



TRANSLATION OF

BOLLETTINO TECNICO

The technical content of this document is approved
under the authority of DOA nr EASA.21J.005.

N° **109-129**

DATE February 16, 2009

REV.

Compliance with
this bollettino is:

MANDATORY

SUBJECT: INCLUSION OF POWER TURBINE N2 LIMITATIONS.

REASON: Prescribe operational limitations for the power turbine speed in accordance with information provided by engine TCH (ref. Rolls-Royce C.E.B A-1400 Rev. 3), until the affected components have been replaced.

HELICOPTERS AFFECTED:

All the Agusta A109A, A109All and A109C helicopters equipped with the Allison / Rolls-Royce 250-C20B and 250-C20R/1 engines, in which the third stage turbine wheel P/N 23065833 is installed.

COMPLIANCE:

Within the next 25 (twenty-five) operating hours after the receipt of this Bollettino and however before and not later than May 31, 2009.

DESCRIPTION:

This Bollettino has been issued by Agusta based on information provided by engine TCH on the C.E.B. A-1400 Rev. 3.

REQUIRED MANPOWER:

An estimated 0,5 (half) manpower hours are required for compliance with this Bollettino.

WARRANTY:

N.A.

An appropriate entry should be made in the aircraft log book upon accomplishment.
If ownership of aircraft has changed, please, forward to new owner.

REQUIRED MATERIALS:

The following material is required for compliance with this Bollettino:

<u>P/N</u> (*)	<u>DENOMINATION</u>	<u>Q.TY</u>
	Decal	1

NOTE: (*) The decal shall be locally manufactured using white lettering on black background. The text for the decal shall be in capital letters having height not less than 3,5 mm as shown in figure 1.

SPECIAL TOOLS:

N.A.

WEIGHT AND BALANCE CHANGES:

N.A.

REFERENCES:

Rolls-Royce C.E.B. A-1400 Rev. 3 (attached).

PUBLICATIONS AFFECTED:

A109A up to S/N 7165 Flight Manual.
A109A S/N 7166 and subs. Flight Manual.
A109All Flight Manual.
A109C Flight Manual.

COMPLIANCE INSTRUCTIONS:

1. Determine the P/N of the installed third stage turbines wheels.
2. If the third stage turbine wheel of one or both engines is P/N 23065833 proceed in accordance with step 4 of this Bollettino.
3. If the third stage turbine wheel of the two engines is **not** P/N 23065833 no further actions are required, proceed in accordance with step 9 of this Bollettino.
4. Prepare the helicopter on ground for a safe maintenance, disconnect any power supply.
5. Install on the instruments panel, below or near the "ENGINE & ROTOR RPM POWER TURBINE (N2)" however in an area visible by the pilot, one of the two decals shown in figure 1 (in accordance with the instruments panel configuration) reporting the following text: "MIN. CONT. 97% N2 – MIN. TRANS. 95% N2".

NOTE

Avoid steady-state operation in the 95-97% N2 range for more than 60 seconds in single or cumulative events.

Steady-state operation is defined as any manoeuvre during which an attempt is being made to maintain a constant engine speed within 2% N2

6. A109A and A109All helicopters
Insert in the applicable Flight Manual, Section I – OPERATING LIMITATIONS, paragraph “POWER PLANT LIMITATIONS” the page 5 or 6, as applicable, of this Bollettino.
7. A109C helicopters
Insert in the Flight Manual, Section I - LIMITATIONS, paragraph “POWER PLANT AND TRANSMISSION LIMITATIONS” the page 7 of this Bollettino.
8. Return the helicopter in a ready to flight condition.
9. Record compliance with this Bollettino in the helicopter log book.

MIN. CONT. 97% N2 - MIN. TRANS. 95% N2

OR

**MIN.
CONT.
97%
N2**
**MIN.
TRANS.
95%
N2**

Letter: white colour

Background: black colour

Letter height: 3,5 mm

FIGURE 1

BT 109-129

A109A Flight Manual

POWER PLANT AND TRANSMISSION LIMITATIONS**ENGINES ALLISON / ROLLS ROYCE 250-C20B WITH 3RD-STAGE
TURBINE WHEEL P/N 23065833 INSTALLED.****POWER TURBINE (N2) RPM**

Minimum RPM

continuous	:	97 %
transient:		95 %

Avoid steady-state operation in the 95-97% N2 range for more than 60 seconds in single or cumulative events.

Steady-state operation is defined as any manoeuvre during which an attempt is being made to maintain a constant engine speed within 2% N2.

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A109All Flight Manual

POWER PLANT AND TRANSMISSION LIMITATIONS

**ENGINES ALLISON / ROLLS ROYCE 250-C20B OR 250-C20R/1 WITH
3RD-STAGE TURBINE WHEEL P/N 23065833 INSTALLED.**

POWER TURBINE (N2) RPM

Minimum RPM

continuous	:	97 %
transient:		95 %

Avoid steady-state operation in the 95-97% N2 range for more than 60 seconds in single or cumulative events.

Steady-state operation is defined as any manoeuvre during which an attempt is being made to maintain a constant engine speed within 2% N2.

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A109C Flight Manual

POWER PLANT AND TRANSMISSION LIMITATIONS

**ENGINES ALLISON / ROLLS ROYCE 250-C20R/1 WITH 3RD-STAGE
TURBINE WHEEL P/N 23065833 INSTALLED.**

POWER TURBINE (N2) RPM

Minimum RPM

continuous	:	97 %
transient:		95 %

Avoid steady-state operation in the 95-97% N2 range for more than 60 seconds in single or cumulative events.

Steady-state operation is defined as any manoeuvre during which an attempt is being made to maintain a constant engine speed within 2% N2.

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COMMERCIAL ENGINE BULLETIN



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

1. PLANNING INFORMATION

A. Effectivity

(1) Engines

All Rolls-Royce Model 250–C20, –C20R, –B17 and –B17F Series engines are affected by this Commercial Engine Bulletin (CEB).

(2) Spares – Not affected

B. Reason

This CEB is being revised to clarify and communicate the required engine N2 speed avoidance range for all Model 250 Series II engines. The required engine N2 speed avoidance range is dependent upon the part number of the 3rd–stage turbine wheel in service and the OEM application in which the engine is installed. Of the three different designs of 3rd–stage turbine wheel in service, this CEB specifically addresses the action by part number of the two affected wheels and the OEM applications where relevant. Part numbers of the three 3rd–stage turbine wheels in service and the OEM applications affected are as follows:

(1) Enhanced Power Turbine Fitted with P/N 23065818 3rd–stage Turbine Wheel.

Changes documented in the previous revisions of this CEB that address the Speed Limit Tables for the enhanced P/N 23065818 3rd–stage turbine wheel remain in effect. This speed avoidance range is applicable to all OEM applications.

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

For normal operation, the OEM applications affected are those with a cruise power rating of 350 SHP or above: Agusta A109 (all models), Soloy B206L/R and Eurocopter BO105 (all models). In addition and for One Engine Inoperable (OEI) only, the following OEM application is affected: Eurocopter AS355 (all models). 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.

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

This CEB provides advanced notification of actions pertaining to the 3rd–stage turbine wheel that are being incorporated in all applicable Model 250 Series II engine Operation and Maintenance Manuals.

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 in the following wording and charts. Transition through the speed range is to be accomplished as expeditiously as possible.

D. Approval

Technical aspects are FAA approved.

December 22, 2006

Revision 3

January 19, 2009

250–C20 Series	CEB A–1400
250–C20R Series	CEB A–72–4095
250–B17 Series	TP CEB A–1343
250–B17F Series	TP CEB A–72–2091

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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	C20 Series, C20R Series
23065818	1	Third-stage, Turbine Wheel	B17 Series, B17F 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, Turboshift Models, 250–C20, –C20B, –C20F, –C20J, –C20S, –C20W (OMM).
- (2) 10W3 Overhaul Manual, Turboshift Models 250–C20, –C20B, –C20F, –C20J, –C20S, –C20W (O/H).
- (3) 10W4 Illustrated Parts Catalog, Turboshift Models 250–C20, –C20B, –C20C, –C20F, –C20J, –C20S, –C20W (IPC).
- (4) 11W2 Operation and Maintenance Manual, Turboprop Models 250–B17, –B17B, –B17C, –B17D, –B17E (OMM).
- (5) 11W3 Overhaul Manual, Turboprop Models 250–B17, –B17B, –B17C, –B17D, –B17E (O/H).
- (6) 11W4 Illustrated Parts Catalog, Turboprop Models 250–B17, –B17B, –B17C, –B17D, –B17E (IPC).
- (7) CSP21007 Operation and Maintenance Manual, Turboshift Models 250–C20R, –C20R/1, –C20R/2, –C20R/4 (OMM).
- (8) GTP5232–3 Overhaul Manual, Turboshift Models 250–C20R, –C20R/1, –C20R/2, –C20R/4 (O/H).
- (9) CSP23007 Illustrated Parts Catalog, Turboshift Models 250–C20R, –C20R/1, –C20R/2, –C20R/4 (IPC).
- (10) CSP21008 Operation and Maintenance Manual, Turboprop Models 250–B17F, –B17F/1, –B17F/2 (OMM).
- (11) GTP5243–3 Overhaul Manual, Turboprop Models 250–B17F, –B17F/1, –B17F/2 (O/H).
- (12) CSP23008 Illustrated Parts Catalog, Turboprop Models 250–B17F, –B17F/1, –B17F/2 (IPC).

L. Prerequisites – None

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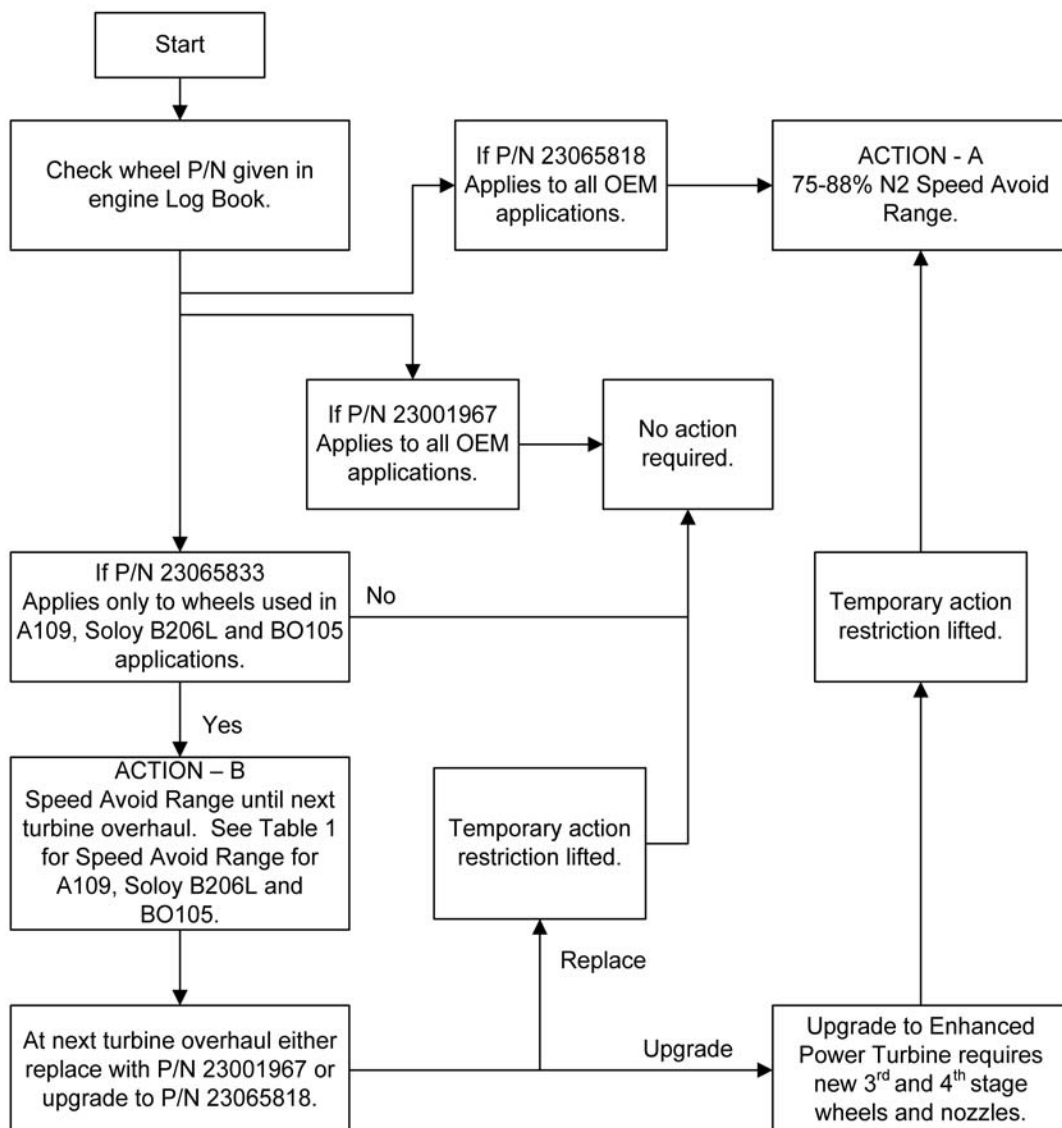
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2. ACCOMPLISHMENT INSTRUCTIONS

A. Identification of Wheel and Action Required.

The part number of the 3rd-stage turbine wheel installed in a Model 250 Series II engine is recorded in the engine logbook, Turbine Assembly (pink pages), Assembly Record, Part V. The part number must be used to identify the appropriate action described in paragraph 2.B. or 2.C. The following flowchart is included as a simple guide to help identify the appropriate action for each wheel type.

NOTE: A temporary action only is required for the Agusta A109 (all models), Soloy B206L/R and Eurocopter BO105 (all models) with the non-enhanced 3rd-stage turbine wheel P/N 23065833 installed, since this wheel will be permanently removed from service at the next turbine overhaul (replacement options are discussed in paragraph 2.C.(1)(d)). All other OEM applications with the non-enhanced 3rd-stage turbine wheel P/N 23065833 installed do not require a temporary action.



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B. Action A – Enhanced Power Turbine Fitted with P/N 23065818 3rd-stage Turbine Wheel.

(1) This action is applicable to all Model 250 Series II Engines used in all OEM applications.

A mandatory 75% to 88% engine N2 steady-state speed avoidance range is required for operation above 85 SHP (equivalent to 91.5 ft-lb (124.1 Nm) of torque). 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.

Steady-state operation below 85 SHP or transient operation passing through this speed range is allowable. This action applies to all flight and ground maintenance (including track and balance) operational practices (Ref. FIG. 1, 2, 3 and 4).

(a) An entry into the engine logbook must be made for any steady-state operating excursion into the 75% to 88% N2 speed avoidance range while operating above 85 SHP (equivalent to 91.5 ft-lb (124.1 Nm) of torque). If the total accumulated time above 85 SHP exceeds 60 seconds for a single or multiple event, the turbine unit must be removed from service and the 3rd-stage turbine wheel scrapped and replaced with another P/N 23065818 wheel. If the cumulative time at steady-state conditions above 85 SHP has possibly exceeded 60 seconds, or is unknown, Rolls-Royce must be contacted for disposition of the wheel.

(b) Engines that have a logbook entry for a steady-state operating excursion into the 75% to 88% N2 speed avoidance range or that have been used in an application that has operated below 89% N2 should not be fitted on another OEM application without the 3rd-stage turbine wheel being scrapped and replaced.

NOTE: The 60 second operation restriction in the speed avoidance range between 75% and 88% N2 while operating above 85 SHP (equivalent to 91.5 ft-lb (124.1 Nm) of torque) applies to sustained engine N2 steady-state operation. It does not apply to transient operation passing through this speed range. Steady-state operation is defined as any maneuver during which an attempt is being made to maintain a constant engine speed within 2% N2.

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 OEM applications do not require this temporary 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, the required engine N2 speed avoidance range is 87% to 95% N2. If this cannot be accomplished, 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.

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

Table 1
OEM Application Specific Speed Avoid Range

An entry into the engine logbook must be made for any steady-state engine operation in the N2 speed avoidance range regardless of engine power. The total time spent at steady-state conditions in the N2 speed avoidance range during the event must be recorded in the engine logbook. Once the total accumulated time of steady-state operation exceeds 60 seconds, the turbine unit must be removed from service and the 3rd-stage turbine wheel P/N 23065833 scrapped. If the cumulative time at steady-state conditions above 85 SHP has possibly exceeded 60 seconds, or is unknown, Rolls-Royce must be contacted for disposition of the wheel.

NOTE: The 60 second 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. Steady-state operation is defined as any maneuver during which an attempt is being made to maintain a constant engine speed within 2% N2.

- (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, the 3rd-stage turbine wheel P/N 23065833 must be removed from service 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 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 any of the affected OEM applications (A109 (all models), Soloy B206L/R, BO105 (all models)), must not be used in any other OEM application (including non-affected OEM applications) without first removing the turbine unit from service and scrapping the 3rd-stage wheel.

- (2) For OEI operation, this action is required for Model 250 Series II engines used in the following OEM application only: Eurocopter AS355 (all models).

If an OEI condition occurs, the turbine unit of the engine operating during the event must be immediately removed from service following the event and the 3rd-stage turbine wheel scrapped. Replacement 3rd-stage turbine wheel options are discussed in paragraph 2.C.(1)(d).

3. MATERIAL INFORMATION – Not applicable

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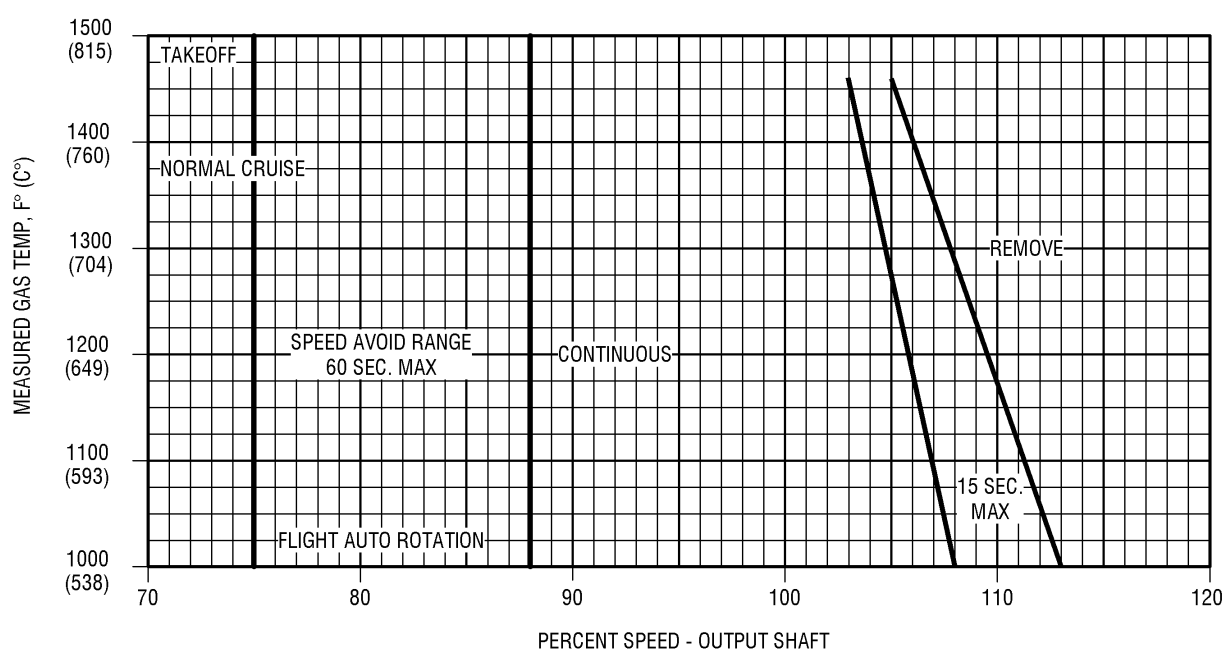
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**NOTE:**

TRANSITION THROUGH THE SPEED AVOID RANGE IS TO BE ACCOMPLISHED AS EXPEDIENTLY AS POSSIBLE.

ADS212XA

250-C20 Maximum Allowable Output Shaft Speeds
FIG. 1

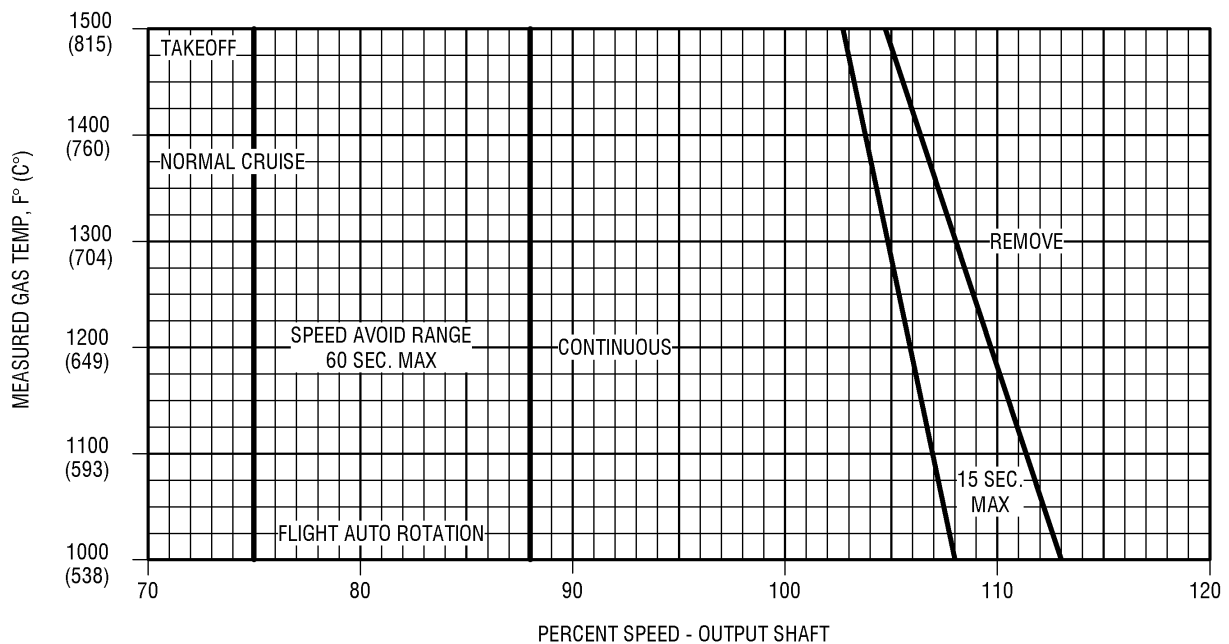
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250-C20R Series	CEB A-72-4095
250-B17 Series	TP CEB A-1343
250-B17F Series	TP CEB A-72-2091

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NOTE:

TRANSITION THROUGH THE SPEED AVOID RANGE IS TO BE ACCOMPLISHED AS EXPEDIENTLY AS POSSIBLE.

ADS213XA

250-C20B, -C20F, -C20J, -C20W Maximum Allowable Output Shaft Speeds
FIG. 2

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

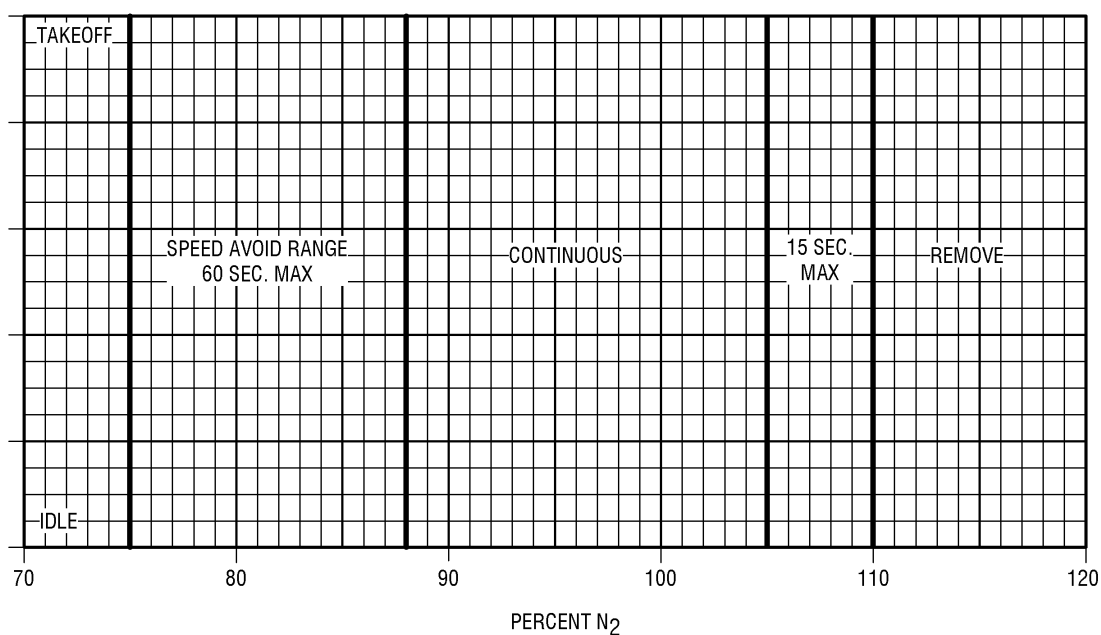
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NOTE:

TRANSITION THROUGH THE SPEED AVOID RANGE IS TO BE ACCOMPLISHED AS EXPEDIENTLY AS POSSIBLE.

ADS217XA

250-B17, -B17F, -C20S Maximum Allowable Output Shaft Speeds
FIG. 3

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

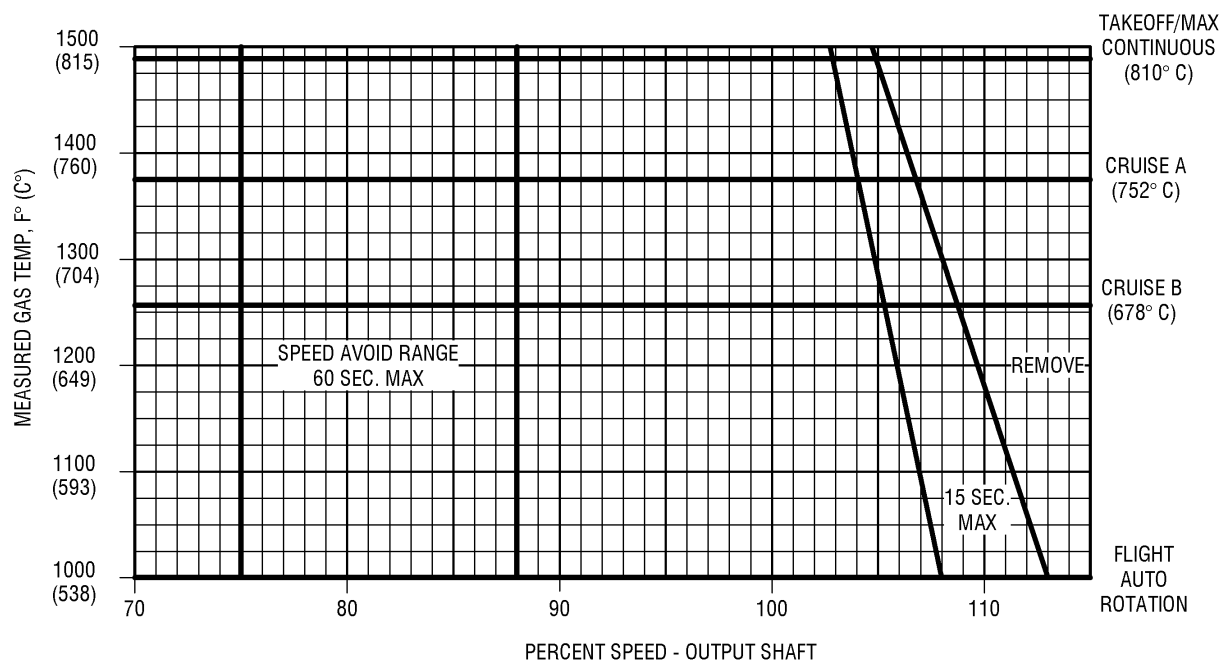
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NOTE:

TRANSITION THROUGH THE SPEED AVOID RANGE IS TO BE ACCOMPLISHED AS EXPEDIENTLY AS POSSIBLE.

ADS218XA

250-C20R Maximum Allowable Output Shaft Speeds
FIG. 4

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250-C20 Series	CEB A-1400
250-C20R Series	CEB A-72-4095
250-B17 Series	TP CEB A-1343
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Prego spedire a questo indirizzo: <i>Please send to the following address:</i> AGUSTA s.p.A. PRODUCT SUPPORT ITALY Via per Tornavento, 15 21019 Somma Lombardo (VA) - ITALY Tel.: +39 0331 711100 Fax: +39 0331 711180		MODULO APPLICAZIONE BOLLETTINO TECNICO <i>TECHNICAL BULLETIN COMPLIANCE FORM</i>		Data: <i>Date:</i>
		Numero: <i>Number:</i>		
		Revisione: <i>Revision:</i>		
Denominazione Cliente ed Indirizzo: <i>Customer Name and Address:</i>			Telefono: <i>Telephone:</i>	
			Fax:	
			Data Applicazione B.T.: <i>B.T. Compliance Date:</i>	
Modello Elicottero <i>Helicopter Model</i>	S/N	Matricola <i>Tail Number</i>	Ore Totali <i>Total Hours</i>	Ore D.U.R. <i>T.S.O.</i>
Note: <i>Remarks:</i>				
Informazioni: <i>Information:</i> Al fine di gestire le varianti alla configurazione base, in relazione all'emissione del Bollettino Tecnico, preghiamo di voler compilare il presente modulo in tutte le sue parti e spedirlo all'indirizzo sopra indicato. Si ringrazia per la gentile collaborazione data. We request your cooperation in filling this form, in order to keep out statistical data relevant to aircraft configuration up-to-date. The form should be filled in all its parts and sent to the above address. We thank you beforehand for the information given.				