

Instrument Approaches

- Instrument Approach Procedures can be divided into three main categories.
 - Based on the accuracy and reliability of the approach
 - Which Include
 - Precision Approaches
 - Which have ground based vertical guidance
 - Approaches with Vertical Guidance
 - But not ground based vertical guidance
 - Non precision Approaches
 - Which have no vertical guidance
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Precision Approaches

- Are aligned within 3 degrees of the runway center line and provide you with vertical guidance.
 - In Addition to the course guidance you get during an approach
 - Usually in the form of an electronic glide slope
- Allow you to descend to as low as 200 feet before a missed approach must be initiated.
 - Expressed as a specific altitude and height
 - Decision Altitude (DA) in feet (MSL)
 - Decision Height (DH) in feet AGL
- Have visibility minimums as low as 1/2 mile
- Can give you a minimum obstacle clearance as low as 150 feet
 - Includes
 - ILS (Instrument Landing System) approaches
 - PAR (Precision Approach Radar) approaches

CATEGORY	A	B	C	D
S-ILS 28R	623- $\frac{1}{2}$ 200 (200- $\frac{1}{2}$)		NA	
S-LOC 28R	800- $\frac{1}{2}$ 377 (400- $\frac{1}{2}$)		NA	
CIRCLING	880-1 453 (500-1)		NA	

ILS Approaches

- Are the most common Approach Types
- Provide lateral guidance
 - With a localizer transmitter
- Provide Vertical Guidance
 - With a Ground based glide-slope transmitter

Precision Approach Radar (PAR)

- Used primarily by the military
- Approaches where a controller gives you highly accurate navigation guidance laterally and vertically in the form of
 - Headings to fly
 - To keep you aligned with the extended centerline of the runway
 - When to start the descent
 - Verbal indication as to your vertical position relative to the glide-path
 - On, Above, or below glide-slope

Approaches with vertical guidance (APV)

- Also provide an electronic glide slope
- With the exception of LDA approaches, are based on signals from the GPS and WAAS
 - Instead of ground based nav-aids, which
 - Traditional precision and non-precision approaches use
 - Are expensive to install and maintain
 - Gives the FAA the ability to add hundreds of new instrument approaches every year.
- Provide Vertical guidance
 - And in some cases can take you as low as an ILS approach
 - But do not meet the standards for precision approaches, because

- They do not meet the ICAO and FAA precision approach definitions which apply mostly too:
 - Localizer Ground based glide-slope transmitters
 - Ground based radar
- Require a lot of
 - Documentation
 - Associated costs
- Include
 - LPV (Localizer performance with vertical guidance) approaches
 - LNAV/VNAV (Lateral navigation / vertical navigation) approaches
 - LDA (localizer-type directional aid) approaches that include glide-path guidance

LPV's

- Are a type of gps approach
- Can only be flown if your aircraft is equipped with WAAS
- Take advantage of WAAS's
 - High accuracy guidance
 - Increased integrity
- Depending on the circumstances can provide the minimums as an ILS

LNAV/VNAV's

- Are another type of GPS approach
- Can be flown with
 - Barometric VNAV
 - WAAS
 - Which eliminates the errors that can be introduced by using information

CATEGORY	A	B	C	D
LPV DA	737/40 411 (500-¾)			NA
LNAV/VNAV DA	1387-2 1061 (1100-2)		1387-3 1061 (1100-3)	NA
LNAV MDA	1100/40 774 (800-¾)		1100-1¾ 774 (800-1¾)	NA
CIRCLING	1100-1 769 (800-1)	1100-1¼ 769 (800-1¼)	1100-2¼ 769 (800-2¼)	NA

LDA's

- Use a Localizer for lateral guidance

- But do not align with the runway centerline
- Are categorized as APV approaches when they have glidepath information
 - Although this is rare