthiness Directive: PAD No. 24-100, dated 05 Aug 24
- (B) EASA AD 2019-0282R1, dated 25 Aug 21
- (C) Rolls-Royce SB Trent 1000 72-K570 original issue dated 15 June 2021
- (D) Rolls-Royce SB Trent 1000 72-K571 original issue dated 15 June 2021



Comment ACommenter Request

Modify Ref (A) PAD, Definition paragraph, to add clarification to the terms “Serviceable Part”.

Request justification

The current definition of a “Serviceable Part” only allows for new or serviceable P/N LV18447 or LV19601 to be installed in an engine if a crack is found. However, there is a pre-SB 72-K570 P/N KH18436, which is subject to EASA AD 2019-0282R1, Ref. (B), which could also be eligible to install as an alternative part number as long as it has passed an inspection in accordance with EASA AD 2019-0282R1, Ref. (B). Allowing the installation of an additional serviceable P/N provides flexibility to the operator in case of a module swap while maintaining the safety intent of the proposed rule.

List paragraphs that change; describe (nonobvious) changes

Definitions:

- New Definition for “Serviceable Part”.

Comment BCommenter Request

Modify Ref (A) PAD, On-Wing Inspection paragraph (1), to clarify Table 1 – Compliance Time to specify the required time of accomplishment for new P/N LV19601.

Request justification

Paragraph (1) under On-Wing Inspection specifies the initial inspection of new P/N LV19601 to be within 500 EFC since new. For P/N LV18447 the initial inspection requirement is since embodiment of SB 72-K570/72-K571, Ref. (C) and (D). However, Table 1 – Compliance Time only references the time since embodiment of SB K570/72-K571, Ref. (C) and (D), but not cycles since new, which is applicable to P/N LV19601.

List paragraphs that change; describe (nonobvious) changes

On-Wing Inspection:

- Table 1 – Compliance Time to include time of accomplishment for P/N LV19601.
- Note 1: Include time of accomplishment since new for P/N LV19601.

Comment CCommenter Request

Modify Ref (A) PAD, In-Shop Inspection paragraph (2), to allow the inspection of the affected part in accordance with the appropriate Cleaning, Inspection and Repair manual.



Request justification

Paragraph (2) under In-Shop Inspection specifies that the only method of compliance for engines in shop is SB 72-K618, Revision 2. The Cleaning, Inspection and Repair task 72-32-31-200-801 include an equivalent FPI inspection of the Front Air Seal which addresses the safety concern and can be used as alternate method of compliance to SB 72-618, Revision 2.

List paragraphs that change; describe (nonobvious) changes

In-Shop Inspection:

- (2) Include applicable Cleaning, Inspection and Repair manual task as additional method of compliance for in-shop inspection.

EASA response:***Comment A:***

Comment disagreed. Installation of IPC shaft assemblies having P/N KH18436 in post Rolls-Royce SB Trent 1000 72 K571 / SB Trent 1000 72 K570 engines is not allowed. Rolls-Royce SB Trent 1000 72 K571 / SB Trent 1000 72 K570 define that these modifications are 'one-way interchangeable'. Paragraphs (1) to (6) of the AD are applicable to Group 1 engines, i.e. engines having Rolls-Royce SB Trent 1000 72 K571 / SB Trent 1000 72 K570 embodied. Paragraph (7) provides condition for optional modification in accordance with the instructions of Rolls-Royce SB Trent 1000 72 K571 / SB Trent 1000 72 K570. The definition for the "Serviceable part" is applicable only for the purpose of this AD.

No changes have been made to the Final AD in response to this comment.

Comment B:

Comment agreed: Note 1 was amended to specify that for IPC shaft assemblies having P/N LV19601 the EFC specified in column 'Number of EFC' of the Table 1 of this AD are those accumulated since new.

We have amended the Final AD accordingly.

Comment C:

Comment disagreed. The Cleaning, Inspection and Repair task does not include a task to cover the seal fins. It is a specific inspection of the Stage 1 and Stage 2 dovetails. The Cleaning, Inspection and Repair task CIR 72-32-31-200-811 does cover the seal fins and NMSB 72-K618 just refers to this task. If 72-31-200-811 has been completed, MRO facility shops are able to claim NMSB 72-K618 as being completed. The task 72-31-200-801 is not equivalent.

No changes have been made to the Final AD in response to this comment.



Commenter 3: All Nippon Airways Co., Ltd. – Satoshi Ishibashi – 02/09/2024

Comment #3

Comment A

Definitions - Serviceable Part

We believe that "IPC shaft assembly" does not include Pre-SB 72-K571(P/N KH18436) because de-modification is prohibited in SB 72-K571.

ANA requests to add wording as follows,

Serviceable part: IPC shaft assembly *which is an affected part*, eligible for installation [...]

Comment B

Definitions - Serviceable Part

ANA requests to add wording as follows, Serviceable part: [...]; or an affected part which passed an inspection (no defect found) in accordance with the instructions of the NMSB *or Rolls-Royce NMSB Trent 1000 72-K618 Revision 2*, as defined in this AD.

Comment C

Required Action(s) and Compliance Time(s) - On-wing Inspection

We believe the following content in the first sentence is included in the Table 1.

"Within 500 engine flight cycles (EFC) accumulated by the affected part since new (for P/N LV19601) or since embodiment of Rolls-Royce SB Trent 1000 72-K571 or SB Trent 1000 72-K570 (for P/N LV18447), as applicable,"

ANA requests to delete it.

If EASA doesn't delete it, ANA requests the following actions,

- Please let us know the reason why EASA writes the above content.
- Please revise the wording as follows to clarify.

"Within 500 engine flight cycles (EFC) accumulated by the affected part since new (for P/N LV19601) or since embodiment of Rolls-Royce SB Trent 1000 72-K571 *(for P/N LV18447)* or SB Trent 7000 72-K570 (for P/N LV18447)."



Comment D**Required Action(s) and Compliance Time(s) - In-Shop Inspection**

This paragraph only states that in-shop inspection in accordance with SB 72-AL139 or SB 72-K618 Rev.2 is acceptable to comply with the requirements of on-wing inspection.

As legal requirement of this AD, is it not mandatory to perform in-shop inspection in accordance with SB 72-AL139 at every shop visit?

If it is mandatory, ANA requests to add the following contents to this paragraph,

- At every shop visit, accomplish a visual inspection of the front air seal of each affected part in accordance with the instructions of the NMSB (Method A or Method B). This inspection is not required at shop visit where IPC shaft cycles since SB 72-K570 (Trent 7000) or SB 72-K571 (Trent 1000) is zero.
- Accomplishment of SB 72-K618 Revision 2 is acceptable to comply with the requirements of paragraph (2) of this AD.

Comment E**Required Action(s) and Compliance Time(s) - In-Shop Inspection/Corrective Action(s)**

The part of the Paragraph (2) is duplicable of the contents of the paragraph (3).

But paragraph (3) does not state the corrective action when any cracked affected part is detected during in-shop inspection.

ANA requests to revise the paragraph (3) as follows,

- If, during any on-wing inspection as required by paragraph (1) of this AD, any crack is detected, before next flight, remove the engine from service and, before release to service of the engine, replace the affected part with a serviceable part, as defined in this AD, in accordance with approved Rolls-Royce maintenance instructions.
- If, during any in-shop inspection as specified in paragraph (2) of this AD, any crack is detected, before release to service of the engine, replace the affected part with a serviceable part, as defined in this AD, in accordance with approved Rolls-Royce maintenance instructions.

Comment F**Required Action(s) and Compliance Time(s) - Corrective Action(s)**

ANA requests to revise the location of "," as follows,

[...] before next flight, remove the engine from service in accordance with the instructions of the NMSB, and before release to service of that engine,
[...]

Comment G**Required Action(s) and Compliance Time(s) - Acceptable Method**

"The repetitive inspections must, however, be accomplished on these parts as required by paragraph (1) of this AD" requires the repetitive inspection before the effective date of the AD. It would be stricter than the compliance in the Table 1.

ANA does requests to delete or revise the sentence as follows,

"The next inspections must be accomplished on these parts as required by compliance time of the repeat inspection or the initial inspection in Table 1, whichever is later in paragraph (1) of this AD."

Comment H

Required Action(s) and Compliance Time(s) - Modification (optional)

Why does EASA write "optional" though the modification is legally set as terminate action of EASA AD 2019-0282R1?

We believe that the main intent of this paragraph is just reference information and the modification is not mandated by the AD.

only the last sentence "After modification the engine becomes a Group 1 engine which must be inspected and, depending on findings, corrected in accordance with the requirements of this AD." and other part is just reference information.

Is this correct ?

Comment I

Required Action(s) and Compliance Time(s) - Modification (optional)

"From the effective date of this AD, modification of an engine in accordance with [...], as applicable, is allowed, [...]" can be interpreted as modification is not allowed before the effective date of this AD.

ANA requests to revise as follows,

"Even after the effective date of this AD, modification of an engine in accordance with [...], as applicable, is still allowed, [...]" can be interpreted as modification is not allowed before the effective date of this AD.

Comment J

When will EASA issue the AD?

EASA response:

Comment A:

Comment disagreed. The serviceable part definition as worded allows installation of any future approved IPC assemblies, potentially eligible for installation. The one-way interchangeability of P/N 18436 (pre SB TRENT 1000 72-K571 part) is defined and regulated by SB TRENT 1000 72-K571 and there is no need to narrow down the serviceable part definition of this AD to reflect this fact.

No changes have been made to the Final AD in response to this comment. Agreed



Comment B:

Comment agreed. We have amended the Final AD accordingly.

Comment C:

Comment partially agreed. The cited sentence defines the compliance time for parts installed in the future, while the Table 1 - Compliance Time of the AD provides the compliance time (grace periods) for parts currently installed on engines which may be close to the required inspection thresholds. The Note 1 under the Table 1 of the AD was amended, see Comment #2B

No changes have been made to the Final AD in response to this comment.

The official designation for SB 72-570 applicable to Trent 7000 models is Trent 1000 72 K570.

No changes have been made to the Final AD in response to this comment.

Clarification that Rolls-Royce SB Trent 1000 72-K571 is also applicable to P/N LV18447 added.

We have amended the Final AD accordingly.

Comment D:

Comment noted. The AD mandates actions to be accomplished at aeroplane level and therefore primary mandates the on-wing inspection of front air seal of IPC shaft assemblies, having Part Number (P/N) LV18447 or P/N LV19601. For the purpose of this AD, the in-shop inspection is an acceptable method to comply with the requirements of the paragraph (1). This does not affect any other regulatory requirements (particularly Part 145) mandating to release an engine after an in-shop intervention in airworthy condition using the applicable maintenance data issued by the (engine) type certificate holder and that there are no known non-compliances which endanger flight safety.

No changes have been made to the Final AD in response to this comment.

Comment E:

Comment disagreed. Paragraph (3) is linked to paragraph (1) - the on-wing inspection - and requires removal of the engine from service. By removal of the engine from service the unsafe condition at aeroplane level -which is the purpose of the AD - is rectified. However, the paragraph (3) goes further and requires that before release to service of such an engine, the affected part shall be replaced.



In paragraph (2) - applicable to in-shop inspection - is stated that the in-shop inspection is acceptable, provided that the applicable compliance time and intervals as defined in paragraph (1) of this AD are not exceeded and found discrepancies are corrected, as applicable, in accordance with the instructions of the NMSB or Rolls-Royce NMSB Trent 1000 72-K618 Revision 2 before release to service of that engine. This ensures that the engine is release with respect of this AD in airworthy condition.

No changes have been made to the Final AD in response to this comment.

Comment F:

Comment disagreed. The part of sentence "before release to service" only amplifies or evaluate the information concerning the statement "remove the engine from service in accordance with the instructions of the NMSB and, ..., replace the affected part". The commas in brackets 'and [,]...[,]' replace the affected part' mark a relative clause.

No changes have been made to the Final AD in response to this comment.

Comment G:

Comment disagreed. The first sentence of the paragraph (5) states that "The IPC shaft assemblies listed (by P/N and serial number) in Appendix 3 of the NMSB are known to have been already inspected (before the effective date of this AD) in accordance with applicable maintenance instructions equivalent to those of the NMSB, and are therefore considered compliant with the initial inspection requirement of paragraph (1) of this AD." Additionally, further clarifies that only the repetitive inspections shall be accomplished in accordance with the paragraph (1). Paragraph (5) does not require any repetitive inspection to be accomplished before the effective date of the AD. The first repetitive inspection shall be accomplished at interval not to exceed 300 FC after the initial inspection.

No changes have been made to the Final AD in response to this comment.

Comment H:

Comment noted. Modification in accordance with the instructions of Rolls-Royce SB Trent 1000 72 K571 (Trent 1000 engines) or SB Trent 1000 72 K570 (Trent 7000 engines) is not required by paragraph (6) of AD 2019-0282R1 but is only recognised as a terminating action for the repetitive inspections of IPC shaft assemblies, having Part Number KH18436. The intent of paragraph (7) of this AD is to confirm that after embodiment of Rolls-Royce SB Trent 1000 72 K571 (Trent 1000 engines) or SB Trent 1000 72 K570 (Trent 7000 engines) the engine becomes a Group 1 engine and therefore the requirements of (1) to (6) of the AD become applicable to this engine.

No changes have been made to the Final AD in response to this comment.



Comment I:

Comment noted. The interpretation is not correct. The AD does not impose any restriction or action before the effective date of the AD. Paragraph (7) only defines the conditions under which the embodiment of Rolls-Royce SB Trent 1000 72 K571 (Trent 1000 engines) or SB Trent 1000 72 K570 (Trent 7000 engines) is allowed.

No changes have been made to the Final AD in response to this comment.

Comment J:

EASA issues the final AD after review of the comments received during the consultation period of the PAD 24-100 and drafting, coordinating with the product certificate holder, agreeing on the appropriate responses and as the case may be on necessary changes of the wording of the final AD.

No changes have been made to the Final AD in response to this comment.

