



VICTORIA FLYING CLUB

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- Bookings, Questions



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# Stalls

- Review Slow Flight
- Definition and Motivation
- **Power-Off and Power-On Stalls**
- **Accelerated, Approach and Departure Stalls**
- Summary and Questions
- Pre-Flight Briefing

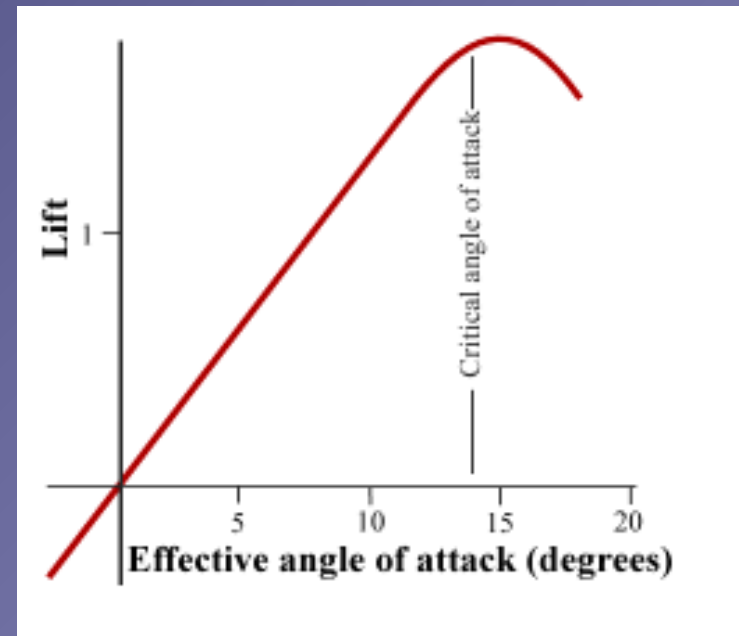
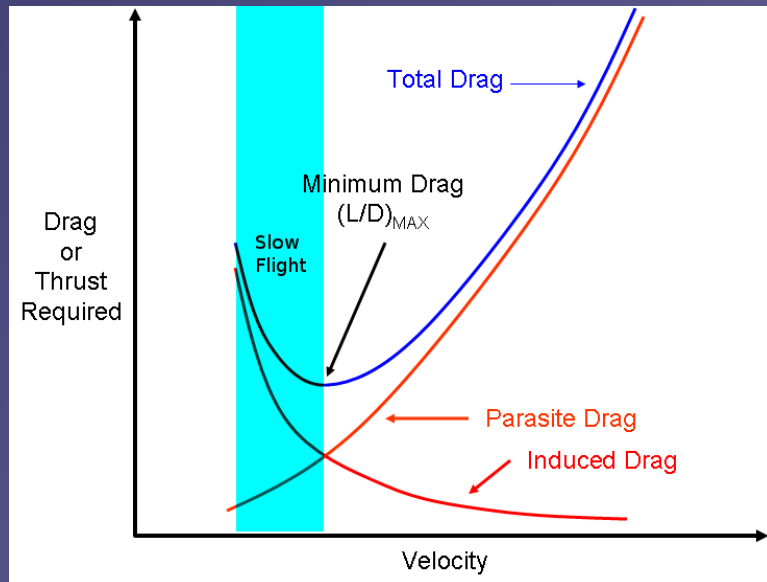


# Review Slow Flight

- *Attitude plus power equals performance!*
- Mentally enter a slow flight in landing configuration from cruise flight and state all observations and required actions.
- What particular observation applies to the control inputs compared to normal cruise flight?
- Mentally recover from a slow flight in landing configuration and state all observations and required actions.



# Definition and Motivation



- **Lower limit of the slow flight range**
- Any angle of attack **beyond** the **critical angle of attack** at which any further increase leads to **less lift** and **more drag**
- *Imminent* – **stall warning**, **bottom of arc**, **buffet**
- *Fully Developed* – **nose or wing drop**



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# Safety Considerations

- High **nose-up** attitude maneuver
- Limited forward visibility
- **HASEL, lookout** ahead and below
- **Maintain** good **lookout** during maneuver
- **Yaw** is to be controlled precisely with **rudder**
- **Remain coordinated** at all times
- **Utility category** for wing drop stalls



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# Entering a Power-Off Stall



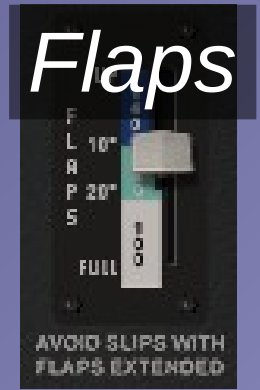
- Reduce **power** to **idle**, decelerate and control yaw
- Apply elevator **back-pressure** to increase **nose-up attitude** controlling yaw with **rudder** maintaining **altitude**
- Extend flaps in stages to desired degree in **white arc**





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# Recovering a Power-Off Stall



- Apply elevator **forward pressure** to lower the nose *immediately*
- Apply **full power** controlling yaw with **rudder** to remain **coordinated**
- **Accelerate** past the slow flight range and **regain altitude** ( $V_x$ )
- Retract **flaps** in stages to up in **white arc**
- Establish **cruise attitude** and **accelerate** to **cruise airspeed**
- Reduce **power** to **cruise power** setting and finally **trim**



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# Entering a Power-On Stall



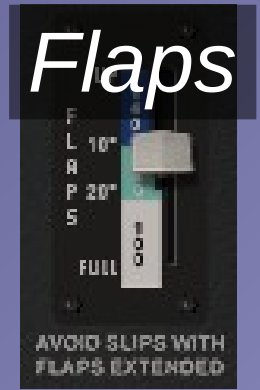
- Apply elevator **back-pressure** to increase and **hold nose-up attitude** controlling yaw with **rudder**
- Extend flaps in stages to desired degree in **white arc**





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# Recovering a Power-On Stall



- Apply **elevator forward pressure** to lower the nose *immediately*
- Apply **full power** controlling **yaw** with **rudder** to remain **coordinated**
- **Accelerate** past the slow flight range and **regain altitude**
- Retract **flaps** in stages to up in **white arc**
- Establish **cruise attitude** and **accelerate** to **cruise airspeed**
- Reduce **power** to **cruise power** setting and finally **trim**



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# Power-On versus Power-Off Stall

- Slightly lower **stall speed** and higher **pitch attitude**
- More directional **control** and **coordination** required
- **Ailerons** are even less effective
- More **rudder** and **elevator** effectiveness (slipstream)
- More pronounced **attitude change**



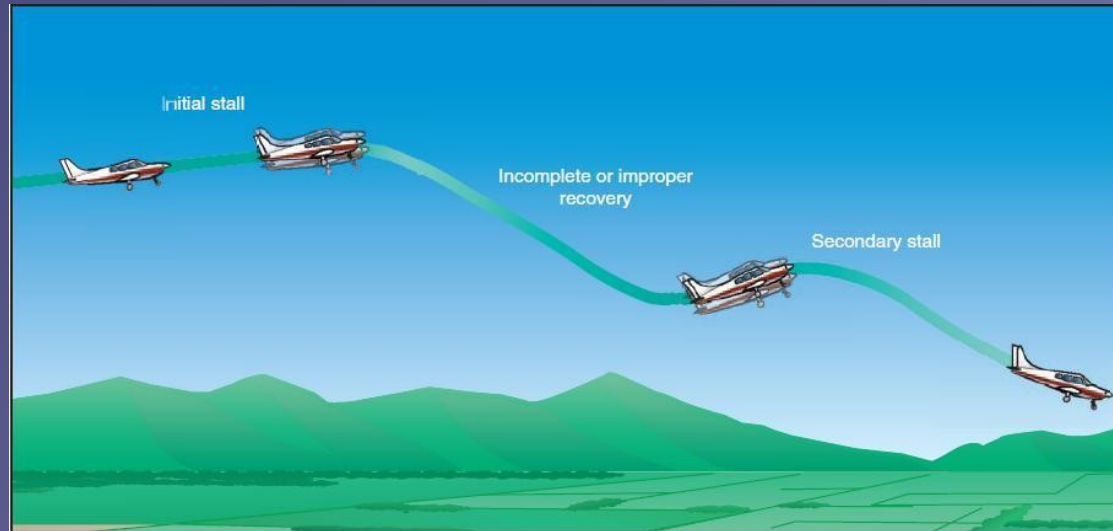
# Imminent and Fully Developed Stalls

- Stall **recovery** in normal flight operations should be performed as **early as possible** – during the **imminent stall**
- Recover at the **first indication** of **stall warning, bottom of arc** or **buffet**
- Fully developed stalls are practiced to develop **proficiency in recognition and recovery *only***



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# Accelerated Stall



- High load factors and abrupt elevator back-pressure may lead to a stall at **any airspeed** and **attitude**
- An incorrect stall recovery may lead to a **secondary stall**





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# Approach / Turning Stall

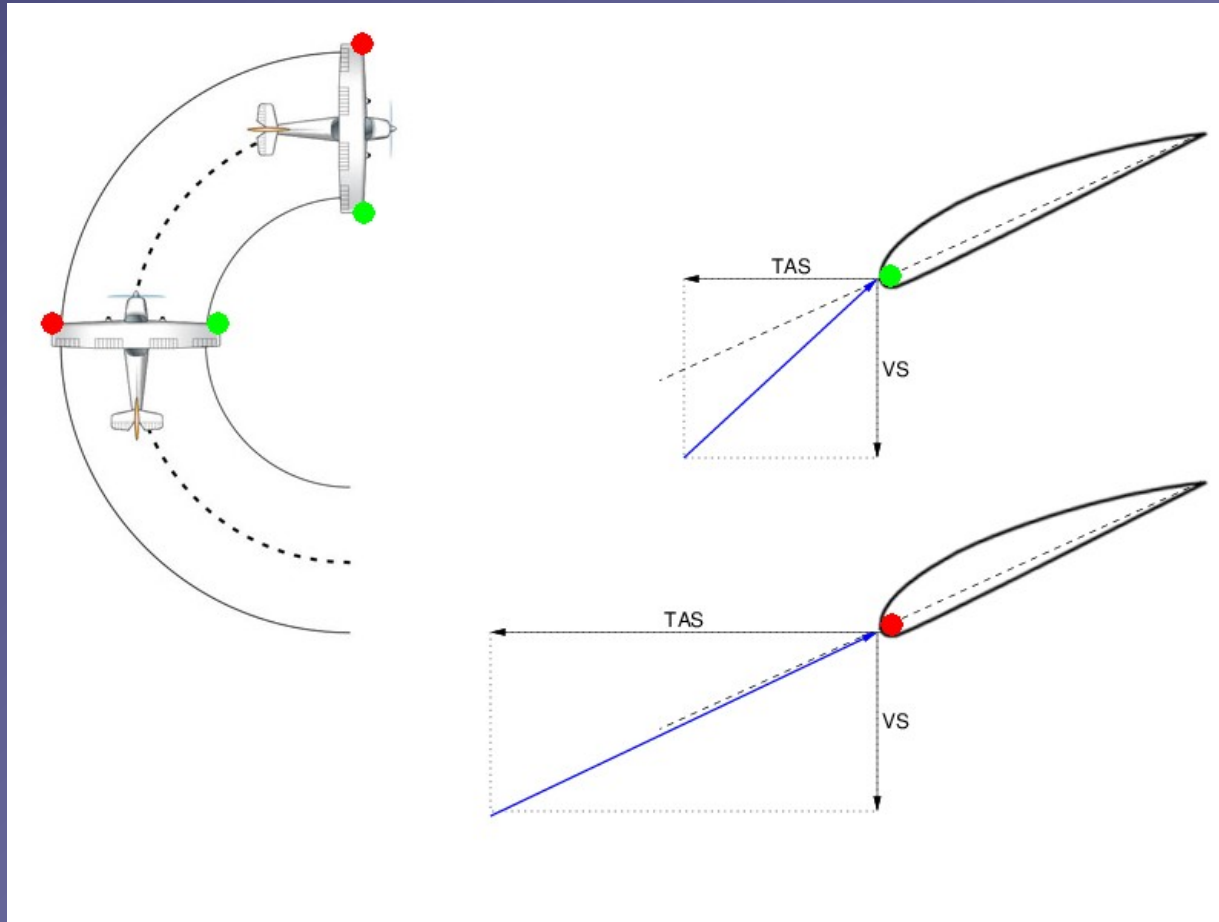


- Establish a power-off descending turn
- Increase bank attitude with high rate of turn
- Inner wing *may* stall first and drop
- **Release** elevator back-pressure lowering nose, apply **opposite rudder** and **ease out** of dive applying **power**



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# Approach / Turning Stall AoA





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# Departure / Turning Stall

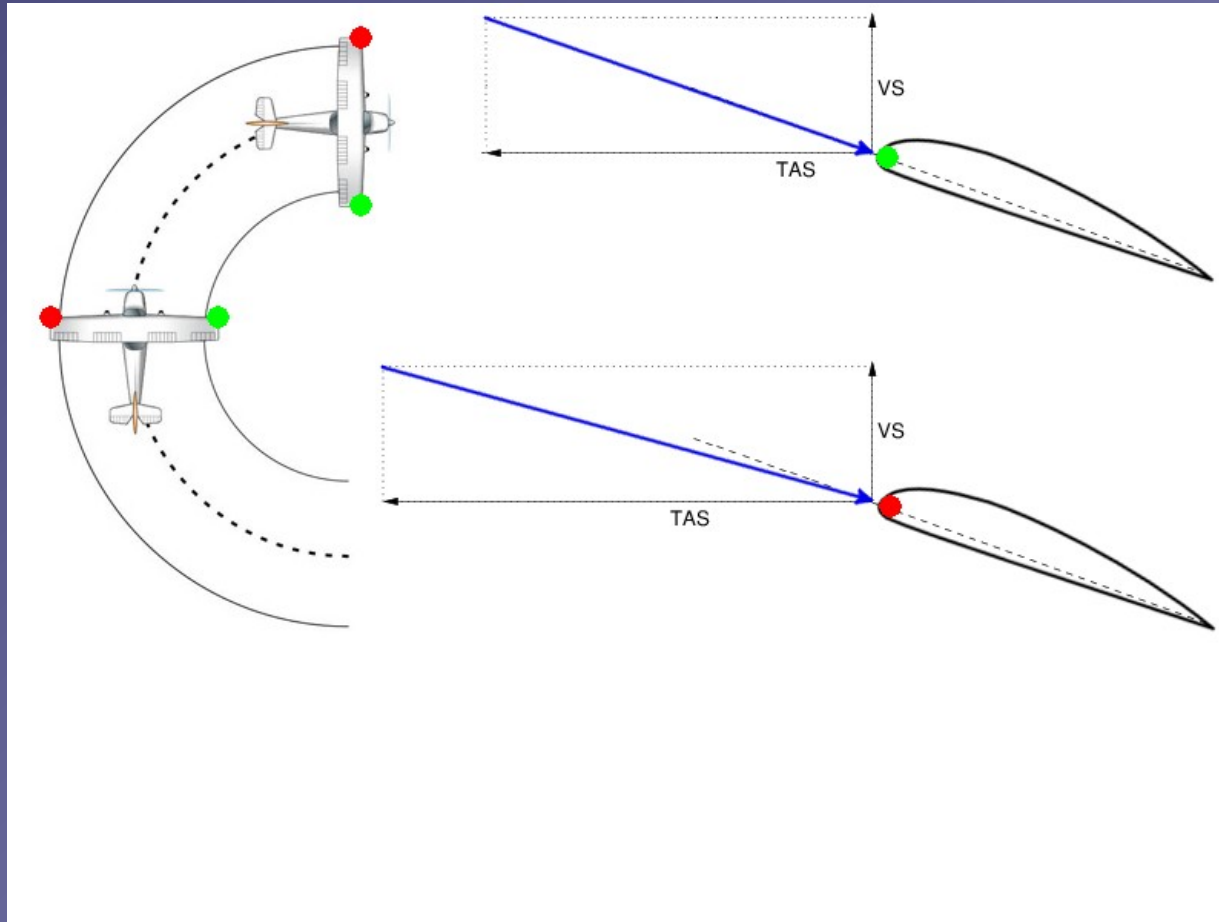


- Establish a power-on climbing turn
- Increase nose-up attitude while turning
- **Outer wing** *may* stall first and drop – **opposite** to the turn
- **Release** elevator back-pressure lowering the nose, apply **opposite rudder**, then **neutralize**, wings level and **ease out** of dive applying **power**



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# Departure / Turning Stall AoA







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# Summary / Quiz

- Define a stall and describe the indications of a stall.
- What airspeed or attitude is required to produce a stall?
- Mentally enter and recover a clean power-off stall from cruise flight and state all observations and required actions.
- Mentally enter and recover a power-on stall with flaps from cruise flight and state all observations and required actions.
- Mentally enter and recover a departure stall and state all observations and required 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



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# Stalls (Ex. 12, LP. 5, 6)

- Objective
- Review
- Motivation
- Howto
- Summary / Questions
- Preflight Briefing



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# Entering a Power-On Stall



- Reduce **power** to low power setting (1500 RPM)
- Apply elevator **back-pressure** to increase **nose-up attitude** controlling yaw with **rudder** maintaining **altitude**
- Extend **flaps** in stages to desired degree in **white arc**