A Textron Company

ALERT SERVICE BULLETIN 206-07-115

21 May 2007
Revision A, 15 January 2008
Revision B, 5 May 2008
Revision C, 4 February 2009
Revision D, 9 July 2018

MODEL AFFECTED: **206A/B and TH-67**

SUBJECT: **POWER TURBINE RPM (N2) STEADY STATE OPERATION AVOIDANCE, INTRODUCTION OF.**

HELICOPTERS AFFECTED: **Model 206A serial numbers 004 through 660 and 672 through 715 converted to model 206B per the Service Instruction BHT-206-SI-80.**
Model 206B serial numbers 661 through 671, 716 through 4690, and TH-67 serial numbers 5101 through 5313.

COMPLIANCE: Within 7 days after release of Revision D of this bulletin.

DESCRIPTION:

Revision D is a complete reissue of this Alert Service Bulletin (ASB). Rolls-Royce Corporation has revised the maximum allowable output shaft speeds for Series II engines (250-C20, 250-C20B, and 250-C20J). The new tables have been revised to include the power turbine RPM (N2) speed avoid range between 71% and 88%. Refer to Rolls-Royce ALERT CEB A-1400 Revision 6 dated April 12, 2018. **Revision D** of this bulletin provides the instructions to install the new decal 230-075-213-129 to affected helicopters.

APPROVAL:

The engineering design aspects of this bulletin are Transport Canada Civil Aviation (TCCA) approved.

CONTACT INFO:

For any questions regarding this bulletin, please contact:

Bell Product Support Engineering - Light Helicopters
Tel: 450-437-2862 / 1-800-363-8023 / pselight@bellflight.com

MANPOWER:

Approximately 0.5 man-hours are required to complete this bulletin. Man-hours are based on hands-on time, and may vary with personnel and facilities available.

WARRANTY:

There is no warranty credit applicable for parts or labor associated with this bulletin.

MATERIAL:

Required Material:

Part Number	Nomenclature	Qty (Note)
230-075-213-129	Decal	1 (1)

NOTE 1: The decal may be locally manufactured using lettering of white color (No. 17875) on black background color (No. 17038). Characters to be 10 point Spartan Blackfont and color per FED STD 595. The text for the decal is detailed in Figure 1 and should be in capital letters.

Consumable Material:
The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Supply Center.

Part Number	Nomenclature	Qty (Note)	Reference *
2110-00010-00	Aliphatic Naphtha	1 gallon (1)	C-305
2010-06640-00	Edge Sealer	8 ounces (1)	C-349

* C-XXX numbers refer to the consumables list in the BHT-ALL-SPM, Standard Practices Manual

NOTE 1: Quantity indicated is the format the product is delivered in. Actual quantity required to accomplish the instructions in this bulletin may be less.

SPECIAL TOOLS:

None required.

WEIGHT AND BALANCE:

Not affected.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

BHT-ALL-SPM, Standard Practice Manual
BHT-206B-FM-1, Rotorcraft Flight Manual
BHT-206B3-FM-1, Rotorcraft Flight Manual
Rolls-Royce Corporation Alert Commercial Engine Bulletin CEB A-1400 Revision 6 dated April 12, 2018
Rolls-Royce Corporation Alert Commercial Engine Bulletin CEB A-1174 Revision 6 dated August 1, 1989

PUBLICATIONS AFFECTED:

BHT-206A/B-SERIES-IPB, Illustrated Parts Breakdown, Chapter 11
BHT-206A/B-SERIES-MM-2, Maintenance Manual, Chapter 11
BHT-206B-FM-1, Rotorcraft Flight Manual, Section 1
BHT-206B3-FM-1, Rotorcraft Flight Manual, Section 1

ACCOMPLISHMENT INSTRUCTIONS:

1. Prepare helicopter for maintenance.

2. Remove existing 230-075-213-125 decal from instrument panel. Clean the area with aliphatic naphtha (C-305) (BHT-ALL-SPM, Chapter 8).

3. Install 230-075-213-129 decal on the instrument panel below the Nr/N2 RPM dual tachometer indicator. Apply edge sealer (C-349) over the installed decal (BHT-ALL-SPM, Chapter 8).

-NOTE-

The previous Rotorcraft Flight Manual temporary revision (BHT-206B-FM-1-TR) covering CEB A-1174 will remain in effect (if applicable).

-NOTE-

The required Flight Manual revisions are being delivered to current owners/operators registered on the Technical Publications distribution list on record with Bell. If the Flight Manual revisions are not being received owners/operators may contact Technical Publications at publications@bellflight.com or +1-817-280-2584 to obtain a copy.

4. Insert the applicable revision to the Rotorcraft Flight Manual of the affected helicopters.

   a. Insert the BHT-206B-FM-1 Revision B-54, or subsequent revision, to the Rotorcraft Flight Manual.

or

   b. Insert the BHT-206B3-FM-1 Revision 17, or subsequent revision, to the Rotorcraft Flight Manual.

5. Make an entry in the helicopter logbook and historical service records indicating compliance with this Alert Service Bulletin.

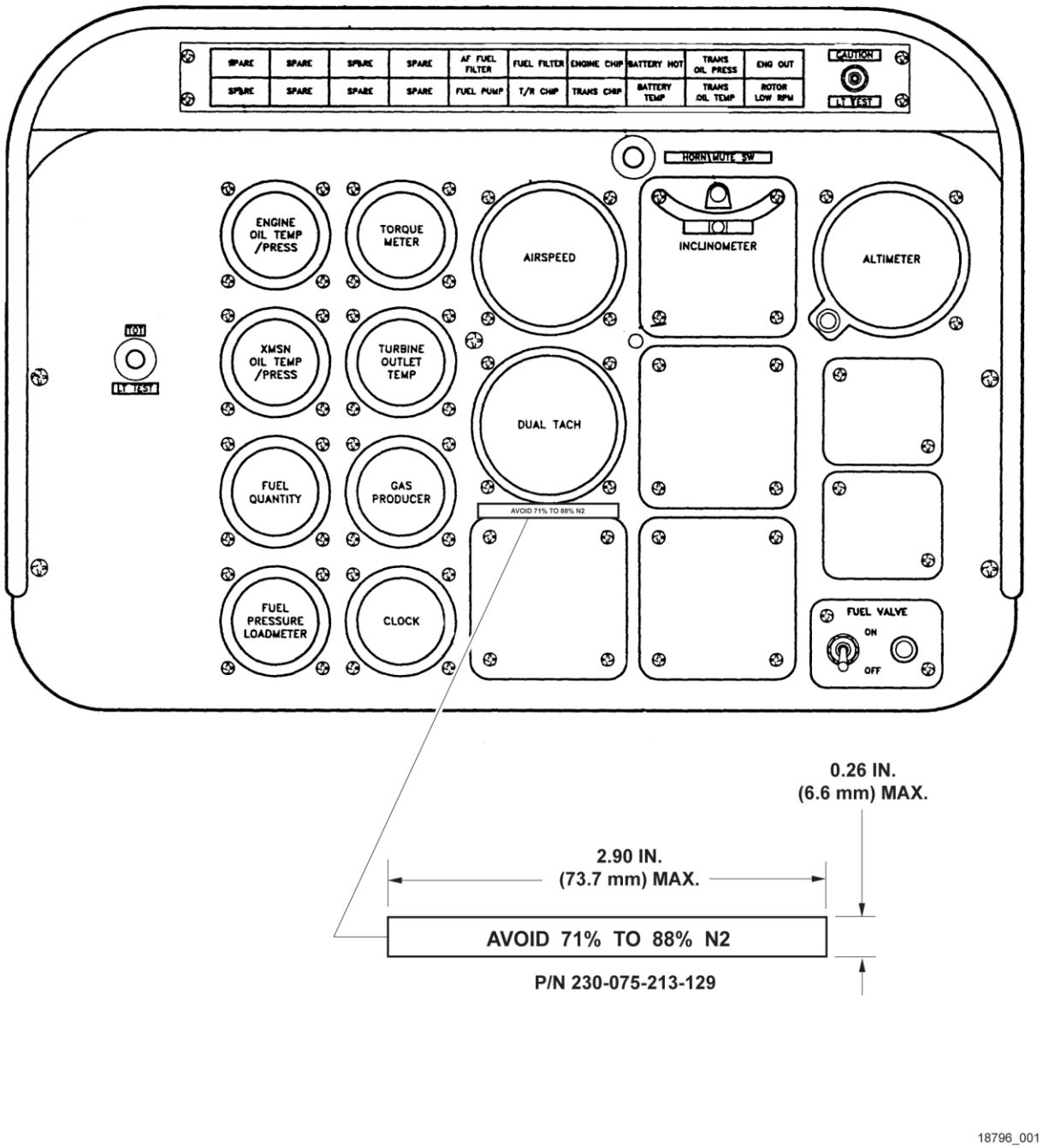


Figure 1 - Typical 206B Instrument Panel Layout
(May vary depending on model and serial number applicability)

ALERT
COMMERCIAL ENGINE BULLETIN

Rolls-Royce®

ENGINE, TURBINE ASSEMBLY - STEADY-STATE OPERATION AVOIDANCE RANGE LIMIT

1. PLANNING INFORMATION

A. Effectivity

(1) Engines

All Rolls-Royce Model M250®-C20, -C20R, -B17 and -B17F Series engines are affected by this Commercial Engine Bulletin (CEB).

(2) Spares - Not affected

B. Reason

This Alert CEB has been released by Rolls-Royce to heighten awareness of the N2 speed avoidance range for Series II engines. It is required to observe the speed avoidance range and operating procedures to minimize the possibility of power turbine failure.The required engine N2 speed avoidance range is dependent upon the part number of the Power Turbine Wheel in service, engine model, and the OEM application in which the engine is installed. Part numbers of the 3rd-stage and 4th-stage Turbine Wheels in service, engine models, and the OEM applications affected are as follows:

(1) Enhanced Power Turbine Fitted with P/N 23065818 3rd-stage Turbine Wheel and P/N 23055944 4th-stage Turbine Wheel or P/N M250-10445 4th-stage Turbine Wheel.

For normal operation, all OEM applications are affected. The engine N2 speed avoidance range is dependent upon the part number of the 4th-stage Turbine Wheel installed and the engine model.

(2) Non-Enhanced Power Turbine Fitted with P/N 23065833 3rd-stage Turbine Wheel.

For normal operation, the following OEM applications are affected: Agusta A109 (all models), Soloy B206L/R and Eurocopter BO105 (all models). In addition, this speed avoidance range is applicable during One-Engine-Inoperative (OEI) operation of multi-engine aircraft. P/N 23065833 wheel is no longer manufactured and so alternative options for replacement of the wheel at next turbine overhaul are discussed in paragraph 2.C.(1)(d).

(3) Non-Enhanced Power Turbine Fitted with P/N 23001967 3rd-stage Turbine Wheel and P/N 6853279 4th-stage Turbine Wheel.

No N2 speed avoidance range is required for any OEM application. P/N 23001967 and P/N 6853279 wheels are not affected by this CEB and are mentioned only for completeness.

December 22, 2006
Revision 6
April 12, 2018

M250-C20 Series CEB A-1400
M250-C20R Series CEB A-72-4095
M250-B17 Series TP CEB A-1343
M250-B17F Series TP CEB A-72-2091

C. Description

This CEB requires Operators to avoid engine N2 steady-state operation in the speed avoidance range as specified by 3rd-stage turbine wheel part number and 4th-stage turbine wheel part number in the following wording and charts. Transition through the speed range is to be accomplished as expediently as possible. In autorotation, with N2 split from NR and throttle in the Ground Idle position, unrestricted operation within the speed avoidance range is permitted. Transient operation in the speed avoidance range during recovery from autorotation is permitted.

NOTE: Transient Operation is defined as no dwell at an N2 speed of more than a 1 second duration.

D. Approval

Technical aspects are FAA approved.

E. Compliance

Compliance Code 1: To be complied with immediately.

F. Interchangeability – Not affected

G. Material Availability

PART NUMBER	QTY/ENGINE	NAME	MODEL
23065833	1	Third-stage, Turbine Wheel	C20 Series, C20R Series
23065818	1	Third-stage, Turbine Wheel	B17 Series, B17F Series, C20 Series, C20R Series, C20S
23055944	1	Fourth-stage, Turbine Wheel	B17 Series, B17F Series, C20 Series, C20R Series, C20S
M250-10445	1	Fourth-stage, Turbine Wheel	B17 Series, B17F Series, C20 Series, C20R Series, C20S

H. Tooling – Not affected

I. Weight and Balance – Not affected

J. Electrical Load Data – Not affected

K. References

(1) 10W2 Operation and Maintenance Manual, Turboshaft Models, M250-C20, -C20B, -C20F, -C20J, -C20S, -C20W (OMM).

(2) 10W3 Overhaul Manual, Turboshaft Models M250-C20, -C20B, -C20F, -C20J, -C20S, -C20W (O/H).

(3) 10W4 Illustrated Parts Catalog, Turboshaft Models M250-C20, -C20B, -C20C, -C20F, -C20J, -C20S, -C20W (IPC).

(4) 11W2 Operation and Maintenance Manual, Turboprop Models M250-B17, -B17B, -B17C, -B17D, -B17E (OMM).

(5) 11W3 Overhaul Manual, Turboprop Models M250-B17, -B17B, -B17C, -B17D, -B17E (O/H).

(6) 11W4 Illustrated Parts Catalog, Turboprop Models M250-B17, -B17B, -B17C, -B17D, -B17E (IPC).

(7) CSP21007 Operation and Maintenance Manual, Turboshaft Models M250-C20R, -C20R/1, -C20R/2, -C20R/4 (OMM).

(8) GTP5232-3 Overhaul Manual, Turboshaft Models M250-C20R, -C20R/1, -C20R/2, -C20R/4 (O/H).

(9) CSP23007 Illustrated Parts Catalog, Turboshaft Models M250-C20R, -C20R/1, -C20R/2, -C20R/4 (IPC).

(10) CSP21008 Operation and Maintenance Manual, Turboprop Models M250-B17F, -B17F/1, -B17F/2 (OMM).

(11) GTP5243-3 Overhaul Manual, Turboprop Models M250-B17F, -B17F/1, -B17F/2 (O/H).

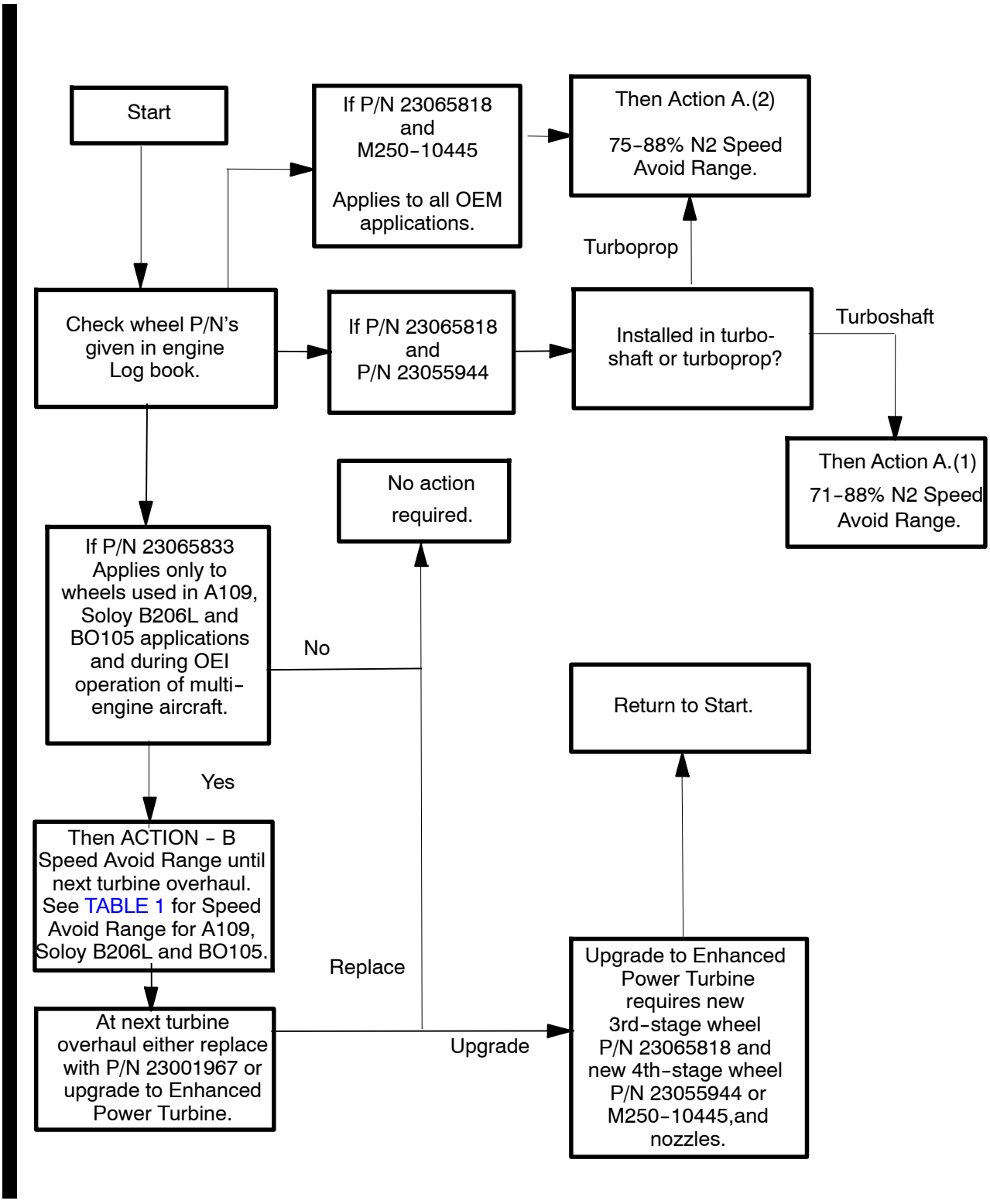
(12) CSP23008 Illustrated Parts Catalog, Turboprop Models M250-B17F, -B17F/1, -B17F/2 (IPC).

L. Prerequisites - None

2. ACCOMPLISHMENT INSTRUCTIONS

A. Identification of Wheel and Action Required.

The part number of the power turbine wheels installed in a Model M250 Series II engine is recorded in the engine logbook, Turbine Assembly, Assembly Record, Part V. The part number must be used to identify the appropriate action described in paragraph 2.B. or 2.C. The flowchart that follows is included as a simple guide to help identify the appropriate action for each wheel type.



B. Action A

(1) This action is applicable to all Rolls-Royce M250-C20 Series (except M250-C20S) and -C20R Series Turboshaft Engines used in all Turboshaft OEM applications fitted with enhanced power turbine wheels P/N 23065818 3rd-stage Turbine Wheel and P/N 23055944 4th-stage Turbine Wheel.

A 71% to 88% engine N2 steady-state speed avoidance range is required for all operational practices. Rolls-Royce must be consulted for additional guidance on the speed avoidance range for any OEM application that has a potential steady-state operating speed below 89% N2.

NOTE: Transient operation only is permitted in the speed avoidance range. Any exposure in the speed avoidance range must be minimized as much as possible.

This action applies to all flight and ground maintenance (including track and balance) operational practices. Operation within the speed avoidance range is permitted for preflight and postflight checks specified in OEM flight manuals.

NOTE: In autorotation, with N2 split from NR and throttle in the Ground Idle position, unrestricted operation within the speed avoidance range is permitted. Transient operation in the speed avoidance range during recovery from autorotation is permitted.

NOTE: Transient Operation is defined as no dwell at an N2 speed of more than a one second duration.

(2) This action is applicable to all Rolls-Royce M250-B17 Series, -B17F Series and -C20S Turboprop Engines used in all Turboprop OEM applications fitted with enhanced power turbine wheels P/N 23065818 3rd-stage Turbine Wheel and P/N 23055944 4th-stage Turbine Wheel.
This action is also applicable to all Rolls-Royce M250 Series II Engines used in all OEM applications fitted with enhanced power turbine wheels P/N 23065818 3rd-stage Turbine Wheel and P/N M250-10445 4th-stage Turbine Wheel.

A 75% to 88% engine N2 steady-state speed avoidance range is required for all operational practices. Rolls-Royce must be consulted for additional guidance on the speed avoidance range for any OEM application that has a potential steady-state operating speed below 89% N2.

NOTE: Transient operation only is permitted in the speed avoidance range. Any exposure in the speed avoidance range must be minimized as much as possible.

This action applies to all flight and ground maintenance (including track and balance) operational practices. Operation within the speed avoidance range is permitted for preflight and postflight checks specified in OEM flight manuals.

NOTE: For turboshaft engines in autorotation, with N2 split from NR and throttle in the Ground Idle position, unrestricted operation within the speed avoidance range is permitted. Transient operation in the speed avoidance range during recovery from autorotation is permitted.

NOTE: Transient Operation is defined as no dwell at an N2 speed of more than a one second duration.

C. Action B – Non–Enhanced Power Turbine Fitted with P/N 23065833 3rd–stage Turbine Wheel.

(1) For normal engine operation, this action is required only for Model 250 Series II Engines used in the following OEM applications: Agusta A109 (all models), Soloy B206L/R and Eurocopter BO105 (all models). This action is required only until the next turbine overhaul at which time the 3rd–stage Turbine Wheel must be removed from service. All other single–engine OEM applications with 3rd–stage Turbine Wheel P/N 23065833 installed do not require this action.

Two options are available to satisfy this action (paragraph 2.C.(1)(a) or 2.C.(1)(b)). Only one option need be implemented:

(a) Conduct N2 Indication System Calibration Check.

A narrower N2 speed avoidance range is required if a calibration check on the N2 indication system can be performed to zero out any error. If this can be accomplished, then the required engine N2 speed avoidance range is 87% to 95% N2. If this cannot be accomplished, then refer to paragraph 2.C.(1)(b) for the required expanded engine N2 speed avoidance range that includes an appropriate allowance for the N2 indication system accuracy of each OEM application affected.

(b) N2 Speed Avoidance Range.

The allowable engine N2 steady–state operating speed is a function of the engine N2 speed indication system error. The required engine N2 speed avoidance range is documented in TABLE 1 for the affected OEM applications, and applies to both flight and ground maintenance (including track and balance) operational practices. Operation within the speed avoidance range is permitted for preflight and postflight checks specified in OEM flight manuals.

NOTE: In autorotation, with N2 split from NR and throttle in the Ground Idle position, unrestricted operation within the speed avoidance range is permitted. Transient operation in the speed avoidance range during recovery from autorotation is permitted.

TABLE 1
OEM Application Specific Speed Avoid Range

OEM Aircraft	Speed Avoidance Range (% N2)
A109	85.0–97.0
Soloy B206L	84.5–97.5
BO105	86.5–95.5

NOTE: The operation restriction in the speed avoidance range applies to sustained engine N2 steady–state engine operation. It does not apply to transient operation passing through this speed range. Transient Operation is defined as no dwell at an N2 speed of more than a one second duration.

(c) N2 Gage Indication System Calibration or N2 Speed Avoidance Range Not Implemented.

If the N2 Gage Indication System or the N2 Speed Avoidance Range cannot be implemented for any reason, then the turbine must be sent to an authorized overhaul facility for removal of the 3rd stage Turbine Wheel P/N 23065833 and a replacement wheel as discussed in paragraph 2.C.(1)(d) installed.

(d) Replacement Wheel Options at Turbine Overhaul.

At the next scheduled turbine overhaul, 3rd-stage Turbine Wheel P/N 23065833 must be removed from service and scrapped. Replacement options are a direct swap with P/N 23001967 3rd-stage Turbine Wheel or to upgrade to the Enhanced Power Turbine design that uses P/N 23065818 3rd-stage Turbine Wheel. The upgrade to the Enhanced Power Turbine requires new 3rd- and 4th-stage Turbine Wheels and nozzles.

(e) Re-use of Engines Fitted with P/N 23065833 3rd-stage Turbine Wheels Prohibited.

Engines fitted with 3rd-stage Turbine Wheel P/N 23065833 that have been used in one or more of the affected OEM applications (A109 (all models), Soloy B206L/R, BO105 (all models)), must not be used in other OEM application (including non-affected OEM applications) without first removing the turbine unit from service and scrapping the 3rd-stage Turbine Wheel.

(2) For OEI operation, this action is required for Model 250 Series II engines used in multi-engine aircraft.

A mandatory 87% to 95% engine N2 steady-state speed avoidance range is required.

NOTE: The operation restriction in the speed avoidance range applies to sustained engine N2 steady-state engine operation. It does not apply to transient operation passing through this speed range. Transient Operation is defined as no dwell at an N2 speed of more than a one second duration.

If the N2 speed avoidance range cannot be implemented during OEI operation, the turbine unit of the engine operating during the event must be immediately removed from service following the event and the turbine unit sent to an authorized repair facility for the 3rd-stage turbine wheel to be scrapped. Replacement 3rd-stage turbine wheel options are discussed in paragraph 2.C.(1).(d).

3. MATERIAL INFORMATION - Not applicable

CUSTOMER SUPPORT
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