

vTools

EuroScope Plug-In

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VTOOLS FEATURES

- Showing aircraft height in meters based on QFE below transition level.
- Setting aircraft height in meters based on QFE by the controller.
- Showing the list of airports with QFE in mmHg and hPa, transition level and control height.
- Showing distance and deviations from course/glide path for landing aircraft.
- Showing the precision approach radar.

INSTALLATION

1. Create vTools folder in EuroScope folder.
2. Copy all the files to this folder.
3. Load plug-in in EuroScope (OTHER SET → Plug-ins... → Load).

WORKING WITH VTOOLS

vTools allows to add to EuroScope:

- aircraft parameters to show in tags near aircraft mark and in aircraft lists.
- QFE list to show QFE/TL/CH for airports under control.
- graphic precision approach radar.

Part of the aircraft parameters is intended to replace existent parameters (i.e. QFE height – to replace EuroScope altitude). Another part contains new parameters to add to existent lists and tags (i.e. aircraft deviation from glide path).

Modifying aircraft parameters in tags

Tag – the set of aircraft parameters shown near its mark.

1. Go to tag editor (OTHER SET → Tag editor...).
2. If in TAG family there is only built-in tag family (Matias), create its copy which will be available for editing (Copy family).
3. Select TAG Type and Tagging level.

TAG type: aircraft tags for different types of radar and aircraft transponder conditions (primary, secondary, secondary with transponder mode C, etc.). In the easiest case (Simulation mode: Easy Euroscope mode, Correlation mode: Easy VATSIM) – Tag type «Correlated A+C» is used.

Tagging level:

1. untagged – tag of the aircraft not under control.
2. tagged – tag of the aircraft under control.
3. detailed – tag of the aircraft under control when mouse cursor is hovered over it.
4. Replace/add/delete parameters using correspondent buttons and «Tag Item type» list. **This list is that very place, where all the aircraft parameters available in vTools will appear (they will be called vTools / ...).**

Modifying aircraft parameters in lists

Lists – tables with aircraft call signs and parameters.

1. Go to the settings of the required list («S» button, third from the left in the top left corner of the list).
2. Replace/add/delete parameters like in tag editor.

Aircraft parameters available in vTools and their supposed places in EuroScope aircraft tags and lists will be discussed below.

More information on tags and parameters – in EuroScopeWiki
(<http://www.euroscope.hu/mediawiki/index.php?title=TAGs>).

QFE HEIGHT TAGS

vTools / Height

height:

- near airport and below $TH+THgap^*$: based on QFE and with 'H' symbol
- en route below general $TH+THgap^*$: based on QNH and with 'A' symbol
- in other case: flight level

To replace: Tagging level: *untagged, tagged*; Item type: *Altitude*.

* TH – parameter in airports.ini, generalTH, THgap – parameters in vTools.ini.

vTools / Temporary height

temporary height: shown based on the same rules as vTools / Height.

To replace: Tagging level: *tagged*; Item type: *Temporary altitude*.

vTools / Final height

final height: shown based on the same rules as vTools / Height, but without taking airport elevations in account.

To replace: Tagging level: *tagged*; Item type: *Final altitude*.

vTools / Height(ref airport)

vTools / Temporary height(ref airport)

vTools / Final height(ref airport)

htight, temporary height and final height shown as HXXX(ICAO), with the code of the airport, based on which QFE the height is calculated,.

To replace: Tagging level: *detailed*; Item type: *Altitude, Temporary altitude, Final altitude*.

Setting aircraft height with F5, F7

For the correct height calculation based on QFE you **have to be the assigned controller for the aircraft**.

Height is set in hundreds of meters below TH and in hundreds of meters or feet above TH. All the calculations are made automatically.

Examples:

F5 101 ($\text{feetAboveTH}^* = 0$): in flight strip – 33100, in *Final Height* – 101.

F5 320 ($\text{feetAboveTH}^* = 1$): in flight strip – 32000, in *Final Height* – 320.

F5 7 (i.e. near UDD): in flight strip – 2300, in *Final Height* – H070.

F8 7: in flight strip – 2900 (700m+180m(UDD)), in *Temporary Height* – H070.

* feetAboveTH – parameter in vTools.ini.

QFE LIST

When EuroScope receives METAR: airport code, QFE pressure in mmHg and hPa, transition level and control height are shown in QFE list.

The list will initially appear in the top left corner of the screen, probably hidden behind other lists, so you have to drag it to some more suitable place and **using the left button in the list header select how many lines it will contain (unlimited is recommended)**.

Commands available from EuroScope command line:

.qfesi: show QFE list (if it's accidentally closed).

.qfeaa <ICAO>: add the airport to the list (it's added automatically when EuroScope receives METAR). If the airport is added without receiving the METAR zeroes are shown before METAR is received.

.qfera <ICAO>: remove airport from the list.

Transition level formula:

$$TL[m] \geq (patternH[m] + 300) \cdot \left(1 - \frac{T[^\circ C] - 15}{300}\right) + (1013.25 - QFE[hPa]) \cdot 9$$

Transition level is higher than TH + 300m.

Calculated value is rounded up to the nearest flight level.

9 m/hPa seems to be correct for FS2004.

PRECISION APPROACH RADAR

For the aircraft to be shown in the Landing list:

- runway must be specified in EuroScope sector file (that's how vTools knows the threshold coordinates and runway heading, all the other parameters are taken from runways.ini).
- landing runway (which must be active in the EuroScope settings) for the aircraft must be correctly set.
- aircraft must be in the radar range.

Call sign, destination, runway, distance (km), side deviation (m), height (m), speed (km/h or knots depending on the EuroScope settings) are shown in the Landing list.

The list will initially appear in the top left corner of the screen, probably hidden behind other lists, so you have to drag it to some more suitable place and **using the left button in the list header select how many lines it will contain (unlimited is recommended)**.

- Side deviation is shown with L/R symbols (left/right) or "CRS" (on course).
- Height is shown before FAF. After FAF +/- (above/below) or "GP" (on glide path).
- Distance is shown in yellow* at some** distance from FAF.
- Height and side deviation are shown in yellow* when deviations are critical** before Outer Marker, and in red* between OM and MM (or 1km/4km if there is no MM/OM).

* yellow and red are by default, in fact it's EuroScope INFORMATION и EMERGENCY colors.

** radar parameters are set in vTools.ini and runways.ini.

Click on the line with the aircraft to show the precision approach radar window (double click on the radar window to close it).

VTOOLS SETTINGS

vTools.ini

[QFE]

QFErange [km] – radius inside which height is shown based on QFE.

generalTH [m] – general transition height en route.

THgap [m] – flight levels are shown above TH+THgap.

feetAboveTH – 0: metric flight levels, 1: feet flight levels.

modifyAssignedAltitude – 1: assume, that heights are assigned based on QFE.

[AppRadar]

distMperPixel, widthMperPixel, heightMperPixel [m/pixel] – meters per screen pixel for distance, side deviation and height (defines radar window size).

radarWidth [m] – radar size for side deviation.

distBeforeFAF [km] – radar size for distance (from FAF).

FAFapproachDist [km] – FAF approach warning distance.

heightAboveFAF [m] – radar size for height (from FAF height).

maxCourseDeviationAngle [°] – critical course deviation.

maxGPDeviationAngle [°] – critical glide path deviation.

minGPDeviation [m] – critical glide path deviation from MM to MM+1km (1...2km if there is no MM).

Colors (in BBGRR format (blue, green, red) – 3-byte hexadecimal number.

colorBack – background.

colorText – text.

colorAxis – axes and markers.

colorGrid – grid.

colorPath – course and glide path.

colorDeviation – critical deviations.

colorTrack – aircraft position mark.

markerDotRadius [pixel] – MM and OM mark radius.

pathWidth [pixel] – course and glide path line width.

trackDotRadius [pixel] – aircraft position mark radius.

trackHistory – number of previous aircraft position marks to display.

transparency – transparency (0 – not transparent ... 254 – fully transparent, 255 – transparent background).

airports.ini

[XXXX] – airport ICAO code.

lat, lon – coordinates.

elev [m] – airport elevation.

TH [m] – transition height.

patternH [m] – pattern height.

TL [m] – transition level (set as "TL" or "TL:QFE:TL", etc.).

Example: 1800:731:1500:758:1200 (1800 if $QFE < 731$, 1500 if $758 \leq QFE < 758$, 1200 if $QFE \geq 758$).

(if TL is not set, it's calculated using the formula)

runways.ini

[Default] – default runway parameters.

[XXXXYYYY] (XXXX: airport ICAO code, YYY: runway name) – custom runway parameters (different from default parameters).

fromTStoRadar [m] – distance from threshold along the runway to the approach radar.

radarCourseViewAngleLeft [°] – maximum radar viewing angle to the left.

radarCourseViewAngleRight [°] – maximum radar viewing angle to the right

radarGPViewAngleTop [°] – maximum radar viewing angle for height.

radarGPViewAngleBottom [°] – minimum radar viewing angle for height.

minRadarDist [km] – minimum distance from threshold still visible for radar.

FAFheight [m] – FAF height.

GSangle [°] – glide slope angle.

fromTStoTD [m] – distance from threshold along the runway to touchdown point (GP antenna).

distOM [km] – OM distance; «-1» – no OM.

distMM [km] – MM distance; «-1» – no MM.

Xprec [m], **XprecRange** [km], **Yprec** [m], **YprecRange** [km] – radar precision: X – for side deviation, Y – for height.

Example: prec=10;20;30 precRange=5.0;10.0, precision – 10m closer than 5 km, 20m from 5 to 10 km, 30m farther than 10 km.

UPDATES & FEEDBACK

Web-page: <https://sites.google.com/site/vatsimtools>.

E-mail: vatsimtools@gmail.com.