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_____ Piper Archer II PA28-181 _____
Quick Reference Manual

This maneuvers flow guide is intended to be used as a ready reference and provides only the basic steps and sequences. This guide should be used in conjunction with most current versions of FAA-H-8083-3, the FAA Airmen Certification Standards, Practical Test Standards, and the Pilot's Operating Handbook for the Piper Archer.

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Preflight/Normal Operations

Weight and Balance

1. Max Gross Weight..... 2550 lbs
2. Taxi Fuel Burn..... 8 lbs

V-Speeds

V_{S0}..... 49
V_{S1}..... 55
V_{FE}..... 102
V_R ..... 52 - 65 *(Recommended - 60)*
V_{NO}..... 125
V_{NE}..... 154
V_X..... 64
V_G..... 76
V_Y..... 76
V_A..... 89-113
X-Wind..... 17

Leaning Procedures

1. Lean Assist..... Hold
2. Mixture Level..... Lean Until Peak EGT
3. Mixture Level..... Enrich 100°F

Engine Starting

Engine Start (Flooded)

1. Brakes..... Hold
2. Throttle..... Open Full
3. Fuel Pump..... On
4. Mixture..... Idle Cut-Off
5. Engine/PFD Indicators..... Monitor/DECIDE
6. Magnetos..... Select Both/Start
7. Mixture (On Start).....Advance Full
8. Throttle..... Retard
9. Oil Pressure..... Check
    - **If a Fire Begins, proceed to Engine Fire (Starting)**

Description:

Excessive priming can result in a fuel/air mixture that is too rich. Reducing the mixture (fuel) while increasing the amount of air (throttle) can equalize this imbalance and start the motor.

Common Errors:

- Not reducing the mixture to idle before starting
- Failure to reduce the throttle
- Failure to hold the brakes

Clearing Fouled Spark Plug Procedure

1. Brakes..... Hold
2. Throttle..... Open 2000 RPM
3. Mixture..... Lean 50 º of Peak
4. Engine..... Run ~30 Seconds
5. Engine RPM/PFD Indicators..... Monitor/DECIDE
6. Magnetos (L/R)..... Max 175 RPM Drop / 50 RPM Difference
7. Throttle..... Retard
8. Mixture..... Advance to 100 º Rich of Peak
    - **If Roughtness/RPM Differences Do Not Impove Seek Maintenance**

Description:

Fouling is created by excessively rich fuel/air mixtures during prolonged ground maneuvers and/or failure to properly lean the mixture during flight and causes a buildup of carbon deposits. If left unchecked, spark plug fouling results in engine roughness, hot spots, and detonation.

Common Errors:

- Not leaning the mixture while on the ground
- Engine overheating due to high oil temperatures during prolonged runup
- Failure to hold the brakes

Takeoff Operations

Normal Takeoff

1. Flaps..... Up
2. Rotate..... 52 - 65 KTS *(Calculate based off Weight)*
3. Climb Out..... 76 KTS
   * *If CHT increases to 400, increase climb out speed to* **80-90** *as necessary to keep CHT under 400*

Soft Field Takeoff

1. Flaps.....25° (2 clicks)
2. Pitch..... Start Yoke Full Back
3. Lift Off..... Early as Able
4. Accelerate in Ground effect ..... 76 KTS
5. Climb out ..... 76 KTS
6. Flaps..... 10° with Positive Rate of Climb
7. Climb Out..... 76 KTS
8. Flaps..... 0° with Positive Rate of Climb
9. Climb Out..... 76 KTS
   * *If CHT increases to 400, increase climb out speed to* **80-90** *as necessary to keep CHT under 400*

Description:

Soft or rough runway surfaces (grass, sand, snow) require getting the airplane airborne as quickly as possible to eliminate surface drag. Shift weight from the landing gear to the wings via a high AOA to accomplish this. Then fly within ground effect increases airspeed after takeoff.

Common Errors:

- Insufficient back pressure during roll resulting in inadequate AOA
- Poor directional control
- Climbing outside of ground effect too early
- Abrupt and/or excessive elevator control inputs
- Touching back down after lift-off
- Failure to adjust pitch outside of ground effect

Short Field Takeoff

1. Flaps.....25° (2 clicks)
2. Full Stop..... Maximum Available Runaway
3. Takeoff Power..... Verify Set
4. Brakes..... Release
5. Rotate..... 55 KTS
6. Climb Out..... 64 KTS until clear of 50 ft Obstacle
7. Flaps..... 10° with Positive Rate of Climb
8. Climb Out..... 76 KTS
9. Flaps..... 0°with Positive Rate of Climb
10. Climb Out..... 76 KTS

* *If CHT increases to 400, increase climb out speed to* **80-90** *as necessary to keep CHT under 400*

Description:

When the runway area is short or restricted by obstructions, the airplane must be flown precisely at its maximum limit of takeoff performance. This results in the shortest ground roll and steepest angle of climb.

Common Errors:

- Failure to utilize all available runway distance
- Failure to properly trim
- Premature lift-off resulting in high drag
- Prolonging ground roll
- Inability to hold Vx
- Airspeed/instrument fixation
- Premature retraction of landing gear and/or flaps

Performance Maneuvers

CRAAC

1. **C**learing Turns.....Perform
2. **R**eference Point.....Visual Established
3. **A**ltitude .....As Required & Noted
4. **A**irspeed.....Va (as Calculated)
5. **C**onfiguration Flow.....Perform

Description:

Memory aid for preparing the airplane for any manuver.

Configuration Flow

1. Fuel Selector..... Fullest Tank
2. Throttle..... 2300 RPM
3. Mixture..... Rich
4. Carb Heat..... As Required
5. Fuel Pump..... On
6. Clearing Turns..... Complete

Description:

Necessary to safely prepare the aircraft for any maneuvers and ensure separation from other traffic.

Steep Turns

* Perform Flow Checklists

1. Altitude..... Above 3000’ AGL
2. Airspeed..... 90 KTS
3. Bank..... 45º or 50º
4. Trim..... 2 Full Swipes
5. Throttle..... Increase ~100 RPM
6. Recover..... Wings Level, Remove Throttle and Trim

Description:

Pilot smoothness and coordination is tested throughout multiple 360° turns while banked at 45-60°. Management of bank, AOA (pitch), and power are critical to maintaining a consistent turn.

Common Errors:

- Inadequate pitch on entry or rollout
- Gaining/Losing altitude or airspeed
- Failure to maintain a constant bank angle
- Uncoordinated Controls
- Ineffective use of Power

Slow Flight

* Perform Flow Checklists

1. Altitude..... .Above 3000’ AGL
2. Throttle..... 1700 RPM
3. Flaps..... Full, Incrementally
4. Airspeed..... 55 KTS (Just Above Stall)
5. Throttle..... As Required (~2200 RPM)
6. ***Recovery***
7. Throttle..... Full
8. Flaps..... Retract, Incrementally

Description:

Low airspeed and high AOA attitudes, while at altitude, simulates the flight characteristics, incipient stall-warnings, and control feel experienced during takeoff/departure and approach/landing phases of flight.

Common Errors:

- Incorrect elevator input resulting in an ascent or descent after power reduction
- Insufficient right rudder compensation
- Flight instrument fixation
- Failure to anticipate AOA changes with flap settings
- Lack of trim usage
- Delayed response to stall warnings

Power-On Stall

* Perform Flow Checklists

1. Altitude..... Above 3000’ AGL
2. Throttle..... 1700 RPM
3. Airspeed..... 65 KTS
4. Throttle..... Full
5. Pitch..... As Required to Induce Stall

Recovery

6. Unload Wing..... Nose Down, Wings Level
7. Cram..... Full Throttle
8. Climb..... Pitch Just Above Horizon
9. Clean..... Flaps & Carb Heat, Incrementally

Description:

Practiced to develop awareness and corrective responses to excessive pitch attitudes during takeoff and climbs (typically over obstacles) that result in stalls.

Common Errors:

- Failure to properly configure the airplane (power, flaps, gear)
- Improper pitch, heading (straight-ahead stalls), and bank control
- Rough or uncoordinated control inputs
- Failure to recognize stall warnings or to achieve a stall
- Delayed recovery, excessive altitude loss, or entering a secondary stall

Power-Off Stall

* Perform Flow Checklists

1. Altitude..... Above 3000’ AGL
2. Throttle..... 1700 RPM
3. Carb Heat.....On
4. Flaps..... Full, Incrementally
5. Airspeed..... Descend at 65 KTS
6. Throttle..... Idle
7. Calls..... Call out horn and Buffet

   Pitch..... To Hold Altitude

Recovery

8. Unload Wing..... Nose Down, Wings Level
9. Cram..... Full Throttle
10. Climb..... Pitch Just Above Horizon
11. Clean..... FlapsUp (Incrementally)& Carb HeatOff

Description:

Practiced to develop awareness and corrective responses to improper control inputs during a turn (simulating landing) or when trying to stretch a glide, which results in a stall.

Common Errors:

- Failure to properly configure the airplane (power, flaps, gear)
- Improper pitch, heading (straight-ahead stalls), and bank control
- Rough or uncoordinated control inputs
- Failure to recognize stall warnings or to achieve a stall
- Delayed recovery, excessive altitude loss, or entering a secondary stall

Accelerated Stall

* Perform Flow Checklists

1. Altitude..... Above 3000’ AGL
2. Throttle..... 1700 RPM
3. Bank..... 45º
4. Throttle..... Idle
5. Pitch..... As Required to Induce Stall

Recovery

6. Unload Wing..... Nose Down, Wings Level
7. Cram..... Full Throttle
8. Climb..... Pitch Just Above Horizon
9. Clean..... Flaps & Carb Heat, Incrementally

Description:

At the same gross weight, airplane configuration, and power setting, an airplane will consistently stall at the same indicated airspeed. However, a stall will ooccur at a higher indicated airspeed with excessive maneuvering (load factor) imposed by abrupt control inputs to change direction.

Common Errors:

- Failure to properly configure the airplane (power, flaps, gear)
- Rough or uncoordinated control inputs
- Failure to recognize stall warnings or to achieve a stall
- Delayed recovery, excessive altitude loss, or entering a secondary stall

Steep Spiral

* Perform Flow Checklists

1. Altitude..... Above 4500’ AGL
2. Reference..... Under Main Tire or Storm Window
3. Throttle..... Idle
4. Carb Heat..... On
5. Airspeed.....76 KTS (Vg)
6. Throttle..... Clear engine every 1000’
7. Recover..... Above 1500’ AGL

Description:

The objective is to rapidly dissipate excessive altitude, necessary during emergencies, while remaining over top of a selected landing spot.

Common Errors:

- Inadequate pitch on entry or rollout
- Gaining altitude or excessive airspeed
- Failure to compensate for wind by varying bank angles
- Uncoordinated Controls
- Ineffective use of trim
- Premature/Excessive rollout on heading
- Over-reliance on instrument instead of visual references

Chandelles

* Perform Flow Checklists

1. Altitude..... Above 1500’ AGL
2. Reference Point..... Abeam Wing
3. Airspeed..... 100 KTS
   - **A.** Entry to 45 º
     - a) Throttle..... Full
     - b) Bank..... 30 º
     - c) Pitch..... Smoothly Increased
     - d) Coordination..... Verify
   - **B.** 90 º
     - a) Pitch Attitude..... Hold 15 º
     - b) Bank..... Hold 30 º
     - c) Coordination..... Verify
   - **C.** 90 º to 180 º
     - a) Pitch Attitude..... Decreasing
     - b) Bank..... Decreasing
   - **D.** 180 º
     - a) Pitch Attitude..... Level
     - b) Bank..... Level
     - c) Airspeed..... Just Above Stall
     - d) Heading..... 180 º From Entry
4. Resume Normal Cruise..... Establish

Description:

This maximum performance climbing turn finishes 180° from the initial altitude below and just above stalling speed. The goal is to obtain the most altitude given a specific bank angle and power setting.

Common Errors:

- Initial bank too shallow (stall) or too steep (lost performance)
- Bank angle exceeds 30°
- Not beginning rollout at 90° or rolling wings level before 180°
- Exceeding/altering pitch attitude once set
- Unsmooth or uncoordinated control inputs
- Excessive airspeed or stalling at recovery point
- Over-reliance on instrument instead of visual references

Lazy Eights

* Perform Flow Checklists

1. Altitude..... Above 1500' AGL
2. Airspeed..... 90 KTS
3. Select Points..... 45°, 90°, 135°
4. Enter Climbing Turn..... Coordinated
   - **A.** 45°
     - a) Bank..... Increasing
     - b) Pitch Attitude..... Maximum
   - **B.** 90°
     - a) Pitch Attitude..... Hold
     - b) Bank..... Appx. 30°
     - c) Airspeed..... 5-10 KTS Above Stall
   - **C.** 135°
     - a) Pitch Attitude..... Lowest Point
     - b) Bank..... Decreasing
   - **D.** 180°
     - a) Pitch Attitude..... Level
     - b) Altitude..... Entry Level
     - c) Airspeed..... Entry Level
     - d) Heading..... 180° From Entry
   - **E.** Reverse Direction..... Repeat Maneuver
5. Resume Normal Cruise..... Establish

Description:

Intended to enhance proper coordination of the flight controls throughout a wide range of airspeeds and attitudes. Substantial skill is required to coordinate aileron and rudder, which are at no time constant.

Common Errors:

- Asymmetry across each 180° points
- Improper/inadequate reference point selection or use
- Gain/loss of altitude at 180° points
- Airspeed or bank angle standards not met
- Unsmooth or uncoordinated control inputs
- Over-reliance on instrument instead of visual references

Ground Reference Maneuvers

Ground Reference Maneuvers

* Perform Flow Checklists
1. Altitude..... 1000’ AGL

Turns Around a Point

1. Enter Downwind
2. Maintain Constant Radius by Changing Bank Angle
3. Complete 2 Turns or as Specified by Instructor/Examiner
4. Exit at Same Point of Entry

S-Turns

1. Enter on the Downwind
2. Maintain Constant Radius by Changing Bank Angle
3. Make Left or Right Turns as Specified by Instructor/Examiner

Rectangular Course

1. Enter 45° on the Downwind Leg
2. Establish Adequate Wind Correction Angle
3. Make Left or Right Turns as Specified by Instructor/Examiner

Eights on Pylon (Commercial)

1. Calculate Pivotal Altitude **(Groundspeed² / 11.3) + 1000 = PA**
2. Airspeed Established at 90 kts
3. Enter Downwind, Between Pylons
   - **A. Above** pivotal altitude: reference line move rearward
   - **B. At** pivotal altitude: aircraft pivots on reference line
   - **C. Below** pivotal altitude: reference line moves forward

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Description:

Intended to aid pilots in understanding the relationship of flight control inputs and their resulting attitude changes. Above all, these maneuvers require control coordination, timing, and attention to situational awareness to accurately and safely fly at low altitudes.

Common Errors:

- Failure to establish and then maintain a constant, level altitude
- Failure to properly assess and correct for wind changes
- Failure to smoothly coordinate controls
- Failure to properly divide attention between tasks
- Failure to accurately execute turns on time

Landing Operations

Pre-Landing Checklist (GUMPPS)

1. **G**as ……..…… On Fullest Tank
2. **U**ndercarriage..... Down/Fixed
3. **M**ixture..... Full Rich
4. **P**ower/Props..... Set As Required & Full
5. **F**uel Pump..... On
6. **S**afety (Lights & Seatbelts)..... On

Normal Landing

* Pre-Landing **GUMPPS** Checklist

1. Abeam..... 15-1700 RPM, Flaps 10 º, 85 KTS
2. Base..... Flaps 25 º, 75 KTS
3. Final..... Flaps 40 º, 65 KTS

Soft Field Landing

* Pre-Landing **GUMPPS** Checklist

1. Abeam..... 15-1700 RPM, Flaps 10º, 85 KTS
2. Base..... Flaps 25 º, 75 KTS
3. Final..... 70 KTS
4. Throttle..... As Needed through Touchdown
5. Nose Wheel..... Hold Off Long as Possible

Description:

Soft or rough runway surfaces (grass, sand, snow) require slower and smoother landings. Pilots must use the wings, not the landing gear, to support the weight of the airplane (by holding backpressure) as long as practicable.

Common Errors:

- Unstable approach (excessive descent rate or airspeed)
- Round out too high
- Poor power management during round out and touch down
- Hard touchdown
- Transferring weight to the wheels (letting the nose wheel fall) after touchdown

Short Field Landing

* Pre-Landing **GUMPPS** Checklist

1. Abeam..... 15-1700 RPM, Flaps 10º, 85 KTS
2. Base..... Flaps 25º, 75 KTS
3. Final..... Flaps 40º, 62 KTS

After Touchdown

4. Flaps..... Up
5. Brakes..... Maximum
6. Yoke..... Max Aerodynamics Braking

Description:

To a short runway, one with obstacles, or both, pilots must precisely control inputs to produce a rate of descent and airspeed resulting in no floating during round out and the shortest stopping distance.

Common Errors:

- Unstable approach (excessive descent rate or airspeed)
- Low airspeed resulting in flare inability and a hard landing
- Poor power management, resulting in hard landings
- Excessive braking (lock ups)
- Failure to maintain directional control
- Failure to abort an unsafe approach

Power-Off 180º

* Pre-Landing **GUMPPS** Checklist

1. Abeam..... Power Idle, 76 KTS, Trim
2. Base..... Flaps 10º (as Necessary)
3. Final..... 66 KTS, Flaps/Slips (as Necessary)
4. Landing..... On Pre-Specified Point/ Just Beyond

Description:

This approach is executed by gliding with the power off from the downwind leg to a preselected landing spot or 200 feet beyond. The objective is to instill good judgment and procedures necessary for accurately flying without power.

Common Errors:

- Downwind leg is too far from the runway
- Overextension of the downwind leg due to tailwinds
- Inadequate crosswind compensation
- Uncoordinated turns
- Failure to lower landing gear
- Premature flap / landing gear extension
- Attempting to “stretch” gliding distance
- Using the throttle
- Forcing the airplane on to the runway to avoid overshooting the landing spot

Go-Around

1. Cram..... Full Power
2. Climb..... Pitch Just Above Horizon
3. Clean..... Flaps 25º Immediately
   - **A.** Carb Heat..... Off
   - **B.** Flaps Up 10º ..... Positive Climb
   - **C.** Flaps Up Full..... 75 KTS
4. Call..... Announce Go Around
5. Climb Out..... 80 KTS

Description:

When airport and/or landing configuration conditions cannot safely be assured, a landing must aborted. The earlier a go around can be initiated the safer its execution becomes.

Common Errors:

- Pride - believing a rejected landing is an admission of failure.
- Indecision
- Delay in initiating a go-around
- Failure to apply full power smoothly
- Improper pitch attitude
- Failure to configure the airplane properly
- Inadequate right rudder
- Loss of aircraft control

Instrument Procedures

Instrument Procedures

Precision Approach

1. When directed to IAF or Vectored.....Load & Activate Approach
2. Approach Checklist / Identify Localizer.....Early As Possible
3. Localizer moves towards center.....“Localizer Alive”
4. Airpseed.....90kts
5. Glideslope moves towards center.....“Glideslope Alive”
6. ½ dot below GS intercept.....Slow 90kts, flaps 10º, “Pre-Landing Checklist”
7. GS Intercept.....Power ~1500RPM
8. Descend.....On GS at 90kts
9. 1000ft above DA.....“1000 to go”
10. 200ft above DA.....“Approaching Minimums”
11. At Descion Height/Altitude.....“Minimums”
12. If runway in Sight.....Flaps 20º, Slow to 70kts
13. Short Final.....Slow to 65kts

- **At DA**, if runway is in sight (per 91.175), continue and land. **If requirements are not met at the DA - EXECUTE MISSED APPROACH INSTRUCTIONS.**

Missed Approach

1. Click.....Go Around Button
2. Cram.....Full Power
3. Climb.....Establish Vy
4. Clean..... Flaps Up at 76 KTS
   A. Carb Heat..... Off
5. Call.....Report Going Missed
6. Configure.....Navs/Radials/Radios

Instrument Procedures

Non-precision Approach

1. When directed to IAF or Vectored.....Load & activate approach
2. Airpseed.....90kts
3. Just prior to FAF (0.5NM).....Slow 80kts, flaps 10º, "Pre-Landing Checklist"
4. At the FAF.....Descend at required FPM at 90kts
5. 1000ft above MDA.....“1000 to go”
6. 200ft above MDA.....“Approaching Minimums”
7. At MDA.....Level off without descending to MAP/Runway
8. If runway in Sight.....Flaps 20º, Slow to 70kts
9. Short Final.....Slow to 65kts

- **At MDA**, if runway is in sight (per 91.175), continue and land.. **If requirements are not met by the missed approach point (MAP) - EXECUTE MISSED APPROACH INSTRUCTIONS.**

Missed Approach

7. Click.....Go Around Button
8. Cram.....Full Power
9. Climb.....Establish Vy
10. Clean..... Flaps Up at 76 KTS
    A. Carb Heat..... Off
11. Call.....Report Going Missed
12. Configure.....Navs/Radials/Radios

Reaching MDA & Level Off

1. Throttle.....As Required
2. Pitch.....Level Flight
3. Trim.....Adjust
4. Time.....Monitor

Emergency Procedures

Emergency (ABCD) Checklist

1. **A**irspeed …….....…… Pitch Best Glide (76 KTS)
2. **B**est Place to Land..... Fly Toward
3. **C**hecklist (**Above 500' AGL Only**)..... Memory Items/List
4. **D**eclare Emergency..... Call ATC / 121.5, Transponder 7700

Engine Fire (During Start)

1. Start Switch..... Continue to Crank
2. Mixture..... Cut-Off
3. Throttle..... Open
4. Fuel Pump..... Off
5. Fuel Selector..... Off
   - **Abandon if Fire Continues**

Engine Power Loss (Takeoff)

1. **Sufficient Runway Remains**
   - **A.** Power..... Idle
   - **B.** Landing..... Land/Stop Ahead
   - **C.** Brakes..... As Required

2. **Insufficient Runway Remains**
   - **A.** Perform **ABCD** Checklist
   - **B.** Landing..... Straight Ahead / Avoid Obstacles
   - **C.** Flaps..... As Necessary

3. **Sufficient Altitude Gained (Attempt Restart)**
   - **A.** Perform **ABCD** Checklist
   - **B.** Fuel Selector..... Switch Tanks
   - **C.** Fuel Pump..... On
   - **D.** Mixture..... Rich
   - **E.** Carb Heat..... On
     - **If Power is Not Regained, Proceed with Landing (No Engine Power)**

Engine Power Loss (In Flight)

* Perform **ABCD** Checklist

1. Airspeed..... 76 KTS
2. Fuel Selector..... Fullest Tank
3. Fuel Pump..... On
4. Mixture..... Full Rich
5. Carb Heat..... On
6. Magnetos..... Off, then Individually On
   - **When Power is Restored**
7. Carb Heat..... Off
8. Fuel Pump..... Off
   - **Land as Soon as Practical**
   - **If Power is Not Restored – Landing (No Engine Power)**

Landing (No Engine Power)

* Perform **ABCD** Checklist

1. Airspeed..... 76 KTS
2. Landing Pattern..... Established 1000' AGL
   - **When Committed to Landing**
3. Airspeed..... 66 KTS
4. Flaps..... As Necessary
5. Throttle..... Idle
6. Mixture..... Cut-off
7. Magnetos..... Off
8. Master Switches..... Off
9. Fuel Selector..... Closed
10. Seatbelts..... Secure

Engine Fire (In Flight)

* Perform **ABCD** Checklist

1. Fuel Selector..... Off
2. Throttle..... Closed
3. Mixture..... Cut-Off
4. Fuel Pump..... Off
5. Vent/Defroster..... Closed/Off
   - **If Fire Continues:**
6. Airspeed/Attitude..... Increase/Pitch Down
   - **Proceed with Landing (No Engine Power)**

Emergency Descent

1. Power..... Idle
2. Mixture..... Full
3. Carb Heat..... On
4. Airspeed.....120kts (Simulate Red line)
5. Bank..... 35-45º
6. Landing Spot..... Recover from Descent Downwind
    - **Prepare for Landing (No Engine Power)**

Description:

A spiraling descent is made as rapidly as possible to lower alitutde or to the ground for an emergency landing. A fire, sickness, loss of cabin pressurization, or other situations may demand this maneuver.

Common Errors:

- Failure to respond quickly to the emergency
- Failure to properly configure the airplane
- Lack of coordination and control (airspeed or rate of descent)
- Loss of reference point or becoming disoriented
- Failure to aviate, navigate, communicate

Engine Roughness

1. Carb Heat..... On
    - **If Roughness Continues After 1 Minute:**
2. Mixture..... Max Smoothness
3. Carb Heat..... Off
4. Fuel Pump..... On
5. Fuel Selector..... Switch Tanks
6. Engine Indicators..... Monitor/DECIDE
7. Magnetos..... Verify Singlularly
    - **Prepare for Engine Power Loss (In Flight)**

Description:

Engine roughness can be caused by several factors including carburetor or intake icing, ice build up over the air intake, carbon build up on the spark plugs, fuel contamination, fuel deficiencies, excessive leaning, and more.

Common Errors:

- Failure to respond quickly to engine roughness
- Misdiagnosis of the prevailing issues
- Lack of planning for emergency maneuvers
- Failure to aviate, navigate, communicate

Notes