Ground Checklists and Information — N73146

Preflight

Fuel	
Magnetos	OFF
Fuel quantity	CHECK VISUALLY
Fuel sumps	DRAIN
Left wing, right wing, fuel strainer. Inspect for contamination.	
Fuel filler caps	SECURE
Cabin	
Pitot cover	REMOVE
ARROW Documents	VERIFY
Master	ON
Flaps	EXTEND
Fuel gauges	CHECK QUANTITY
Lights	CHECK
Tach time	RECORD
Pitot heat	TEST
Master	OFF
Fire extinguisher	SECURE
Control lock	REMOVE
Empennage	
Rudder gust lock	REMOVE
Control surfaces	CHECK
Freedom of movement and security	
Right	
Main wheel tire	CHECK INFLATION
Aileron	CHECK
Freedom of movement and security	
Nose	
Engine oil level	CHECK
Minimum 6 quarts	
Propeller, spinner	CHECK
For nicks and security	
Landing light	CHECK CLEAR
Air filter	CHECK CLEAR
Nosewheel & strut	CHECK INFLATED
Static source	CHECK CLEAR
Left	
Main wheel tire	CHECK INFLATION

Preflight (continued)

Fuel tank vent	CHECK CLEAR
Pitot tube	CHECK CLEAR
Stall warning	TEST
Aileron	CHECK
Freedom of movement and security	
Final	
Flight Circle	DISPATCH
Tach, Hobbs times	RECORD
Baggage door	LOCK
Chocks	REMOVE
Tie-downs	REMOVE

Securing

Control lock	INSTALL
Tie-downs, chocks	APPLY
Vents, windows	CLOSE
Pitot cover	APPLY
Tach, Hobbs times	RECORD
Flight Circle	CHECK IN
Doors	LOCK

Speeds

		KIAS
Best glide (V_G)		65
Best angle of climb (V_X)	Sea level 10,000 ft	64 62
Best rate of climb (V_Y)	Sea level 10,000 ft	78 68
Landing approach	Flaps up Flaps 40	60-70 55-65
Normal takeoff climb		70-80
Short-field takeoff climb	Flaps up Flaps 10	59 55
Normal enroute climb	Sea level 10,000 ft	80-90 70-80
Design maneuvering speed (V_A)	2300 lbs 1950 lbs 1600 lbs	97 89 80

Light Gun Signals

Aircraft on the Ground	Aircraft in Flight
Cleared for takeoff	Cleared to land
Cleared for taxi	Return for landing (to be followed by steady green at the proper time)
STOP	Give way to other aircraft and continue circling
Taxi clear of the runway in use	Airport unsafe, do not land
Return to starting point on airport	Not applicable
Exercise extreme caution	Exercise extreme caution

Operating Checklists — N73146

Start

Before Start	
Preflight inspection	COMPLETE
Passenger briefing	COMPLETE
Brakes	TEST and SET
Seats, belts, harnesses	SECURE
Fuel valve	BOTH
Radios, electrical equipment	OFF
Circuit breakers	CHECK IN
Beacon switch	ON
Engine Start	
Mixture	RICH
Carburetor heat	COLD
Prime	AS REQUIRED
Throttle	OPEN 1/8 INCH
Master	ON
Propeller area	CLEAR
Ignition switch	START
Release when engine starts	
Oil pressure	CHECK
If no pressure in 30 seconds, shutdown	
Mixture	GROUND LEAN
Before Taxi	
Avionics	ON
Headset	ON
Flaps	RETRACT
Transponder	VERIFY ALT
Weather	OBTAIN
Altimeter	SET
EFB Setup	AS DESIRED
Navigation, landing lights	ON

Run-up

Instruments	CHECK and SET
VOR check	IF NEEDED
Brakes	SET
Doors and windows	CLOSED, LOCKED
Flight controls	FREE and CORRECT
Fuel valve	BOTH
Mixture	RICH (below 3000 feet)
Throttle	1700 RPM
Magnetos	CHECK
Max drop 125 RPM, max diff. 50 RPM	
Engine gauges, ammeter	CHECK
Vacuum gauge	CHECK
Gyroscopic instruments	CHECK
Carburetor heat	TEST
Idle	TEST
Mixture	GROUND LEAN
Throttle friction	ADJUST

Before Takeoff

Radios, navigation, instruments	SETUP
Takeoff briefing	COMPLETE
Beacon, navigation, landing lights	ON
Carburetor heat	AS REQUIRED
Flaps	0-10°
Trim	TAKEOFF
Fuel valve	BOTH
Fuel quantity	CHECK
Mixture	RICH (below 3000 feet)

Climb

Airspeed	70-90 KIAS
Throttle	FULL
Mixture	RICH (lean above 3000 feet)

Cruise

Power	2200-2700 RPM (≤75%)
Trim	ADJUST
Mixture	LEAN (for max RPM)

Descent

Mixture	RICH
Power	AS DESIRED
Carburetor heat	AS REQUIRED

Before Landing

Fuel valve	BOTH
Mixture	RICH
Carburetor heat	ON
Airspeed	60-70 KIAS (flaps UP)
Flaps	AS DESIRED
Airspeed	55-65 KIAS (flaps DOWN)

Balked Landing

Throttle	FULL
Carburetor heat	COLD
Flaps	20°
Airspeed	55 KIAS
Flaps	RETRACT slowly

After Landing

Flaps	UP
Caburetor heat	OFF
Mixture	GROUND LEAN

Shutdown

Brakes	SET
Tach time	RECORD
Radios, electrical equipment	OFF
Mixture	CUT-OFF
Magnetos	OFF
Master	OFF

Engine Failures, Abnormal Landings

Engine Failure During Takeoff Run

Throttle	IDLE
Brakes	APPLY
Flaps	RETRACT
Mixture	CUT-OFF
Magnetos	OFF

Engine Failure Shortly After Takeoff

Airspeed	Flaps up: 65 KIAS Flaps down: 60 KIAS
Mixture	CUT-OFF
Fuel valve	OFF
Magnetos	OFF
Flaps	AS REQUIRED
Master	OFF

Engine Failure During Flight

Airspeed	65 KIAS
Carburetor heat	ON
Fuel valve	BOTH
Mixture	RICH
Magnetos	BOTH (START if prop stopped)
Primer	IN and LOCKED

Forced Landing With Engine Failure

Airspeed	Flaps up: 65 KIAS Flaps down: 60 KIAS
Mixture	CUT-OFF
Fuel valve	OFF
Magnetos	OFF
Flaps	AS REQUIRED 40° recommended
Master	OFF
Doors	UNLATCH BEFORE TOUCHDOWN
Touchdown	SLIGHTLY TAIL LOW
Brakes	APPLY HEAVILY

Precautionary Landing

Flaps	20°
Airspeed	60 KIAS
Selected field	FLY OVER Note terrain/obstructions. Retract flaps upon reaching a safe altitude and airspeed.
Radios, electrical switches	OFF
Flaps	40° (on final approach)
Airspeed	60 KIAS
Master	OFF
Doors	UNLATCH BEFORE TOUCHDOWN
Touchdown	SLIGHTLY TAIL LOW
Magnetos	OFF
Brakes	APPLY HEAVILY

Ditching

Radio	MAYDAY on 121.5 MHz Give location, intentions
Heavy objects	SECURE or JETTISON
Flaps	20°-40°
Power	300 FT/MIN DESCENT AT 55 KIAS If no power available, approach flaps up 65 KIAS or flaps 10° 60 KIAS
Strong wind, heavy seas:	
LAND INTO WIND	
Light wind, heavy swells:	
LAND PARALLEL TO SWELLS	
Doors	UNLATCH
Touchdown	LEVEL ATTITUDE at established rate of descent
Face	CUSHION at touchdown with coat
Airplane	EVACUATE
Life vests/raft	INFLATE

Landing Without Elevator Control

Trim	FOR LEVEL FLIGHT at 60 KIAS, flaps 20°
Approach	Control glide angle using power, do not change trim.
Flare	USE NOSE-UP TRIM & POWER
Touchdown	THROTTLE IDLE

Fires, Icing, Flat Tire, Electrical

Engine Fire During Start On Ground

Cranking	CONTINUE
If engine starts:	
Power	1700 RPM for a few minutes
Engine	SHUTDOWN
If engine fails to start:	
Throttle	FULL OPEN
Mixture	CUT-OFF
Cranking	CONTINUE for 2-3 minutes
Fire extinguisher	OBTAIN
Master	OFF
Magnetos	OFF
Fuel valve	OFF
Fire	EXTINGUISH Use fire extinguisher, seat cushion, wool blanket, or dirt. If practical, try to remove air filter if it is ablaze.
Both cases: inspect and repair damage before conducting another flight.	

Engine Fire in Flight

Mixture	CUT-OFF
Fuel valve	OFF
Master	OFF
Cabin heat & air	OFF (except overhead vents)
Airspeed	100 KIAS If fire is not extinguished, increase glide speed to find an airspeed which will provide an incombustible mixture
Forced Landing With Engine Failure checklist	EXECUTE

Electrical Fire in Flight

Master	OFF
All other switches (except magnetos)	OFF
Vents/cabin air/heat	CLOSE
Fire extinguisher	USE
If fire appears out and electrical power is necessary to continue flight:	
Master	ON
Circuit breakers	CHECK (do not reset faulty circuit)
Radio/electrical switches	ON One at a time with delay after each until short circuit is localized
Vents/cabin air/heat	OPEN (when fire completely extinguished)

Cabin Fire

Master	OFF
Vents/cabin air/heat	CLOSED (to avoid drafts)
Fire extinguisher	USE WARNING: After discharging extinguisher within a closed cabin, ventilate cabin
Land ASAP, inspect for damage	

Wing Fire

Nav lights	OFF
Pitot heat	OFF
NOTE: Sideslip to keep flames away from fuel tanks and cabin. Land ASAP using flaps only as required.	

Inadvertent Icing Encounter

Pitot heat	ON
Turn back or change altitude to obtain an OAT less conducive to icing.	
Cabin heat	FULL ON
Defroster	OPEN
Cabin air	ADJUST Maximize defroster heat and airflow
Throttle	OPEN
Carburetor/air filter icing	MONITOR Apply carb heat as required, lean mixture for maximum RPM if used continuously
Land	NEAREST AIRPORT With very rapid ice build-up, select suitable off-airport landing site
With ≥ 1/4 inch ice on the leading edges, prepare for significantly higher stall speed	
Flaps	LEAVE RETRACTED
Open left window and scrape ice from windshield, if necessary for visibility	
Forward slip if necessary for visibility	
Approach speed	65-75 KIAS Depending on level of accumulation
Landing	Perform in level attitude

Static Source Blockage

Alternate static source valve	PULL ON
Airspeed	Use calibration table in POH section 5

Landing With a Flat Main Tire

Approach	NORMAL
Touchdown	GOOD TIRE FIRST
Hold flat tire off ground as long as possible	

Over-Voltage Light Illuminates

Master	OFF (both sides)
Master	ON
If over-voltage light illuminates again:	
Flight	TERMINATE ASAP

Ammeter Shows Discharge

Alternator	OFF
Nonessential electrical equipment	OFF
Flight	TERMINATE as soon as practical