

Introduction

Boeing recently published a technical document with information on the new B777-9 series and a comparison of the fuel adapter location of the new B777-9 and the legacy 777-300ER (inserted as Appendix 1) and the A380 (inserted as Appendix 2).

Based on the information from Boeing, the fuel panel on the new B777-9 will be at a maximum height of 6.2m (20.4ft) above ground level, i.e. higher by 0.7m (2.4ft) than the legacy B777-300ER and higher by 0.3m (1.0ft) compared to the A380, as shown in Appendices 1 and 2, respectively.

JIG would like to raise awareness to aircraft fuelling operators, of possible vehicle design modifications for the existing vehicle elevating platforms to reach the fuel panel and to enable ergonomic handling and connection of the fuelling nozzles to the aircraft fuel adapters.

The first delivery of the new B777-9 series is expected late 2019 or early 2020.

Fuelling vehicle modifications

Modern vehicles or vehicles upgraded to service A380s

Vehicles equipped with a double scissor lift that can reach 4.5m (14.8ft) should already meet the requirements for the new B777-9 aircraft.

For modern fuelling vehicles or equipment previously upgraded for the A380 series, the elevating fuelling platform is typically manufactured with the capability to extend to 4.1-4.2m (13.5-13.8ft) or more above ground level.

Vehicles equipped with a scissor lift that can elevate the fuelling platform to a maximum height of 4.1-4.2m (13.5-13.8ft), will require platform modifications to extend by an additional 0.3-0.4m (1.0-1.3ft) to enable the usability of the platforms by all operators. Without this modification, operators whose height is less than 1.80m (5.9ft) may be challenged, from an ergonomic and manual handling point of view, to connect the fuelling nozzles to the fuel adapters of the B777-9.

Older vehicles or vehicles not upgraded to service A380s

For locations using mobile fuelling equipment with elevating fuelling platforms reaching a maximum height of less than 4.2m (13.8ft), the equipment will require modification to safely access the new B777-9 fuelling adapter at 6.2m (20.4ft). For hydrant servicers not equipped with pantographs to support the hose on the platform when in upper position, a modification to increase fuelling platform level when in low (retracted) position may be necessary, to avoid the need for longer deck hoses. Some low profile fuelers may also need modification.

Considerations for vehicle modifications

Careful evaluation with the manufacturers is required to ensure that vehicle modifications will not introduce additional risks or restrict the operability of the fuelling vehicles. Factors to be considered include:

- Increasing platform's height may introduce additional hazards such as vehicle instability.
- Increasing the length of deck hoses may result in stowage and handling issues, e.g. due to insufficient space to stow longer hoses, and may also result in kinking of the hoses when e.g. fuelling lower wing aircrafts
- Note: Based on information received from Boeing, the aircraft adaptors are not expected to be impacted by the load of longer hoses, as the adaptors are designed to withstand significantly higher loads.
- Careful consideration should be given on fitting or adjusting pantographs.
- Installing an additional lift on top of the existing lift may cause instability issues and/or be challenging to operate.

- Extending scissor arms may increase vehicle width.
- If elevating platform systems are mounted higher on the chassis to increase the maximum possible platform height, the height of the vehicle when the platform is lowered may increase (with platform handrails above cab height), which could lead to significant risks and operational problems.
- Modifications shall not result in reduced handrail height (below safe limits) above the platform's floor.
- Payload, safe access/egress and location of wand sensors should be considered.

Other new aircraft types

Data provided by Airbus for the A350 XWB, show a variation of the ground clearance for the fuel connectors, ranging from 5.5m (18.0ft) to 5.7m (18.7ft), depending on the aircraft loading. Therefore, vehicle modifications, as outlined in this document for the new B777, may be required for older vehicles and for vehicles which are not already upgraded to service the A380 aircraft.

Recommended actions

An evaluation of the existing equipment will be needed at every location which may be requested to fuel new aircraft types. Where modifications are deemed as necessary, a detailed Management of Change plan will be required, with support obtained from equipment manufacturers, who will propose suitable modifications to vehicle platforms to safely achieve additional platform height, where necessary.

Locations used by airlines for flight diversions should evaluate the need to modify fuelling equipment.

Modified platforms shall continue to meet the requirements of JIG 1, section 3.1.16 and all applicable national/local standards and regulations associated with the elevating fuelling platforms. Recertification of modified platforms may be required by some local regulations.

Stand Plans

The B777-9 will be longer than the 777-300ER by 2.9m (9.4ft). As shown in Appendix 1, the fuel panel will be 2.6m (8.7ft) further out and 1.9m (6.3ft) further back from the engines, compared to 777-300ER. Conceptually, the newer design helps alleviate the concerns many in-service B777s are fueled with fuelling vehicles in very close proximity to aircraft engines. There are two aircraft fuel positions for dual-vehicle fuelling. However, only the port side has the fuel panel to control the fuelling process.

The implications of the different position of the fuel panel on the new B777-9 compared to the B777-300ER, both vertically and horizontally, including fuel panel position relative to the hydrant pit, should be assessed from a stand-plan point of view.

A Management of Change plan should be developed to determine required updates to the airport stand plans.

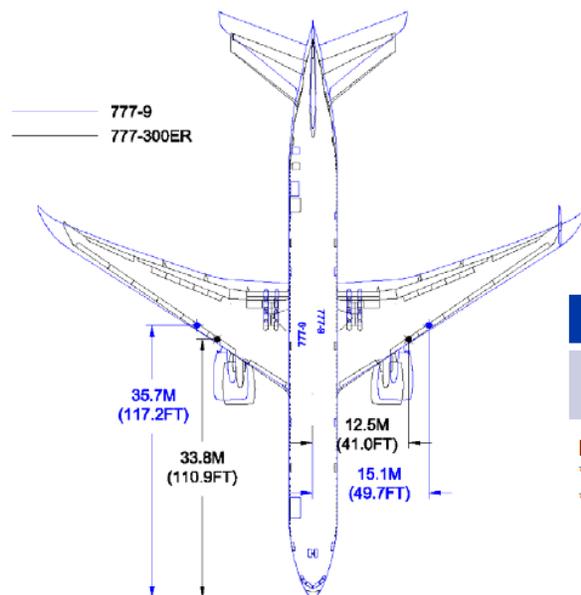
Actions to Implement this Bulletin (See Table 1 for Action Type Codes)

Action Description	Action Type	Target Completion Date
Review this bulletin and determine whether a MOC plan should be initiated for vehicle platform modifications, in accordance with the information and guidance provided in this document.	RP	31 st December 2017
Consideration should be given to incorporate vehicle platform requirements into specifications for new fuelling vehicle builds.	RP	31 st December 2017

Appendix 1: 777-9 Fuel Adapter Location Comparison with 777-300ER

777-9 Fuel Adapter Location Comparison with 777-300ER

- Compatibility with Existing underground fueling system



	777-9 *	777-300ER **
Outboard Fuel Adapter Height Above Ground	6.2m (20.4ft)	5.5m (18.0ft)

Notes:

* 777-9 reasonable worse-case airline operating scenario

** Max. height above ground

Note: Dimensions shown are for outboard fuel adapter. 777-9 data is measured with wings in jig position.

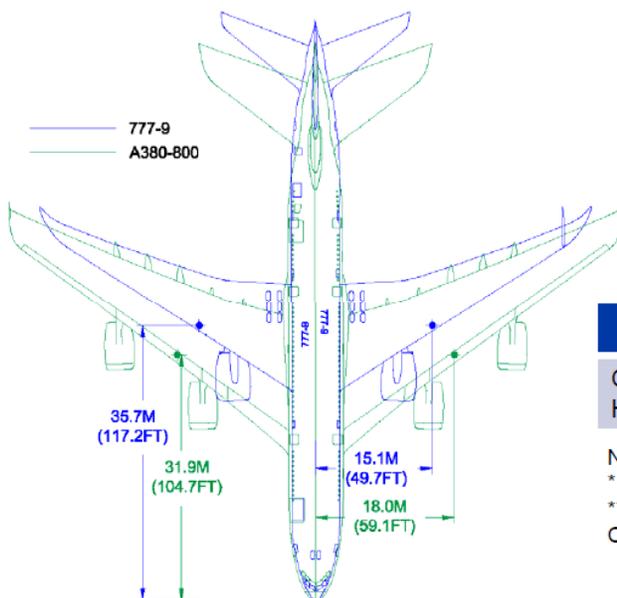
Dimensions shown are preliminary and may change during configuration development

Copyright © 2016 Boeing. All rights reserved.

Copyright @ 2016 Boeing All rights reserved

Appendix 2: 777-9 Fuel Adapter Location Comparison with A380

777-9 Fuel Adapter Location Comparison with A380



	777-9 *	A380 **
Outboard Fuel Adapter Height Above Ground	6.2m (20.4ft)	5.9m (19.4ft)

Notes:

* 777-9 reasonable worst-case airline operating scenario

** Mean Height from ground as noted in A380 Airplane Characteristics – Airport and Maintenance Planning manual.

Note: Dimensions shown are for outboard fuel adapter. 777-9 data is measured with wings in jig position.

Dimensions shown are preliminary and may change during configuration development

Copyright © 2016 Boeing. All rights reserved.

Copyright © 2016 Boeing All rights reserved

Operations Bulletin

Bulletin 103

Vehicle platform modifications

June 2017

Table 1 Action Type Codes

Action Types	JIG Bulletin Action Type Definition
JS	Change to JIG Standard – to be adopted by JV and/or Operator to continue to meet the JIG Standard(s) (JIG 1, 2, 4, EI/JIG 1530 and the JIG HSSE Management System).
RP	JIG Recommended Practice which the JV should consider adopting as its own practice (**).
I	Issued for information purposes only.
Note (**) - If the JV agreements require any of the JIG Standards and/or any of the JIG Common Processes as the governing operational standard then adoption of changes to applicable JIG Standards and/or Common Processes should not be considered optional by the JV Board.	

Note: This document is intended for the guidance of Members of JIG and companies affiliated with Members of JIG, and does not preclude the use of any other operating procedures, equipment or inspection procedures.

The information contained in this publication is subject to constant review in the light of changing government requirements and regulations. Although efforts are made to keep this information up-to-date, accurate, complete, and free from error, we make no representation, warranty or guarantee, whether express or implied, that the information is up-to-date, accurate, complete, free from error, or in compliance with applicable law and regulations. No subscriber or other reader should act on the basis of any such information without referring to applicable laws and regulations and/or without taking appropriate professional advice. None of JIG, its Members, the Companies affiliated with its Members accepts responsibility for any loss or damage, whether in contract, tort (including negligence), breach of statutory duty, or otherwise, even if foreseeable, arising under or in connection with your use, adoption or reliance on the information in this document. You use this information at your own risk, but for the full terms and conditions concerning use of this document, please refer to <http://www.jigonline.com/legal-and-copyright/>

JIG is the owner of the copyright and all intellectual property rights in the publication. IATA uses such rights with permission from JIG.