

INSTRUMENT APPROACHES

Precision vs Nonprecision

A checkride focused guide to the real differences between precision approaches, approaches with vertical guidance, and nonprecision approaches.

- PRECISION APPROACH
- NONPRECISION APPROACH
- APV
- DA AND MDA
- IFR APPROACHES
- CHECKRIDE

OPENING PICTURE

Pilots use the words precision and nonprecision constantly, but many students miss the deeper meaning. The difference is not simply whether the airplane shows a glide path. The FAA separates instrument approaches by the type and quality of final approach guidance, the type of minimum altitude published, and the obstacle clearance assumptions used in procedure design.

This matters every time a pilot chooses minimums, briefs a missed approach, decides when to descend, or answers an examiner who asks whether LPV is a precision approach.

THE THREE BUCKETS

FAA CLASSIFICATION

- Precision means lateral course guidance plus vertical glide path guidance that meets precision standards.
- APV means lateral and vertical guidance, but the vertical system does not meet precision standards.
- Nonprecision means lateral course guidance, with no approved glide path deviation information for the final segment.

MEMORY AID

P A N

Precision, APV, Nonprecision. This keeps LPV and LNAV/VNAV from being forced into the wrong bucket.

Precision	APV	Nonprecision
Lateral guidance Yes	Lateral guidance Yes	Lateral guidance Yes
Vertical guidance Yes	Vertical guidance Yes	Vertical guidance No published glidepath
Minimum type DA / DH	Minimum type DA	Minimum type MDA
Example ILS	Examples LPV, LNAV/VNAV	Examples VOR, LOC, LNAV

Always use the approach chart minimums and equipment notes for the specific procedure.

Guidance Plus Minimums

The practical classification comes from the guidance being used and the line of minimums selected. Precision approaches normally use DA or DH because the airplane descends along a defined vertical path to a decision point. APV approaches normally use DA, even though they are not precision approaches. Nonprecision approaches normally use MDA because the procedure does not provide approved vertical path guidance below that altitude.

TYPE	GUIDANCE	TYPICAL MINIMUM
Precision	Lateral guidance and precision vertical guidance	DA or DH
APV	Lateral guidance and vertical guidance that does not meet precision standards	DA
Nonprecision	Lateral guidance without approved glide path deviation information	MDA

INSTRUCTOR TIP

Ask, what kind of minimums am I using. If the line says DA or DH, you are probably flying precision or APV style vertical guidance. If the line says MDA, you are flying nonprecision minimums.

CHECKRIDE TRAP

Do not classify by what the display looks like. Classify by what the FAA says the procedure provides and by the line of minimums being used.

DA, DH, AND MDA

DA / DH

DA

Descend on glidepath to DA.
If required visual cues are absent,
begin the missed approach.

MDA

MDA

Descend to MDA, then level.
Do not descend below MDA before
the VDP/MAP criteria are met.

DA is a decision point on descent; MDA is a floor you must not descend below without required visual references.

MDA FLOOR

Do not go below until position, visibility, and visual reference are satisfied

Use this every time you fly LNAV, LP, VOR, LOC, NDB, or other nonprecision minimums.

The Core Mistake

Treating MDA like DA can lead to descending below the published minimum altitude before the legal visual requirements are met.

Precision And APV Are Similar To Fly, Different To Explain

A precision approach provides course guidance and glide path guidance that meet precision standards. Common examples include ILS, PAR, and GLS. The pilot flies lateral and vertical guidance to DA or DH, then either continues visually under 14 CFR 91.175 or begins the missed approach.

An APV provides lateral and vertical guidance, but the vertical system does not meet precision approach standards. LPV, LNAV/VNAV, Baro VNAV, and some LDA procedures with glide path belong here. LPV may fly like an ILS and may have ILS like sensitivity, but the correct checkride language is, LPV is an approach with vertical guidance, not a precision approach.

LPV ANSWER

Like an ILS to fly, APV by classification. Use DA if authorized and annunciated. Do not call it precision when answering an FAA classification question.

BARO VNAV

Check chart notes and aircraft limitations. Barometric VNAV can be affected by temperature and altimeter errors, so temperature limits and equipment approvals matter.

RNAV MINIMUMS MINEFIELD

LINE OF MINIMUMS	CATEGORY	MINIMUM ALTITUDE TYPE
LPV	APV	DA
LNAV/VNAV	APV	DA
LP	Nonprecision	MDA
LNAV	Nonprecision	MDA
Circling	Circling	MDA

The RNAV approach title alone does not tell you what minimums you may use. The specific line of minimums depends on aircraft capability, installed equipment, receiver approval, signal availability, and correct annunciation. If the receiver annunciates LNAV, the pilot may not use LPV or LNAV/VNAV minimums.

Question: Is LPV a precision approach?

No. LPV is APV. It is flown to DA and can feel similar to an ILS, but the FAA does not classify it as a precision approach.

Scenario: The receiver annunciates LNAV.

Use LNAV minimums if the approach remains legal and safe. You may not use LPV or LNAV/VNAV minimums because the receiver is not providing that level of service.

COMMON EXAMPLES

APPROACH OR MINIMUMS	FAA CATEGORY	PRACTICAL NOTE
ILS	Precision	Uses glideslope and DA or DH
PAR	Precision	Controller provides precision radar guidance
GLS	Precision	Uses GBAS landing system guidance
LPV	APV	Uses WAAS vertical guidance and DA
LNAV/VNAV	APV	Uses approved vertical guidance and DA
VOR, LOC, LNAV, LP, NDB	Nonprecision	Use MDA and stepdown discipline

Nonprecision Approaches Demand Altitude Discipline

A nonprecision approach provides lateral course guidance without approved glide path deviation information. Examples include VOR, NDB, LOC, LDA without glide path, SDF, LNAV, LP, and ASR approaches. Minimums are normally expressed as MDA.

Some nonprecision approaches publish a vertical descent angle. That angle helps the pilot fly a stabilized descent, but it does not turn the approach into APV or precision. Advisory vertical guidance is not legal vertical guidance for descending below MDA.

THREE DEGREE DESCENT

Groundspeed x 5 = approximate feet per minute

Example, 100 knots groundspeed needs about 500 feet per minute.

FAF TO RUNWAY CHECK

Altitude to lose / distance = feet per NM

Compare the required descent to about 300 feet per NM for a normal three degree path.

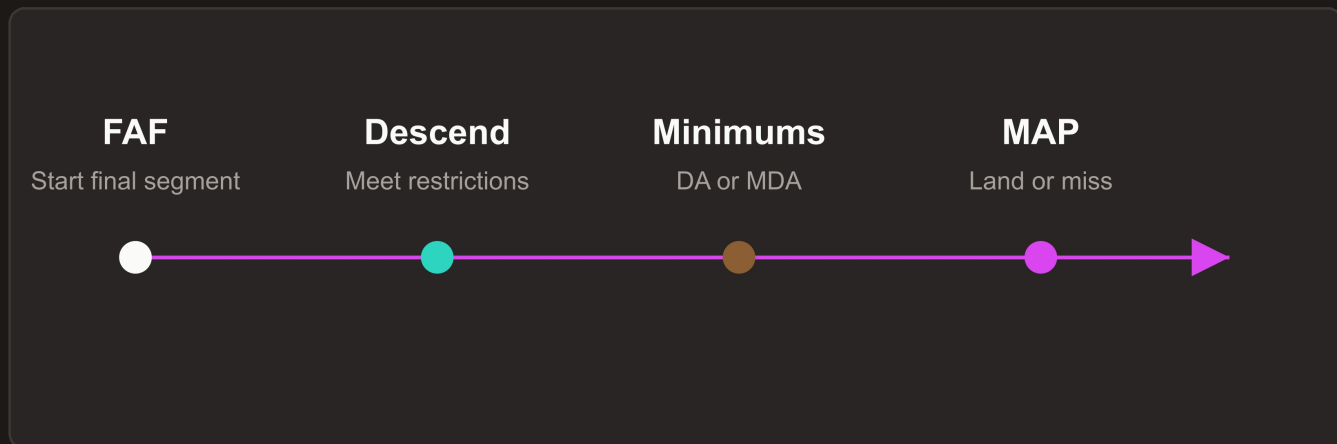
STEPDOWN FIX TRAP

On a nonprecision approach flown to MDA, stepdown fix altitudes in the final segment apply. Do not let a GPS generated glide path pull you below a stepdown altitude on an LNAV approach.

STABLE DESCENT

Use VDA, distance, groundspeed, and descent rate to arrive near MDA close to the point where a normal landing can be made. Technique helps you fly better. Regulations still control how low you may go.

FAF TO MAP TIMELINE



The published chart controls descent points, timing, minimums, and missed approach instructions.

Question: Does a VDA make a nonprecision approach APV?

No. VDA is descent planning information. If the line of minimums is MDA, you are still flying a nonprecision approach.

Question: Why do stepdown fixes matter?

Nonprecision obstacle clearance depends on the pilot complying with published minimum altitudes and stepdown fixes.

Missed Approach Logic Changes With The Minimums

On a precision approach or APV, the missed approach point occurs at DA or DH on the glide path or glidepath. If the required visual conditions are not established at DA or DH, the missed approach decision is immediate.

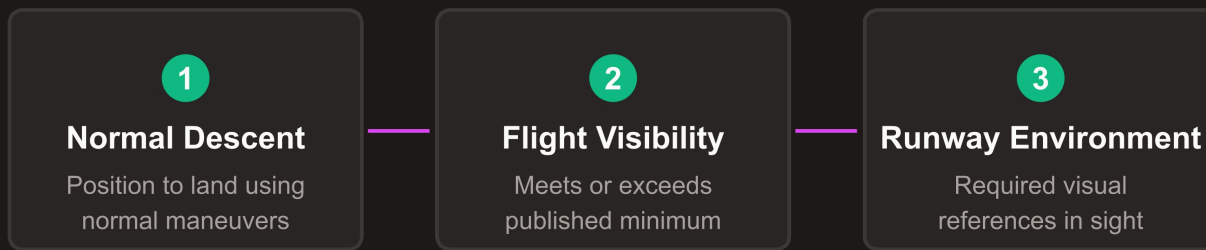
On a nonprecision approach, the MAP may be identified by a fix, navaid, DME, timing from the FAF, or a runway waypoint on an RNAV approach. If you reach the MAP without the required visual conditions, the missed approach decision is immediate.

If you go missed before the MAP on a nonprecision approach, you should normally continue along the lateral final approach course to the MAP before beginning published missed approach turns unless ATC instructs otherwise. Obstacle clearance is tied to the designed procedure path, and turning early can place the aircraft outside protected airspace.

APPROACH TYPE	DECISION POINT	PILOT MUST KNOW
Precision	DA or DH	Continue only if 91.175 conditions are met
APV	DA	Continue only if 91.175 conditions are met
Nonprecision	MDA and MAP	Do not descend below MDA before 91.175 conditions are met
Circling	Circling MDA	Maintain visual reference and normal landing position

14 CFR 91.175

To Descend Below DA/MDA, All Three Must Be True



If any requirement is not met at the decision point, execute the missed approach.

RUNWAY IN SIGHT IS NOT ENOUGH

You also need required flight visibility and a normal position to land using normal maneuvers. If the runway appears late and the descent would be steep or unstable, go missed.

APPROACH LIGHTS

Seeing the approach light system may allow descent below DA, DH, or MDA, but not below 100 feet above touchdown zone elevation unless red terminating bars or red side row bars are visible.

When Guidance Changes, Rebrief The Approach

An ILS with the glideslope available is a precision approach. A localizer approach without glideslope is a nonprecision approach. The same chart may publish localizer minimums, but if the glideslope is out of service or unreliable, you must rebrief MDA, stepdown fixes, MAP, timing if needed, and missed approach.

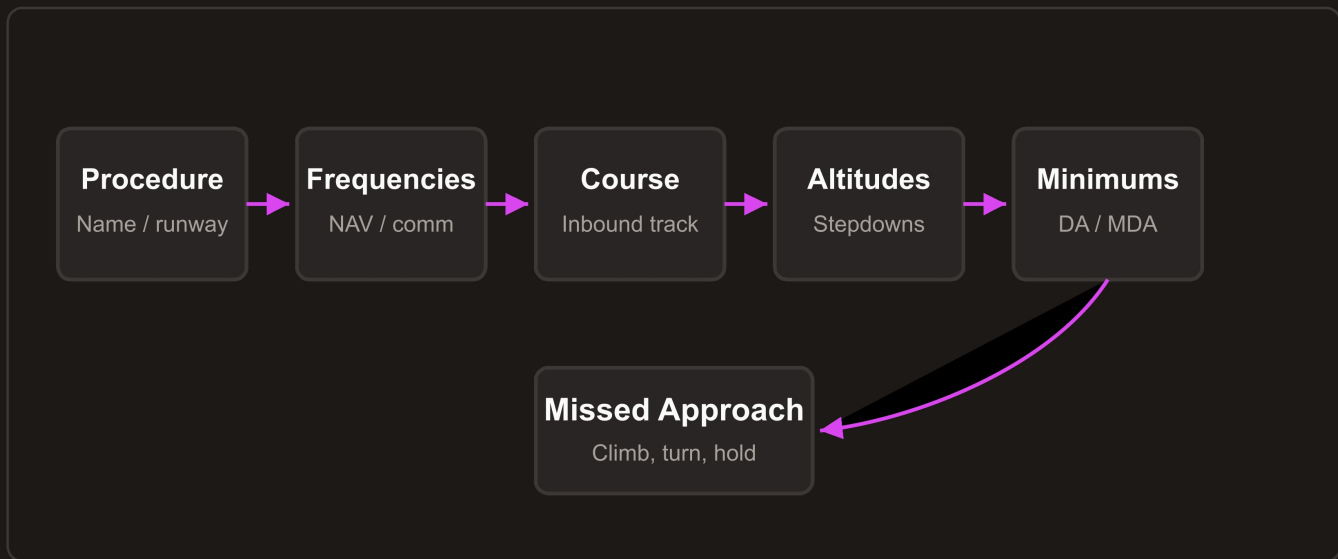
Question: What happens if the glideslope fails on an ILS?

If localizer minimums are published and the localizer is usable, I may be able to fly the localizer as a nonprecision approach. I would rebrief before continuing or request another clearance.

Scenario: LNAV advisory glide path disappears.

If using LNAV minimums, the advisory glide path is not required vertical guidance. Continue only if lateral guidance, altitude awareness, equipment, and workload remain safe.

APPROACH BRIEF FLOW



Brief enough to fly the approach from memory if workload rises, then verify against the chart.

PRECISION BRIEF

Confirm title, final course, frequency, identifier, intercept altitude, DA or DH, visibility, visual references, and missed approach.

APV BRIEF

Confirm the line of minimums, approval, annunciation, DA, visibility, temperature limits if applicable, and what happens if vertical guidance is lost.

NONPRECISION BRIEF

Confirm FAF, final course, stepdowns, MDA, MAP, timing if required, VDA descent plan, and missed approach.

RISK	WHY IT HAPPENS	PREVENTION
Early descent	Pilot follows advisory path below restrictions	Cross check every stepdown altitude
Missed MAP	Pilot focuses on runway search	Brief MAP and set up timing or waypoint
Wrong minimums	Pilot chooses lowest printed line	Match minimums to equipment and annunciation
Unstable final	Dive and drive creates high sink rate	Use CDFA when appropriate

Regulatory Anchors

The AIM defines precision, APV, and nonprecision procedures by the final approach guidance provided. It also explains that a VDA on a nonprecision approach helps stabilized descent but does not make the approach APV when flown to an MDA.

WAAS guidance in the AIM matters because a pilot cannot use a line of minimums just because it is printed. Equipment approval and receiver annunciation must match the planned minimums.

AIM 5 4 5

- Precision uses course and glide path deviation information meeting precision standards.
- APV uses course and glide path information that does not meet precision standards.
- Nonprecision uses course deviation information but no glide path deviation information.

AIM 1 1 18 AND 1 1 20

- WAAS equipment can support vertically guided approaches when the receiver, signal, and procedure support that level of service.
- The aircraft flight manual or supplement states what level of approach the receiver supports.
- Receiver annunciations tell the pilot what level of service is available for the active approach.

14 CFR 91.175

- Do not descend below DA, DH, or MDA unless the aircraft is in a normal position to land.
- Required flight visibility must exist.
- At least one approved visual reference must be distinctly visible and identifiable.

AC 120 108A

- CDFA is FAA supported guidance for stabilized nonprecision approach operations.
- It reduces level segments, high descent rates, and late runway dives.
- It does not erase the requirement to comply with published minimums.

CHECKRIDE TRAP ANSWERS

EXAMINER PROMPT	STRONG ANSWER	WHY
Is LPV precision	No, APV	It has vertical guidance but not precision classification
Is LOC precision	No, nonprecision	Localizer only has lateral guidance
Can I use LPV if box says LNAV	No	Annunciation must support selected minimums
Does VDA authorize descent below MDA	No	VDA is advisory planning information
Can I descend below MDA when runway is visible	Only if all 91.175 conditions are met	Visibility and normal position also matter

Question: What is the difference between precision and nonprecision?

Precision provides lateral and vertical guidance meeting precision standards. Nonprecision provides lateral guidance without approved glide path deviation information. I would also mention APV as a third category.

Question: What must you have to descend below DA or MDA?

Normal position to land, required flight visibility, and at least one approved visual reference distinctly visible and identifiable under 14 CFR 91.175.

The Old Two Bucket Model Is The Source Of Confusion

Older pilot language often divided approaches into precision and nonprecision. Modern RNAV procedures introduced APV as a practical middle category. A checkride quality answer should include APV when discussing LPV and LNAV/VNAV.

Do not classify by equipment alone. GPS can support LNAV, LP, LNAV/VNAV, and LPV. The same navigator may support both nonprecision and APV minimums. The selected and annunciated line of minimums determines what you are actually flying.

IF UNSURE

Use the line of minimums the aircraft is approved and annunciated to fly. If the approach provides approved vertical guidance to DA, treat it as precision or APV depending on classification. If it uses MDA, treat it as nonprecision.

WHEN VERTICAL GUIDANCE IS LOST

Outside the FAF, request delay vectors or holding if needed. Determine whether another line of minimums is available and legal. Inside the FAF, go missed if you cannot safely transition to another legal method.

FINAL PRACTICE PLAN**ONE EXERCISE THAT FIXES MOST CONFUSION**

- Compare one ILS, one LPV, one LNAV/VNAV, one LNAV, and one LOC approach.
- For each one, identify approach category, minimum altitude type, MAP, required equipment, and missed approach.
- Then explain what would change if vertical guidance failed.
- Finish by saying what visual requirements must exist before descending below DA, DH, or MDA.

BEFORE THE FAF**FINAL CHECK****Chart, clearance, course**

Confirm you are flying the intended procedure and final approach course.

FINAL CHECK**Altitude, annunciation, minimums**

Match the published line of minimums to the equipment and receiver status.

FINAL CHECK**Missed**

Know the MAP, the first climb instruction, and when turns begin.

FINAL INSTRUCTOR THOUGHT

Precision, APV, and nonprecision are not just test vocabulary. They tell you what guidance is protecting you, what minimums apply, what mistakes are most likely, and how disciplined your descent must be.

The pilot who understands that difference flies approaches with less guesswork and makes cleaner decisions when the runway does not appear.