
AIRWORTHINESS DIRECTIVE

For the reasons set out in the background section, the CASA delegate whose signature appears below issues the following Airworthiness Directive (AD) under subregulation 39.1 (1) of CAR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

Boeing 747 Series Aeroplanes

AD/B747/283

Fuel Tank Limitations

**1/2003
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Applicability: All Model 747 series aeroplanes.

Requirement: Revise the Limitations Section of the Aircraft Flight Manual (AFM) to include the following (this may be accomplished by inserting a copy of this Directive into the AFM):

Model 747-100, -200B, -200F, -200C, -100B, -300, -100B SUD, 747SR and 747SP

CERTIFICATE LIMITATIONS

Fueling and use of the centre auxiliary fuel tank and auxiliary fuel tanks 1 and 4 (if installed) is prohibited.

The centre wing tank (CWT) must contain a minimum of 17,000 pounds (7,700 kilograms) of fuel prior to engine start, if the CWT override/jettison pumps are to be selected ON during flight.

The CWT fuel quantity indication system must be operative to dispatch with CWT mission fuel.

Both CWT override/jettison pump switches must be selected OFF at or before the CWT fuel quantity reaches 7,000 pounds (3,200 kilograms), if the CWT fuel quantity is less than 50,000 pounds (22,700 kilograms) prior to engine start. The CWT override pumps may be selected ON during stabilized cruise conditions. Both CWT override/jettison pump switches must be selected OFF at or before the CWT fuel quantity reaches 3,000 pounds (1,400 kilograms).

Both CWT override/jettison pump switches must be selected OFF at or before the CWT fuel quantity reaches 3,000 pounds (1,400 kilograms), if the CWT fuel quantity is greater than or equal to 50,000 pounds (22,700 kilograms) prior to engine start.

Both CWT override/jettison pumps must be selected OFF when either CWT override/jettison fuel pump low pressure light illuminates.

Boeing 747 Series Aeroplanes

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Warning

Do not reset a tripped fuel pump circuit breaker.

Warning

Do not cycle the CWT pump switches from ON to OFF to ON with any continuous low pressure indication present.

Note

The CWT may be emptied normally in an emergency fuel jettison.

Note

In a low fuel situation, both CWT override/jettison pumps may be selected ON and all CWT fuel may be used.

If a centre wing tank pump fails with fuel in the centre tank, shut off the affected fuel pump.

If the main tanks are not full, the zero fuel gross weight of the aeroplane plus the weight of CWT tank fuel may exceed the maximum zero fuel gross weight by up to 7,000 pounds (3,200 kilograms) for takeoff, climb, cruise, descent, and landing, provided that the effects of balance (CG) have been considered.

When defueling centre or main wing tanks, the Fuel Pump Low Pressure indication lights must be monitored and the fuel pumps positioned to OFF at the first indication of fuel pump low pressure. Defueling with passengers on board is prohibited.

Model 747-400, -400D, and -400F

CERTIFICATE LIMITATIONS

Fueling and use of the horizontal stabilizer tank (if installed) is prohibited.

The centre wing tank (CWT) must contain a minimum of 17,000 pounds (7,700 kilograms) prior to engine start, if the CWT override/jettison pumps are to be selected ON during flight.

The CWT fuel quantity indication system must be operative to dispatch with CWT mission fuel.

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Both CWT override/jettison pump switches must be selected OFF at or before CWT fuel quantity reaches 7,000 pounds (3,200 kilograms), if CWT fuel quantity is less than 50,000 pounds (22,700 kilograms) prior to engine start. The CWT override pumps may be selected ON during stabilized cruise conditions. Both CWT override/jettison pump switches must be selected OFF at or before the CWT fuel quantity reaches 3,000 pounds (1,400 kilograms).

Note

With CWT override/jettison pumps selected OFF and CWT fuel quantity greater than 6,000 pounds (2,800 kilograms), the FUEL OVRD CTR L & R EICAS messages will be displayed. Do not accomplish the associated non-normal procedure.

Both CWT override/jettison pump switches must be selected OFF at or before CWT fuel quantity reaches 3,000 pounds (1,400 kilograms), if CWT fuel quantity is greater than or equal to 50,000 pounds (22,700 kilograms) prior to engine start.

Both CWT override/jettison pumps must be selected OFF when either CWT override/jettison fuel pump low pressure light illuminates.

Warning

Do not reset a tripped fuel pump circuit breaker.

Warning

Do not cycle CWT override/jettison pump switches from ON to OFF to ON with any continuous low pressure indication present.

Note

The centre wing tank may be emptied normally during an emergency fuel jettison.

Note

In a low fuel situation, both CWT override/jettison pumps may be selected ON and all CWT fuel may be used.

If a centre wing tank pump fails with fuel in the centre tank, accomplish the FUEL OVRD CTR L, R non-normal procedure.

Boeing 747 Series Aeroplanes

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If the main tanks are not full, the zero fuel gross weight of the aeroplane plus the weight of CWT tank fuel may exceed the maximum zero fuel gross weight by up to 7,000 pounds (3,200 kilograms) for takeoff, climb, cruise, descent, and landing, provided that the effects of balance (CG) have been considered.

When defueling any fuel tanks, the Fuel Pump Low Pressure indication lights must be monitored and the fuel pumps positioned to OFF at the first indication of fuel pump low pressure. Defueling with passengers on board is prohibited.

The limitations contained in this Directive supersede any conflicting basic Aircraft Flight Manual limitations.

Accomplishment of Requirement 2 of AD/B747/280 is acceptable for compliance with the requirements this Directive. This Directive does not require that those actions be repeated unless the terminating actions specified in Requirements 4, 6 and 7 of AD/B747/280 have been accomplished.

Accomplishment of the terminating actions specified in Requirement 4, 6 and 7 of AD/B747/280, does not allow removal of the AFM revisions required by this Directive.

Note: FAA Emergency AD 2002-24-51 and AD2002-24-52 refer.

Compliance: Before 29 November 2002.

This Airworthiness Directive becomes effective on 26 November 2002.

Background: The United States Federal Aviation Administration has received reports indicating that two fuel tank pumps from different Model 747 series aeroplanes showed evidence of extreme localized overheating of parts in the priming and vapour pump section of the fuel pump. The priming and vapour pump section of the pump is open to the fuel tank via the pump inlet line and the vapour vent of the pump. The cause of this overheating is believed to be friction between the pump parts; however, the specific cause of the friction is unknown at this time.

Overheating of the parts in the priming and vapour pump section of the fuel pump provides an ignition source in the fuel tank during dry running of the pump, which could result in fire/explosion of the fuel tank.

Boeing 747 Series Aeroplanes

AD/B747/283 (Continued)

This Directive requires revision of the AFM to require the flight crew to maintain certain minimum fuel levels in the centre fuel tanks, together with a prohibition of the use of the horizontal stabilizer fuel tank (for Model 747-400 series aeroplanes) and certain centre auxiliary fuel tanks (on Model 747 series aeroplanes). These procedures specify crew monitoring of fuel levels and shutoff of centre fuel tank pumps at specified levels that ensure the pump inlet remains covered during pump operation. Covering the pump inlet prevents fuel vapours from coming into contact with potentially overheated parts in the priming and vapour pump section of the fuel pump, together with the likelihood of preventing the overheating condition itself. This action is considered interim and further rule making is anticipated.



James Coyne
Delegate of the Civil Aviation Safety Authority

25 November 2002