



SERVICE DIRECTIVE BULLETIN

SERVICE DIRECTIVE BULLETIN NO. T-028

Revision 2

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DATE: May 24, 2016

1. SUBJECT: Turbine Engine Assembly - Steady State Operation Avoidance Range Limit
2. MODEL: TH-28, 480, and 480B
3. EFFECTIVITY: All Serial Numbers
4. BACKGROUND:

Rolls-Royce (RR) issued Commercial Engine Bulletin (CEB) A-1400 that creates a Speed Avoid Range. The Speed Avoid Range is applicable to RR 250-C20W engines equipped with Third Stage Turbine Wheels, P/N 23065818 or P/N 23065833.

Revision 4 to CEB A-1400 has changed the Speed Avoid Range for RR 250-C20W engines equipped with Fourth Stage Turbine Wheel P/N 23055944 and has changed the transient operation limits through the speed avoidance range.

The previous Speed Avoid Range for engines equipped with Third Stage Turbine Wheels P/N 23065833 and Fourth Stage Turbine Wheel P/N M250-10445 is unchanged.

The Rotorcraft Flight Manuals are being revised to incorporate the new Speed Avoid Range and the new transient operation limits.

5. COMPLIANCE:

Effective immediately, for RR 250-C20W engines equipped with Fourth Stage Turbine Wheels, P/N 23055944, avoid steady state operation of the engine between 71% N_2 and 88% N_2 rpm.

For engines equipped with Fourth Stage Turbine Wheels, P/N M250-10445, avoid steady state operation of the engine between 75% N_2 and 88% N_2 rpm (in effect since the original release of this Service Directive Bulletin (SDB).

According to RR CEB A-1400 Revision 4, operators shall avoid engine N_2 steady-state operation in the speed avoidance range. *“Transition through the speed range is to be accomplished as expediently as possible. In autorotation, with N_2 split from N_R 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 N_2 speed of more than a 1 second duration.”*

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- 5.1 Aircraft with RR 250-C20W engines installed equipped with Third Stage Turbine Wheel P/N 23065818 and Fourth Stage Turbine Wheel P/N 23055944:
- At or before the next 100 hour/annual inspection, install the new Speed Avoid Range marking on the dual tachometer in accordance with paragraph 6 of this SDB.
 - For helicopters equipped with G1000H Integrated Flight Instrument System, Enstrom 480B G1000 Software Version 1852.02, at or before the next 100 hour/annual inspection, install the new Speed Avoid Range notice placard in accordance with paragraph 6.
- 5.2 Aircraft with RR 250-C20W engines installed equipped with Third Stage Turbine Wheel P/N 23065833 and Fourth Stage Turbine Wheel P/N M250-10445:
- For helicopters not previously in compliance with this SDB, at or before the next 100 hour/annual inspection, install the new Speed Avoid Range marking on the dual tachometer, in accordance with paragraph 6 of this SDB.
 - For helicopters previously in compliance with this SDB, installation of the new Speed Avoid Range marking on the dual tachometer is optional. Apply the new marking in accordance with paragraph 6 of this SDB. However, if the new marking is not applied, this SDB must be reviewed for compliance any time the engine is overhauled or changed (paragraph 12).
6. MODIFICATION:
- 6.1 Refer to RR CEB A-1400 and check the engine logbook to determine which wheel is installed in the engine.
- 6.2 Engines equipped with P/N 23065818 and P/N 23055944:
- 6.2.1 If equipped with dual tachometer P/N ECD4053, proceed to step 6.4.
- 6.2.2 If equipped with the G1000H Integrated Flight Instrument System, apply placard P/N 4230012-11 to an available space to the left of the PFD or MFD.
- 6.3 Engines equipped with P/N 23065833 and P/N M250-10445:
- 6.3.1 If the dual tachometer is not marked 75% N₂ to 88% N₂, proceed to step 6.4 to apply the new Speed Avoid Range marking 71% N₂ to 88% N₂.
- 6.3.2 If the dual tachometer is marked 75% N₂ to 88% N₂ and the operator/owner chooses to apply the new Speed Avoid Range marking, 71% N₂ to 88% N₂, proceed to step 6.4.
- 6.3.3 If the dual tachometer is marked 75% N₂ to 88% N₂ and the operator/owner chooses not to apply the new marking, proceed to step 12.
- 6.4 Apply the 71% N₂ to 88% N₂ Speed Avoid Range marking.

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- 6.4.1 Apply a yellow arc range marking on the face glass of the dual tachometer that corresponds from 71% N₂ to 88% N₂ (TURBINE % RPM). Refer to paragraph 6.5 for sources of range marking decals. Refer to Figures 1, 2, or 3 for the location of the range marking.
- 6.4.2 Apply a clear coat finish (finger nail polish or equivalent) over the range marking.
- 6.4.3 Apply a torque stripe/slippage mark between the glass face and the instrument case at the 6 o'clock position.

NOTE

The dual tachometer may be sent to a properly certified instrument repair station and have the markings installed directly on the tachometer face.

6.5 PARTS:

- 6.5.1 The yellow range marking can be locally manufactured using yellow vinyl tape. Alternatively, yellow range marking decals are available from the sources listed below or other similar sources.

Aircraft Spruce & Speciality Co. Tel: 877-477-7823 Outside USA: 951-372-9555	P/N: 10-03905	www.aircraftspruce.com
Wag-Aero Group Tel: 800-558-6868 Outside USA: 262-763-9586	P/N: A-005-199	www.wagaero.com
Cumulus Soaring, Inc. Tel: 952-445-9033	P/N: OpRangeStickers	www.soarmn.com/cumulus

- 6.5.2 The clear coat finish (finger nail polish or equivalent) can be locally purchased.
- 6.5.3 Dual tachometer, P/N ECD4053-4 or ECD4053-6, can be replaced with Dual Tachometer, P/N ECD4053-7. Contact Enstrom Product Support for more information.
- 6.5.4 G1000H Integrated Flight Instrument System Placard, P/N 4230012-11.

6.6 CONTACT INFORMATION:

Rolls-Royce Model 250 Customer Support
Tel: 317-230-2720

Enstrom Product Support
Tel: 906-863-1200
Fax: 906-863-6244
Email: customerservice@enstromhelicopter.com

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7. SPECIAL TOOLS: N/A
8. MAN-HOURS: 1 Man-Hour
9. WARRANTY: Per Enstrom Warranty Policy
10. WEIGHT CHANGE: N/A
11. LOG BOOK ENTRY: Enter compliance with this SDB in the aircraft maintenance records.
12. REPETITIVE ACTION:
 - 12.1 For engines equipped with P/N 23065818 and P/N 23055944 and in compliance with this SDB revision, no further action is required.
 - 12.2 For engines equipped with P/N 23065833 and P/N M250-10445 and the dual tachometer Avoid Speed Range remains marked as 75% N₂ to 88% N₂, this SDB must be reviewed for compliance any time the engine is overhauled or changed.

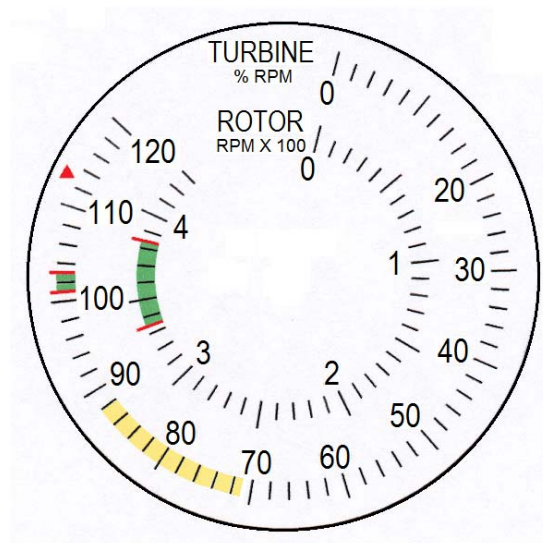


Figure 1. TH-28/480 Dual Tach - Aircraft Not Equipped With Increased RPM Kit, P/N 4230002

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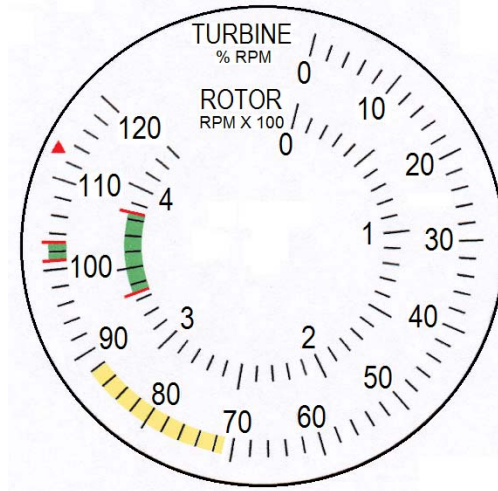


Figure 2. 480/480B Dual Tach - 480 Models Equipped With Increased RPM Kit, P/N 4230002

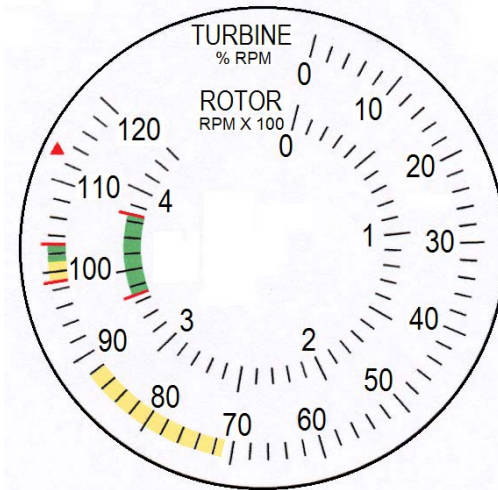


Figure 3. 480 Alternate Dual Tach - 480 Models Equipped With Increased RPM Kit, P/N 4230002, and Pop-Out Float Kit, P/N 4220091