



VICTORIA FLYING CLUB

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# Normal Take-Offs and Landings

- Review Climbing, Descending, Slow Flight
- Definition and Motivation
- **Normal Take-Off**
  - Criteria and Phases
- **Normal Approach and Landings**
  - Criteria and Phases
- Summary and Questions
- Pre-Flight Briefing



# Review Climbing

- Define and state the two important reference speeds for climbing.
- Where do we find the relevant performance data?
- How do we maintain a selected climb airspeed given a fix power setting?
- What factors affect climb performance?
- How do we maintain *coordinated flight* during a climbing turn?



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# Take-Off – Definition and Motivation

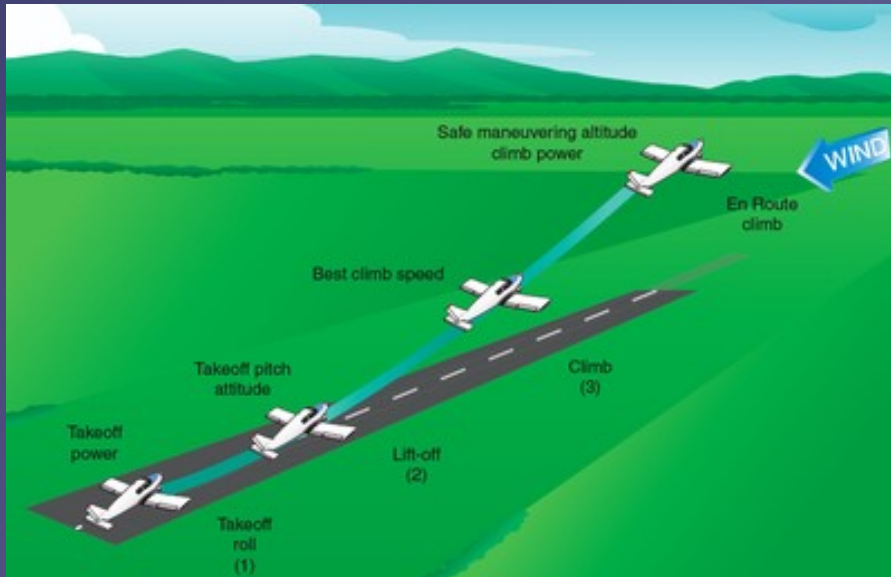


- *Act of leaving a supporting surface including the immediately preceding and following acts*
- Leaving the ground and **becoming airborne**
- Essential maneuver used in every single flight



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# Normal Take-Off



- *Criteria:* hard uncontaminated surface, **long** runway, no obstacles, **low** density altitude, no or steady headwind
- Check environment and consult performance data in POH
- Pre-take-off checks according to checklists in POH
- Mixture **full rich**, lean for **maximum RPM** above **3000' DA**
- Passenger, departure and emergency briefings





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# Normal Take-Off – Line Up



- **Check** approach sector and **callout** *Approach Sector Clear*
- Align with runway **centerline** using **rudder** and **brakes**
- Keep **nose-wheel centered** and **stop** before take-off run
- Crosscheck runway heading, magnetic compass, heading indicator



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## Normal Take-Off – Run



Keep  
Straight

Runway End



Lift Off



- Callout *Take-Off* before initiating take-off run
- Smoothly apply **full power** keeping **straight** with **rudder**
- Use **runway end** as reference for directional control
- Check RPM/ASI and callout *RPM Checked, Airspeed Alive*
- Continue to **accelerate** to lift-off speed ( $V_r = 55 \text{ KIAS}$ )
- Gently apply **elevator** back-pressure to lift off nose-wheel



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# Normal Take-Off – Initial Climb

*Positive Rate*



*Adjust Attitude*



*Maintain Vy*

*Control Direction*



- Check VSI and callout *Positive Rate*
- Accelerate to **best rate of climb** airspeed ( $V_y = 74 \text{ KIAS}$ )
- Adjust and maintain nose-up **attitude** for **airspeed**
- **Trim** away elevator forward-pressure as required
- Maintain directional control and control yaw with **rudder**

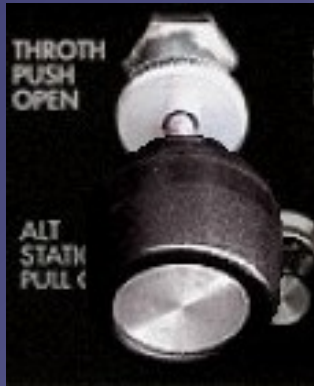




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# Aborted / Rejected Take-Off

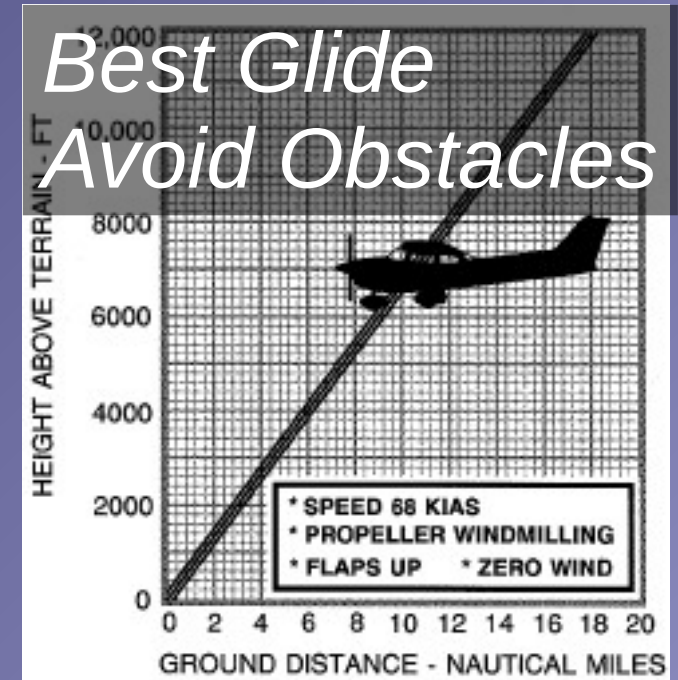
*Power Idle*



*Apply Brakes*



*Best Glide  
Avoid Obstacles*



- *Reasons:* failures, traffic, animals, humans
- *During Take-Off Run:* power **idle**, apply **brakes**
- *Immediately after Take-Off:* **best glide airspeed (68 KIAS)**, avoid **obstacles**



# Take-Off and Landing Factors

- **Density** (Altitude, Pressure, Temperature, Humidity)
- **Surface** Material (Hard, Soft, Rough) and **Slope**
- Surface **Contamination** (Wet, Dry, Slush, Snow, Ice)
- **Wind** / Turbulence (Head-/Tailwind, Gusts, Windshear)
- **Wake** Turbulence
- **Obstacles**
- **Weight** and **Balance**
- Lifting Surfaces **Contamination**
- Ground Effect, Wheelbarrowing, Weathercocking



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# Wheelbarrowing



- Higher load on the nose-wheel
- Tendency to pivot about the nose wheel may result in ground loop
- *Before pivoting:* **Ease back elevator** to reduce weight
- *After pivoting:* **Relax forward elevator** and abort if not stopped



# Review Descending and Slow Flight

- Mentally perform a power-off and power-on descent and state all observations and required actions (PAT).
- Define and state the best glide airspeed.
- How do we recognize that a ground reference can be reached during a descent?
- What is slow flight and how do we recover from the slow flight range?
- Define and state the two stall v-speeds.





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# Landing – Definition and Motivation

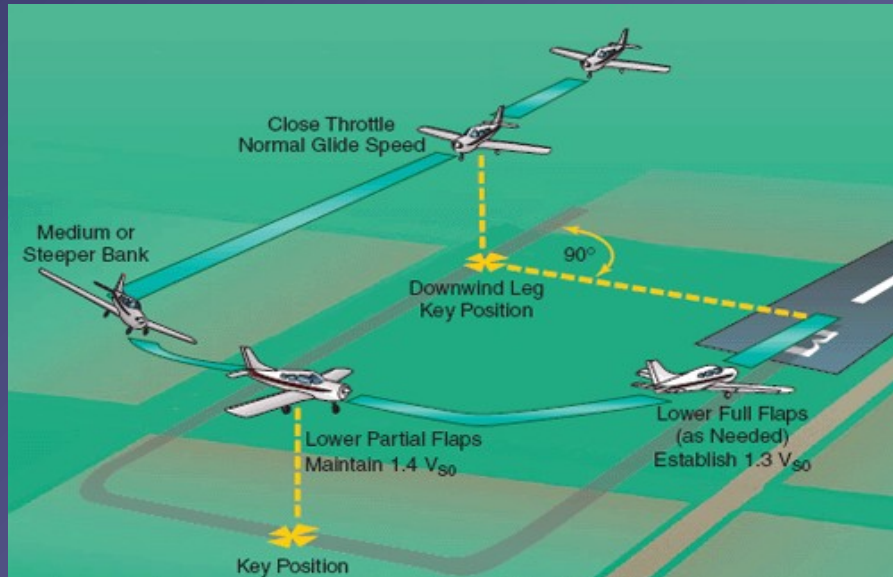


- *Landing is the last part of a flight, where a flying animal, aircraft, or spacecraft returns to the ground.*
- Stabilized **approach**, **flare**, **touchdown**, **ground roll**
- Essential maneuver used in every single flight



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# Normal Approach and Landing

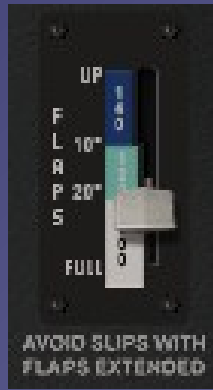
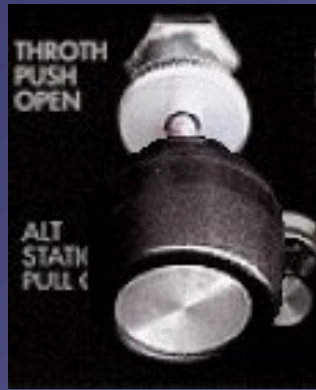


- *Criteria:* hard uncontaminated surface, **long** runway, no obstacles, **low** density altitude, no or steady headwind
- Check environment and consult performance data in POH
- Pre-landing checks according to **checklists** in POH
- **Passenger, arrival and emergency briefings**



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# Normal Landing – Approach



*Align and Descent*

*Perspective*

*Approach Speed*

- Align with **runway** and establish a *stabilized descent*
- Aim for runway threshold to flare into landing zone
- Set **flaps** as required (**10°-20°**) in **white arc** (below **85 KIAS**)
- *Continuously* check correct **approach airspeed** (**65-75 KIAS**)
- Adjust **power** to maintain **attitude** and **perspective**





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# Approach Perspective



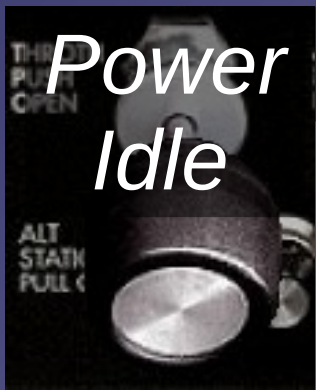
- Maintain **descent angle** (perspective) and **attitude**
- Control airspeed and rate of descent with **power**
- Be aware of potential **visual illusions**





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# Normal Landing – Flare and Touchdown



- Callout *Landing Assured* before initiating landing flare
- Reduce **power** to **idle** keeping **straight**
- Use **runway end** as reference for directional control
- Continue to **decelerate** in **level slow flight** above runway
- Gently increase **elevator** back-pressure to assume **landing attitude** gradually – slight **nose-up**, **main-wheels** first



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# Normal Landing – Ground Roll

*Keep Straight*

*Runway End*



*Allow Nose Wheel to Settle*

*Apply Brakes*

- Keep **straight** with **rudder** using **peripheral vision**
- Hold **elevator** back-pressure allowing nose wheel to settle
- *Gently* apply **brakes** keeping **straight** towards **runway end**
- **Slow down** to taxi speed and **vacate runway**
- Post-Landing – clearance, flaps, transponder, lights, time



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# Overshoot / Go-Around

*Full Power*



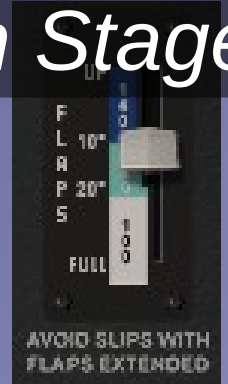
*Control Yaw*



*Assume Slight  
Nose-Up Attitude*



*Flaps Up  
In Stages*



- *Reasons*: balked landing, failures, traffic, animals, humans
- Apply **full power** controlling yaw with **rudder**
- Assume a *slight* **nose-up attitude** just above the horizon
- Retract **flaps** to **10°** and **accelerate** to *safe climb speed*
- **Maintain climb speed** and retract flaps in **white arc**





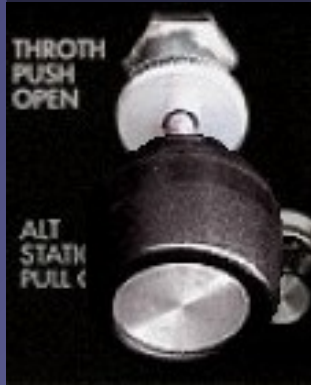
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# Touch and Go

*Flaps  
Up*



*Full Power*



*Keep Straight*

*Runway End*



- *Ensure sufficient runway length beforehand*
- **Retract flaps** completely during ground roll, **trim** for take-off
- Apply **full power** and **keep straight** with **rudder**
- Use **runway end** as reference for directional control
- Perform **take-off run** and **initial climb** as required





## Summary / Quiz

- What are the factors affecting take-offs and landings the selection of a *normal* take-off and landing?
- Mentally perform a normal take-off and state all observations and actions.
- Mentally perform a normal landing and state all observations and actions.
- How do flaps affect the landing performance?
- Mentally perform a go-around and state all observations and actions.



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# Pre-Flight Briefing

- Exercise
- Training Area
- Departure and Arrival Procedures
- Weather Briefing / NOTAMs
- Aircraft and Documents
- Time and Fuel Requirements
- Safety Considerations and Responsibilities