

Preflight

Documents ARROW
Tach/Hobbs Recorded
Control Lock Removed
Emergency Equipment List
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

Exterior Inspection

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

Before Start

Tiedowns/Chocks Out
Towbar Stowed
Baggage Door Secured
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
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
Clearance	Recieved
Exterior Lights	Set

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
<i>Runup Flow</i>	
Mixture	Full Rich
Throttle	1700-2000 RPM
Oil PressureTemp.....	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, 700/Carb In
Mixture	Lean for Taxi
Circuit Breakers	In
Alternate Static	Check

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_{S0}/V_{S1} 48/53 KIAS

Before Takeoff

Doors & Windows Secured

Carb. Heat Off

Flaps.....Set

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

Targ. Airspeed.....53-78 KIAS

Flaps 0-20

Mixture Full Rich/Target EGT

Carb Heat Cold

Throttle Full Power

Rotate 70 KIAS

Flaps Retract at 70 KIAS

IF I LOSE THE ENGINE,
I WILL PUSH IMMEDIATELY!

Enroute Climb

Targ. Airspeed.....87-96 KIAS

Power.....23" /2450 RPM

Prop As Req.

Mixture..... Rich

Cowl Flaps As Req.

Cruise

Targ. 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, Arrival, & Approach Briefed
- Terrain & Taxi Briefed
- Specials..... Briefed

Before Landing	
Seat & Belts.....	Secure
Fuel Selector	Both
Mixture	Rich
Propellor	High RPM
JPI.....	Check
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

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'