

# Level Change

## General

During various phases of flight, level changes by aircraft may be necessary for the purpose of separation.

When issuing a level change clearance, vertical and horizontal separation between aircraft shall always be assured. Controllers must ensure that the cleared level will not result in a loss of separation with any other traffic in the vicinity prior to issuing a level clearance.

Due consideration be given to aircraft on crossing or reciprocal tracks, as well as aircraft that are on the same track which may be separated vertically but may not have adequate horizontal separation.

If there is any doubt as to whether separation will be assured an alternative clearance must be provided.

## Level change clearance

### Climb clearance

During a climb, when an aircraft is expected to cross, or is on the same track as proximate traffic and separation may reduce to below minimum horizontal separation, they shall only be cleared:

- To a level 1000 ft below traffic that is maintaining level flight; or
- To a level vacated by traffic if its mode C readout indicates a climb; or
- To a level 1000 ft below the clearance level of traffic that is descending

### Descent clearance

During a descent, when an aircraft is expected to cross, or is on the same track as proximate traffic and separation may reduce to below minimum horizontal separation, they shall only be cleared:

- To a level 1000 ft above traffic that is maintaining level flight; or
- To a level vacated by traffic if its mode C readout indicates a descent; or
- To a level 1000 ft above the clearance level of traffic that is climbing

## Horizontal speed control in combination with a level clearance

For two or more aircraft on the same track, the level clearance requirements in 9.2.2, and 9.2.3 may be exempted provided horizontal speed control has been applied and appropriate minimum

horizontal separation exists and will continue to exist.

## Vertical speed control in combination with a level clearance

For aircraft on crossing tracks, the requirements in 9.2.2 and 9.2.3 may be exempted, provided adequate vertical speed control has been applied and adequate horizontal separation exists and will continue to exist throughout the level change maneuver.

## Associated risks

### Incorrect altimeter setting

An incorrect altimeter setting between QNH and standard pressure may result in a loss of separation between aircraft at transition level and transition altitude. To mitigate this risk, an additional buffer shall be used between transition altitude and level.

### Confusion between altitude and flight level

Often, confusion may occur between the terms “ALTITUDE” and “FLIGHT LEVEL”. In order to mitigate this risk, controllers must be vigilant when listening to a read back of the cleared level when transitioning between altimeter settings and reiterate the clearance and pass the QNH if necessary.

### Level busts

Aircraft maintaining a very high rate of climb or descent may overshoot the cleared level in some circumstances. If aircraft are expected to maintain a high rate or climb descent, an additional buffer of vertical separation may be required in order to ensure that a level bust will not result in a loss of separation.

## Rules of thumb

- Aircraft will lose approximately 300 ft per 1 NM travelled forward during descent
- Aircraft need 10 NM to lose 3000 ft
- Aircraft need 16 NM to lose 5000 ft
- Aircraft need 33 NM to lose 10,000 ft
- A tailwind will increase descent track miles required; a headwind will decrease descent track miles required.
- If a rapid descent is required, aircraft should be instructed to maintain a high airspeed and then reduce speed during level flight.

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