



# IFR PRECISION APPROACH AND MINIMA

## 1. Introduction

A Precision approach (PA) procedure is an instrument approach procedure based on navigation systems (ILS, MLS, GLS and SBAS CAT I) designed for 3D instrument approach operations Type A or B.

The operating minima for 3D instrument approach operations using instrument approach procedures shall be determined by establishing a decision altitude (DA) or decision height (DH) and the minimum visibility or RVR.

## 2. Definition

Aerodrome operating minima mark the limits of usability of an aerodrome for:

- take-off, expressed in terms of runway visual range and/or visibility and, if necessary, cloud conditions
- landing in 2D instrument approach operations, expressed in terms of visibility and/or runway visual range, minimum descent altitude/height (MDA/H) and, if necessary, cloud conditions
- landing in 3D instrument approach operations, expressed in terms of visibility and/or runway visual range and decision altitude/height (DA/H) as appropriate to the type and/or category of the operation.

**DA** = A specified altitude or height in a 3D instrument approach operation at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

**MDA** = A specified altitude or height in a 2D instrument approach operation or circling approach operation below which descent must not be made without the required visual reference.

There are two methods for executing instrument approach operations:

- a two-dimensional (2D) instrument approach operation, using lateral navigation guidance only;
- a three-dimensional (3D) instrument approach operation, using both lateral and vertical navigation guidance.

Instrument approach operations shall be classified based on the designed lowest operating minima below which an approach operation shall only be continued with the required visual reference as follows:

- Type A: a minimum descent height or decision height at or above 75 m (250 ft); and
- Type B: a decision height below 75 m (250 ft).

Type B instrument approach operations are categorized as:

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- Category I (CAT I): a decision height not lower than 60 m (200 ft) and with either a visibility not less than 800 m or a runway visual range not less than 550 m
- Category II (CAT II): a decision height lower than 60 m (200 ft) but not lower than 30 m (100 ft) and a runway visual range not less than 300 m
- Category IIIA (CAT IIIA): a decision height lower than 30 m (100 ft) or no decision height and a runway visual range not less than 175 m
- Category IIIB (CAT IIIB): a decision height lower than 15 m (50 ft) or no decision height and a runway visual range less than 175 m but not less than 50 m
- Category IIIC (CAT IIIC): no decision height and no runway visual range limitations.

Lateral and vertical navigation guidance refers to the guidance provided either by:

- A ground-based radio navigation aid (NDB, LLZ, VOR, ILS)
- Computer-generated navigation data from ground-based, space-based, self-contained navigation aids or a combination of these.

Types of precision approach which are commonly used in flight simulation:

- Instrument landing system – ILS
- RNAV with vertical guidance

### 3. Decision making to continue

The pilot may commence an instrument approach regardless of the reported RVR/Visibility but the approach shall not be continued beyond the outer marker, or equivalent position, if the reported RVR/visibility is less than the applicable minima.

If, after passing the outer marker or equivalent position in accordance with the sentence above, the reported RVR/visibility falls below the applicable minimum, the approach may be continued to DA/H or MDA/H.

The operator shall establish operational procedures designed to ensure that an aeroplane being used to conduct 3D instrument approach operations crosses the threshold by a safe margin, with the aeroplane in the landing configuration and attitude.

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## 4. Category of operation

Categories of precision approach and landing operations are defined according to the applicable DA/H and RVR or visibility as shown in the following table.

Category of Operation	Decision Height (DH)	Runway Visual Range (RVR)
CAT I	DH $\geq$ 200 ft (60m)	RVR $\geq$ 550 m or VIS $\geq$ 800m RVR $\geq$ 1750 ft or VIS $\geq$ 2400 ft
CAT II	100 ft $\leq$ DH $<$ 200 ft	RVR $\geq$ 300 m
CAT III A	No DH or DH $<$ 100 ft	RVR $\geq$ 175 m
CAT III B	No DH or DH $<$ 50ft	50 m $\leq$ RVR $<$ 175 m
CAT III C	No DH	No RVR limitation

You may not use CAT III C category as this category is never used on airports.

**NO DH and NO RVR:** This means a plane can come in without seeing anything at all during the whole landing flare and roll out, but since the pilots do not see a thing when their plane is stationary on the runway after landing, they can-not leave that runway under their own power and should be towed off!

The vertical minima used in a CAT I approach is measured by reference to a barometric altimeter. In practice, this means that when flying a CAT I approach either a DA or DH may be used.

Because greater precision is required when flying a CAT II or CAT III approach, special attention is given to the terrain in the runway undershoot to enable a radio altimeter to be used. CAT II and CAT III approaches are therefore always flown to a DH with reference to a radio altimeter.

CAT II and CAT III instrument approach and landing operations are not permitted unless RVR information is provided.

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# 1. Decision height and Decision altitude

Instrument approach operations include an instrument phase and a visual phase:

- The instrument phase ends at the published MDA/H or DA/H unless a missed approach is initiated.
- The continued approach to landing from MDA/H or DA/H will be conducted using visual references

Decision height (DH) and Decision altitude (DA) is a specified altitude or height in a 3D instrument approach operation at which a missed approach must be initiated if the required visual reference to continue the approach has not been established.

Missed approach must be commenced at the DA/H unless the required visual reference has been established. Calculation of the DA/H takes into account that the aircraft will descend below the DA/H during the missed approach.

Decision altitude (DA) is referenced to mean sea level and decision height (DH) is referenced to the threshold elevation.

The DH for Category II and III approaches is invariably assessed by reference to a radio altimeter and never a barometric altimeter; therefore the minima can only be expressed as DH and not DA.

The required visual reference means that section of the visual aids or of the approach area which should have been in view for sufficient time for the pilot to have made an assessment of the aircraft position and rate of change of position, in relation to the desired flight path.

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