

Medium, climbing and descending turns

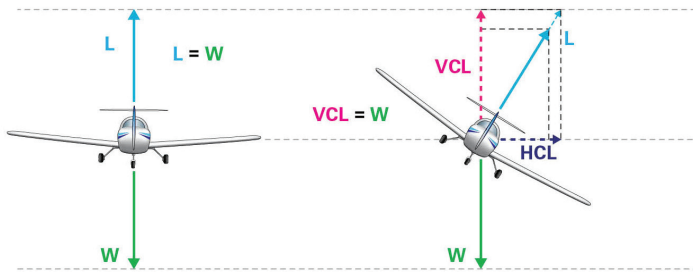
BASIC CONCEPTS

Objectives

- To change direction through 360 degrees at a constant rate – using 30 degrees angle of bank – while maintaining a constant altitude and keeping the aeroplane in balance.
- To complete a medium turn while climbing and while descending.

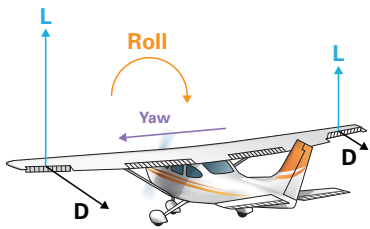
Principles of flight

- In order to turn need to create a force towards the centre of the turn – bank the aeroplane
- HCL provides the force
- VCL reduced \ more L required → increase angle of attack slightly



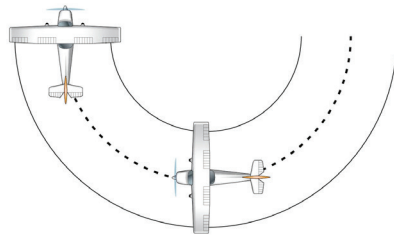
Adverse yaw

- Increased lift on up-going wing also means increased drag, therefore yaw occurs away from turn
- Rudder used to balance yaw as ailerons deflected



Overbanking

- Outer wing travels further, therefore more L, tries to keep rolling
- Hold off bank with aileron



Performance

- When climbing and turning, angle of bank must be reduced maximum of 20°, use 15°

Air exercise

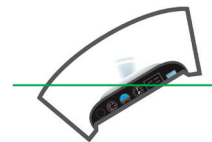
Adverse yaw

- Demonstration only

Entry

Medium level turn

- From S+L
- Lookout
- Roll with aileron to 30° AoB
- Balance with rudder
- Backpressure to set attitude – ↑ slightly



Climbing turn

- Establish in climb
- Lookout
- Roll with aileron to 15° AoB
- Balance with rudder
- Relax backpressure to maintain attitude – ↓



Descending turn

- Establish in glide
- Lookout
- Roll with aileron to 30° AoB
- Balance with rudder
- Relax backpressure to maintain attitude – ↓



In turn

- 'Check' the ailerons and maintain balance
- Lookout
- Attitude

- Instruments
- Angle of bank controlled with aileron
- Altitude controlled with backpressure

Exit

- Look for reference point
- Anticipate rollout by half the angle of bank

- Roll wings level
- Balance with rudder
- Relax backpressure

- Reset S+L attitude
- On exit from a climbing or descending turn, check **PAT**

Airmanship

- 20° per 2 second scan technique
- Lookout and listenout
- SA – 360° turns, position, altitude, weather
- VFR minima, 5–2–1

Aeroplane management

- Smooth and positive throttle movements
- Carb heat

Human factors

- 360° turns to minimise disorientation
- Turning sensation