

# Instrument flying introduction

## INSTRUMENT FLYING

### Objectives

- To experience the sensory illusions that occur when deprived of visual references.
- To maintain straight and level flight by sole reference to the aeroplane's instruments.

### Considerations

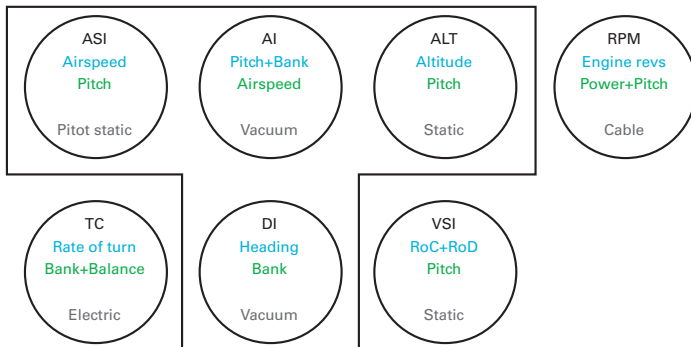
- Power + Attitude = Performance

### Control instruments

- Attitude indicator
- Tachometer

### Performance instruments

- Airspeed indicator
- Altimeter
- Directional indicator
- Turn coordinator
- Balance indicator
- Vertical speed indicator



### Instrument layout

- Basic T plus TC, VSI and RPM

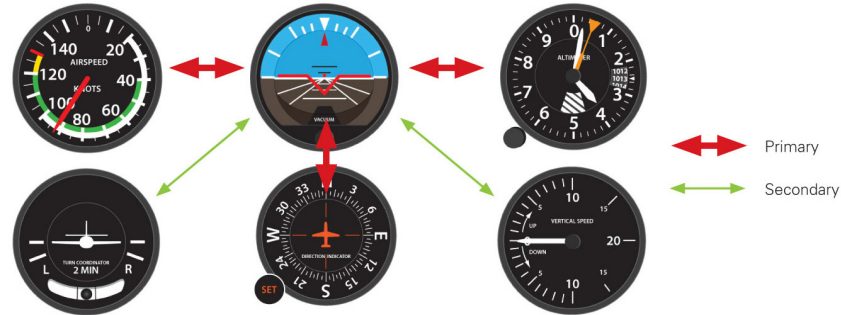
### Instrument lag

- All instruments have lag (delay in indicating correct information)
- Only VSI lag is significant, must be checked against other information

### Air exercise

- Demonstration of limitations of vestibular and muscular system

### Selective radial scan



### Maintain straight and level

- Set attitude, check altitude, heading and airspeed being maintained
- Check in balance and VSI showing level

### Attain straight and level from a climb or descent

- APT and PAT

### Turns

- All turns at rate one

### Airmanship

- Instrument check while taxiing
- Can't use peripheral vision
- Need to consciously counteract inertia
- Change – check – hold – adjust – trim
- Lookout "clear left"....

### Aeroplane management

- Pitot static system operation
- Set AI symbol before flight, don't change

### Human factors

#### Balance organs

- Sense angular acceleration and change of direction in 3 planes, and body tilt
- Can't detect change when it's very slow or constant

#### Muscular pressure sensors

- Affected by gravity
- Know if standing or sitting with eyes closed
- Can't distinguish between causes of increased G

#### Vision

- Most powerful system
- Usually resolves ambiguous information from other senses
- But in IF conditions visual references not available
- Leans
- Trust the instruments