

Preflight

In-Cabin

Documents ARROW
Tach/Hobbs.....Recorded
Control Lock.....Removed
Emergency Equipment.....Check
Magnetos Off
Alternate Static.....Closed
Circuit Breakers..... In
Electrical Equipment..... Off
Bat. Switch..... On
Fuel Quantity Set
Flaps..... Full
Avionics/Fan..... On,Fan,Off
Bat. Switch..... Off

Dirty Work

Fuel Sump.....Both Clear
Dip Fuel.....Record
Engine Oil.....10-12 Qts
Engine Fuel Flush.....No Water
Tire Pres. Nose/Main.. 49/42 PSI

Exterior Inspection

Tiedowns/Chocks.....Out
Baggage Door.....Secured
Towbar.....Stowed

Before Start

Exterior Inspections..... Complete
Passenger Briefing.....Standard
Seats/Seat Belts..... Set, Secure
Parking Break.....Set
Circuit Breakers..... Check
Avionics..... Off
Fuel Selector Both
Cowl Flaps..... Open

Start

Carburetor Heat Cold
Throttle Open 1/2", Set
Propellor.....High RPM, Set
Mixture Rich, Set
Battery Master..... On
Beacon.....On
Ext. Lights On as Required
Prime As Required
Prop. Area Clear Prop
Ignition Start
Oil Pressure.....Green 30s/60s
Ammeter Check, On, Charge
Mixture.....Lean, Set
Avionics On, Set
Flaps Retract
Transponder.....ALT
Parking Break..... Off
Breaks Test

Ready to Taxi	
Garmin Database	Updated
ATIS	Copied
Transponder	Set
COM & NAV	Set
Initial Alt.....	Set
Initial Heading	Set
Exterior Lights	Set
Clearance	Recieved

Engine Run-Up	
Seats/Belts	Secure
Cabin Doors	Closed
Flight Controls	Free & Correct
Autopilot	Check, Off
Flight Instruments	Set
Fuel Quantity	Check
Cowl Flaps	Open
Fuel Selector	Both
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Mixture	Full Rich
Propellor	High RPM
Throttle	1700-2000 RPM
Oil Pressure/Temp	Green
Cyl. Head Temp	Green
Ammeter	Check
Annunciators	Check
Vacuum	4.6-5.4 Hg.
Magnetos	Check R & L (max drop 150; max Δ 50)
Propellor	Cycle 3X
Carb Heat	Hot
Throttle	Idle
Throttle	700 RPM
Carb Heat	Cold
Mixture	Lean for Taxi
Circuit Breakers	In
Alternate Static	Check

Before Takeoff

Doors & Windows Secured
Carb. Heat Off
Flaps 0-20°
Trim Set
Cowl Flaps Full Open
Lights As Req.

Departure Briefing

Takeoff Distance Briefed
Terrain & Obstacles Briefed
Takeoff Minimums Briefed
Departure Procedure Briefed

Abnormal Operations

Rejected Takeoff Briefed
Engine Power Loss Briefed
(below & above ≈ 600' AGL)

Takeoff

Confirm Runway # Confirmed
Target Airspeed 53-78 KIAS
Mixture Rich/Target EGT
Carb Heat Cold
Throttle Full
Rotate 70 KIAS
Flaps Retract at 70 KIAS

IF I LOSE THE ENGINE,
I WILL PUSH IMMEDIATELY!

Enroute Climb

Target Airspeed 87-96 KIAS
Power 23" /2450 RPM
Prop As Req.
Mixture Rich
Cowl Flaps As Req.

Cruise

Target Airspeed 87-96 KIAS
Power ... 15"-23" /2200-2450 RPM
Prop As Req.
Mixture Leaned
Trims As Req.
Cowl Flaps As Req.

Descent

Fuel Selector Both
Cowl Flaps As Req.
Rudder Trim Reset
Mixture Rich
Carb Heat As Req.
Power As Req.
ATIS Copied
Arrival & Approach Briefed
Terrain & Taxi Briefed
Specials Briefed

Before Landing	
Seat & Belts.....	Secure
Fuel Selector	Both
Mixture	Rich
Propellor	High RPM
Cowl Flaps	As Req.
Rudder Trim	Neutralize
Ext. Lights	As Req.
Pitot Heat	As Req.

Normal Landing	
Airspeed Flaps Up	70-78 KIAS
Wing Flaps	0 to 40°
Airspeed Flaps Down .	61-70 KIAS

After Landing	
Flaps	Full Retract
Cowl Flaps	Open
Carb Heat	Cold
Mixture	Lean for Taxi
Lights	As Required

Securing Aircraft	
Hobbs & Tach	Record
Lights	Off
Avionics	Off
Throttle	700 RPM
Mixture	Idle Cutoff
Magnetos	Off & Pull Key
Master Switch	Off
Position Plane	Chocks
Cowl Flaps	Closed
Parking Break	Set

V-Speeds	
V_{BG} flaps Up/Down	70/65
V_R (flaps 0°/25°)	60/50 KIAS
V_X sea/10K	59/63 KIAS
V_Y sea/10K	80/63 KIAS
V_A	89-110 KIAS
V_{S_0}/V_{S_1}	48/53 KIAS

Electrical Fire (Smoke in Cabin)

Master switch off
Avionics master.....off
Electrical switches off

If no smoke:

Circuit breakers note tripped
Circuit breakers.....off
Master switch on

If no smoke:

Avionics master on

Alternator Failure

Verify failure
Reduce electrical load as much as possible
Alt circuit breakerscheck
Alt switch.....off, wait, then on

If no output:

Alt switch off
Reduce electrical load and land as soon as practical

Note: Checklist is a WIP. Missing emergency procedures (like engine failure) as per 14 CFR § 91.503.

Table 1: Rate of climb/descent (ft. per min)

ft/NM	Ground speed (knots)					Angle
	60	75	90	105	120	
210	210	265	320	370	425	2.0°
318	318	398	478	557	637	3.0°
530	530	665	795	930	1065	5.0°
745	745	935	1120	1305	1490	7.0°

Table 2: Additional runway length required to clear low, close-in obstacle

	Climb Angle		
	745'/NM	530'/NM	318'/NM
200' obstacle	1,224'	1,720'	2,867'
150' obstacle	816'	1,147'	1,911'
100' obstacle	408'	574'	956'

Note:

- Assumes takeoff performance data is based on clearing a 50' obstacle.
- Subtract obstacle's distance from runway end from required runway length.
- Return back to the departure briefing.

Table 3: Archer flight maneuver entry speeds at 2,150 lbf

Maneuver	KIAS
Steep Turns	100
Steep Spiral	90
Chandelles	100
Lazy Eights	100
Eights on Pylons	100

Note:

- Design maneuvering speed (V_A) at 2,150 lbf gross weight is ≈ 102.5 KIAS.
- Wings-level best glide speed (V_{bg}) at 2,150 lbf gross weight is ≈ 69 KIAS.

Table 4: Speed versus pivotal altitude at 100' MSL elevation

Ground speed (knots)	Approximate pivotal pltitude (MSL)
80	650'
85	750'
90	800'
95	900'
100	1,000'
110	1,150'
115	1,250'
120	1,350'