

## Regina Flying Club Multi & IFR Handout

### Performance and Specifications

1976 Piper Seneca II PA-34-200T

(C-GPZO)

Refer to the aircraft POH for more detailed information on performance. The below numbers are given just for reference and are calculated using the aircraft performance charts at max gross weight under standard conditions at sea level. Do not use these numbers for aircraft performance calculations, refer to the POH.

Engines	Two Continental six-cylinder turbocharged, 200 hp
Engines	Type – TSIO-360
Engines	Air-cooled, fuel injected
Max Manifold Pressure	40 in. Hg
Propellers	Hartzell 2 Blade, Constant Speed, Full Feathering
Seats	6
Wingspan	38' 10.87"
Empty Weight	2,970.47 lbs
Weight with Full Fuel	3,708.47 lbs
Gross Weight	4,570 lbs
Max Landing Weight	4,342 lbs
Max Zero Fuel Weight	4000 – 4168 lbs (see modified W/B)
Baggage Area (Forward)	100 lbs max
Baggage Area (Aft)	100 lbs max
Take-off Run, flaps up (sea level)	1,100'
Take-off Over 50 ft Obstacle (sea level)	1,460'
Landing Roll (flaps down)	1,380'
Landing Over 50 ft Obstacle (flaps down, short field)	2090'
(all landing weights calculated at max landing weight 4342lbs)	
Cruise Power	20-25" and 2400 rpm (for VFR&IFR manoeuvring)
Climb Power	31.5" and 2450 rpm (120 mph)
Max Power	40" (DO NOT EXCEED 40" Manifold pressure)
Max Speed (Sea Level)	197 mph
Max Speed (12,000')	224 mph
Max Speed optimum alt (20,000')	218 mph
Cruise Speed 65% Power (24,000')	208 mph
Cruise Speed 55% Power (25,000')	189 mph
Range at 75% Power	900 sm (16,000' with 45 minute reserve)
Range at 55% Power	1010 sm (16, 000' with 45 minute reserve)
Fuel consumption 75%	23.6 gph (for both engines)
Fuel consumption 65%	20.5 gph (for both engines)

Auto-Pilot Max speed (autopilot Vmo) 199 mph

Approach Speeds:

- Full Flap 115 mph Downwind, 110 mph Base, 95 mph on Final (90 mph if lightly loaded)
- Short Field 87 mph (CAS) Short Final
- Crosswind Approach at higher than normal speeds with 0° to 25° flaps

Max Demonstrated Crosswind Component 20mph

**Take-Off Briefing**

This will be a normal take-off. We will rotate at 80 mph, climb at 120 mph and retract the landing gear when there is insufficient runway to land on.

If we have an engine failure during the ground roll, we will close both throttles and stop straight ahead on remaining runway.

If we have an engine failure after lift-off but before gear retraction with adequate runway remaining, we will close the throttles and land straight ahead and stop. If there is inadequate runway length the pilot must decide to continue or abort. Should the decision to continue be made we will do our engine out drill of – Control, Mixtures, Props, Throttles, Flaps up, Gear up, Identify, Verify, Feather the dead engine, Climb straight ahead at 105 mph to 1000’ AGL and request a circuit into the good engine to return for landing. Do you have any questions?

NOTE: If IFR, advise ATC and request vectors to return to land.

**Emergency Procedures**

**1) DETECTING A DEAD ENGINE**

- a. Loss of thrust
- b. Nose of aircraft will yaw in direction of dead engine (with co-ordinated controls)

**2) ENGINE FAILURE DURING TAKEOFF**

Single Engine minimum control speed is 72 mph (CAS) under standard conditions.

- a. Engine failure occurs during takeoff ground roll and 100 mph (CAS) has not been attained, CLOSE BOTH THROTTLES IMMEDIATELY AND STOP STRAIGHT AHEAD. If inadequate runway remains to stop, then:
  - i. Throttles.....CLOSED
  - ii. Brakes.....APPLY MAXIMUM BRAKING
  - iii. Master Switch.....OFF
  - iv. Fuel Selectors.....OFF
  - v. Continue Straight Ahead.....AVOID OBSTACLES AS NECESSARY
  
- b. Engine failure occurs during takeoff ground roll or after lift-off with gear still down and 100 mph (CAS) has been attained:

## **5) ENGINE FAILURE IN ICING CONDITIONS**

If engine failure occurs during icing flight, select ALTERNATE AIR and attempt to restart engine. If unable to restart engine:

- a. Inoperative propeller.....FEATHER (see feathering procedures)
- b. Maintain airspeed.....105 MPH
- c. Descend if necessary.....TO MAINTAIN AIRSPEED
- d. Electrical load.....REDUCE (see Alternator Failure in Icing Conditions)
- e. Avoid Further Icing Conditions if Possible
- f. Land.....AS SOON AS PRACTICAL
- g. Maintain Airspeed.....AT LEAST 105 MPH (CAS) DURING FINAL APPROACH
- h. Undercarriage/Wing Flaps...USE 25° INSTEAD OF 40° FLAPS FOR LANDING

## **6) FEATHERING PROCEDURE**

Propellers can only be feathered while engine is rotating above 800 rpm. Single engine performance will decrease if the propeller on inoperative engine is not feathered.

- a. Attempting to restore power prior to feathering:
  - i. Mixture.....AS REQUIRED
  - ii. Fuel Selector.....CROSSFEED
  - iii. Magnetos.....SELECT L or R ONLY
  - iv. Alternate Air.....ON
  - v. Auxiliary Fuel Pump.....ON HI, (if power not immediately restored, off)
- b. Feathering Procedure:
  - i. Minimum Control Speed.....72 MPH
  - ii. Best Single Engine Rate of Climb Speed.....105 MPH
  - iii. Directional Control and Airspeed.....MAINTAIN ABOVE 90 MPH
  - iv. Mixtures.....FORWARD
  - v. Propellers.....FORWARD
  - vi. Throttles.FORWARD - NOT TO EXCEED 40" MANIFOLD PRESSURE
  - vii. Flaps.....RETRACT
  - viii. Landing Gear.....RETRACT
  - ix. Identify.....INOPERATIVE ENGINE
  - x. Verify.....THROTTLE OF INOPERATIVE ENGINE – REDUCE
  - xi. Mixture.....INOPERATIVE ENGINE – IDLE CUT OFF
  - xii. Propeller.....INOPERATIVE ENGINE – FEATHER
  - xiii. Trims.....AS REQUIRED (stabilator/rudder)
  - xiv. Maintain 5° Bank.....TOWARD OPERATING ENGINE
  - xv. Auxiliary Fuel Pump.....ON HI, if power not immediately restored, OFF
  - xvi. Magnetos.....INOPERATIVE ENGINE – OFF
  - xvii. Cowl Flaps.....INOPERATIVE ENGINE – CLOSE  
OPERATIVE ENGINE – AS REQUIRED
  - xviii. Alternator.....INOPERATIVE ENGINE – OFF
  - xix. Electrical Load.....REDUCE - TO PREVENT BATTERY DEPLETION
  - xx. Fuel Management.....FUEL OFF INOPERATIVE ENGINE  
CONSIDER CROSSFEED USE

DO NOT actuate the auxiliary fuel pumps unless vapour suppression is required (LO position) or the engine driven fuel pump fails (HI position). The auxiliary pumps have no standby function. Actuation of the HI switch position when the engines are operating normally may cause engine roughness and/or power loss.

**10) SINGLE ENGINE LANDING**

- a. Inoperative Engine.....FEATHER
- b. Landing Gear.....WHEN CERTAIN OF MAKING RUNWAY – EXTEND
- c. Wing Flaps.....WHEN CERTAIN OF MAKING RUNWAY – EXTEND

Maintain additional altitude and speed during approach, keeping in mind that landing should be made right the first time and that a go-around may require the use of full power on the operating engine, making control more difficult. A final approach speed of 105 mph and the use of 25° flaps rather than full wing flaps will place the aircraft in the best configuration for a go-around should this be necessary, but it should still be avoided if at all possible. Under some conditions of loading and density altitude a go-around may be impossible and in any event the sudden application of power during single engine operation makes control of the airplane more difficult.

**11) LANDING GEAR UNSAFE WARNINGS**

The red landing gear light will illuminate when the landing gear is in transition between the full up position and the down and locked position. The pilot should recycle the landing gear if continued illumination of the light occurs. Additionally, the light will illuminate when the gear warning horn sounds. The gear warning horn will sound at low throttle settings if the gear is not down and locked.

**12) MANUAL EXTENSION OF LANDING GEAR**

Check the following before extending the gear manually:

- a. Circuit Breakers.....CHECK
- b. Master Switch.....ON
- c. Alternators.....CHECK ON
- d. Navigation Lights.....OFF (Daytime)

To extend the gear, reposition the clip covering the emergency disengage control downward, clear of the knob, and proceed as listed below:

- e. Reduce Power.....AISPEED NO GREATER THAN 100 MPH
- f. Landing Gear Selector.....PLACE IN “GEAR DOWN LOCKED” POSITION
- g. Emergency Gear Extension Knob.....PULL
- h. 3 Green Landing Gear Lights.....CHECK

**13) GEAR-UP EMERGENCY LANDING**

- a. Approach.....POWER FOR NORMAL AIRSPEED
- b. Flaps.....LEAVE UP (to reduce flap and wing damage)
- c. Throttles.....CLOSE JUST BEFORE TOUCHDOWN
- d. Master & Ignition.....OFF
- e. Fuel Selector Valves.....OFF
- f. Touchdown.....AT MINIMUM AIRSPEED

**17) ENGINE FIRE**

- a. Engine Fire in Flight (on the affected engine):
  - i. Fuel Selector.....OFF
  - ii. Throttle.....CLOSE
  - iii. Propeller.....FEATHER
  - iv. Mixture.....IDLE CUT-OFF
  - v. Heater.....OFF (in all cases of fire)
  - vi. Defroster.....OFF (in all cases of fire)
  - vii. If Terrain Permits.....LAND IMMEDIATELY

The possibility of an engine fire in flight is extremely remote. The procedure given above is general and pilot judgement should be the deciding factor for action in such emergency.

- b. Engine Fire on the Ground:
  - i. If Engine has not Started
    - 1. Mixture.....IDLE CUT-OFF
    - 2. Throttle.....OPEN
    - 3. Turn Engine with Starter.....(to attempt to suck fire into engine)
  - ii. If engine has already started and is running, continue operating to try pulling the fire into the engine.
  - iii. In either case (i and ii), if fire continues longer than a few seconds, the fire should be extinguished by the best available external means.
  - iv. If external fire extinguishing is to be applied:
    - 1. Fuel Selector Valve.....OFF
    - 2. Mixture.....IDLE CUT-OFF

**18) ELECTRICAL FIRE**

- a. Master.....OFF
- b. All Electrical Equipment.....OFF
- c. Fire Extinguisher.....ACTIVATE AS NECESSARY
- d. Circuit Breakers.....CHECK
- e. Turn On Electrical Equipment.....ONE BY ONE AS REQUIRED
- f. Leave Affected Item OFF.....PULL CIRCUIT BREAKER IF IT IS STILL IN
- g. Terminate Flight.....AS SOON AS PRACTICAL

**19) COMBUSTION HEATER OVERHEAT**

\*Red "OVERHEAT" light will illuminate to indicate heater overheat. In the event of an overheat condition, the fuel, air and ignition to the heater is automatically cut off. DO NOT attempt to restart the heater until it has been inspected and the cause of the malfunction has been determined and corrected.

**20) SPINS**

Intentional spins are prohibited. In the event an unintentional spin is encountered, immediately recover using the following procedures:

- a. Throttles.....IDLE
- b. Apply Full Rudder.....IN DIRECTION OPPOSITE TO SPIN ROTATION
- c. Control Column.....RELEASE ALL BACK PRESSURE

- d. Altitude Loss During Malfunction
  - i. An Autopilot malfunction with a 3 second delay in recovery could result in as much as 60° of bank and a 200 foot altitude loss.
  - ii. Altitude loss – high altitude descent – 3 second delay in recovery could result in as much as 60° of bank and a 420 foot altitude loss
  - iii. Autopilot malfunction during an approach with a 1 second delay in recovery could result in as much as 20° bank and 75 foot altitude loss
- e. Single Engine Operations
  - i. Engine failure during Autopilot approach – Disengage Autopilot, continue flying manually
  - ii. Engine failure during go-around – Disengage Autopilot, retrim aircraft, perform normal engine out procedures then re-engage autopilot
  - iii. Engine failure during normal climb, cruise, descent – retrim aircraft, perform normal engine out procedures
  - iv. Maintain aircraft yaw trim throughout all single engine operations
- f. Appearance of HDG Flag:
  - i. Check air supply (vac or pressure) for adequate air supply (4 in Hg.)
  - ii. Check NSD 360 circuit breaker
  - iii. Observe display for proper operation

NOTE: If heading card is inoperative, autopilot should NOT be used

- iv. With card inoperative – VOR and Glide Slope displays are still functional. Use card set to rotate card to aircraft heading for correct picture
- v. Localizer – left-right information still useable. Flag information is disabled – compare needle with #2 indicator for valid left-right needle operation

#### **24) DOOR OPEN ON TAKEOFF**

If either main or rear cabin door is open or partially open on takeoff, fly the plane in a normal manner and return for landing to close the door on the ground. If landing cannot be made, it may be possible to close the door in flight:

- a. Maintain airspeed – 100 to 110 mph
- b. Open Storm Window
- c. Pull door closed, make certain upper latch is properly positioned
- d. Close the upper latch, may need to pull in on upper portion of door while latch is being closed

NOTE: It is necessary to have someone in the airplane in addition to the pilot to carry out this procedure. If either door can't be properly closed it is possible to continue safely for an extended period of time. In this case keep airspeed below 125 mph and above 100 mph to prevent buffeting

#### D) Autotrim

1. AP ON - (Roll and Pitch Sections) Check automatic operation by activating autopilot pitch command UP then DN. Observe trim operation follows pitch command direction.

NOTE:

In autopilot mode, there will be approximately a 3 second delay between operation of pitch command and operation of trim

2. Press center bar (AP OFF) - release - check autopilot disengagement.
3. Rotate trim wheel to check manual trim operation. Reset to takeoff position prior to takeoff

#### Emergency Procedures

In the absence of a procedure in the POH, these steps should be taken. Note that **BOLDFACE** denotes memory items. With the majority of emergencies, certain procedures must be performed immediately from memory. Students should be made aware of such items during simulation on an engine failure.

<b>CONRTOL</b>	yaw, roll, airspeed
<b>POWER</b>	mixtures, propellers, throttles
<b>DRAG</b>	confirm flaps up, landing gear up
<b>IDENTIFY</b>	failed engine
<b>VERIFY</b>	failed engine by reducing throttle of suspected failed engine
<b>CAUSE CHECK</b>	if time and altitude permit, attempt to asses and correct the problem using appropriate checklist, then advance throttle to determine if the engine is developing power
<b>FEATHER</b>	propeller on the failed engine
<b>SECURE</b>	complete the checklist and monitor operating engine and its related systems

#### Engine Failure During an Overshoot

<b>CONTROL</b>	yaw, roll, airspeed
<b>POWER</b>	mixtures rich, propellers FULL increase, throttles FULL power
<b>DRAG</b>	check flaps up, landing gear up
<b>IDENTIFY</b>	failed engine
<b>VERIFY</b>	failed engine by reducing throttle of suspected failed engine
<b>FEATHER</b>	the propeller on the failed engine
<b>SECURE</b>	complete checklist if/when time and altitude permit
<b>LAND</b>	unless the airport is not suitable, then proceed to the nearest suitable airport. Cause checks would be completed if proceeding to another airport



# Piper PA34 Checklist

## Pre-Takeoff at Hold-Short Line

Mixtures..... RICH  
 Props..... FORWARD  
 Radios/Nav Aids..... SET  
 Transponder..... ALT  
 Time..... RECORD  
 Switches/Lights..... AS REQUIRED  
 Auto-Pilot..... OFF  
 Pitot Heat..... AS REQUIRED  
 Ice Protection..... AS REQUIRED  
 Compass/HSI..... CHECK

## On Centerline

Localizer..... CHECK  
 Altimeter..... CHECK +/- 50 FT  
 HSI / H.I..... SET TO RWY HDG

## Post Takeoff/ Climb

Undercarriage..... UP  
 Flaps..... UP  
 Climb Power..... SET  
 Lights..... AS REQUIRED/OFF  
 Auto Pilot..... SET

## Cruise Flight

Cruise Power..... AS PER POWER TABLE  
 Fuel Selectors..... ON  
 Mixtures..... LEAN  
 Switches..... AS REQUIRED  
 Cowl Flaps..... CLOSE  
 Trims..... SET

## Pre-Landing

Seat Backs..... UPRIGHT & LOCKED  
 Seat Belts/Shoulder Harness... FASTENED  
 Fuel Selectors..... ON  
 Cowl Flaps..... SET AS REQUIRED  
 Auxiliary Fuel Pumps..... OFF  
 Mixtures..... RICH  
 Props..... SET  
 Altimeter..... SET  
 Approach Briefing..... COMPLETE  
 Undercarriage..... DOWN under 150mph  
 Flaps..... SET AS REQUIRED  
 10° (First Notch) 160 MPH MAX  
 25° (Second Notch) 140 MPH MAX  
 40° (Third Notch) 125 MPH MAX  
 Autopilot..... OFF - Prior to landing  
 \*A/P not approved for greater than 25° flaps

## Post-Landing

Flaps..... UP  
 Cowl Flaps..... OPEN  
 Pitot Heat..... OFF  
 Anti-icing/De-icing Equipment..... OFF  
 Mixtures..... LEAN FOR TAXI  
 Transponder..... STANDBY  
 Heater..... FAN  
 Alternate Air..... OFF  
 Time..... RECORD

## Shutdown

Radio (121.5)..... CHECK  
 Avionics Master..... OFF  
 Switches..... OFF  
 Magnetos..... CHECK  
 Throttles..... IDLE  
 Mixtures..... CUT  
 Magnetos..... OFF  
 Lights..... OFF  
 Heater..... OFF  
 Master..... OFF  
 Hobbs..... RECORD

Airspeeds	(MPH)
Approach (Full Flap).....	95 MPH
Approach (Short Field).....	87 MPH
Va (Maneuvering).....	140 MPH
Vle (Gear Extend).....	150 MPH
Vlr (Gear Retract).....	125 MPH
Vfe (40° Flap).....	125 MPH
Vmc (Minimum Control).....	72 MPH
Vx (Best Angle).....	90 MPH
Vy (Best Rate).....	105 MPH
Vyse (Best Rate Single Engine).....	105 MPH
Vs (Clean Stall).....	76 MPH
Vso (Dirty Stall).....	70 MPH
Vne (Never Exceed).....	224 MPH
Vr (Rotation Flaps Up).....	80 MPH

Max Takeoff Weight..... 4570 lbs  
 Max Landing Weight..... 4342 lbs

## Flight Into Known Icing Conditions

Inspect Ice Protection System Prior to Flight  
 Review AFM Prior to Flight in Icing Conditions  
 Avoid Forecast Icing when Possible  
 When in Cloud..... MONITOR OAT TEMP  
 Windshield Defroster/Pitot Heat..... ON  
 (Turn on Before Entering Icing Conditions)  
 Propeller Heat/ Windshield Heat..... On  
 (Turn on Upon Entering Icing Conditions)  
 Cycle Boots..... AS REQUIRED (1/4" - 1/2")