

TITLE

POWER PLANT - TRANSMITTAL OF ROLLS ROYCE ALERT SERVICE BULLETIN AE 3007A-A-72-447/AE3007C-A-72-346, ENGINE - REPLACE SPECIFIC 3RD STAGE COMPRESSOR WHEELS

EFFECTIVITY

MODEL	SERIAL NUMBERS
750 (Citation X)	-0001 thru -0313
750 (Citation X+)	-0501 thru -0532

NOTE: Maintenance facilities authorized by Rolls Royce are the only facilities that can complete this service document.

REASON

Inspection of a third stage compressor wheel from an in-flight shutdown engine discovered a low cycle fatigue crack in the dovetail slot that allowed one 3rd-stage compressor blade to release.

DESCRIPTION

This service letter transmits Rolls Royce Alert Service Bulletin AE 3007A-A-72-447/ AE 3007C-A-72-346 which provides instructions to inspect the third stage compressor wheels in the engine and replace, if necessary.

COMPLIANCE

INFORMATIONAL. This service document is for informational purposes only.

A service document published by Textron Aviation may be recorded as *completed* in an aircraft log only when the following requirements are satisfied:

- 1) The mechanic must complete all of the instructions in the service document, including the intent therein.
- 2) The mechanic must correctly use and install all applicable parts supplied with the service document kit. Only with written authorization from Textron Aviation can substitute parts or rebuilt parts be used to replace new parts.
- 3) The mechanic or airplane owner must use the technical data in the service document only as approved and published.
- 4) The mechanic or airplane owner must apply the information in the service document only to aircraft serial numbers identified in the *Effectivity* section of the document.
- 5) The mechanic or airplane owner must use maintenance practices that are identified as acceptable standard practices in the aviation industry and governmental regulations.

No individual or corporate organization other than Textron Aviation is authorized to make or apply any changes to a Textron Aviation-issued service document or flight manual supplement without prior written consent from Textron Aviation.

Textron Aviation is not responsible for the quality of maintenance performed to comply with this document, unless the maintenance is accomplished at a Textron Aviation-owned Service Center.

REFERENCES

Rolls Royce Alert Service Bulletin AE 3007A-A-72-447/AE3007C-A-72-346

September 30, 2020

SL750-71-15
Page 1 of 2

Textron Aviation Customer Service, P.O. Box 7706, Wichita, KS 67277, U.S.A. 1-316-517-5800

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PUBLICATIONS AFFECTED

None

ACCOMPLISHMENT INSTRUCTIONS

1. Do the attached Rolls-Royce Rolls Royce Alert Service Bulletin AE 3007A-A-72-447/AE3007C-A-72-346.
2. Make an entry in the airplane logbook that states compliance and method of compliance with this service document and a separate entry for the Rolls-Royce document.

NOTE: Textron Aviation recommends that compliance with all service documents is reported to a maintenance tracking system provider.

- Complete a record of compliance. (Maintenance Transaction Report, Log Book Entry, or other record of compliance.)
- Put a copy of the completed record of compliance in the airplane logbook.
- Send a copy of the completed record of compliance to the maintenance tracking system provider used.

ENGINE – REPLACE SPECIFIC 3RD-STAGE COMPRESSOR WHEELS

1. PLANNING INFORMATION

A. Effectivity

(1) Engines

All AE 3007A, AE 3007A1, AE 3007A1/1, AE 3007A1/2, AE 3007A1/3, AE 3007A1E, AE 3007A1P, AE 3007A2, and AE 3007A3 engines with 3rd-stage compressor wheel part number 23065303 and the serial numbers listed below in TABLE 1.

All AE 3007C, AE 3007C1, and AE 3007C2 engines with 3rd-stage compressor wheel part number 23065303 and the serial numbers listed below in TABLE 1.

TABLE 1 - Serial Numbers of Affected P/N 23065303 3rd-stage Compressor Wheels.

L273680	L273682	L273684	L273685	L273686	L273687	L273688
L273689	L273690	L273692	L273693	L273694	L273695	L273696
L273697	L273698	L273699	L273700	L273701	L273702	L273703
L273704	L273705	L273706	L273707	L273708	L273709	L273710
L273711	L273712	L273713	L273714	L273715	L273716	L273717
L273718	L273719	L273720	L273721	L273722	L273723	L273724
L273725	L273726	L273727	L273728	L273729	L273730	L273731
L273732	L273733	L273734	L273735	L273736	L273737	L273738
L273739	L273740	L273741	L273742	L273743	L273744	L273745
L273746	L273747	L273748	L273749	L273750	L273751	L273752
L273753	L273754	L273755	L273756	L273757	L273758	L273759
L273760	L273761	L273762	L273763	L273764	L273785	L273786
L273787	L273788	L273789	L273790	L273791	L273792	L273793
L273794	L273795	L273796	L273797	L273799	L273800	L273801
L273802	L273803					

(2) Spares - Not affected

B. Reason

Inspection of a 3rd-stage compressor wheel from an in-flight shutdown engine discovered a low cycle fatigue crack in the dovetail slot that allowed one 3rd-stage compressor blade to release. The crack initiated in the dovetail slot due to a sharp corner in the wheel slot geometry. The broaching process was identified as the cause of the sharp corner. Inspection of other manufacturing lots identified similar wheel slot features, which require removal from the field.

July 29, 2020

AE 3007A-A-72-447
AE 3007C-A-72-346

ALERT

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SERVICE BULLETIN

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This service bulletin gives you the procedure to remove the designated 3rd-stage compressor wheels identified in the Effectivity section.

C. Description

This service bulletin gives you the procedure to remove the affected 3rd-stage compressor wheels from the engine at an authorized maintenance facility.

D. Approval

Technical aspects are FAA approved.

E. Manpower

In Service Not applicable.

Engine Removed Approximately 40.0 man-hours are necessary to do this service bulletin. If you only remove the 3rd-stage compressor wheel from the compressor rotor.

Approximately 125.0 man-hours are necessary to do this service bulletin if you disassemble the engine only to remove the 3rd-stage compressor wheel.

F. Compliance - Mandatory

This service bulletin is mandatory. This service bulletin requires removal of the affected 3rd-stage compressor wheel (listed in TABLE 1) in accordance with the operating cycles of 3rd-stage wheels defined in TABLE 2, TABLE 3, and TABLE 4. This service bulletin cannot be accomplished with the engine installed on the aircraft.

TABLE 2 - Required Removal of 3rd-stage Compressor Wheels for AE 3007A, AE 3007A1, AE 3007A1/1, AE 3007A1/2, AE 3007A1/3, AE 3007A1P, and AE 3007A3 engines.

For 3rd-stage compressor wheel with the following CSN as of April 14, 2020	Removal Prior to accumulating cycles
16,000 or more CSN	25
15,000 to 15,999	200
13,000 to 14,999	500
11,400 to 12,999	1,000
Fewer than 11,400	Before reaching 12,400 total or when engine is at AMC for shop visit prior to 12,400 CSN

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SERVICE BULLETIN

TABLE 3 - Required Removal of 3rd-stage Compressor Wheels for AE 3007A1E and AE 3007A2 Engines.

For 3rd-stage compressor wheel with the following CSN as of April 14, 2020	Removal Prior to accumulating cycles
9,000 or more CSN	500
7,500 to 8,999	1000
Fewer than 7,500	Before reaching 8,500 total or when engine is at AMC for shop visit prior to 8,500 CSN

TABLE 4 - Required Removal of 3rd-stage Compressor Wheels for AE 3007C, AE 3007C1, and AE 3007C2 Engines.

For 3rd-stage compressor wheel with the following CSN as of April 14, 2020	Removal Prior to accumulating cycles
14,000 or more CSN	500
10,200 to 13,999	1000
Fewer than 10,200	Before reaching 11,200 total or when engine is at AMC for shop visit prior to 11,200 CSN

- G. Interchangeability – Not affected
- H. Material Availability – Not applicable
- I. Tooling – Not applicable
- J. Weight and Balance - Not affected
- K. Electrical Load Data - Not affected
- L. References
 - (1) AE 3007A Series Illustrated Parts Catalog (IPC), CSP33002.
 - (2) AE 3007C Series Illustrated Parts Catalog (IPC), CSP33001.
 - (3) AE 3007 Series Engine Manual (EM), CSP31010.
 - (4) Notice to Operators (NTO) AE 3007A-030, Parts Return Process.
 - (4) Notice to Operators (NTO) AE 3007C-020, Parts Return Process.
- M. Prerequisites – None
- N. Corequisites – None

July 29, 2020

AE 3007A-A-72-447
AE 3007C-A-72-346

ALERT

Rolls-Royce

SERVICE BULLETIN

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2. ACCOMPLISHMENT INSTRUCTIONS

A. Disassemble the engine.

- (1) Remove the external components from the high-pressure compressor assembly (Ref. TASK 72-00-30-000-802 or 72-00-30-000-803, EM).
- (2) Disassemble the compressor section (Ref. TASK 72-30-00-000-802 or 72-30-00-000-803, EM).
- (3) Partially disassemble the compressor rotor (Ref. TASK 72-35-01-000-804, EM). Remove the 3rd-stage bladed wheel assembly.
- (4) Remove the blades from the 3rd-stage bladed wheel assembly (Ref. TASK 72-35-01-000-804, EM).
- (5) Clean the 3rd- stage compressor blades sufficiently to let you do the visual inspection (Ref. TASK 72-35-03-100-801, EM).
- (6) Do the Inspection of the 3rd-stage compressor blades (Ref. TASK 72-35-03-200-801, EM).
- (7) Clean the 3rd-stage compressor wheel (Ref. TASK 72-35-27-100-801, EM).
- (8) Do the fluorescent penetrant inspection of the 3rd-stage compressor wheel (Ref. TASK 72-35-27-200-801, EM).
- (9) Make a replicast of two dovetail slots on the aft side of the slot between 0.020-0.100 in. (0.51-2.54 mm) from aft face of wheel as shown in Figure 1.
- (10) Install replicast of the two slots on a comparator to check for acceptable condition noted in Figures 2 and 3 and unacceptable condition in Figures 4 and 5. Take photographs of the results.
- (11) Record your fluorescent penetrant inspection and replicast results on the Service Bulletin Compliance Form.

NOTE: This form is not a substitute for the Service Engineering Feedback Form.

- (12) The removed wheel must be returned to Rolls-Royce.

B. Assemble the engine.

- (1) Use a new or serviceable 3rd-stage compressor wheel and the serviceable removed blades when you assemble the compressor rotor assembly (Ref. TASK 72-35-01-400-804, EM).
- (2) Assemble the compressor section (Ref. TASK 72-30-00-400-802 or 72-30-00-400-803, EM).
- (3) Install the external components from the high-pressure compressor assembly (Ref. TASK 72-00-30-400-802 or 72-00-30-400-803, EM).

C. Return the removed 3rd-stage compressor wheel with the Parts Return Report (Ref. AE 3007A-030, NTO).

July 29, 2020

AE 3007A-A-72-447
AE 3007C-A-72-346

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Page 4 of 12

ALERT

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- D. Return the attached Service Bulletin Compliance Form to:

Corporate Customer Support
Attn: Data Services Manager
450 South Meridian Street
Indianapolis, Indiana 46225-1103
USA
Mail Code MC-N3-05

FAX 317-230-4010
Email cra.rel.data@rolls-royce.com

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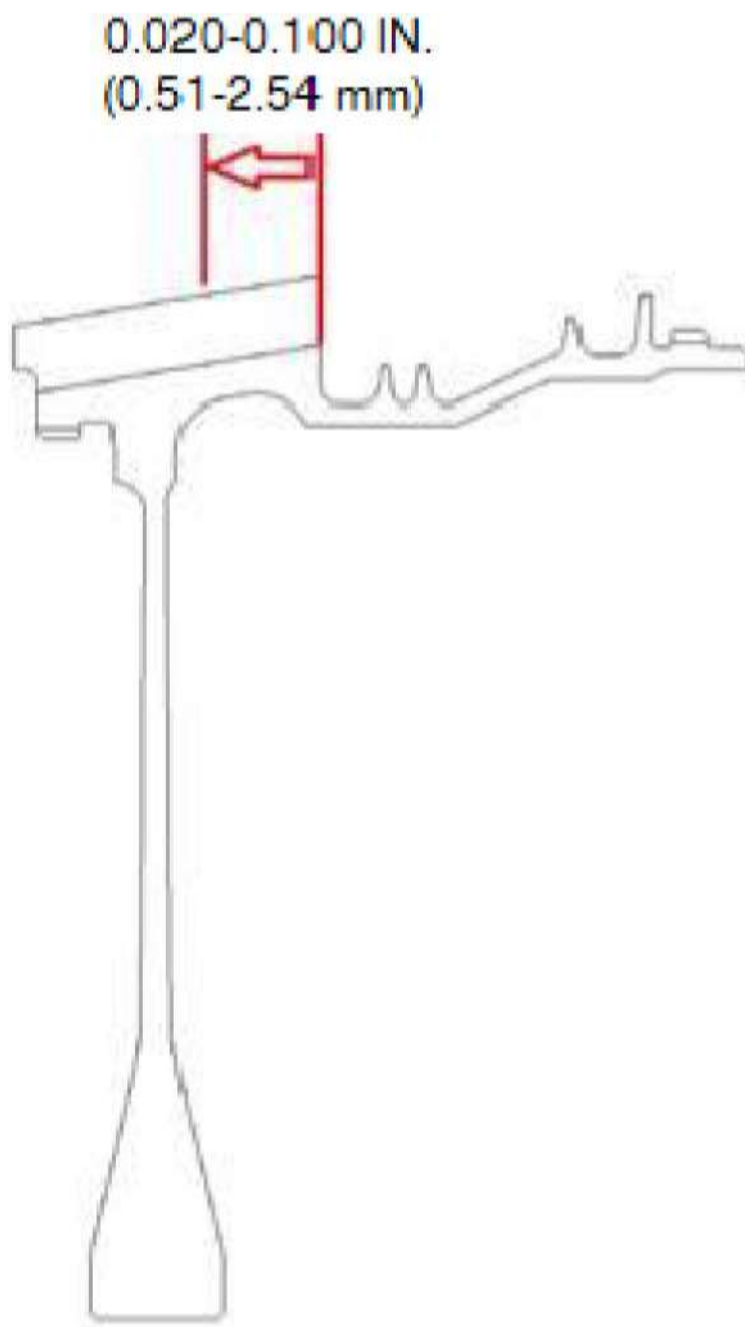
- E. Record compliance with this service bulletin in the applicable section of the engine logbook.

July 29, 2020

AE 3007A-A-72-447
AE 3007C-A-72-346

ALERT

Rolls-Royce
SERVICE BULLETIN

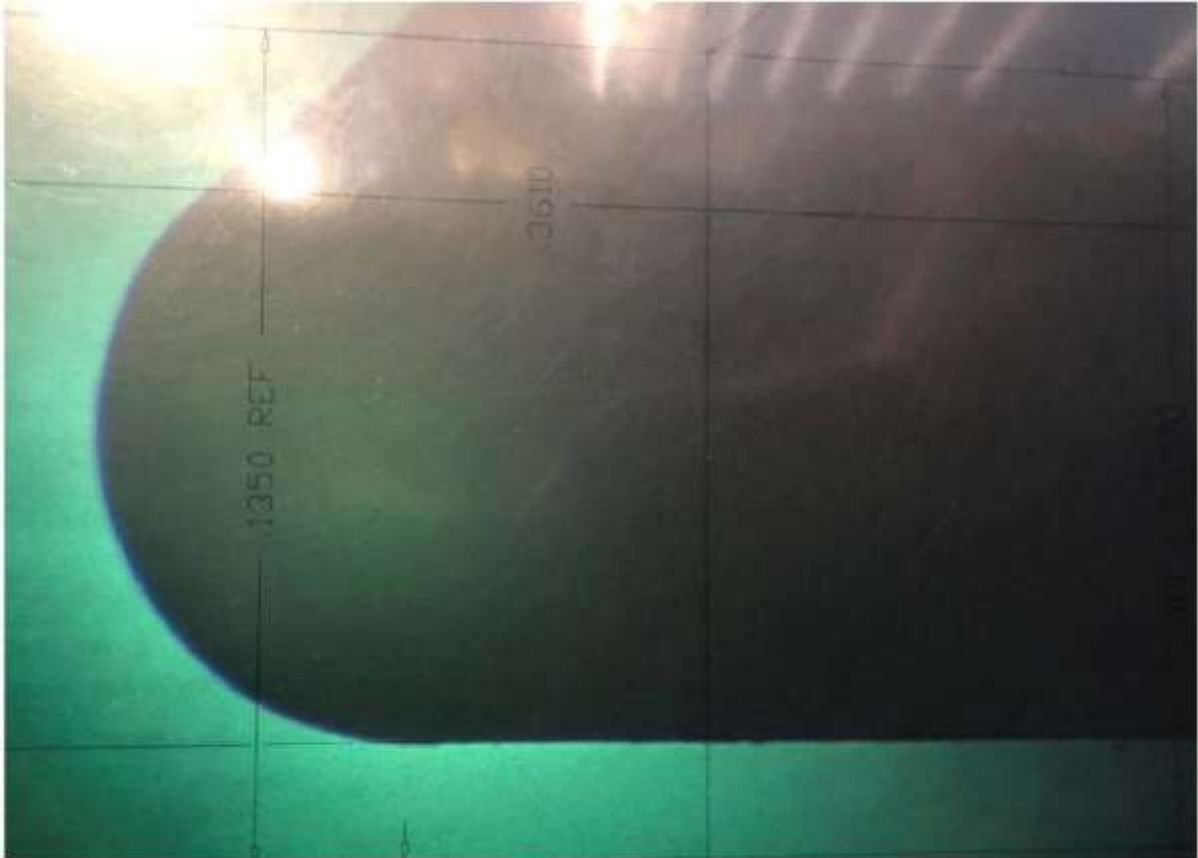


Take Replicast of Dovetail Slots from Aft Face of 3rd-stage Compressor Wheel
FIG. 1

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ALERT

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Acceptable Dove Tail Slot - Smooth Transition Between Fillet Radius and Slot Bottom
FIG. 2

July 29, 2020

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AE 3007A-A-72-447
AE 3007C-A-72-346

Page 7 of 12

EXPORT CONTROLLED

ALERT

Rolls-Royce
SERVICE BULLETIN



Acceptable Dove Tail Slot - Smooth Transition Between Fillet Radius and Slot Bottom
FIG. 3

July 29, 2020

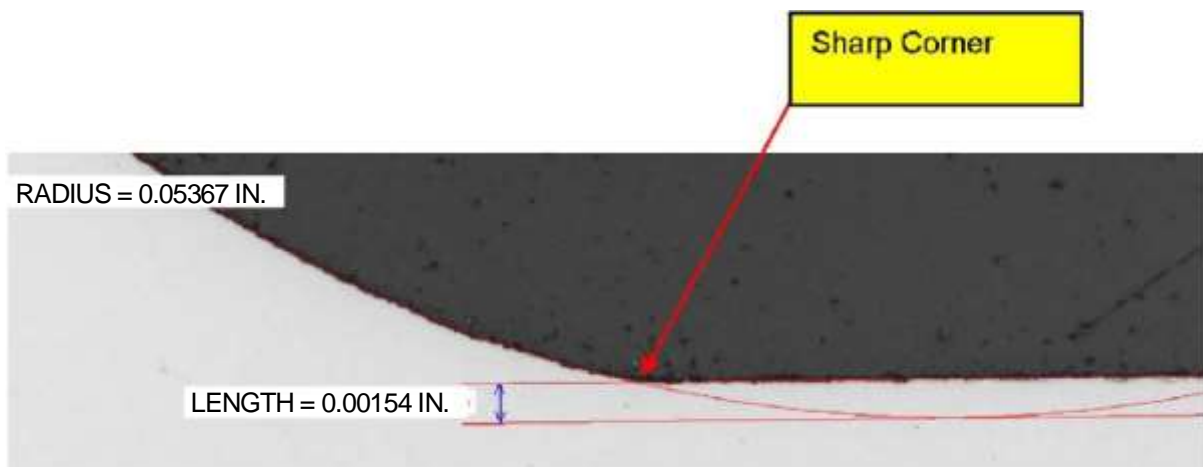
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AE 3007A-A-72-447
AE 3007C-A-72-346

Page 8 of 12

ALERT

Rolls-Royce
SERVICE BULLETIN

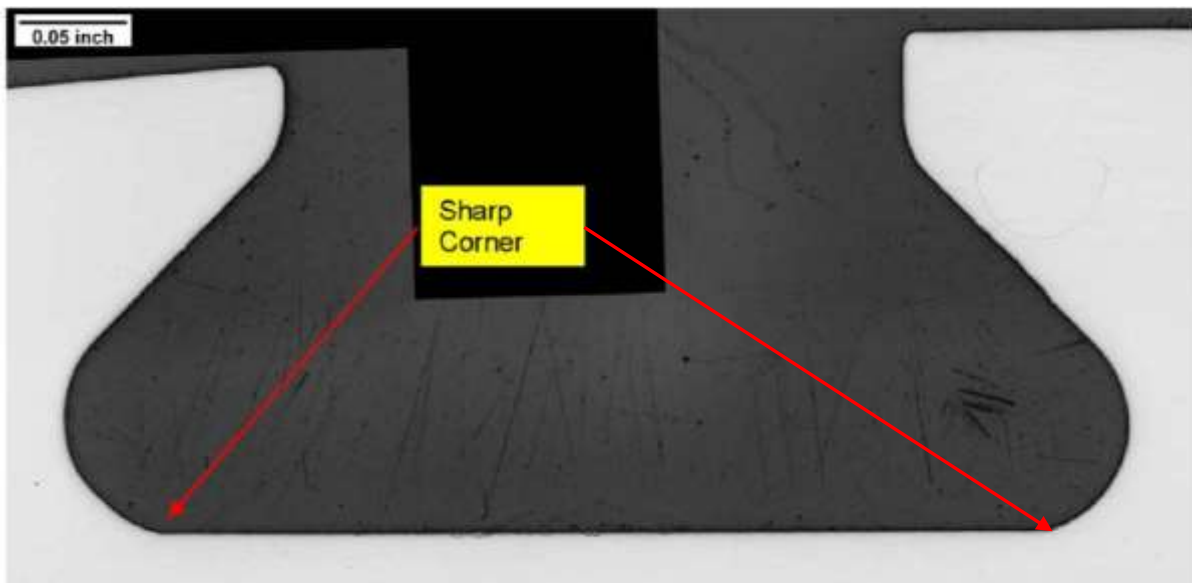


Rejectable Dovetail Slot - Transition Feature with a Sharp Corner (No Radius) Between Fillet Radius and Slot Bottom. Dimensions are for Reference Only.
FIG. 4

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Rejectable Dovetail Slot - Transition Feature with a Sharp Corner (No Radius) Between
Dovetail Fillet Radius and Slot Bottom

FIG. 5

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3. MATERIAL INFORMATION

A. Configuration Chart

NEW P/N	NAME	QTY/ENG
23065303	Wheel, Compressor – 3rd-stage	1

B. Consumable Materials

- (1) Cloth, lint-free, MIL-C-85043.
- (2) Solvent, dry-cleaning, P-D-680.
- (3) Solvent, petroleum, AMS 3160.
- (4) Spirits, mineral, EMS-6.

C. Expendable Parts – None

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July 29, 2020

AE 3007A-A-72-447
AE 3007C-A-72-346

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Page 11 of 12

ALERT

Rolls-Royce

SERVICE BULLETIN

EXPORT CONTROLLED

SERVICE BULLETIN COMPLIANCE FORM

Engine S/N	
Engine Model	
HPC3 Wheel P/N	
HPC3 Wheel S/N	
HPC3 Wheel TSN	
HPC3 Wheel CSN	

HPC3 FPI Results	Acceptable	
	Reject	

Send Photographs of any FPI Reject to Rolls-Royce Service Engineering.

HPC3 Inspection Results	Acceptable – no step in fillet radius transition	
	Reject - Step in Fillet radius transition	

Send Photographs of the results of the replicast to Rolls-Royce Service Engineering

FAX this Service Bulletin Compliance Form to:
If you cannot send this form by fax,
transmit the above information to
the AE Service Data Manager by Email.

Rolls-Royce Corporation
Corporate Customer Support
Attn: Data Services Manager
450 South Meridian Street
Indianapolis, Indiana 46225-1103
USA
Mail code: MC-N3-05

FAX 317-230-4010
Email cra.rel.data@rolls-royce.com

July 29, 2020

AE 3007A-A-72-447
AE 3007C-A-72-346

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Page 12 of 12