



PA34T
SENECA V



EMERGENCY PROCEDURES



Autopilot (AP) Flight System



FLIGHT DIRECTOR/AUTOPILOT MASTER (FD/AP) BUTTON	THIS BUTTON HAS THREE MODES:
	Mode 1) FD off - AP off Mode 2) FD on - AP off Mode 3) FD on - AP on Left click will advance one mode and Right click will decrease one mode.
HEADING MODE	In Heading mode the autopilot will maintain the heading selected by the heading bug on the directional gyro or HSI.
HEADING BUG INDICATOR	The Heading Bug indicator provides a fully visible course indicator around the normal directional gyro or HSI.
NAVIGATION MODE	The NAV button pursues the Selected Course in the directional gyro or HSI. Once the course is caught, the AP will hold it. NAV mode will follow NAV1.
APPROACH MODE	The approach mode is used for automatic approach. When the APR button is pressed, the AP will follow the ILS signal of the NAV 1. This mode is recommended for instrument approach.
REVERSE MODE	Reverse mode permits automatic Back-Course approaches and for tracking outbound on the Front Course prior to a procedural turn. When using this mode, the Course Selector of the directional gyro needs to be set to the opposite direction of the Front-Course heading.

ALTITUDE HOLD



Engagement of the altitude hold button will maintain the altitude (desired altitude) at the moment the ALT button is pressed.

VERTICAL SPEED FUNCTION



When pressed, AP will engage the vertical speed hold mode.

You can modify the vertical speed using the DECR/INCR knob of the right of the AP

Desired vertical speed will appear:

- On the AP screen indication (x100 feet/minute)



AIRSPEEDS FOR SAFE OPERATIONS

One engine inoperative air minimum control (VMCA)	66 KIAS
One engine inoperative best rate of climb (V _{YSE})	88 KIAS
One engine inoperative best angle of climb (V _{XSE})	83 KIAS
Maneuvering (V _A - 4407 LBS)	135 KIAS
Never exceed (V _{NE})	204 KIAS

EMERGENCY PROCEDURES CHECKLIST

Engine Inoperative Procedures

IDENTIFYING DEAD ENGINE AND VERIFYING POWER LOSS

Loss of thrust.

Nose of aircraft will yaw in direction of dead engine (with coordinated controls).

Rudder pedal force will be required in the direction away from the dead engine to maintain straight flight.

ENGINE SECURING PROCEDURE (FEATHERING PROCEDURE)

Throttle	CLOSE
Propeller	FEATHER (800 RPM MIN.)
Mixture	IDLE CUT-OFF
Cowl Flap	CLOSE
Fuel Selector	OFF
Airconditioner (If installed)	OFF
Alternator	OFF
Standby Fuel Pump	OFF
Magneto Switches	OFF
Prop Sync (If installed)	OFF
Electrical Load	REDUCE
Crossfeed	AS REQUIRED



**ENGINE FAILURE DURING TAKEOFF (SPEED BELOW 85 KIAS
OR GEAR DOWN)**

**If engine failure occurs during takeoff and 85 KIAS has not been
attained:**

ThrottlesIMMEDIATELY CLOSE
Brakes (or land and brake).....AS REQUIRED
Stop straight ahead

If insufficient runway remains for a complete stop:

ThrottlesIMMEDIATELY CLOSE
Mixtures.....IDLE CUT-OFF
Fuel SelectorsOFF
Magneto Switches.....OFF
Standby Fuel PumpsOFF
Battery Master SwitchOFF
Brakesapply max. braking

***MAINTAIN DIRECTIONAL CONTROL, MANEUVERING
TO AVOID OBSTACLES IF NECESSARY.***

ENGINE FAILURE DURING TAKEOFF (SPEED ABOVE 85 KIAS)

If sufficient runway remains for a complete stop:

Directional ControlMAINTAIN
ThrottlesIMMEDIATELY CLOSE

LAND IF AIRBORNE AND STOP STRAIGHT AHEAD

BrakesAS REQUIRED



Engine Inoperative Procedures

ENGINE FAILURE DURING TAKEOFF (SPEED ABOVE 85 KIAS)

If runway remaining is inadequate for stopping and the decision is made to continue:

WARNING

Negative climb performance may result from an engine failure occurring after liftoff and before the failed engine's propeller has been feathered, the gear has been retracted, the cowl flap on the failed engine is closed and a speed of 88 KIAS has been attained.

In many combinations of aircraft weight, configuration, ambient conditions and speed, negative climb performance may result.

Mixture controlsFULL FORWARD
Propeller controls.....FULL FORWARD
Throttles38 in. Hg. MAP
Directional ControlMAINTAIN
Flaps.....FULL UP
Landing Gear (in level or climbing flight).....RETRACT
Inoperative EngineIDENTIFY BY
CLOSING THROTTLE
Propeller (Inop. Engine)FEATHER
Establish Bank2° to 3° INTO OPERATIVE ENGINE
Climb Speed88 KIAS
TrimADJUST TO 2° to 3° BANK TOWARD
OPERATIVE ENGINE WITH
APPROXIMATELY 1/2 BALL SLIP
INDICATED ON THE
TURN AND BANK INDICATOR
Cowl Flap (Inop. Engine).....CLOSE

When a positive rate of climb has been established:

Engine SecuringCOMPLETE
LAND AS SOON AS PRACTICAL AT THE NEAREST SUITABLE AIRPORT.



Airspeed.....	MAINTAIN 88 KIAS
Directional Control	MAINTAIN
Power	MAX. CONTINUOUS
Inoperative Engine	IDENTIFY and VERIFY
Inoperative Engine.....	COMPLETE ENGINE SECURING PROCEDURE
Trim.....	ADJUST TO 2° to 3° BANK TOWARD OPERATIVE ENGINE WITH APPROXIMATELY 1/2 BALL SLIP INDICATED ON THE TURN AND BANK INDICATOR
Cowl Flap (Operative Engine)	1/2 OPEN

LAND AS SOON AS PRACTICAL AT THE NEAREST SUITABLE AIRPORT.



Engine Inoperative Procedures

ENGINE FAILURE DURING FLIGHT (SPEED BELOW VMCA)

RudderAPPLY AGAINST YAW
(Operative Engine)
Throttles (Both Engines)RETARD TO STOP TURN
Pitch Attitude.....LOWER NOSE TO ACCELERATE
ABOVE VMCA (66 KIAS)
Operative Engine.....INCREASE POWER AS AIRSPEED
INCREASES ABOVE VMCA (66 KIAS)

If altitude permits, a restart may be attempted.

If restart fails or if altitude does not permit restart:

Inoperative Engine Propeller.....FEATHER
TrimADJUST TO 2° to 3° BANK
TOWARD OPERATIVE ENGINE
WITH APPROXIMATELY 1/2
BALL SLIP INDICATED ON
THE TURN AND BANK INDICATOR
Inoperative EngineComplete Engine
Securing Procedure
Cowl Flap (Operative Engine)1/2 OPEN

LAND AS SOON AS PRACTICAL AT THE NEAREST SUITABLE AIRPORT.



ONE ENGINE INOPERATIVE LANDING

Inoperative EngineENGINE SECURING PROCEDURE
COMPLETE

Seat Belts/HarnessesFASTEN/ADJUST

Fuel Selector (Operative Engine).....ON

Standby Fuel Pump (Operative Engine)ON

Mixture (Operative Engine)FULL RICH

Propeller Control (Operative Engine).....FULL FORWARD

Cowl Flap (Operative Engine)1/2 OPEN

Altitude & Airspeed.....MAKE NORMAL
APPROACH

When Landing is Assured:

Landing GearDOWN

Flaps.....AS REQUIRED

Final Approach Speed90 KIAS

Power.....RETARD SLOWLY AND
FLARE AIRPLANE

TrimAS POWER IS REDUCED
(AIRPLANE WILL YAW IN DIRECTION
OF OPERATIVE ENGINE)



Engine Inoperative Procedures

WARNING

Under many conditions of loading and density altitude a go-around may be impossible and in any event the sudden application of power during one engine inoperative operation makes control of the airplane more difficult.

WARNING

One Engine Go-Around is not possible from the approach configuration unless sufficient altitude is available to raise flaps and landing gear in a descent.

CAUTION:

A one engine inoperative go-around should be avoided if at all possible.

ONE ENGINE INOPERATIVE GO-AROUND

Mixture	VERIFY FULL FORWARD
Propeller	VERIFY FULL FORWARD
Throttle	MAX ON OPERATIVE ENGINE
Flaps	RETRACT SLOWLY
Landing Gear.....	RETRACT
Airspeed	88 KIAS
Trim	ADJUST TO 2° to 3° BANK TOWARD OPERATIVE ENGINE WITH APPROXIMATELY 1/2 BALL SLIP INDICATED ON THE TURN AND BANK INDICATOR
Cowl Flap (Operating Engine).....	1/2 OPEN



Air Starting Procedure

UNFEATHERING PROCEDURE/ STARTER ASSISTED

Fuel Selector (Inoperative Engine)ON
Standby Fuel PumpON
ThrottleOpen 1/2 inch
MixtureFULL RICH
Magneto Switches (Inoperative Engine).....ON
Prop Control (Inoperative Engine)MID RANGE
Starter.....ENGAGE until prop windmills
Throttle.....REDUCE POWER until engine is warm
Standby Fuel Pump.....OFF

Alternator (after restart)ON
Engine InstrumentsCHECK
Airconditioner (If installed)(As desired) ON
Propeller.....Manual Sync with operative engine
Throttle.....Set as Desired
Prop Sync (If installed)(As desired) ON



UNFEATHERING PROCEDURE/ UNFEATHERING ACCUMULATOR ASSISTED

NOTE

With the propeller unfeathering system installed, the propeller will usually windmill automatically when the propeller control is moved forward.

Fuel Selector (Inoperative Engine)ON
Standby Fuel Pump (Inop. Engine).....ON
ThrottleOpen 1/4 inch
MixtureFULL RICH
Magneto Switches (Inoperative Engine).....ON
Prop ControlFULL FORWARD
Throttle.....REDUCE POWER until engine is warm
Standby Fuel Pump (Inop. Engine)OFF
AlternatorON

If engine does not start, prime as required and engage starter.

NOTE

Starter assist is required if the propeller is not windmilling freely within 5-7 seconds after the propeller control has been moved forward.

When propeller unfeathering occurs, it may be necessary to retard the prop control slightly to keep the prop from overspeeding.



Engine Fire

ENGINE FIRE DURING START

If engine has not started:

Fuel SelectorOFF
MixtureIDLE CUT-OFF
ThrottleFULL OPEN
StarterCONTINUE to Crank Engine

If engine has already started and is running, continue operating to try pulling the fire into the engine.

If fire continues:

Fuel SelectorOFF
Standby Fuel Pump.....OFF
MixtureIDLE CUT-OFF
ThrottleFULL OPEN
External Fire Extinguisher (If Available).....USE
Airplane.....EVACUATE

NOTES:

If fire continues, shut down both engines and evacuate.

If fire has spread to the ground, it may be possible to taxi away.

ENGINE FIRE IN FLIGHT

Fuel Selector (Affected Engine).....OFF
Throttle (Affected Engine).....CLOSE
Propeller (Affected Engine)FEATHER
Mixture (Affected Engine)IDLE CUT-OFF
Heater.....OFF
DefrosterOFF
Cowl FlapOPEN
Affected EngineCOMPLETE Engine Securing Procedure

If fire persists:

Airspeed.....INCREASE in attempt to blow out fire

Land as soon as possible at the nearest suitable airport.



TURBOCHARGER FAILURE

CAUTION:

If a turbocharger failure is the result of loose, disconnected or burned through exhaust system components, a potentially serious fire hazard exists. If a failure within the exhaust system is suspected in flight, shut down the engine immediately and **LAND AS SOON AS POSSIBLE**. If a suspected exhaust system failure occurs prior to takeoff, **DO NOT FLY THE AIRCRAFT**.

NOTE:

A turbocharger malfunction at altitudes above 10,000 feet MSL may result in an overly rich fuel mixture, which could result in a partial power loss and/or a rough running engine. In worst case conditions a complete loss of engine power may result.

COMPLETE LOSS OF ENGINE POWER:

If a suspected turbocharger or turbocharger control system failure results in a complete loss of engine power, the following procedure is recommended:

Mixture	IDLE CUTOFF
Throttle.....	CRUISE
Propeller Control	FULL FORWARD
Mixture	ADVANCE SLOWLY until engine restarts and adjust for smooth engine operation

Reduce power and land as soon as possible.



TURBOCHARGER FAILURE

PARTIAL LOSS OF ENGINE POWER

If the turbocharger wastegate fails in the OPEN position, a partial loss of engine power may result. The following procedure is recommended if a suspected turbocharger or turbocharger wastegate control failure results in a partial loss of engine power.

ThrottleAS REQUIRED
Propeller.....AS REQUIRED
MixtureAS REQUIRED
Land as soon as possible.

ENGINE POWER OVERBOOST

If the turbocharger wastegate control fails in the CLOSED position, an engine power overboost condition may occur. The following procedure is recommended for an overboost condition:

ThrottleREDUCE as necessary to keep manifold pressure within limits

NOTE

Expect manifold pressure response to throttle movements to be sensitive.

Propeller.....AS REQUIRED
MixtureFULL RICH
Land as soon as possible.



Fuel Management During One Engine Inoperative Operation

CRUISING

CROSSFEED

Fuel Selector (Operative Engine).....CROSSFEED
Fuel Selector (Inoperative Engine).....OFF

NOTE

Use crossfeed in level cruise flight only.

COMING OUT OF CROSSFEED (Prior to Landing)

Standby Fuel Pump (Operative Engine)ON
Fuel Selector (Operative Engine).....ON
Fuel Selector (Inoperative Engine).....OFF
Standby Fuel Pump (Inoperative Engine)OFF

LANDING

Fuel Selector (Operative Engine).....ON
Fuel Selector (Inoperative Engine).....OFF
Standby Fuel Pump (Operative Engine)ON

Engine Driven Fuel Pump Failure

Throttle.....RETARD
Standby Fuel Pump (Affected Engine)ON
Throttle.....RESET (As Required)
Mixture.....RESET (As Required)

CAUTION

If normal engine operation and fuel flow is not immediately re-established, the standby fuel pump should be turned off. The lack of a fuel flow indication could indicate a leak in the fuel system, or fuel exhaustion. If system leak is verified, switch fuel selector to OFF. Proceed with engine securing procedure.



Landing Gear Unsafe Warnings

Red gear warning annunciator light indicates when the gear is in transit.

Recycle gear if indication continues.

Red gear warning annunciator light will illuminate along with the gear warning horn should the gear not be down and locked if throttles are brought to a low setting.

Landing Gear Malfunctions

MANUAL EXTENSION OF LANDING GEAR

If emergency gear extension is required due to electrical power failure, the gear position indicator lights will not illuminate.

Check following before extending gear manually:

Day/Night Dimming Switch (Daytime)	DAY
Circuit Breakers	CHECK
Battery Master Switch	ON
Alternators	CHECK

To extend, reposition guard clip downward clear of knob and proceed as follows:

Airspeed	REDUCE (85 KIAS max.)
Gear Selector	GEAR DOWN POSITION
Emerg. Gear Extend Knob	PULL
Indicator Lights	3 GREEN

Leave emergency gear extension knob out.

WARNING

If the emergency gear extension knob has been pulled out to lower the gear due to a gear system malfunction, leave the control in its extended position until the airplane has been put on jacks to check the proper function of the landing gears hydraulic and electrical systems.



GEAR UP LANDING

Select suitable landing area.

Ground Personnel.....INFORM (If possible)
FuelBURN OFF (If time allowed)
Seatbelts and Harness.....FASTEN/ADJUST
CHECK INERTIA REEL
Passengers.....BRIEF
Normal Landing Checklist.....COMPLETE
Autopilot.....OFF
Battery Master (Daytime).....OFF
ApproachNORMAL

When runway is made and landing is assured:

Mixtures.....IDLE CUTOFF
Prop Controls.....FEATHER
Fuel SelectorsOFF

Touch down at minimum airspeed and level attitude.

Battery Master (Night).....OFF
Evacuate when aircraft comes to a stop.



Electrical Failures

SINGLE ALTERNATOR FAILURE

(Alternator #1 or #2 Inop. Light Illuminated - Annunciator Panel).

Verify Failure.....CHECK AMMETER
Electrical load.....REDUCE until total load
is less than 85 Amps
Failed Alternator Switch.....OFF
Failed Alternator Circuit Breaker.....CHECK AND RESET
Failed Alternator Switch (After OFF at least 1 second).....ON

If power is NOT restored:

Failed Alternator Switch.....OFF
AmperageMONITOR and
maintain below 85 Amps

While one alternator will supply sufficient current for minimum required avionics and cockpit lighting, use of deicing equipment, particularly windshield or propeller heat, may be limited. Immediate action should be taken to avoid or exit icing conditions. Under no circumstances may the total electrical load exceed 85 amps. The cabin recirculation blowers, and position, strobe and landing lights should not be used unless absolutely necessary.



Electrical Failures

DUAL ALTERNATOR FAILURE

Alternator #1 and #2 Inop. Light Illuminated - Annunciator Panel).

The alternator output circuit breakers must not be opened manually when the alternators are functioning properly.

NOTE

Anytime total bus voltage is below approximately 25 Vdc, the LO BUS voltage annunciator will illuminate.

Verify Failure.....CHECK AMMETER
Electrical load.....REDUCE to minimum
required for safe flight
Alternator SwitchesOFF
Alternator Circuit BreakersCHECK & RESET
AS REQUIRED
Alternator Switches (One at a time
after OFF at least 1 second).....ON

If only one alternator resets:

Operating Alternator SwitchON
Failed Alternator Switch.....OFF
Electrical loadMAINTAIN less
than 85 Amps
AmperageMONITOR



Electrical Failures

DUAL ALTERNATOR FAILURE

If neither alternator resets:

Both Alternator Switches.....OFF

CONTINUE FLIGHT WITH REDUCED ELECTRICAL LOAD ON BATTERY POWER ONLY.

NOTE

LO BUS voltage annunciator will also be illuminated.

Land as soon as practical. Anticipate complete electrical failure. Duration of battery power available will be dependent on electrical load and battery condition prior to failure.

WARNING

Compass error may exceed 10 degrees with both alternators inoperative.

NOTE

If battery is depleted, the landing gear must be lowered using the emergency gear extension procedure. Gear position lights will be inoperative. The flaps will also be inoperative and a flaps up landing will be required



Vacuum System Failures

(Left or right Vacuum Inop. Light Illuminated - Annunciator Panel).

Gyro Suction GaugeCHECK (within normal operating range)

Although either vacuum pump independently has sufficient capacity to operate the flight instruments and the deice boots in a normal manner, intentional or continued operation in icing conditions is not recommended. Immediate action should be taken to avoid or exit icing conditions.

(Left and right Vacuum Inop. Light Illuminated - Annunciator Panel).

If both vacuum systems are inoperable, the turn coordinator and pilot's directional gyro will be the only usable gyroscopic flight instruments, wing and tail deicer boots will be inoperative. A precautionary landing should be considered depending on operating conditions

Spin Recovery (Intentional Spins Prohibited)

NOTE

Federal Aviation Administration Regulations do not require spin demonstration of multi-engine airplanes; spin tests have not been conducted. The recovery technique presented is based on the best available information.

Throttles RETARD to IDLE
Rudder FULL OPPOSITE TO
DIRECTION OF SPIN
Control wheel FULL FORWARD if
nose does not drop
Ailerons NEUTRAL
Rudder NEUTRALIZE when
rotation stops
Control wheel SMOOTH BACK PRESSURE
to recover from dive



Emergency Descent

Throttles.....CLOSED
Propellers.....FULL FORWARD
Mixture.....AS REQUIRED for
smooth operation
Landing gearEXTEND below 128 KIAS
Airspeed128 KIAS Max.

Combustion Heater Overheat

Unit will automatically cut-off.
Do not attempt to restart.

Propeller Overspeed

Throttle (Affected Engine).....RETARD
Oil pressure (Affected Engine).....CHECK
Prop control (Affected Engine).....FULL DECREASE RPM
(DO NOT FEATHER)
THEN SET if any
control available
AirspeedREDUCE
Throttle (Affected Engine).....AS REQUIRED to remain
below 2600 rpm



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NORMAL PROCEDURES



NORMAL PROCEDURES CHECKLIST

Preflight Checklists

CAUTION:

The flap position should be noted before boarding the airplane.
The flaps must be placed in the up position before they will be locked and support weight on the step.

COCKPIT

Control Wheelrelease restraints
Static SystemDRAIN
Parking BrakeSET
Magneto SwitchesOFF
Standby Fuel Pump SwitchesOFF
Flight ControlsPROPER OPERATION
Gear SelectorDOWN



COCKPIT

Throttles	IDLE
Mixture Controls	IDLE CUT-OFF
Alternate Static Source	NORMAL
Cowl Flaps	OPEN
Stabilator & Rudder Trim	NEUTRAL
Fuel Selectors	ON
Radio Master Switch	OFF
All Electrical Switches	OFF
Battery Master Switch	ON
Annunciator Panel	PRESS TO TEST
Fuel Gauges	CHECK QUANTITY
Landing Gear Lights	3 GREEN
Flaps	EXTEND
Battery Master Switch	OFF
Windows	check CLEAN
Required Papers	check ON BOARD
POH	check ON BOARD
Baggage	STOW PROPERLY - SECURE
Crossfeed drains	DRAIN

RIGHT WING

Crossfeed Drains	CHECK CLOSED
Surface Condition	CLEAR of ICE, FROST & SNOW
Flap and Hinges	CHECK
Aileron, Hinges & Freedom of Movement	CHECK
Static Wicks	CHECK
Wing Tip and Nav/Anti-Collision Lights	CHECK
Fuel Filler Cap	CHECK & SECURE
Fuel Tank Vent	CLEAR

CAUTION:

When draining any amount of fuel, care should be taken to ensure that no fire hazard exists before starting engine.



RIGHT WING

Wing Tank Drains (2).....DRAIN
Tie Down.....REMOVE
Fuel Filter Drain.....DRAIN
Engine Oil & Cap.....CHECK & SECURE
Propeller & Spinner.....CHECK
Air InletsCLEAR
Cowl Flap AreaCHECK
Main Gear Strut.....PROPER INFLATION
(3.2 ± .50 in.)
Main Wheel Tire.....CHECK
Brake, Block & DiscCHECK
ChockREMOVE

NOSE SECTION

General ConditionCHECK
Windshield.....CLEAN
Landing LightsCHECK
Tow bar.....REMOVED AND STOWED
ChockREMOVE
Nose Gear Strut.....PROPER INFLATION
(1.2 ± .25 in.)
Nose Wheel Tire.....CHECK
Forward baggage door (key removable
in locked position only).....SECURE AND LOCKED



Preflight Checklists

LEFT WING

Surface ConditionCLEAR of ICE, FROST & SNOW
Main Gear Strut.....PROPER INFLATION
(3 1/2 in.)
Main Wheel Tire.....CHECK
Brake, Block & DiscCHECK
ChockREMOVE
Cowl Flap Area.....CHECK Engine Oil & Cap
CHECK & SECURE
Propeller & Spinner.....CHECK
Air InletsCLEAR
Fuel Filter DrainDRAIN
Stall Warning Vanes (2).....CHECK
Pitot HeadCLEAR
Tie DownREMOVE

CAUTION:

When draining any amount of fuel, care should be taken to ensure that no fire hazard exists before starting engine.

Wing Tank Drains (2).....DRAIN
Fuel Tank VentCLEAR
Fuel Filler CapCHECK & SECURE
Wing Tip and Nav/Anti-Collision LightsCHECK
Aileron, Hinges & Freedom of Movement.....CHECK
Flap and Hinges.....CHECK
Static Wicks.....CHECK

FUSELAGE (LEFT SIDE)

General ConditionCHECK
AntennasCHECK
Fresh Air Inlet.....CLEAR
Battery Vents.....CLEAR
External Power Receptacle.....CHECK
Rear doors.....LATCHED
Left static ventCLEAR



EMPENNAGE

Surface Condition	CLEAR of ICE, FROST & SNOW
Anti-Collision Light	CHECK
Stabilator, Trim Tab & Freedom of Movement	CHECK
Rudder, Trim Tab & Freedom of Movement	CHECK
Static Wicks	CHECK
Tie Down	REMOVE

FUSELAGE

General Condition	CHECK
Fresh Air Inlet	CLEAR
Right static vent	CLEAR
Cabin Door	CHECK

MISCELLANEOUS

Battery Master Switch	ON
Flaps	RETRACT
Interior Lighting (Night Flight)	ON & CHECK

CAUTION

Care should be taken when an operational check of the heated pitot head is being performed. The unit becomes very hot. Ground operation should be limited to 3 minutes maximum to avoid damaging the heating elements.

Pitot Heat/ Lift Detect Switch	ON
Exterior Lighting Switches	ON & CHECK
Pitot Head	CHECK - WARM
Lift Detect Switch	CHECK - WARM
All Lighting Switches	OFF
Pitot Heat/ Lift Detect Switch	OFF
Battery Master Switch	OFF
Passengers	BOARD



Before Starting Engine Checklists

BEFORE STARTING ENGINE

Preflight CheckCOMPLETED
Flight Planning.....COMPLETED
Aft Cabin Doors.....CLOSE & SECURE
Forward Cabin Door.....CLOSE & SECURE
Seats.....ADJUSTED & LOCKED

CAUTION:

With the shoulder harness fastened and adjusted, a pull test of it's locking restraint feature should be performed.

Seatbelts and Harness.....FASTEN/ADJUST
CHECK INERTIA REEL
Empty Seats.....SEAT BELTS SNUGLY FASTENED
Alternators.....ON

WARNING

No braking will occur if knob is pulled before brake application.

Parking BrakeSET
Gear SelectorGEAR DOWN
ThrottlesIDLE
Propeller Controls.....FULL FORWARD
MixtureIDLE CUT-OFF
Friction HandleAS DESIRED
Alternate Air ControlsOFF
Cowl Flaps.....OPEN
Stabilator & Rudder TrimSET
Fuel SelectorsON
Heater SwitchOFF
Radio Master SwitchOFF
Electrical SwitchesOFF
Circuit BreakersCHECK IN



: Engine Start Checklists

ENGINE START - GENERAL

CAUTION:

For cold weather starting, ensure magneto and master switches are off and mixture controls are in idle cut-off before turning propeller manually.

NOTE:

When starting at ambient temperatures +20°F and below, operate first engine started with alternator ON (at max charging rate not to exceed 1500 RPM) for 5 minutes minimum before initiating start on second engine.

To prevent starter damage, limit starter cranking to 30-second periods. If the engine does not start within that time, allow a cooling period of several minutes before engaging starter again. Do not engage the starter immediately after releasing it. This practice may damage the starter mechanism.

NOTE:

If available, preheat should be considered. Rotate each propeller through three times manually during preflight inspection.

NOTE:

Do not attempt an engine start while the engine gauges are in the process of conducting the self test feature.



Engine Start Checklists

NORMAL START - COLD ENGINE

Throttles 1 INCH OPEN
Propeller Controls FULL FORWARD
Battery Master Switch ON
Gear Lights 3 GREEN
*Standby Fuel Pump ON
*Magneto Switches ON
*Mixture RICH - THEN IDLE CUTOFF

NOTE

The amount of prime depends on engine temperature. Familiarity and practice will enable the operator to estimate the amount of prime required.

*Propeller Area CLEAR
*Starter ENGAGE
*Mixture (when engine fires) ADVANCE
*Throttle ADJUST
*Oil Pressure CHECK

Repeat Above Procedure () for Second Engine Start*

Voltmeter CHECK (28 ± 1 VOLT)
Alternator CHECK AMP OUTPUT
Gyro Vacuum CHECK (within normal operating range)

ENGINE START - COLD WEATHER

Throttles 1/2 INCH OPEN
Propeller Controls FULL FORWARD
Battery Master Switch ON
Gear Lights 3 GREEN
*Standby Fuel Pump ON
*Magneto Switches ON
*Mixture FULL RICH
*Throttle IDLE (after 5 sec. of prime)
*Propeller Area CLEAR
*Starter ENGAGE
*Throttle ADJUST AS REQUIRED
*Oil Pressure CHECK

Repeat Above Procedure () for Second Engine Start*

Voltmeter CHECK (28 ± 1 VOLT)
Alternator CHECK AMP OUTPUT
Gyro Vacuum CHECK (within normal operating range)



Engine Start Checklists

NORMAL START - HOT ENGINE

Throttles.....1/2 INCH OPEN
Propeller Controls.....FULL FORWARD
MixtureIDLE CUT-OFF
Battery Master Switch.....ON
Gear Lights3 GREEN
Standby Fuel Pump.....OFF

NOTE

Pump may be turned ON after successful engine start, if long periods of engine idle in high ambient temperatures are anticipated.

Magneto SwitchesON
Propeller AreaCLEAR
Starter.....ENGAGE
Mixture (when engine fires).....ADVANCE
Throttle.....ADJUST
Oil PressureCHECK
VoltmeterCHECK (28 ± 1 VOLT)
AlternatorCHECK AMP OUTPUT
Gyro VacuumCHECK (within normal operating range)

ENGINE START WHEN FLOODED

ThrottleOPEN FULL
Propeller ControlFULL FORWARD
MixtureIDLE CUT-OFF
Battery Master Switch.....ON
Standby Fuel Pump.....OFF

NOTE

Pump may be turned ON after successful engine start, if long periods of engine idle in high ambient temperatures are anticipated.

Magneto SwitchesON
Propeller AreaCLEAR
Starter.....ENGAGE
Mixture (when engine fires).....ADVANCE SLOWLY
ThrottleRETARD TO 1000 RPM
Oil PressureCHECK
VoltmeterCHECK (28 ± 1 VOLT)
AlternatorCHECK AMP OUTPUT



ENGINE START WITH EXTERNAL POWER SOURCE

NOTE

For all normal operations using an external power source, the battery master switch should be OFF, but it is possible to use the ship's battery in parallel by turning the battery master switch ON. This will give longer cranking capabilities, but will not increase the amperage.

CAUTION:

Care should be exercised because if the ship's battery has been depleted, the external power supply can be reduced to the level of the ship's battery. This can be tested by turning the battery master switch ON momentarily while the starter is engaged.

If cranking speed increases, the ship's battery is at a higher level than the external power supply. If the battery has been depleted by excessive cranking, it must be recharged before the second engine is started. All the alternator current will go to the low battery until it receives sufficient charge, and it may not start the other engine immediately.

Battery Master SwitchOFF
Alternator SwitchesOFF
All Electrical EquipmentOFF
Receptacle DoorOPEN
External Power PlugINSERT in RECEPTACLE

Proceed with normal start.

ThrottlesLOWEST POSSIBLE RPM
External Power PlugDISCONNECT from RECEPTACLE
Receptacle DoorSECURE
Battery Master SwitchON
Alternator SwitchesON
Throttles1000 RPM
Oil PressureCHECK
VoltmeterCHECK BUS VOLTAGE (28 ± 1 Volt)
Alternator OutputCHECK, BOTH LT and RT
Gyro VacuumCHECK (within normal operating range)



Before Taxiing Checklist

WARM-UP

External Power Source UnitREMOVE (IF APPLIED)
Throttles.....1000 to 1200 RPM

BEFORE TAXIING

Battery Master Switch.....ON
Gyros.....SET
Altimeter and ClockCHECK & SET
Radio Master SwitchON
LightsAS REQUIRED
Heater and DefrosterAS DESIRED
Fuel SelectorsON, CHECK CROSSFEED
Radios.....CHECK & SET
AutopilotTEST & OFF
Electric Trim.....CHECK
Passenger BriefingCOMPLETE
Parking BrakeRELEASE

Taxiing Checklist

TAXIING

Taxi Area.....CLEAR
Standby Fuel PumpsAS REQUIRED

NOTE

During extended periods of engine idle at high ambient temperatures, fuel flow to the engine can be interrupted by the formation of fuel vapor bubbles in the fuel line. This condition can be corrected by turning the standby fuel pump ON, to provide positive pressure to the engine driven pump inlet.

Throttles.....APPLY SLOWLY
BrakesCHECK
Steering.....CHECK
Flight Instruments.....CHECK

NOTE

During taxi, if the Low Bus Voltage annunciator illuminates, increase engine RPM (if possible) to retain adequate battery charging.



Ground Check Checklist

GROUND CHECK

CAUTION:

Alternate air is unfiltered. Use of alternate air during ground or flight operations, when dust or other contaminant's are present, may result in engine damage from particle ingestion.

Parking BrakeSET
Mixtures.....FULL RICH
Propeller Controls.....FULL FORWARD
Throttles.....1000 RPM
Engine Instruments.....CHECK
Throttles.....1500 RPM
Propeller Controls (Max. Drop - 300 RPM).....FEATHER - CHECK
Throttles.....2300 RPM
Propeller Controls (Max. Drop - 300 RPM).....EXERCISE
Alternate Air.....CHECK ON (OBSERVE
APPROX. 25 RPM DROP) THEN OI
Throttles.....2000 RPM
Magnetos (Max. Drop - 150 RPM:
Max. Diff. - 50 RPM).....CHECK
VoltmeterCHECK BUS (28 ± 1 VOLT)
Alternator Output.....CHECK, BOTH LT and RT
Annunciator Panel LightsOUT
Gyro Vacuum Gauge.....CHECK AS REQUIRED
(within normal operating range)

WARNING:

If flight into icing conditions (in visible moisture below +5°C) is anticipated or encountered during climb, cruise or descent, activate the aircraft ice protection system,including the pitot heat

Ice Protection Equipment.....CHECK AS REQUIREI
ThrottlesIDLE - CHECK
Throttles.....800 to 1000 RPM
Friction HandleSET



Before Takeoff Checklist

BEFORE TAKEOFF

Doors..... LATCHED
Seat BacksERECT
SeatsADJUSTED & LOCKED IN POSITION
Seat Belts, Harnesses.....FASTENED/ADJUSTED
ArmrestsSTOWED
Battery Master Switch.....ON
Alternators.....ON
Standby Fuel Pumps.....ON
Flight Instruments.....CHECK
Engine Instruments.....CHECK

WARNING:

If flight into icing conditions (in visible moisture below +5°C) is anticipated or encountered during climb, cruise or descent, activate the aircraft ice protection system, including the pitot heat

Prop HeatAS REQUIRED
Windshield HeatAS REQUIRED
Pitot/Stall Warning HeatAS REQUIRED
Prop Controls.....FULL FORWARD
Mixtures.....FULL FORWARD
Alternate AirOFF
Flaps.....SET
Airconditioner (if installed)OFF
Stabilator and Rudder TrimsSET
Fuel SelectorsON
Flight Controls.....CHECK
Parking BrakeRELEASE



Takeoff Checklist

CAUTION:

Fast taxi turns immediately prior to takeoff should be avoided to prevent unporting fuel feed lines.

NOTE:

Takeoffs are normally made with full throttle. However, under some off standard conditions, the manifold pressure indication can exceed its indicated limit at full throttle. Limit manifold pressure to 38 in. Hg. maximum.

NORMAL (0° FLAP) PERFORMANCE TAKEOFF

Flaps.....	UP
Stabilator and Rudder Trim.....	CHECK SET
Brakes	HOLD
Mixture	FULL RICH
Power	2600 RPM, 38 in. Hg. MAN PRESS
Brakes	RELEASE
Rotate Speed	(Max. T.O. Wt.) 79 KIAS
Obstacle Clearance Speed.....	(Max. T.O. Wt.) 79 KIAS
Gear.....	UP
Climb Speed (after obstacle clearance)	88 KIAS



Takeoff Checklist

SHORT FIELD PERFORMANCE TAKEOFF

Flaps25°
Stabilator and Rudder Trim.....CHECK SET
BrakesHOLD
MixtureFULL RICH
Power.....2600 RPM, 38 in. Hg. MAN PRESS
BrakesRELEASE
Rotate Speed.....(Max. T.O. Wt.) 71 KIAS
Obstacle Clearance Speed.....(Max. T.O. Wt.) 73 KIAS
Gear.....UP
Flaps.....RETRACT SLOWLY WHILE ACCELERATING
Climb Speed (after obstacle clearance)88 KIAS

Climb Checklist

MAXIMUM PERFORMANCE CLIMB

Best Rate (Flaps Up).....88 KIAS
Best Angle (Flaps Up)83 KIAS
Cowl FlapsFULL OPEN
PowerMax. Continuous Power
Standby Fuel PumpsOFF at a safe altitude
(ON above 10,000 FT)

CRUISE CLIMB

MixtureFULL RICH
Power.....2500 RPM, 32 in. Hg. MAN PRESS
Climb Speed110 KIAS
Cowl FlapsCLOSED or As Required
1/2 OPEN
Standby Fuel PumpsOFF at a safe altitude
(ON above 10,000 FT)



Cruise Checklist

CRUISING

PowerSET per Power Setting Chart
Mixture ControlsADJUST
Fuel Pump(Confirm OFF)
Cowl FlapsAS REQUIRED

Descent Checklist

DESCENT

ThrottlesAS REQUIRED
Mixture ControlsADJUST
Cowl FlapsCLOSED
AltimeterSET
Windshield DefrostAS DESIRED

Approach and Landing Checklist

APPROACH AND LANDING

NAV SourceVERIFY HSI Nav Guidance is set for approach
Seat BacksERECT
Seat Belts, HarnessesFASTEN/ADJUSTED
ArmrestsSTOWED
Standby Fuel PumpsON
Fuel SelectorsON
Cowl FlapsAS REQUIRED
Mixture ControlsFULL RICH
Propeller ControlsFULL FORWARD
Landing Gear (Below 128 KIAS)DOWN
Landing Gear Lights3 GREEN
Nacelle MirrorNOSE GEAR DOWN
Airconditioner (if installed)OFF
AutopilotOFF
Toe BrakesDEPRESS TO CHECK



Approach and Landing Checklist

NORMAL LANDING

Flaps (Below 113 KIAS)FULL DOWN
Airspeed.....90 KIAS
TrimAS REQUIRED
Throttles.....AS REQUIRED
Touchdown.....MAIN WHEELS
BrakingAS REQUIRED

SHORT FIELD PERFORMANCE LANDING

Flaps (Below 113 KIAS)FULL DOWN
Airspeed (At Max. Weight)82 KIAS
TrimAS REQUIRED
Throttles.....IDLE
Touchdown.....MAIN WHEELS
Flaps.....RETRACT
Control WheelBACK PRESSURE
BrakingMAXIMUM without SKIDDING

Go-Around Checklist

GO-AROUND

Mixtures.....FULL RICH
Propeller Controls.....FULL FORWARD
ThrottlesFULL POWER
Control WheelBACK PRESSURE TO OBTAIN
POSITIVE CLIMB ATTITUDE at 85 KIAS
Flaps.....RETRACT SLOWLY
Gear.....UP
Cowl Flaps.....AS REQUIRED
TrimAS REQUIRED



After Landing Checklist

AFTER LANDING

Clear of runway.

Flaps.....RETRACT
Cowl Flaps.....FULL OPEN
Airconditioner (if installed)AS DESIRED
Radar (if installed)OFF
Standby Fuel PumpsAS REQUIRED

NOTE

During extended periods of engine idle at high ambient temperatures, fuel flow to the engine can be interrupted by the formation of fuel vapor bubbles in the fuel line. This condition can be corrected by turning the standby fuel pump ON, to provide positive pressure to the engine driven pump inlet.

Strobe Lights.....OFF
Landing and Taxi Lights.....AS REQUIRED

Stopping Engine Checklist

STOPPING ENGINE

Heater (If ON)FAN - 2 MIN. THEN OFF
Radio Master SwitchOFF
Electrical EquipmentOFF
ThrottlesIDLE
MixturesIDLE CUTOFF
MagnetosOFF
Alternator SwitchesOFF
Panel Lights (At Night)OFF
Battery MasterOFF

Mooring Checklist

MOORING

Parking BrakeSET
Control Wheel.....SECURED with belts
Wheel ChocksIN PLACE
Tiedowns.....SECURE



PA34T

SENECA V



PERFORMANCE TABLE



POWER SETTING TABLE

POWER SETTING TABLE

	Pressure Altitude	RPM	Manifold Pressure	Approximate Fuel Flow	Turbine Inlet Temperature
High Speed Cruise	Above 23,000 Ft.	2500	29" Hg	26 GPH	Lean to Peak *Not to Exceed 1650° F
	Below 23,000 Ft.	2500	30" Hg	28 GPH	
Normal Cruise	Above 20,000 Ft.	2500	28" Hg	24 GPH	
	Below 20,000 Ft.	2400	29" Hg		
	Below 20,000 Ft.	2300	30" Hg		
Economy Cruise	Above 20,000 Ft.	2400	26" Hg	22 GPH	
	Below 20,000 Ft.	2300	27" Hg		
	Below 20,000 Ft.	2200	28" Hg		
Long Range Cruise	Below 23,000 Ft.	2200	25" Hg	18 GPH	

*Permissible to lean to 1700° F for up to 60 sec. in order to determine peak TIT.

Note:

The fuel flows shown are approximate. Fuel flows may vary ± 1 GPH depending upon altitude and outside air temperature.



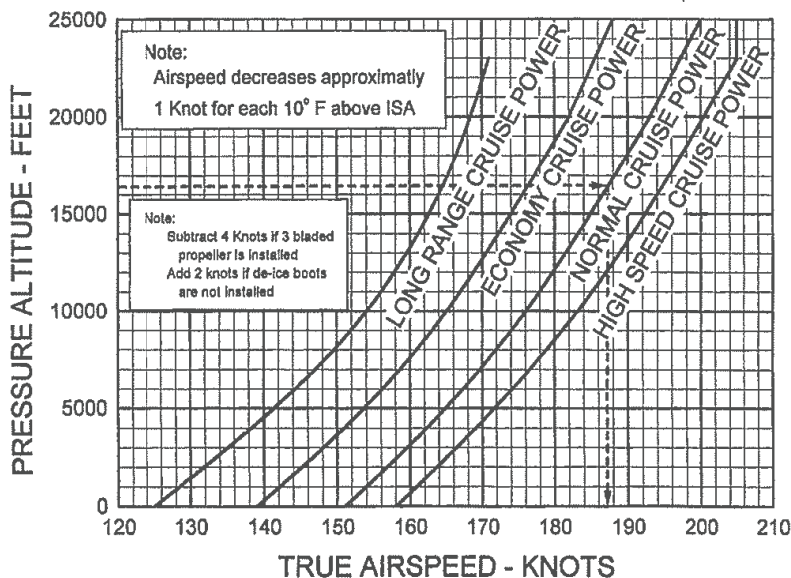
ISA DAY SPEED POWER

ASSOCIATED CONDITIONS:

Cowl Flaps: CLOSED Mixture: PEAK TIT
Landing Gear: UP Gross Weight: 1999 KG
Wing Flaps: 0° (4407 LB)

EXAMPLE:

O.A.T: -13°C
Pressure Altitude: 16,500 Ft
Power: Normal Cruise
True Airspeed: 187 KTAS





PA34T

SENECA V



REFERENCE



AIRSPEED INDICATOR MARKINGS

MARKING	KIAS
Red Radial Line (Never Exceed)	204
Yellow Arc (Caution Range - Smooth Air Only)	164 to 204
Green Arc (Normal Operating Range)	67 to 164
White Arc (Flap Down)	61 to 113
Blue Radial Line (One Engine Inoperative Best Rate of Climb Speed)	88
Red Radial Line (One Engine Inoperative Air Minimum Control Speed)	66

AIRSPEED LIMITATIONS

SPEED	KIAS	KCAS
Never Exceed Speed (VNE) - Do not exceed this speed in any operation.	204	203
Maximum Structural Cruising Speed (VNO) - Do not exceed this speed except in smooth air and then only with caution.	164	165



AIRSPEED LIMITATIONS (Cont)

SPEED	KIAS	KCAS
Design Maneuvering Speed (VA) - Do not make full or abrupt control movements above this speed.		
4407 lbs/1999 kg GW	135	137
3205 lbs.	113	115
CAUTION		
Maneuvering speed decreases at lighter weight as the effects of aerodynamic forces become more pronounced. Linear interpolation may be used for intermediate gross weights. Maneuvering speed should not be exceeded while operating in rough air.		
Maximum Gear Extended Speed (VLE) - Do not exceed this speed with landing gear extended.	128	130
Maximum Landing Gear Operating Speed (VLO) - Do not extend or retract landing gear above these speeds.		
Extension	128	130
Retraction	107	109
Maximum Flaps Extended Speed (VFE) - Do not exceed this speed with the flaps extended.	113	113
One Engine Inoperative Best Rate of Climb Speed. (VYSE)	88	91
Air Minimum Control Speed (VMCA) - Lowest airspeed at which airplane is controllable with one engine operating at takeoff power and no flaps.	66	67