



IFR CRUISE ALTITUDE OR FLIGHT LEVEL

1. Introduction

When you are an IFR pilot, you must respect minimum rules in order to select a cruise altitude or flight level. This article will help you choose one of the possible solutions.

2. IFR altitude and level restrictions

2.1. Minimal altitude

All IFR flight shall be flown except for take-off, landing or except by emission from the appropriate authority:

- At a level which is not below the minimum flight altitude established by the local regulation (published on charts).
- At a level which is a least 600m or 2000ft above the highest obstacle located within 8km of the estimated position of the aircraft, in mountainous areas, when no minimum flight altitude has been established
- At a level which is a least 300m or 1000ft above the highest obstacle located within 8km of the estimated position of the aircraft, elsewhere than the two first items, when no minimum flight altitude has been established

Note that there is no maximal altitude in IFR flight. Only your aircraft performance and the chosen route constraints can limit the altitude. The maximum controlled flight level is usually FL660.

3. Cruise altitude or flight level selection

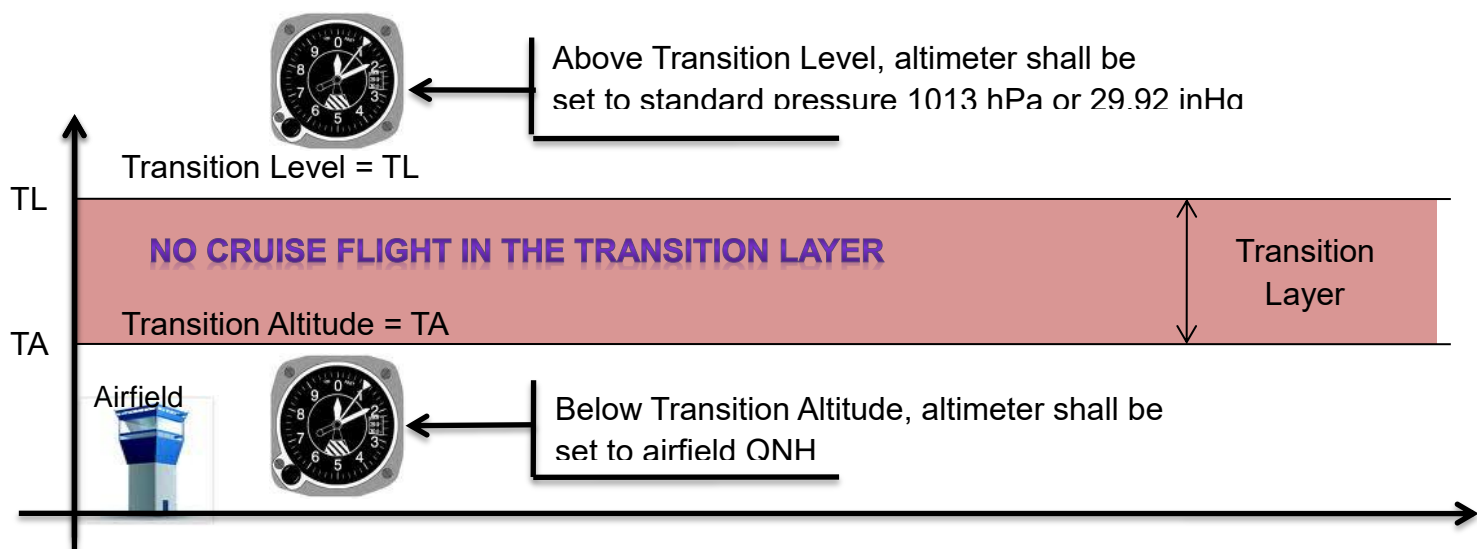
3.1. Transition layer constraints

No cruise flight level or cruise altitude can be chosen in the transition layer

The transition layer is the airspace between the transition altitude and the transition level.

Consult our altimetry documentation for pilot or controller in order to have more information about transition layer, transition altitude and transition level.

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3.2. Available IFR levels

Except where otherwise indicated in air traffic control clearances or specified by the appropriate ATS authority, IFR flights when operated above minimum flight altitude as specified shall be conducted at a flight level/altitudes appropriate to the track as specified in the following levels:

- IFR flights use altitudes ending with the number 000: 5000ft, 6000ft, 7000ft, 8000ft, 12000ft, ...
- IFR flights use flight levels ending with the number 0: FL50, FL60, FL70, FL210, FL320 ...

The cruise altitude or cruise flight level must be chosen using this assigned rule and must follow the semi-circular rule depending on the heading of the aircraft (see next chapter).

Note that VFR flight levels end with final number 5 and not 0. This provides enough separation between VFR and IFR flights and adequately avoids possible conflicts during the cruise phase.

3.3. Odd and even flight levels

For answering to the need of flight level separation between the same types of flight, flight levels have been separated in two categories, the even and the odd flight level:

- **Even** flight level: the last number before the final number 0 shall be even: FL80, FL120, FL260 ...
- **Odd** flight level: the last number before the final number 0 shall be odd: FL90, FL130, FL270 ...

This rule is applicable for flight levels below FL290.

This rule is applicable only for flight levels between FL290 and FL410 in RVSM airspace.

Consult the available tables at the end of this document in order to select your flight level or altitude.

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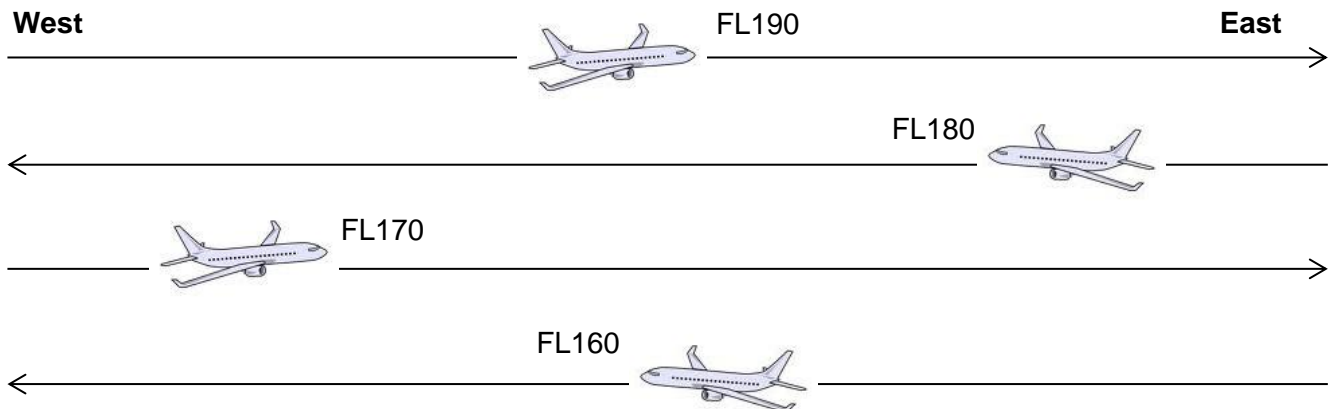
4. Semicircular rule

4.1. Default worldwide semicircular rule

The default worldwide semi-circular rule is the East/West orientation of the flight level parity:

Your aircraft has track between **0°** and **179°**, your flight level or altitude must be **odd**.

Your aircraft has track between **180°** and **359°**, your flight level or altitude must be **even**



By following the semi-circular rule, an IFR aircraft will limit possible conflicts with another aircraft coming from the opposite direction through providing 1000ft separation between opposite west/east tracks.

4.2. Specific semicircular rule

In some countries due to IFR routes or special regulations set by the local administration, the **semicircular rule can be the North/South** orientation of the flight level parity:

- Your aircraft has track between 90° and 269°, your flight level or altitude must be **odd**
- Your aircraft has track between 270° and 359° & between 0° and 89°, your flight level or altitude must be **even**.

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5. List of available flight level and altitude

Since year 2010, the worldwide airspace respects the RVSM regulation between FL290 and FL410 except for some local areas around the world. (RVSM = Reduced Vertical Separation Minimum)

Magnetic track, or in polar areas at latitudes higher than 70 degrees and within such extensions to those areas as may be prescribed by the appropriate ATS authorities, grid tracks as determined by a network of lines parallel to the Greenwich Meridian superimposed on a polar stereographic chart in which the direction towards the North Pole is employed as the Grid North.

5.1. In a RVSM airspace

In areas where feet are used for altitude and where, in accordance with regional air navigation agreements, a vertical separation minimum of 1000 feet is applied between FL290 and FL410 inclusive.

IFR Flight					
Track from 0° to 179°			Track from 180° to 359°		
FL	Feet	Meter	FL	Feet	Meter
10	1000	300	20	2000	600
30	3000	900	40	4000	1200
50	5000	1500	60	6000	1850
70	7000	2150	80	8000	2450
90	9000	2750	100	10000	3050
110	11000	3350	120	12000	3650
130	13000	3950	140	14000	4250
150	15000	4550	160	16000	4900
170	17000	5200	180	18000	5500
190	19000	5800	200	20000	6100
210	21000	6400	220	22000	6700
230	23000	7000	240	24000	7300
250	25000	7600	260	26000	7900
270	27000	8250	280	28000	8550
290	29000	8850	300	30000	9150
310	31000	9450	320	32000	9750
330	33000	10050	340	34000	10350
350	35000	10650	360	36000	10950
370	37000	11300	380	38000	11600
390	39000	11900	400	40000	12200
410	41000	12500	430	43000	13100
450	45000	13700	470	47000	14350
490	49000	14950	510	51000	15550
etc...	etc...	etc...	etc...	etc...	etc...

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5.2. In a RVSM metric airspace

In areas where metres (meter) are used for altitude and where, in accordance with regional air navigation agreements, a vertical separation minimum of 300 m is applied between 8 900 m and 12 500 m inclusive

IFR Flight					
Track from 0° to 179°			Track from 180° to 359°		
Standard Metric	Meters	Feet	Standard Metric	Meters	Feet
30	300	1000	60	600	2000
90	900	3000	120	1200	3900
150	1500	4900	180	1800	5900
210	2100	6900	240	2400	7900
270	2700	8900	300	3000	9800
330	3300	10800	360	3600	11800
390	3900	12800	420	4200	13800
450	4500	14800	480	4800	15700
510	5100	16700	540	5400	17700
570	5700	18700	600	6000	19700
630	6300	20700	660	6600	21700
690	6900	22600	720	7200	23600
750	7500	24600	780	7800	25600
810	8100	26600	840	8400	27600
890	8900	29100	920	9200	30100
950	9500	31100	980	9800	32100
1010	10100	33100	1040	10400	34100
1070	10700	35100	1100	11000	36100
1130	11300	37100	1160	11600	38100
1190	11900	39100	1220	12200	40100
1250	12500	41100	1310	13100	43000
1370	13700	44900	1430	14300	46900
1490	14900	48900	1550	15500	50900
etc...	etc...	etc...	etc...	etc...	etc...

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5.3. In a non-RVSM airspace

If your airspace is a non-RVSM airspace, a vertical separation minimum of 2000 feet is applied between FL290 and FL410 inclusive.

For the level below FL290 and above FL410, you must select the flight level according the table in RVSM airspace.

IFR Flight					
Track from 0° to 179°			Track from 180° to 359°		
290	29000	600	310	31000	1200
330	33000	1800	350	35000	3000
370	37000	11300	390	39000	11900
410	41000	12500	430	43000	13100

5.4. In a non-RVSM metric airspace

If your airspace is a non-RVSM airspace, a vertical separation minimum of 600 m is applied between 8 900 m and 12 500 m inclusive.

For the level below 8 900 m and above 12500 m, you must select the flight level according the table in RVSM airspace.

IFR Flight					
Track from 0° to 179°			Track from 180° to 359°		
890	8900	29100	950	9500	31100
1010	10100	33100	1070	10700	35100
1130	11300	37100	1190	11900	39100
1250	12500	41100	1310	13100	43000