Preflight

Dirty Work

Fuel Sump ..... Both Clear
Dip Fuel ..... Record
Engine Oil ..... 10-12 Qts

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

Exterior Inspection

Walk Around ..... Complete
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
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

Runup Flow

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

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, 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

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 breakers ..... check
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 $\approx$ 102.5 KIAS.
- Wings-level best glide speed (V_{bg}) at 2,150 lbf gross weight is $\approx$ 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'