



IVAO

IVAO - XO

Training Documents

‘Semicircular Rules’

1) Introduction



The semi-circular rule is the basic rule for flight level or altitude selection in function of the aircraft heading in order to ensure basic vertical separation.

This semi-circular defines the available flight levels in the conventional airspace and also in the reduced vertical separation airspace (RVSM) when applicable between FL290 and FL410.

RVSM definition = reduced vertical separation minimum

2) Definition of 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

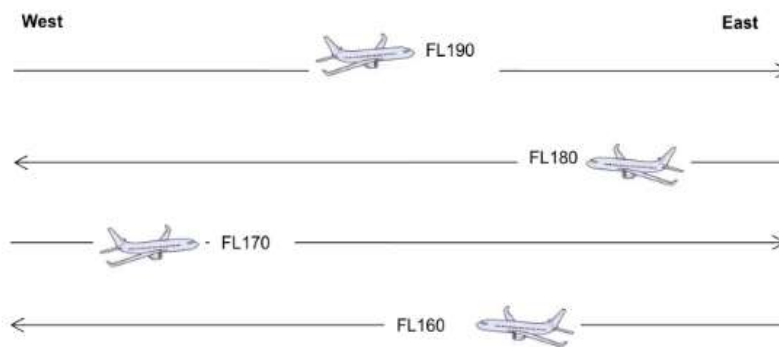
- Even flight level: the last number before the final number 0 shall be even: FL 40, FL 60, FL 120...
- Odd flight level: the last number before the final number 0 shall be odd: FL 50, FL 70, FL 130

3) Default worldwide semi-circular rule

For IFR flights:

✓ 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



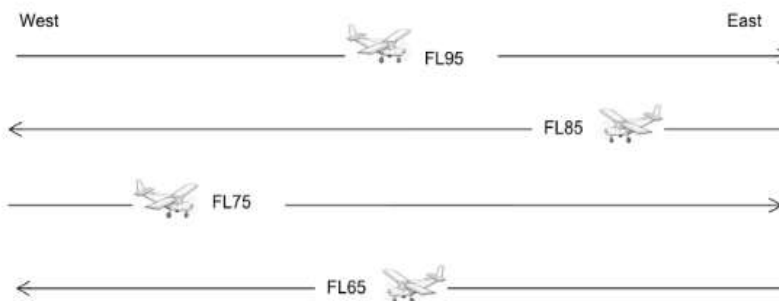
By following the semi-circular rule, an IFR aircraft will limit possible conflicts between other aircraft coming in opposite direction by providing 1000ft separation between opposite west/east tracks.

For VFR flights:

✓ The VFR rules of flight level and/or altitude selection is the same as IFR ones with adding 500ft to all levels.

✓ 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, a VFR aircraft will limit possible conflicts between other aircraft coming in opposite direction by providing 1000ft separation between opposite west/east tracks.

4) Specific semi-circular rule

North/South rule:

In some countries due to the IFR route 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.

5) List of available flight levels and altitude (in feet)

In airspace below FL290 (in feet):

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

6) In RVSM airspace between FL290 and FL410 (in feet)

✓ Reduced Vertical Separation Minima (RVSM) reduces the vertical separation above FL 290 and below FL410 to 1,000 ft.

This allows aircraft to safely fly more optimum routes, gain fuel savings and increase airspace capacity by adding new flight levels.

✓ 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
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

7) In non-RVSM airspace between FL290 and FL410 (in feet)

✓ If your airspace is non-RVSM airspace, a vertical separation minimum of 2000 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
290	29000	600	310	31000	1200
330	33000	1800	350	35000	3000
370	37000	11300	390	39000	11900
410	41000	12500	430	43000	13100

Airspace above FL410 (In feet):

IFR Flight					
Track from 0° to 179°			Track from 180° to 359°		
FL	Feet	Meter	FL	Feet	Meter
410	41000	12500	430	43000	13100
450	45000	13700	470	47000	14350
490	49000	14950	510	51000	15550
530	etc...	etc...	550	etc...	etc...

8) List of available flight levels and altitude (in meters)

In metric airspace below S890 (in feet):

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

In-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
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

In a non-RVSM metric airspace:

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

Airspace above S1490 (in meter):

IFR Flight					
Track from 0° to 179°			Track from 180° to 359°		
Standard Metric	Meters	Feet	Standard Metric	Meters	Feet
1250	12500	41100	1310	13100	43000
1370	13700	44900	1430	14300	46900
1490	14900	48900	1550	15500	50900
etc...	etc...	etc...	etc...	etc...	etc...

On behalf of the IVAO Oceanic Region (XO) Division Training Department
