

Objectives	<ul style="list-style-type: none"> The student should develop the knowledge of the elements related to the effects of speed and configuration on single engine performance at V_{YSE}
Key Elements	<ul style="list-style-type: none"> Maintain V_{YSE} Feathering reduces large amounts of drag Control the airplane
Elements	<ul style="list-style-type: none"> Entry procedure Demonstration Recovery
Schedule	<ul style="list-style-type: none"> Discuss Objectives Review Elements Review & Conclusion
Equipment	<ul style="list-style-type: none"> White Board / Markers References
CFI Actions	<ul style="list-style-type: none"> Present lesson Use teaching aids Ask/ answer questions
Student Actions	<ul style="list-style-type: none"> Participate in discussion Take notes Ask / answer questions
Completion Standards	<ul style="list-style-type: none"> The student understands the importance of reducing drag to maximize single engine performance

Additional Notes: _____

CE = Common Error

Introduction

Overview

Review objectives / Elements

What

This lesson provides insight to the effects of different aircraft configurations on single engine performance

Why

In order to maintain safety in multiengine ops, it is key to understand the importance of reducing drag and maintaining V_{YSE} during single engine operations

How

Entry Procedures

- **Establish an appropriate altitude (remember that the aircraft will climb and descend slightly during the maneuver)**
 - Ensure that a safe altitude is selected in case the engine fails to restart
 - Single engine ops below 3000' AGL will be performed with idle thrust rather than mixture shutdown
- **Reduce power to idle on critical engine**
 - Do not feather (or simulate feathering) the engine
 - The first portion is to demonstrate the performance with a windmilling prop
- **Establish a zero sideslip, trim accordingly**
- **While maintain altitude, slow to V_{YSE}**
- **Once Established at V_{YSE} in straight and level flight, the performance demonstration can begin**
- **CE – Improper entry procedures, including pitch attitude, bank angle, and airspeed**

Demonstration

Propeller Windmilling

- **Apply full power and maintain V_{YSE} in a clean configuration**
 - Make note of the climb performance as well as the pitch attitude required to maintain V_{YSE} with the propeller windmilling
 - Adjust the airspeed about 5 knots above and below V_{YSE} and note the performance
- **Add the approach flaps**
 - Trim the aircraft to maintain a zero sideslip

- Make note of the climb performance as well as the pitch attitude required to maintain V_{YSE} with the propeller windmilling
 - Adjust the airspeed about 5 knots above and below V_{YSE} and note the performance
- **Extend Landing Gear**
 - Trim the aircraft to maintain a zero sideslip
 - Make note of the climb performance as well as the pitch attitude required to maintain V_{YSE} with the propeller windmilling
 - Adjust the airspeed about 5 knots above and below V_{YSE} and note the performance
- **Extend Landing Flaps**
 - Trim the aircraft to maintain a zero sideslip
 - Make note of the climb performance as well as the pitch attitude required to maintain V_{YSE} with the propeller windmilling
 - Adjust the airspeed about 5 knots above and below V_{YSE} and note the performance

Propeller Feathered

- **With the aircraft still in a dirty configuration, feather the critical engine**
 - Trim the aircraft to maintain a zero sideslip
 - Make note of the climb performance as well as the pitch attitude required to maintain V_{YSE} with the propeller windmilling
 - Adjust the airspeed about 5 knots above and below V_{YSE} and note the performance
- **Retract the landing flaps**
 - Trim the aircraft to maintain a zero sideslip
 - Make note of the climb performance as well as the pitch attitude required to maintain V_{YSE} with the propeller windmilling
 - Adjust the airspeed about 5 knots above and below V_{YSE} and note the performance
- **Retract the landing gear**
 - Trim the aircraft to maintain a zero sideslip
 - Make note of the climb performance as well as the pitch attitude required to maintain V_{YSE} with the propeller windmilling
 - Adjust the airspeed about 5 knots above and below V_{YSE} and note the performance
- **Retract the approach flaps (the plane should be clean now)**
 - Trim the aircraft to maintain a zero sideslip
 - Make note of the climb performance as well as the pitch attitude required to maintain V_{YSE} with the propeller windmilling
 - Adjust the airspeed about 5 knots above and below V_{YSE} and note the performance
- **Make note of the performance improvement due to feathering**
- **CE – Improper airspeed control throughout the demonstration**
- **CE – Inadequate knowledge of the effects of airspeed above or below V_{YSE} and of various configurations on performance**
- **CE – Rough and/or uncoordinated flight controls**

Recovery

- Restart the feathered engine
- Increase power on the critical engine, maintain control during the recovery
 - Reduce power on the operating engine
- Return to straight and level coordinated flight
- **CE** – improper procedures during resumption of cruise flight
 - **Ensure proper checklist usage**

Conclusion & Review

Conclusion

Briefly review the key points

- Maintain V_{YSE}
- Feathering reduces large amounts of drag
- Control the airplane