In this document we review the form of the AIP published by States in the European Union. We will compare this official publication with the plates from the private providers like Jeppesen, Navtech and LIDO. We will highlight the drawbacks of the State plates as well as the differences in display of critical information such as the approach minimums around the various formats of the other plates.

LEMD ILS 33R (CAT I/II/III)

Spanish AIP

<table>
<thead>
<tr>
<th>STA</th>
<th>OCA:H</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT I</td>
<td>2074</td>
<td>(188)</td>
<td>2094</td>
<td>(208)</td>
<td>2105</td>
</tr>
<tr>
<td>CAT II</td>
<td>2086</td>
<td>(230)</td>
<td>2094</td>
<td>(208)</td>
<td></td>
</tr>
<tr>
<td>CAT III</td>
<td>(78)</td>
<td>(95)</td>
<td>(107)</td>
<td>(121)</td>
<td></td>
</tr>
<tr>
<td>GP U/S</td>
<td></td>
<td>2340</td>
<td>(460)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above minimus are compliant with $DH_{CAT I} = \max \{200 \text{ ft} ; OCH \}$ and $DH_{CAT II} = \max \{100 \text{ ft} ; OCH \}$. The OCH is not shown, because the Jeppesen charts are oriented for operational use.

From DH 100ft (Height Above Touchdown) we take RA 109ft, because ground is not perfectly flat below the plane. An height of 100 ft above the runway is actually a radio-altimeter height of 109 ft before the runway due to the terrain in front of this runway.

**Jeppesen**

Two Jeppesen charts are used, one for the CAT I and another one for CAT II/CAT III.

**Spanish AIP**

<table>
<thead>
<tr>
<th>STA</th>
<th>OCA:H</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT I</td>
<td>2074</td>
<td>(188)</td>
<td>2094</td>
<td>(208)</td>
<td>2105</td>
</tr>
<tr>
<td>CAT II</td>
<td>2086</td>
<td>(230)</td>
<td>2094</td>
<td>(208)</td>
<td></td>
</tr>
<tr>
<td>CAT III</td>
<td>(78)</td>
<td>(95)</td>
<td>(107)</td>
<td>(121)</td>
<td></td>
</tr>
<tr>
<td>GP U/S</td>
<td></td>
<td>2340</td>
<td>(460)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Above minimus are compliant with $DH_{CAT I} = \max \{200 \text{ ft} ; OCH \}$ and $DH_{CAT II} = \max \{100 \text{ ft} ; OCH \}$. The OCH is not shown, because the Jeppesen charts are oriented for operational use.

From DH 100ft (Height Above Touchdown) we take RA 109ft, because ground is not perfectly flat below the plane. An height of 100 ft above the runway is actually a radio-altimeter height of 109 ft before the runway due to the terrain in front of this runway.
Navigraph

The OCH is not shown, because the chart is oriented for the thru operation of the aircraft, which does not require to know the OCH that lead to the calculated DH. The DH is also not shown for CAT II as only RA will be taken into account during the final approach. The Navigraph chart displays only the essential information. Navigraph does not mention any CAT IIIA minimums instead of Jeppesen. But it clearly states that CAT IIIB is available.

EGGW ILS 26 (Cat I/II/IIIB), United Kingdom AIP

The UK plate shows only the OCA(H). The CAT III Operations are only described in the textual AIP:

« (a) Runways 08 and 26, subject to serviceability of the required facilities, are suitable for Category II/III operations by operators whose minima have been accepted by the National Aviation Authority. »

As CAT III minimums are strongly related to each pilot and aircraft certification (crew minima and aircraft minima), it logical to only pinpoint CAT II minimums. The fact that Jeppesen uses RA50' RVR200m is consistent however with the RVR CAT IIIA rule (RVR greater than 200m while DH is lower than 100 ft, but superior to 50 ft if the system is fail passive) and might be related to the very company the charts were supplied to.

LGAV ILS Z 21R (Z is for CAT I), Hellenic AIP

The DH is not described. We have the OCH however.

LFPG « ILS CAT I » or « ILS CATII and CATIII » or « LOC » 26R, French AIP

The DH for CAT II (and CAT III) is not described in the French AIP. We have the OCH ILS CAT2 however. Since $DH_{CAT II} = \max \{ 100 \text{ ft} ; OCH \}$ and the greater OCH CAT2 is 84 ft, we have a DH$_{CAT II}$ of 100 ft for CAT II for all aircraft categories (ABCD).
The German AIP is providing charts with OCA and OCH data. This is an important information from the point of view of regulatory compliance (to produce the minimums), but is not used directly as minimum per the pilot. Obstacle clearance altitude OCH is the height on an IAP (Instrument approach procedure) with the minimum permitted clearance above obstacles on the final approach. It does not take into account the limitations associated with the navaid (system minimum). Thus the DH (or MDH for non-precision approaches) is the higher of the OCH or the system minimum. The following regulations must be observed

**CAT I**

\[ DH_{\text{CAT I}} = \max \{200 \text{ ft} ; OCH \} \]

**CAT II**

\[ DH_{\text{CAT II}} = \max \{100 \text{ ft} ; OCH \} < 200 \text{ ft} \]

Therefore, from the reading of the German plate for EDDS ILS approach to runway 25, the pilot can calculate the following data for his category C aircraft:

<table>
<thead>
<tr>
<th>Cat. C</th>
<th>ILS CAT III</th>
<th>ILS CAT II</th>
<th>ILS CAT I</th>
<th>LOC DME</th>
<th>Alt AD / THR ELEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>RVR</td>
<td>75m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCH</td>
<td>93</td>
<td>172</td>
<td>410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH (or MDH)</td>
<td>100</td>
<td>200</td>
<td>410 (MDH)</td>
<td></td>
<td>1876 ft / 1181 ft</td>
</tr>
<tr>
<td>DA</td>
<td>1281</td>
<td>1381</td>
<td>1591 (MDA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DA (rounded)</td>
<td>1280</td>
<td>1380</td>
<td>1590 (MDA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publish. OCA</td>
<td>IAP approved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the table, items in regular font are from the German AIP while green data have been calculated per deduction. * During a Cat II ILS approach, choosing DH = RA 100 is not incorrect, but RA 106 would be better if time permits calculation.
The OCH is not shown, because the chart is oriented for the in-flight operation of the aircraft, which does not require to know the OCH that led to the calculated DH. The DH is also not shown for CAT II as only RA will be taken into account during the final approach. The Navigraph chart displays only the essential information.

From the above plate, the pilot can make the following deductions for his category C aircraft:

<table>
<thead>
<tr>
<th>Cat. C</th>
<th>ILS CAT III</th>
<th>ILS CAT II</th>
<th>ILS CAT I</th>
<th>LOC DME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RVR 75m</td>
<td>300 m</td>
<td>550 m</td>
<td>1200 m</td>
</tr>
<tr>
<td></td>
<td>OCH 93</td>
<td>172</td>
<td></td>
<td>410</td>
</tr>
<tr>
<td></td>
<td>DH (or MDH)</td>
<td>100</td>
<td>200</td>
<td>410 (MDH)</td>
</tr>
<tr>
<td></td>
<td>DA 1281</td>
<td>1381</td>
<td>1591 (MDA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DA (rounded)</td>
<td>1280</td>
<td>1380</td>
<td>1590 (MDA)</td>
</tr>
<tr>
<td></td>
<td>Navtech pub.</td>
<td>RA 108 (DH)</td>
<td>1381 (DA)</td>
<td>1590 (MDA)</td>
</tr>
</tbody>
</table>

Navtech information consistent with German AIP. RA 108 instead of DH 100. Consistent with low terrain below glide slope. Calculation consistent with Navtech plate information. Calculation consistent with Navtech plate information.

In the table, black items (regular font) are from the German AIP while blue rows are Navtech data, and green data have been calculated per deduction from German AIP.
In the chart provided by LH Systems, the calculated DH/MDH is shown (as well as the RVR information).

Notice also that LH Systems provides information for category C and D aircraft only, unless crafted otherwise on customer request. From the above plate, the pilot can make the following deductions:

**Navigraph chart (operational charting oriented)**

<table>
<thead>
<tr>
<th>Cat. C</th>
<th>ILS CAT III</th>
<th>ILS CAT II</th>
<th>ILS CAT I</th>
<th>LOC DME</th>
<th>Alt AD / THR ELEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>RVR</td>
<td>75 m</td>
<td>300 m</td>
<td>550 m</td>
<td>1000 m</td>
<td></td>
</tr>
<tr>
<td>OCH</td>
<td>93</td>
<td>172</td>
<td></td>
<td>410</td>
<td></td>
</tr>
<tr>
<td>DH (or MDH)</td>
<td>100</td>
<td>200</td>
<td>410 (MDH)</td>
<td></td>
<td>1876 ft / 1181 ft</td>
</tr>
<tr>
<td>DA</td>
<td>1281</td>
<td>1381</td>
<td>1591 (MDA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DA (rounded)</td>
<td>1280</td>
<td>1380</td>
<td>1590 (MDA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIDO public. Company</td>
<td>RA 108 (DH)</td>
<td>1390 (DA)</td>
<td>1590 (MDA)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LIDO information**: Consistent with German AIP and JAA.

**Calculation consistent with LIDO if rounded to the superior.**

Yellow data stand for information depicted on the LIDO chart.
Old Jeppesen chart (2004)

JeppView

<table>
<thead>
<tr>
<th>Cat. C</th>
<th>ILS CAT III</th>
<th>ILS CAT II</th>
<th>ILS CAT I</th>
<th>LOC DME</th>
<th>Alt AD / THR ELEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>RVR</td>
<td>Not available, not depicted.</td>
<td>300 m</td>
<td>550 m</td>
<td>1000 m</td>
<td></td>
</tr>
<tr>
<td>OCH</td>
<td>93</td>
<td>172</td>
<td>410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH (or MDH)</td>
<td>100</td>
<td>200</td>
<td>410 (MDH)</td>
<td>1876 ft / 1181 ft</td>
<td></td>
</tr>
<tr>
<td>DA</td>
<td>1281</td>
<td>1581</td>
<td>1591 (MDA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIDO public.</td>
<td>RA 108 (DH)</td>
<td>1390 (DA)</td>
<td>1590 (MDA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jeppesen</td>
<td>RA 107 (DH)</td>
<td>1581 (DA)</td>
<td>1590 (MDA)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Jeppesen does not round the result of the calculation. Consistent with German AIP.

Yellow data stand for information depicted on the LIDO chart. Orange data are from the Jeppesen plate.
Conclusion: different pros and cons in the AIP depiction depending on the publisher.

<table>
<thead>
<tr>
<th>Approach</th>
<th>ILS CAT II</th>
<th>ILS CAT I</th>
<th>LOC DME</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>German AIP plate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCA (OCH) in feet</td>
<td>1274 (93)</td>
<td>1353 (172)</td>
<td>1590 (410)</td>
</tr>
<tr>
<td>RVR</td>
<td>Not charted</td>
<td>Not charted</td>
<td>Not charted</td>
</tr>
<tr>
<td>Applying the regulations: calculated DH</td>
<td>100</td>
<td>200</td>
<td>410 (MDH)</td>
</tr>
<tr>
<td>As a result, DA (with Thr. Elev. 1181 ft.)</td>
<td>1281</td>
<td>1381</td>
<td>1591 (MDA)</td>
</tr>
<tr>
<td><strong>Navtech plate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RVR</td>
<td>RA 108</td>
<td>1381</td>
<td></td>
</tr>
<tr>
<td>RVR</td>
<td>300 m</td>
<td>550 m</td>
<td>1200 m</td>
</tr>
<tr>
<td><strong>LIDO plate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RVR</td>
<td>RA 108</td>
<td>1390 (DA)</td>
<td>1590 (MDA)</td>
</tr>
<tr>
<td>RVR</td>
<td>300 m</td>
<td>550 m</td>
<td>10 km</td>
</tr>
<tr>
<td><strong>Jeppesen plate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RVR</td>
<td>RA 107</td>
<td>1381 (DA)</td>
<td>1590 (MDA)</td>
</tr>
<tr>
<td>RVR</td>
<td>300 m</td>
<td>550 m</td>
<td>1000 m</td>
</tr>
</tbody>
</table>

Green values: calculated from OCH. Orange: Jeppesen values, yellow for LIDO, blue for Navtech.

Cat II is conducted with radio altimeters (RA) to determine the Decision Height (DH). When necessary, the published DH (LIDO, Navtech, Jeppesen) takes into account the terrain profile before the runway threshold. Cat I approaches are conducted with a barometric altimeter as reference. Therefore, the Cat I DH is converted into a Decision Altitude.

<table>
<thead>
<tr>
<th>Regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAT I</strong>: $DH_{\text{CAT I}} = \max{200 \text{ ft} ; OCH}$</td>
</tr>
<tr>
<td><strong>CAT II</strong>: $DH_{\text{CAT II}} = \max{100 \text{ ft} ; OCH}$</td>
</tr>
</tbody>
</table>

Navtech plates have a few information on them. This information is focussed on the operation of the aircraft. For instance, you only need RA 108 for a Cat II approach, and care less about the information DH=100 which is stated (in contrast) on the LIDO chart. So Navtech does the calculation for you and only display the result.

The official State charts from the European AIPs do not state DA, DH, MDA or MDH usually. They only display OCA and OCH. This is a kind of raw data. If flying with those State plates (a few really do), the IFR pilot must remember this limitation in order to compute by himself his applicable minimums.

The Jeppesen plate is charting a DA associated to the CAT II approach. This is of little use if you fly your Cat II approach with radio-altimeters instead of barometric altimeters as you should (but it can provide some cross-check backup). Jeppesen plate are accurate on the other hand: they don’t round values.

In the end, for most Category II and Category III approaches, the Decision Height is the controlling minima and the altitude value specified (DA) is advisory. A Decision Height is usually based on a specified radio altitude. While the decision height above the touchdown zone can be quickly calculated from the State plate OCH, the altitude above terrain is however not easy to retrieve from those official plates during flight. This is why using a private publisher like Navtech, Jeppesen or LH Systems is just fine to get a RA that reflect actual height above terrain during the final approach, and not only the height above the touchdown zone.
About the difference between the RA of 108 ft and the DH of 100 ft.

We can check on the precision terrain map for Runway 25 that the difference is due to the evolving nature of the terrain altitude during the approach compared to the touchdown zone altitude.

On the other runway (ILS for runway 07 at EDDS is depicted below) there is the Weidacher Hill. As a consequence, we can check that the RA for Cat II DH is 90 ft as published on the LIDO plate by Lufthansa Systems.

During the ILS approach over the hill, the altitude over the terrain is less than over the runway. Thus, using the LIDO LH Systems nomenclature, the RA has to be less than the DH of 100 ft also stated on the chart.
An automatic landing system is fail-passive if, in the event of a failure, there is no significant out-of-trim condition or deviation of flight path or attitude but the landing is not completed automatically. For a fail-passive automatic landing system the pilot assumes control of the aircraft after a failure (JAA).

An automatic landing system is fail-operational if, in the event of a failure below alert height, the approach, the flare and landing can be completed by the remaining part of the automatic system. In the event of failure, the automatic landing system will operate as a fail-passive system (JAA).

### Determination of the RVR for category III

<table>
<thead>
<tr>
<th>CAT II</th>
<th>ICAO</th>
<th>FAA</th>
<th>JAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH</td>
<td>100ft ≤ DH &lt; 200ft</td>
<td>100ft ≤ DH &lt; 200ft</td>
<td>100ft ≤ DH &lt; 200ft</td>
</tr>
<tr>
<td>RVR</td>
<td>350m ≤ RVR</td>
<td>350m ≤ RVR &lt; 800m</td>
<td>300m ≤ RVR</td>
</tr>
<tr>
<td></td>
<td>1200ft ≤ RVR</td>
<td>1200ft ≤ RVR &lt; 2400ft</td>
<td>1000ft ≤ RVR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAT III A</th>
<th>ICAO</th>
<th>FAA</th>
<th>JAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH</td>
<td>No DH or DH &lt; 100ft (1)</td>
<td>No DH or DH &lt; 100ft (1)</td>
<td>DH &lt; 100ft (1)</td>
</tr>
<tr>
<td>RVR</td>
<td>200m ≤ RVR</td>
<td>200m ≤ RVR</td>
<td>200m ≤ RVR</td>
</tr>
<tr>
<td></td>
<td>700ft ≤ RVR</td>
<td>700ft ≤ RVR</td>
<td>700ft ≤ RVR</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAT III B</th>
<th>ICAO</th>
<th>FAA</th>
<th>JAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH</td>
<td>No DH or DH &lt; 50ft</td>
<td>No DH or DH &lt; 50ft</td>
<td>No DH or DH &lt; 50ft</td>
</tr>
<tr>
<td>RVR</td>
<td>50m ≤ RVR &lt; 200m</td>
<td>50m ≤ RVR &lt; 200m</td>
<td>75m ≤ RVR &lt; 200m</td>
</tr>
<tr>
<td></td>
<td>150ft ≤ RVR &lt; 700ft</td>
<td>150ft ≤ RVR &lt; 700ft</td>
<td>250ft ≤ RVR &lt; 700ft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAT III C</th>
<th>ICAO</th>
<th>FAA</th>
<th>JAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH</td>
<td>No DH</td>
<td>No DH</td>
<td></td>
</tr>
<tr>
<td>RVR</td>
<td>No RVR limitation</td>
<td>No RVR limitation</td>
<td></td>
</tr>
</tbody>
</table>

(1) DH ≥ 50ft if fail passive

### JAA

**RVR as a Function of Automatic Landing System Status**

<table>
<thead>
<tr>
<th>APPROACH CATEGORY</th>
<th>ICAO</th>
<th>FAA</th>
<th>JAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH &lt; 100ft (note 1)</td>
<td>200m</td>
<td>200m</td>
<td>200m</td>
</tr>
<tr>
<td>NO DH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH &lt; 50ft</td>
<td>Not authorized</td>
<td>125m</td>
<td>75m</td>
</tr>
<tr>
<td>NO DH</td>
<td>Not authorized</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** For operations to approved RVR values less than 300m, a go-around is assumed in the event of an autopilot failure at or below DH.

### FAA

**RVR as a Function of Automatic Landing System Status**

<table>
<thead>
<tr>
<th>APPROACH CATEGORY</th>
<th>ICAO</th>
<th>FAA</th>
<th>JAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH &lt; 100ft (note 1)</td>
<td>200m</td>
<td>200m</td>
<td>200m</td>
</tr>
<tr>
<td>NO DH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH &lt; 50ft</td>
<td>Not authorized</td>
<td>200m</td>
<td>200m</td>
</tr>
<tr>
<td>NO DH</td>
<td>Not authorized</td>
<td>100m</td>
<td>50m</td>
</tr>
</tbody>
</table>
Minimums policy

\[ DH_{\text{CAT I}} = \max \{200 \text{ ft} ; \text{OCH} \} \rightarrow \text{DA (regulations)} \]

\[ DH_{\text{CAT II}} = \max \{100 \text{ ft} ; \text{OCH} \} \leq 200 \text{ ft (regulations)} \]

<table>
<thead>
<tr>
<th>ACFT</th>
<th>Cat II</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>As published. Comply with (100 \leq DH \leq 200 \text{ ft} ) (\text{RVR} \geq 300 \text{ m})</td>
</tr>
<tr>
<td></td>
<td>Operational procedure: follow manufacturer guidance</td>
</tr>
</tbody>
</table>

**B737**

**FAIL-PASSIVE LANDING**

<table>
<thead>
<tr>
<th>ACFT</th>
<th>Cat IIIA</th>
<th>Cat IIIB</th>
</tr>
</thead>
<tbody>
<tr>
<td>B737</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAIL-PASSIVE LDG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH 50 (RA) RVR 200 m</td>
<td>One engine operative Not authorised* Revert to CAT II</td>
<td>Not authorised</td>
</tr>
<tr>
<td>PFD</td>
<td>LAND 2</td>
<td>Fail-Op Acft or CMD Fail-Pa Acft</td>
</tr>
</tbody>
</table>

*except for HUD-equipped ACFT and qualified crew: hand-flown approach only, DH 50, RVR 200 m*

**FAIL-OPERATIONAL LANDING**

<table>
<thead>
<tr>
<th>ACFT</th>
<th>Cat IIIA</th>
<th>Cat IIIB</th>
</tr>
</thead>
<tbody>
<tr>
<td>B737</td>
<td>DH 25 (RA) RVR 200 m</td>
<td>One engine operative Flaps 30 DH 50 (RA) RVR 200 m</td>
</tr>
<tr>
<td>FAIL-OPERAT. LDG</td>
<td>LAND 3</td>
<td>LAND 3</td>
</tr>
<tr>
<td>PFD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*DH 50 (RA) RVR 130 m One engine operative Flaps 30 DH 50 (RA) RVR 130 m*
### Fail-Passive Landing

<table>
<thead>
<tr>
<th>ACFT</th>
<th>Cat IIIA</th>
<th>Cat IIIB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A320</strong></td>
<td>DH 50 (RA) RVR 200 m</td>
<td>One engine operative DH 50 (RA) RVR 200 m</td>
</tr>
<tr>
<td><strong>FMA</strong></td>
<td>CAT3 SINGLE</td>
<td>CAT3 SINGLE</td>
</tr>
</tbody>
</table>

One engine operative approach not to be planned. Not authorised.

**A320**: autoland mandatory for CAT III.

### Fail-Operational Landing

<table>
<thead>
<tr>
<th>ACFT</th>
<th>Cat IIIA</th>
<th>Cat IIIB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A320</strong></td>
<td>AH 100 DH 20 (RA) RVR 200 m</td>
<td>AH 100 DH 20 (RA) RVR 75 m</td>
</tr>
<tr>
<td><strong>FMA</strong></td>
<td>CAT3 DUAL</td>
<td>CAT3 DUAL</td>
</tr>
</tbody>
</table>

One engine operative approach not to be planned. Reverts to Fail-Passive per electric GEN. Design. Airbus.

AH is the alert height above ground level.

→ Above AH, a go-around must be initiated if a failure affects the fail-operational landing system. Below AH, the approach will be continued (except if AUTOLAND warning is triggered).

Decision height is the wheel height above the runway elevation by which a go-around must be initiated unless adequate visual reference has been established and the aircraft position and approach path have been assessed as satisfactory to continue the approach and landing in safety (JAA).

An Alert Height is a height above the runway, based on the characteristics of the aeroplane and its fail-operational automatic landing system, above which a Category III approach would be discontinued and a missed approach initiated if a failure occurred in one of the redundant parts of the automatic landing system, or in the relevant ground equipment (ICAO). The AH is evaluated during aircraft certification; it is set at 100 ft for A320 and 200 ft for A330, A340.

---

### E175

<table>
<thead>
<tr>
<th>ACFT</th>
<th>Cat IIIA</th>
<th>Cat IIIB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EMB 170-195</strong></td>
<td>DH 80 (RA) RVR 200 m</td>
<td>Not authorised</td>
</tr>
<tr>
<td><strong>AUTOLAND</strong></td>
<td>AUTOLAND</td>
<td>AUTOLAND</td>
</tr>
</tbody>
</table>

The Embraer E-jets are certified for CAT IIIa fail-passive landings.

**CAT IIIa**: 50 ft ≤ DH < 100 ft and RVR ≥ 200 m
<table>
<thead>
<tr>
<th>Type</th>
<th>Fail-passive capacity for current autoland</th>
<th>Fail-operational capacity for current autoland</th>
</tr>
</thead>
<tbody>
<tr>
<td>A320</td>
<td>CAT 3 SINGLE on the PFD</td>
<td>CAT 3 DUAL on the PFD</td>
</tr>
<tr>
<td>B737 Dual-AP Fail-operational</td>
<td>SINGLE CH → LAND 2 (FLARE)</td>
<td>SINGLE CH → LAND 3 (FLARE+ROLLOUT)</td>
</tr>
<tr>
<td>B737 Dual-AP Fail-passive</td>
<td>SINGLE CH → CMD</td>
<td>-</td>
</tr>
</tbody>
</table>

CAT IIIA is conducted with LAND 2 (FLARE) or LAND 3 for fail-operational aircraft. CAT IIIIB is conducted with LAND 3 (FLARE+ROLLOUT) for fail-operational aircraft.

Only the Jeppesen charts are including minima for CAT III A operations. They are DH 50 and RVR 200m. It corresponds to a fail-passive autoland system, both for FAA and JAA (DH greater than 50ft if fail passive).

**Aircraft category**

<table>
<thead>
<tr>
<th>Aircraft category</th>
<th>VAT range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT A</td>
<td>0 &lt; VAT &lt; 90 kt</td>
</tr>
<tr>
<td>CAT B</td>
<td>91 &lt; VAT &lt; 120 kt</td>
</tr>
<tr>
<td>CAT C</td>
<td>121 &lt; VAT &lt; 140 kt</td>
</tr>
<tr>
<td>CAT D</td>
<td>141 &lt; VAT &lt; 165 kt</td>
</tr>
<tr>
<td>CAT E</td>
<td>65 &lt; VAT &lt; 210 kt</td>
</tr>
</tbody>
</table>
**Fail-passive**

**B737**

- **Approaching intercept heading**
  - Flaps 5

- **Localization capture**
  - Final approach course heading

- **Intercept heading**
  - ILS or GLS tuned and identified
  - LOC and G/S pointers shown
  - Arm APP
  - Second A/P CMD (Dual autopilot)

*Note:* Dual autopilot available during 2 engine approach only.

- **Approaching intercept heading**
  - Flaps 5

- **On RADAR vectors**
  - HDG SEL
  - Pitch mode (as needed)

- **Enroute to fix**
  - LNAV or other roll mode
  - VNAV or other pitch mode

- **Glide slope intercept**
  - Landing flaps (2 engine)
  - Set missed approach altitude
  - Do the Landing checklist

- **500 feet**
  - Verify AFDS status (Dual autopilot)

- **DA(H) Missed approach**
  - Minimum use height for single autopilot:
    - Engage A/P

- **50 feet AGL**
  - Disengage autopilot and disconnect autotrottle

- **Touchdown**
  - Disengage A/P (Dual autopilot)

- **Fix**
  - LOM, MKR, DME
  - Verify crossing altitude

- **Glide slope alive**
  - Gear down
  - Flaps 15 (final flap for 1 engine)
  - Arm speedbrake

---

**Fail-operational**

- **Approaching intercept heading**
  - Flaps 5

- **On RADAR vectors**
  - HDG SEL
  - Pitch mode (as needed)

- **Enroute to fix**
  - LNAV or other roll mode
  - VNAV or other pitch mode

- **Glide slope intercept**
  - Landing flaps (flaps 30, 1 engine)
  - Set missed approach altitude
  - Do the Landing checklist

- **500 Feet**
  - Verify autoland status

- **Fix**
  - LOM, MKR, DME
  - Verify crossing altitude

- **Glide slope alive**
  - Gear down
  - Flaps 15
  - Arm speedbrake

*Note:* Engine out fail operational approach to autoland available with flaps 30 only (performance permitting).
Low Drag ILS Approach <TRT>

Visibility > 5000m and Cloud base > 1000 feet
otherwise apply standard procedures

<TRT> This approach may be conducted using single A/P or flight director only

![Diagram of ILS approach process]

- **Approaching intercept heading**
  - Flaps 5

- **On RADAR vectors**
  - HDG SEL
  - Pitch mode (as needed)

- **Enroute to fix**
  - LNAV or other roll mode
  - VNAV or other pitch mode

- **Glide slope intercept**
  - Set missed approach altitude

- **Intercept heading**
  - ILS or GLS tuned and identified
  - LOC and G/S pointers shown
  - Arm APP

- **On final approach course heading**

- **Localizer capture**
  - Final approach course heading

- **Fix**
  - Verify crossing altitude

- **4nm to Touchdown**
  - Gear down
  - Flaps 15
  - Arm speedbrake

- **500 feet**
  - DA(H)
  - Missed approach
  - Engage A/P

- **50 feet AGL**
  - Minimum use height for single autopilot
  - Disengage autopilot and disconnect autothrottle

- **Landing Flaps**
  - Do the Landing checklist

- **Touchdown**