



## Airworthiness Directive

**D-2004-365**

## Luffahrt-Bundesamt

Airworthiness Directive Section  
Hermann-Blenk-Str. 26  
38108 Braunschweig  
GERMANY

*This Airworthiness Directive supersedes the CAA UK Airworthiness Directives 003-10-2000 and 005-12-99*

### Rolls-Royce Deutschland

Effective Date: 31 January 2005

#### **Affected:**

Kind of aeronautical product: Aircraft Engine  
Manufacturer: Rolls-Royce plc., Derby, United Kingdom  
Type: TAY 650  
Models affected: TAY 650-15 and 650-15/10 Engines  
TAY M03 Module – M03300AA  
TAY 651-54 Engines  
TAY M03 Module – M03400AA  
Serial Numbers affected: All  
German Type Certificate No.: 6328

#### **Subject:**

Release of High Pressure Compressor (HPC) Outlet Guide Vane (OGV) segment to outer seal spacer retaining bolts.

#### **Note:**

The LBA Airworthiness Directive 2004-365 is based on the CAA UK Airworthiness Directives 003-10-2000 and 005-12-99. At the time of publication of the Airworthiness Directives 003-10-2000 and 005-12-99 the British aviation authority CAA was the responsible authority for the publication of Airworthiness Directives for these engines. After transfer of the TC for the TAY engines from Rolls-Royce plc. to Rolls-Royce Deutschland Ltd. & Co. KG on 7 January 2002, the LBA has taken over the responsibility for the post certification activities in accordance with ICAO Annex 8 for these engine models.

#### **Reason:**

Several incidents of HPC OGV segment to outer seal spacer retaining bolt release have been reported on TAY 650-15 series engines. In extreme cases this has led to cracking of the stage 11-12 spacer. The problem is attributed to the OGV retaining bolts cracking in Low Cycle Fatigue (LCF) at the point where the bolts enter the diffuser case. This is as a result of bending loads imparted by a transient thermal mismatch between the inner seal carrier and the diffuser case flange near Maximum Take Off (MTO).

The actions specified by this Airworthiness Directive are intended to prevent HPC OGV segment to outer seal spacer retaining bolt release, which can result in an uncontained engine failure and damage to the airplane.

#### **Action:**

The following actions are required by this Airworthiness Directive:

- 1) Introduction of changes into the HPC module as per Rolls-Royce Deutschland Service Bulletin TAY-72-1498 Revision 2, of 31 December 2004 to reduce the bending moment in the HPC OGV retaining bolt.  
Material, thread and torque tightening of HPC OGV segment retaining bolts changed. Introduction of additional 15 locating pins. Increased diameter and length, material and fit changed of all 30 locating pins. The tab washers at the HPC OGV segment retaining bolts have an increased inner diameter and the material is changed. The material of the lock plates at the HPC OGV segment retaining bolts is changed. Chamfers are introduced on the rear face of the seal carrier flange and front flange of the bearing support.
- 2) Until Service Bulletin TAY-72-1498 is incorporated repeated fibrescope inspection as per Rolls-Royce Service Bulletin TAY-72-1483 Revision 2, of 20 Oct. 2000 to detect OGV bolt release.

All mentioned actions must be performed on the basis of the referenced manufacturer Service Bulletins.

**Compliance:**

All compliance times of the mentioned actions have to be in compliance with the referenced manufacturer Service Bulletins.

**Technical publication of the manufacturer:**

Rolls-Royce Deutschland Service Bulletin TAY-72-1498 Revision 2, of 31 December 2004 and Rolls-Royce Deutschland Service Bulletin TAY-72-1483 Revision 2, of 20 October 2000. These Service Bulletins become here-with part of this AD and can be obtained from:

Rolls-Royce Deutschland Ltd & Co KG  
Service Engineering  
Eschenweg 11  
15827 Dahlewitz  
G E R M A N Y  
Fax +49 (0) 33-708-63615

**EASA-Approval**

Approved by EASA under Approval-No. 2004-12660 on 31 December 2004