

Normal Procedures

Further procedure details are in the *Pilot's Operating Handbook* section 4.

Preflight Cockpit

Begin

1. Parking brakeApply
2. Pitot coverRemove
3. Control wheel lockRemove
4. MagnetosOff
5. (night) FlashlightOperable

Paperwork

6. Pilot certificate, Photo ID, Medical certificateValid, accessible
7. Flight dataOn board
(Flight data means, as needed: charts, weather, alternates, fuel, weight & balance, runway lengths available, take-off & landing distances, delays, ...)
8. Dispatch papers (or aircraft log)Completed
9. Maintenance statusReviewed
10. Airworthiness and registration certificatesDisplayed
11. Pilot's Operating HandbookAvailable

Pilot's Side

12. Circuit breakers (main & avionics)Check in
13. Electrical switches Off
14. Avionics MasterOff
15. MasterOn
16. Fuel Qty[Check]
17. Beacon, Landing, Taxi, Nav, Strobe LightsTest
18. Pitot HeatTest
19. (night) Panel, Radio, Pedestal, & Glareshield LightsTest
20. (night) Map LightTest
21. (night) Overhead flood light (2) & Rear cabin lightTest
22. Annunciator panel switchTest (hold & check)

Avionics Stack

23. Transponder modeSby
24. Avionics MasterOn

Preflight Cockpit

25. Avionics cooling fanCheck (audible)
26. GPS PowerOn
27. Pilot & Crew ICS IsolationOff
28. Transponder codeVFR
29. AutopilotEngage and overpower
30. Autopilot Disconnect switchPress
31. GPS database[Check dates] & Acknowledge
32. GPS Self-testCheck CDI + OBS & Acknowledge
33. ClockSet
34. Avionics MasterOff

Center & Co-Pilot's Side

35. Alt Static AirOff
36. FlapsExtend Full
37. ELT switchAuto
38. Cabin Heat & Cabin AirAdjust
39. Pitch TrimTake-off position
40. Fuel Shutoff valveOpen
41. Fuel SelectorBoth
42. Fire extinguisherCheck condition and pressure
43. MasterOff

"Preflight Cockpit check complete"

Preflight Exterior

1. Baggage DoorCheck latched

Empennage

2. AntennasCheck security of attachment and general condition
3. ElevatorCheck freedom of movement and security
4. RudderCheck freedom of movement and security
5. Rudder Gust Lock (if installed)Remove
6. Tail Tie-DownDisconnect
7. Trim TabCheck security

Right Wing Trailing Edge

8. FlapCheck security and condition
9. AileronCheck freedom of movement and security

Preflight Exterior

Before Start

Before Start

1. Passenger briefingComplete
2. Parking brakeApply
3. Tie-downs, chocks, and tow bar.....Removed
4. Portable electronic devicesOff
5. Seats & seat beltsAdjust & lock
6. MagnetosOff
7. Electrical switches Off
8. MasterOn
9. Avionics Master.....On
10. ATISCopy
11. Altimeter[Set]
12. (if applicable) ClearanceCopy
13. (if applicable) Navigation setupComplete
14. Comm 1 & 2 freq[Set]
15. Transponder code[Set]
16. Transponder modeAlt
17. Avionics Master..... Off
18. Interior lightsSet

“Before Start check complete”

Right Wing Leading Edge

10. Wing Tie-Down.....Disconnect
11. Fuel Tank Sump Quick Drain ValvesSample & check fuel (5 points)
12. Main Wheel Tire.....Check inflation and condition
13. Fuel QuantityCheck visually
14. Fuel Filler CapVent unobstructed and cap secure

Nose

15. Engine Oil DipstickCheck oil level (5–8 qt)
 ▲ (Avoid contact with oil. Wash with soap and water if you get oil on you.)
16. Engine Oil Dipstick/Filler Cap.....Check secure
17. Fuel Strainer Quick Drain Valve.....Sample & check fuel
18. Engine Cooling Air InletsClear of obstructions
19. Propeller & SpinnerCheck for nicks and security
20. Air Filter.....Check clean
21. Nose Wheel Strut.....Check inflation
22. Nose Wheel TireCheck inflation and condition
23. Left Static Source OpeningCheck for blockage

Left Wing Leading Edge

24. Fuel QuantityCheck visually
25. Fuel Filler CapVent unobstructed and cap secure
26. Pitot Tube Opening.....Check for blockage
27. Stall Warning OpeningCheck for blockage
28. Fuel Tank Vent Opening.....Check for blockage
29. Landing & Taxi Lights.....Check condition and cleanliness of cover
30. Wing Tie-Down.....Disconnect
31. Fuel Tank Sump Quick Drain ValvesSample & check fuel (5 points)
32. Main Wheel Tire.....Check inflation and condition

Left Wing Trailing Edge

33. AileronCheck freedom of movement and security
34. Flap.....Check security and condition

“Preflight Exterior check complete”

Engine Start

1. Avionics MasterOff
2. Fuel Shutoff valveOpen
3. Fuel SelectorBoth
4. ThrottleOpen 1/4 inch
5. Mixture.....Cut-Off
6. Propeller area.....Clear
7. MasterOn
8. Beacon.....On
9. Prime, if needed:
 - 9.a. Fuel Pump.....On
 - 9.b. Mixture.....Rich (full forward) until stable fuel flow, then Cut-Off
 - 9.c. Fuel Pump.....Off
10. MagnetosStart (release when engine starts)
11. MixtureRich (smoothly) as engine starts
12. Oil PressCheck
(Shutdown engine if oil pressure not normal within 30 seconds of start.)
13. (night) Nav LightsOn
14. Avionics Master.....On
15. Flaps.....Up
16. Icm volSet
17. Comm 1 & 2 volSet
18. MixtureLean (Set 1200 rpm, Lean for max rpm, Idle)
19. DG set.....[Set]
20. GPS startup pages.....Acknowledge

“Engine Start complete”

Taxi

1. Taxi Light.....On
2. Parking brakeRelease
3. Brakes.....Check

“Taxi check complete”

Engine Start

Taxi

Run-Up

1. Parking brakeApply
2. Seats, seat backs & seat beltsSecure & upright
3. Cabin doorsClosed & locked
4. Flight controls.....Free & correct
5. Fuel Qty.....[Check]
6. Fuel Shutoff ValveOpen
7. Fuel SelectorBoth
8. Mixture.....Full Rich
9. Throttle1800 rpm
10. Magneto check.....Complete
(RPM drop less than 150 RPM. Less than 50 RPM difference between magnetos.)
11. Oil Temp & PressCheck
12. Vac.....Check
13. Alternator check.....Complete
14. Annunciator panel.....Clear (none lit)
15. ThrottleCheck idle
16. Throttle.....800–1000 rpm
17. Autopilot.....Disengaged
18. Pitch TrimTake-off position
19. Altimeter[Check]
20. Navigation setupComplete
21. Transponder code & mode[Check] / Alt
22. Flaps.....[Up or 10°]

“Run-up check complete”

Before Takeoff

1. Mixture(at or below 3000 MSL) Full Rich
(above 3000 MSL) Leaned for max rpm at full throttle
2. Flaps.....[Check Up or 10°]
3. Strobe Lights.....On
4. Landing LightOn
5. Heading (runway alignment)[Check]

“Before Takeoff check complete”

Before Takeoff

After Takeoff

1. FlapsUp
2. Landing LightOff
3. (Above 3000 MSL) MixtureLean
"After Takeoff check complete"

After Takeoff

Cruise

1. Taxi LightOff (Leave on in high traffic areas)
2. Throttle.....[Set cruise power]
3. MixtureLean
4. Fuel Qty.....[Check]
"Cruise check complete"

Cruise

Descent

1. ATISCopy
2. Altimeter[Set]
3. DG set.....[Set]
4. Comm 1 & 2 freq[Set]
5. Landing LightOn
6. Taxi Light.....On
7. Fuel Qty.....[Check]
8. Mixture[Set]
9. Fuel SelectorBoth
10. Seats, seat backs & seat beltsSecure & upright
"Descent check complete"

Descent

Before Landing

1. Mixture.....Full Rich
2. Flaps[10° typical]
3. Fuel Selector.....Check Both
4. Autopilot.....Disengaged
"Before Landing check complete"

Before Landing

After Landing

1. Landing LightOff
2. Strobe Lights.....Off
3. Pitot Heat.....Off
4. Flaps.....Up
"After Landing check complete"

After Landing

Shutdown

1. Parking brakeApply
2. Taxi Light.....Off
3. Transponder modeSby
4. Transponder codeVFR
5. Avionics Master.....Off
6. Mixture.....Cut-Off
7. Throttle.....Closed
8. MagnetosOff
9. Electrical switchesOff
10. Fuel Selector.....Left or Right
11. MasterOff
12. Control wheel lock.....Install
13. (if towing) Parking brakeRelease
"Shutdown check complete"

Shutdown

Securing

1. Dispatch papers (or aircraft log).....Completed
2. Equipment discrepancies.....Logged
3. Panel, Radio, Pedestal, & Glareshield LightsFull dim
4. Map LightFull dim
5. MasterOff
6. Post-flight walk-around.....Complete
7. Pitot cover, chocks, tie-downsInstalled
8. Tow bar.....Stowed
9. Cabin, baggage doors, and windowsLocked
"Securing check complete"

Securing

Abnormal Procedures

Further procedure details are in the *Pilot's Operating Handbook* section 3.

Static Source Blockage (Erroneous Instrument Reading Suspected)

1. ALT STATIC AIR Valve.....PULL ON
2. CABIN HT and CABIN AIR KnobsPULL ON
3. VentsCLOSED
4. Airspeed.....Refer to POH Section 5, Figure 5-1 (Sheet 2)
 "Airspeed Calibration, Alternate Static Source" correction chart

Static Source

Landing with Flat Main Tire

1. Approach.....NORMAL
2. Wing Flaps.....30°
3. Touchdown.....GOOD MAIN TIRE FIRST
 (Hold airplane off flat tire as long as possible with aileron control)
4. Directional ControlMAINTAIN
 (Using brake on good wheel as required)

Flat Tire

Landing with Flat Nose Tire

1. Approach.....NORMAL
2. Wing FlapsAS REQUIRED
3. TouchdownON MAINS
 (Hold nose wheel off the ground as long as possible)
4. Elevator (when nose wheel touches down) ...Maintain FULL UP until stop

Ammeter Shows Excessive Rate of Charge (Full Scale)

1. MASTER Switch (ALT Only)OFF

CAUTION

With the alternator side of the master switch off,
compass deviations of as much as 25 degrees may occur.

2. Nonessential Electrical EquipmentOFF
3. Flight.....TERMINATE as soon as practical

Ammeter Full Scale

Low Voltage Annunciator (VOLTS)

NOTE

Illumination of VOLTS on the annunciator panel may occur during low RPM conditions with an electrical load on the system such as during a low RPM taxi. Under these conditions, the annunciator will go out at higher RPM. The master switch need not be recycled since an over-voltage condition has not occurred to deactivate the alternator system.

1. Avionics Master Switch.....OFF
2. Alternator Circuit Breaker (ALT FLD)CHECK IN
3. Master Switch.....OFF (both sides)
4. Master SwitchON
5. Low Voltage Annunciator (VOLTS)CHECK OFF
6. Avionics Master Switch.....ON

If low voltage annunciator (VOLTS) illuminates again:

7. AlternatorOFF
8. Nonessential Radio and Electrical EquipmentOFF
9. Flight.....TERMINATE as soon as practical

Low Voltage

Vacuum System Failure

Vacuum Annunciator Illuminates (L VAC) or (VAC R)

CAUTION

If vacuum is not within normal operating limits,
a failure has occurred in the vacuum system and
partial panel procedures may be required for continued flight.

1. Vacuum Gage.....CHECK

Vacuum Failure

Excessive Fuel Vapor (Fuel Flow Stabilization Procedures)

(If flow fluctuations of 1 GPH or more or power surges occur.)

1. Auxiliary Fuel Pump Switch.....ON
2. MixtureADJUST for smooth operation
3. Fuel Selector ValveSELECT OPPOSITE TANK if symptoms continue
4. Auxiliary Fuel Pump Switch.....OFF after fuel flow has stabilized

Excessive Fuel Vapor

Emergency Procedures

Further procedure details are in the *Pilot's Operating Handbook* section 3. Items in **boldface** are immediate action items which should be memorized.

Engine Failure During Takeoff Roll

1. **Throttle**IDLE
2. **Brakes**APPLY
3. Wing FlapsRETRACT
4. MixtureIDLE CUTOFF
5. Magnetos Switch.....OFF
6. Master SwitchOFF

Engine Failure Immediately After Takeoff

1. **Airspeed****172R: 65 KIAS (flaps UP) / 60 KIAS (flaps DOWN)**
172S: 70 KIAS (flaps UP) / 65 KIAS (flaps DOWN)
2. MixtureIDLE CUTOFF
3. Fuel Shutoff ValveOFF (Pull Full Out)
4. Magnetos Switch.....OFF
5. Wing FlapsAS REQUIRED
6. Master SwitchOFF
7. Cabin Door.....UNLATCH
8. Land.....STRAIGHT AHEAD

Engine Failure In Flight (Restart Procedures)

1. **Airspeed****172R: 65 KIAS 172S: 68 KIAS**
2. **Fuel Shutoff Valve**.....ON (push full in)
3. **Fuel Selector Valve**BOTH
4. **Auxiliary Fuel Pump Switch**ON
5. **Mixture**RICH (if restart has not occurred)
6. Magnetos SwitchBOTH (or START if propeller is stopped)

NOTE

If the propeller is windmilling, the engine will restart automatically within a few seconds. If the propeller has stopped (possible at low speeds), turn the Magnetos switch to START, advance the throttle slowly from idle and lean the mixture from full rich as required for smooth operation.

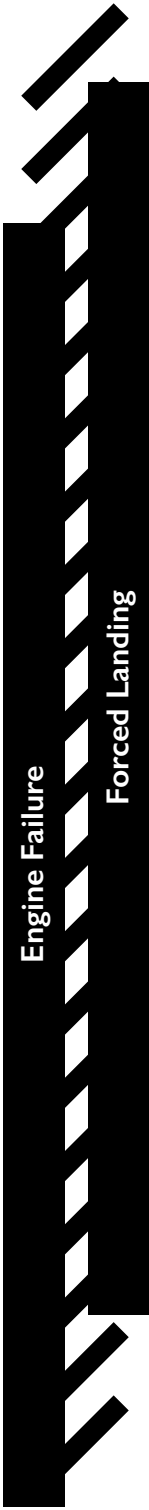
7. Auxiliary Fuel Pump SwitchOFF,
 Back ON if fuel flow drops to zero

Emergency Landing without Engine Power

1. Pilot and Passenger Seat BacksMOST UPRIGHT POSITION
2. Seats and Seat BeltsSECURE
3. Airspeed.....**172R: 65 KIAS (flaps UP) / 60 KIAS (flaps DOWN)**
172S: 70 KIAS (flaps UP) / 65 KIAS (flaps DOWN)
4. MixtureIDLE CUTOFF
5. Fuel Shutoff ValveOFF (Pull Full Out)
6. Magnetos Switch.....OFF
7. Wing Flaps.....AS REQUIRED (30° recommended)
8. Master SwitchOFF (when landing is assured)
9. Doors.....UNLATCH PRIOR TO TOUCHDOWN
10. Touchdown.....SLIGHTLY TAIL LOW
11. Brakes.....APPLY HEAVILY

Precautionary Landing with Engine Power

1. Pilot and Passenger Seat BacksMOST UPRIGHT POSITION
2. Seats and Seat BeltsSECURE
3. Airspeed65 KIAS
4. Wing Flaps.....20°
5. Selected Field.....FLY OVER, noting terrain and obstructions,
 then retract flaps upon reaching a safe altitude and airspeed
6. Avionics Master Switch and Electrical SwitchesOFF
7. Wing Flaps30° (on final approach)
8. Airspeed.....**172R: 60 KIAS 172S: 65 KIAS**
9. Master SwitchOFF
10. Doors.....UNLATCH PRIOR TO TOUCHDOWN
11. Touchdown.....SLIGHTLY TAIL LOW
12. Magnetos Switch.....OFF
13. Brakes.....APPLY HEAVILY
14. MixtureIDLE CUTOFF



Ditching

1. Radio.....TRANSMIT MAYDAY on 121.5 MHz, giving location and intentions and SQUAWK 7700
2. Heavy Objects (in baggage area)SECURE or JETTISON (if possible)
3. Pilot and Passenger Seat BacksMOST UPRIGHT POSITION
4. Seats and Seat BeltsSECURE
5. Wing Flaps20°–30°
6. PowerESTABLISH 300 FT/MIN DESCENT AT 55 KIAS

NOTE

If no power is available, approach at 172R: 65 KIAS 172S: 70 KIAS with flaps up or at 172R: 60 KIAS 172S: 65 KIAS with 10° flaps.

7. Approach.....High Winds, Heavy Seas—INTO THE WIND
Light Winds, Heavy Swells—PARALLEL TO SWELLS
8. Cabin DoorsUNLATCH
9. TouchdownLEVEL ATTITUDE AT ESTABLISHED RATE OF DESCENT
10. FaceCUSHION at touchdown with folded coat
11. ELTACTIVATE
12. Airplane.....EVACUATE through cabin doors. If necessary, open window and flood cabin to equalize pressure so doors can be opened.
13. Life Vests and Raft.....INFLATE WHEN CLEAR OF AIRPLANE

Ditching

Engine Fire During Start

1. **Magnetos Switch...START, continue cranking to get a start which would suck the flames and accumulated fuel into the engine.**

If engine starts:

2. Power172R: 1700 RPM 172S: 1800 RPM for a few minutes
3. EngineSHUTDOWN and inspect for damage

If engine fails to start:

4. **ThrottleFULL OPEN**
5. **Mixture.....IDLE CUTOFF**
6. **Cranking.....CONTINUE**
7. **Fuel Shutoff ValveOFF (Pull Full Out)**
8. **Auxiliary Fuel Pump Switch.....OFF**
9. Fire ExtinguisherOBTAIN
10. Master SwitchOFF
11. Magnetos Switch.....OFF
12. Parking Brake.....RELEASE
13. Airplane.....EVACUATE
14. FireEXTINGUISH using fire extinguisher, wool blanket, or dirt
15. Fire DamageINSPECT, REPAIR or REPLACE

Engine Fire

Engine Fire In Flight

1. **Mixture.....IDLE CUTOFF**
2. **Fuel Shutoff ValvePull Out (OFF)**
3. **Auxiliary Fuel Pump Switch.....OFF**
4. **Master Switch.....OFF**
5. Cabin Heat and Air.....OFF (except overhead vents)
6. Airspeed100 KIAS
(If fire is not extinguished, increase glide speed to find an airspeed—within airspeed limitations—which provides an incombustible mixture).
7. Emergency Landing Without Engine Power checklist.....EXECUTE

Electrical Fire In Flight

1. Master Switch.....OFF
2. Vents, Cabin Air, Heat.....CLOSED
3. Fire ExtinguisherACTIVATE
4. Avionics Master Switch.....OFF
5. All Other Switches (except Magnetos switch).....OFF

WARNING

After discharging fire extinguisher and ascertaining that fire has been extinguished, ventilate the cabin.

6. Vents/Cabin Air/Heat.....OPEN when it is ascertained that fire is completely extinguished

If fire has been extinguished and electrical power is necessary for continuance of flight to nearest suitable airport or landing area:

7. Master Switch.....ON
8. Circuit Breakers.....CHECK for faulty circuit, do not reset
9. Radio SwitchesOFF
10. Avionics Master Switch.....ON
11. Radio/Electrical Switches.....ON one at a time until short circuit is found

Cabin Fire In Flight

1. Master Switch.....OFF
2. Vents/Cabin Air/HeatCLOSED (to avoid drafts)
3. Fire ExtinguisherACTIVATE

WARNING

After discharging fire extinguisher and ascertaining that fire has been extinguished, ventilate the cabin.

4. Vents/Cabin Air/Heat.....OPEN when it is ascertained that fire is extinguished
5. FlightLand the airplane as soon as possible to inspect for damage

Electrical Fire In Flight

Wing Fire In Flight

Wing Fire In Flight

1. Landing/Taxi Light SwitchesOFF
2. Navigation Light SwitchOFF
3. Strobe Light SwitchOFF
4. Pitot Heat SwitchOFF

NOTE

Perform a sideslip to keep the flames away from the fuel tank and cabin. Land as soon as possible using flaps only as required for final approach and touchdown.

Inadvertent Icing Encounter

1. Pitot Heat SwitchON
2. 180 degree turn.....INITIATE
3. Cabin HeatMAXIMUM
4. Windshield Defrost.....MAXIMUM
5. Cabin Air ControlAS REQUIRED for max defrost
6. ThrottleINCREASE
7. Air Intake Filter Ice.....MONITOR for SIGNS
8. Throttle & Mixture.....MAXIMUM RPM
9. Flight.....Land at NEAREST AIRPORT or suitable off airport landing site
10. Wing Flaps.....LEAVE RETRACTED
11. Windshield on Approach.....SCRAPE if practical
12. Approach Speed.....65-75 KIAS
13. Landing.....Perform in LEVEL ATTITUDE

NOTE

Open the throttle to increase engine speed and minimize ice build-up on propeller blades. An unexplained loss in engine speed could be caused by ice blocking the air intake filter, or, in extremely rare instances, ice completely blocking the fuel injection air reference tubes. Plan a landing at the nearest airport. With an extremely rapid ice build-up, select a suitable off airport landing site. With an ice accumulation of 1/4 inch or more on the wing leading edges, be prepared for significantly higher stall speed.

Icing

Cabin Fire In Flight