



**DFS** Deutsche Flugsicherung

# *IFR Pilot Info 03/2023*

## **Climb and descent rates**

### **1. Climb and descent rates**

**DFS assigns climb and descent rates to ensure the optimal separation of air traffic in line with its statutory obligation and international regulations.**

Extract from AIP ENR 1.8–16 1.3

*To avoid unnecessary ACAS/TCAS resolution advisories (RA), it is recommended that pilots reduce the rate of climb/descent to 1500 ft/min within the last 1000 ft before reaching the assigned level (flight level or altitude), unless ATC issues a specific rate in the climb/descent clearance or instruction in order to establish or maintain separation.*

ICAO basis: Doc 4444

#### **4.7.1 General**

*4.7.1.1 In order to facilitate a safe and orderly flow of traffic, aircraft may be instructed to adjust rate of climb or rate of descent. Vertical speed control may be applied between two climbing aircraft or two descending aircraft in order to establish or maintain a specific vertical separation minimum. 4.7.1.2 Vertical speed adjustments should be limited to those necessary to establish and/or maintain a desired separation minimum. Instructions in-volving frequent changes of climb/descent rates should be avoided.*

*4.7.1.3 The flight crew shall inform the ATC unit concerned if unable, at any time, to comply with a specified rate of climb or descent. In such cases, the controller shall apply an alternative method to achieve an appropriate separation minimum between aircraft, without delay.*

## 2. Assignment of climb and descent rates

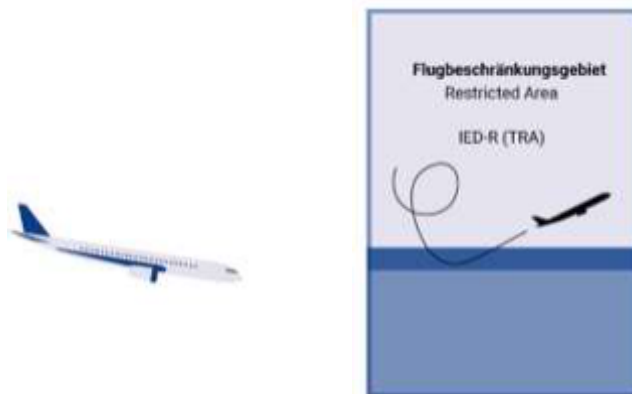
Climb and descent rates are assigned:

- to ensure adherence to the prescribed separation minima



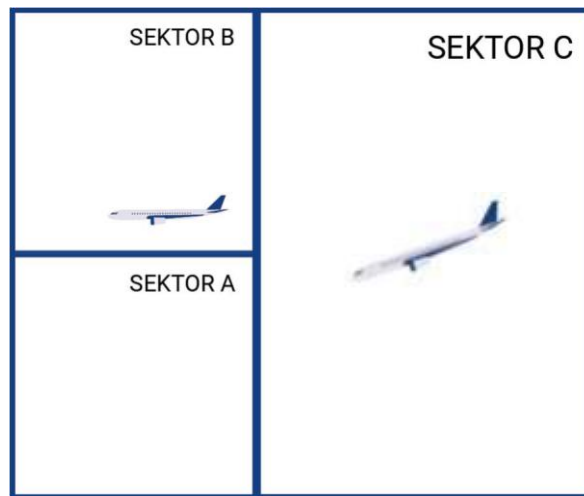
As a rule, the separation minima between 2 IFR flights in upper airspace (FL245 +) are 5 NM/1000 ft and 3 NM/1000 ft in lower airspace (FL245 -). These values may also change (increase) based on various circumstances, such as when wake turbulence separation or separation to formation flights needs to be considered. To handle air traffic safely, a fundamental principle of the daily work of air traffic control is to adhere to these separation minima.

- to maintain an adequate distance to airspace boundaries, such as to TRAs and other restricted areas



In this case, maintaining the prescribed distances to these areas is particularly important to ensure combat aircraft or other military objects (e.g. drones) do not pose a hazard to civil aircraft. In these cases, separation is not provided to the individual aircraft or objects in the airspaces under consideration – this cannot be ensured by ATC – but rather to the airspace boundaries.

- **to ensure adherence to the transfer conditions with other sectors or ACCs**



Agreements (transfer conditions) between two sectors must also be explicitly adhered to as both sectors rely on them and design their traffic planning accordingly. This is a form of 'institutional separation' as conditions have to be adhered to that ensure the safe conduct of operations. Standardisation allows the workload for air traffic controllers in the sector to be reduced so that more traffic can be handled at an even higher safety standard (a similar result is also achieved, for example, with RNAV transitions as standardised approach procedures).

However, in this case air traffic controllers have the option not to issue mandatory climb and descent rates. In cases where numerous aircraft do not have to be transferred to another sector at the same time, requiring separation be maintained among them, air traffic controllers may allow the crew to conduct the descent at their own discretion. The air traffic controller merely determines the point (NAV aid or RNAV point) at which the aircraft must reach a certain level.

Examples:

"Coconut 372\* when ready descend to reach FL320 at RIDSU, for further descent contact Rhein on 132.080."

or

"Coconut 372 descend to reach FL320 at RIDSU at pilot's discretion..."

If the present level needs to be cleared, but the descent is not subject to any further constraints:

"Coconut 372 descend to reach FL320 at RIDSU, commence descend now..."

\*The call sign COC372 and the radio call sign Coconut are fictional designations

## Explanation:

In all cases, air traffic controllers assume that the assigned rate will be reached as quickly as possible. **ATC cannot calculate an average rate** as air traffic controllers do not know how the pilot will perform this "average".

Example: An air traffic controller assigns a climb rate of 2500 ft/min from FL250 to FL300 because there is conflicting traffic at FL270. The air traffic controller relies on the pilot reaching and maintaining the required 2500 ft/min as quickly as possible. An average rate calculated by the pilot may not be used.

The following applies: The ATC instruction is mandatory and must be followed immediately. ATC must be informed if this is not possible.

Another example: Two or more aircraft are flying close together on the same STAR on approach. Separation of 1000ft has been established between the aircraft. To be able to transfer these approaches to ARRIVAL with the prescribed separation minima, the air traffic controller needs to assign a descent rate to each flight to the transfer level. Even in this everyday situation, an average would make no sense.

### 3. What does ATC expect?

- that the assigned rate is reached as quickly as possible
- that the assigned rate is maintained as long as possible
  - do not reduce to 1500 ft/min from 1000 ft before the cleared level instead do this approximately 500 ft before the cleared level
  - for very high rates, the reduction may be performed earlier (inform ATC)
- That the assigned rate is **not** calculated as an "average rate"
- ATC is aware that the level-off cannot be made at the given rate at the cleared level and incorporates a corresponding buffer