

INTRODUCTION:

Operating into environments where Flight Levels, Altitudes or Heights are expressed in meters brings with it a set of complexities. These complexities are further compounded when operating into and out of airfields that issue clearances based on QFE or a combination of QFE and QNH.

Selection of Altitude/FL Displayed in Meters:

Airbus: The metric conversion displayed on any display units shows the selected altitude on the FCU (Airbus) which is a direct arithmetical conversion based on STD or QNH reference setting, thus the value displayed is above mean sea level (AMSL) and not above aerodrome elevation.

Boeing: When MTRS is selected on the EFIS control panel, both selected and actual altitudes converted into meters are displayed on PFD next to normal indications in feet.

SELECTED value is metric equivalent of MCP altitude window value in ft, rounded to the nearest 10 meters.

ACTUAL value is a direct arithmetical conversion of indicated altitude in feet.

Depending on subscale setting of altimeters both may indicate metric flight levels (on STD) or altitudes (when QNH is set).

As QFE is not to be used by Etihad policy, metric indication will never represent heights above aerodrome level.

To avoid confusion, pilots are required to deselect the “PFD/(ECAM on A320 Family) metric selector pushbutton” on the FCU on Airbus aircrafts and “MTRS Switch” on the EFIS on Boeing aircrafts, whenever QNH is set as reference.

References

For Airbus aircraft system related to metric altitude indication refer to FCOM DSC-22 & 31 - METRIC ALTITUDE INDICATION.

For Boeing aircraft, refer to FCOM 10.10.16, 10.10.35 and 10.30.2

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Metric Operations in Standard Setting (1013 hPa):

Flights must always be conducted in STD (1013 hPa) when:

a) During Cruise

Pilots must set/maintain STD (1013 hPa) as a reference setting when cruising above the transition level.

The conversion from Standard Flight Levels to Metric Flight Levels is based on STD (1013 hPa). Conversion tables are available in the Jeppesen charts in addition to the Jeppesen Booklets which must be used.

Pilots are required to changeover from Standard to Metric Flight Levels and vice versa as indicated on the airway charts and/or when instructed by ATC.

b) During Descent

Pilots must set STD (1013 hPa) as a reference setting during descent when at or above the published transition level unless ATC issues a descent clearance to a height/altitude, at which point pilots must set QNH as per “Metric Operations in QNH Setting” below.

c) During Climb

Pilots must set STD (1013 hPa) as a reference setting during climb when above the published transition height / altitude.

R/T Phraseology

The vertical position shall be expressed as Flight Levels in metres (e.g. FL 11600m), read as “Flight Level One-One Thousand Six Hundred Metres”.

Metric Operations in QNH Setting

a) During Descent

Pilots must set QNH as a reference setting during descent when below published transition level or when ATC issues a descent clearance to an altitude while the aircraft is above transition level, whichever comes first.

b) During Climb

Pilots must set QNH as a reference setting in climb when at or below the published transition altitude.

c) During Cruise

Pilots must set/maintain QNH as a reference setting during cruise below transition level / altitude.

R/T Phraseology

The vertical position shall be expressed as an altitude in metres (e.g. Altitude 600m), read as "Altitude Six Hundred Metres".

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Metric Operations with QFE to QNH Conversion:

It is Etihad policy to conduct all approaches with altimeter reference setting based on QNH and **never in QFE**.

Whenever Jeppesen approach charts reflects “ALT/HEIGHT conversion table”, pilots must request and **only accept QFE approach clearances** and the read-back must be in based on QFE (height). Whereas, **conduct of aircraft operation must be based on QNH** that must be received and/or requested from ATC when not available on ATIS.

Any assigned QFE height clearances in metres received from ATC must then be converted directly to QNH altitude in feet by referring to “ALT/HEIGHT conversion table” in the Jeppesen approach charts. This must be cross checked by the pilots after which, the converted altitude must then be set and displayed on the PFD.

As such:

a) During Descent

Pilots must set QNH as a reference setting during descent when below published transition level or when ATC issues a descent clearance to a height while the aircraft is above transition level, whichever comes first.

The vertical position shall be expressed as a height in metres after applying the appropriate conversion (e.g. Height 600m), read as “Height Six Hundred Metres”.

b) During Climb

Pilots must set QNH as a reference setting during climb when at or below the published transition height.

The vertical position shall be expressed as height in metres (e.g. Height 600m), read as “Height Six Hundred Metres”.

During Cruise

Pilots must set/maintain QNH as a reference setting during cruise below transition level / height.

R/T Phraseology

The vertical position shall be expressed as height in metres (e.g. Height 600m), read as "Height Six Hundred Metres".

Example

Below is an illustration of Metric Operations with QFE to QNH Conversion:

The aircraft is cleared to descend from FL 4500m (FL148 on FCU/MCP) to height of 600m (QFE) – the platform height ILS-Z R05R.

Using the Alt / Height conversion box in the top left corner of the approach plate the 600m platform height (QFE) gives an altitude conversion of 4200ft (QNH) which must be set in the FCU (Airbus)/MCP (Boeing) and commence descend to the platform height 600m as cleared on QNH.

