







## TYRE INFLATION

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# AIRWORTHINESS NOTICE

VERSION : 2.0  
DATE OF IMPLEMENTATION : 20-04-2010  
OFFICE OF PRIME INTEREST : AIRWORTHINESS DIRECTORATE

	NAME	DESIGNATION	SIGNATURE
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REVIEWED BY	Engr MUNAWAR JAMAL QURESHI	GM Airworthiness (Regulation)	
VERIFIED BY	Engr MUNAWAR JAMAL QURESHI	GM Airworthiness (Regulation)	
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TYPE OF DOCUMENT	AIRWORTHINESS NOTICE (AWNOT)		
STATUS OF DOCUMENT	CONTROLLED		

**A. AUTHORITY:**

A1. This Airworthiness Notice has been issued under the authority vested in DG CAA vide Rules 4 of Civil Aviation Rules 1994.

**B. PURPOSE:**

B1. The purpose of this Airworthiness Notice is to specify the requirements for inflation of tyres for aircraft above 5700 kg and to minimize the risk of fire by using inert gases.

**C. SCOPE:**

C1. This Airworthiness Notice applies to all operators and maintenance organizations.

**D. DESCRIPTION:**

**D1. DEFINITIONS:**

Nil

**D2. APPLICABILITY:**

D2.1. This Airworthiness Notice is applicable to all Pakistan registered aircraft with a maximum take-off weight authorized (MTWA) exceeding 5700 kg, with retractable landing gear.

**D3. INTRODUCTION:**

D3.1. JAR 25.729(f) & BCAR Chapter D4-5 Para 1.2, require equipment to be protected from the effects of tyre burst. In addition the CAA requires the operational hazards due to tyre bursting in flight be minimized.

D3.2. The majority of in-flight tyre bursts have been attributed to the tyre carcass being weakened by foreign object damage, scuffing, etc., such that a rapid release of pressure takes place. Such failures are usually experienced when the gear has been retracted for some time and the effects of brake heat transfer, internal tyre temperature and differential pressure are combined.

D3.3. After accident involving cabin decompression and fire has highlighted another mode of tyre failure in flight where a tyre may fail explosively without any significant prior degradation. A tyre inflated with air and subject to excessive heating, possibly caused by a dragging brake, can experience a chemical reaction resulting in release of volatile gases. Such a chemical reaction in the presence of the oxygen in the contained air may result in a tyre explosion in a landing gear bay and / or an in-flight fire since it appears that the protection normally afforded by conventional pressure relief devices in the wheel would be incapable of responding adequately to the rapid increase in temperature and gas pressure associated with auto-ignition.

D3.4. Laboratory material and tyre burst testing indicates that the risk of auto-ignition can be reduced by using an inert gas for tyre inflation and servicing.

D3.5. Other potential benefits may accrue from the use of Nitrogen as it will tend to reduce wheel corrosion, tyre fatigue and the risk of fire when fusible plugs melt due to brake overheating.

**D4. COMPLIANCE:**

D4.1. All braked wheels of retractable landing gear units on aircraft defined in paragraph I will be required to have tyres inflated with Nitrogen, or other suitable inert gas, and maintained such as to limit the Oxygen content of the compressed gases to not greater than 5% by volume.

D4.2. To ensure compliance with this requirement suitable inflation and servicing procedures must be adopted in consultation with the airframe constructor. At airfields where suitable inert gases are not normally available it is acceptable to use air for inflation or servicing provided that a suitable entry is made in the Technical Log and that the tyre is re-inflated or serviced in accordance with the agreed procedure at the earliest opportunity or within 25 flight hours, whichever is the sooner.

D4.3. Tyre and wheel assemblies should be maintained such that greases, solvents, powders and rubber dust are excluded as far as practicable from within the inflation volume.

**E. EVIDENCES (ACRONYMS / RECORDS / REFERENCES):**

**E1. ACRONYMS:**

BCAR	BRITISH CIVIL AIRWORTHINESS REQUIREMENTS
JAR	JOINT AVIATION REQUIREMENT
MTWA	MAXIMUM TAKE OFF WEIGHT AUTHORIZED

**E2. RECORDS:**

Nil

**E3. REFERENCES:**

BCAR  
JAR 25.729(f) & BCAR

**IMPLEMENTATION:**

This Airworthiness Notice shall be implemented with effect from 20<sup>th</sup> April, 2010 and repeals / cancels / supersedes Airworthiness Notice No. 8 issue 1, dated 3<sup>rd</sup> April, 2001.



(Engr Ghulam Murtaza)  
Director Airworthiness  
Director General,  
Pakistan Civil Aviation Authority

for

Dated: - 20<sup>th</sup> April, 2010



(Engr Muhammad Jamal Qureshi)  
General Manager Airworthiness (Regulation)  
Dated- 20<sup>th</sup> April, 2010  
File No. HQCAA/ 2233/1/08/AW

