Preflight

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

Exterior Inspection

Walk Around . . . . . Complete
Fuel Sump . . . . . Both Clear
Dip Fuel . . . . . Record
Engine Oil . . . . . Min. 10 Qts.
Engine Fuel Flush . . . . . No Water

Before Start

Preflight Inspection . . . . . Complete
Tiedowns/Chocks . . . . . Out
Towbar . . . . . Stowed
Baggage Door . . . . . Secured
Passenger Briefing . . . . . Standard
Seats/Seat Belts . . . Adj. & Secure
Parking Break . . . . . Set
Circuit Breakers . . . . . In
Avionics . . . . . Off
Fuel Selector . . . . . Both
Cowl Flaps . . . . . Open

Start

Throttle . . . . . Open 1/4"
Propellor . . . . . Full Forward
Mixture . . . . . Full Rich
Carburetor Heat . . . . . Cold
Battery Master . . . . . On
Beacon . . . . . On
Prime . . . . . As Required
Magnetos . . . . . Clear Prop, Start
Oil Pressure . . . . . Green in 30s
Ammeter . . . . . Check, On, Check
Ext. Lights . . . . . On as Required
Avionics . . . . . ON, Set
Flaps . . . . . Retract
Transponder . . . . . ALT
Parking Break . . . . . Off
Breaks . . . . . Test

After Start

Garmin database	Check
Garmin self-test	Check
ATIS	Copied
Transponder	Set
COM & NAV	Set
Initial altitude	Set
Initial heading	Set
Clearance	Recieved

Taxi

Exterior lights	set
Brakes	check
Heading indicator	$\pm 5^\circ$
Attitude indicator	check
Turn coordinator	check

Engine Run-Up

Seats/Belts	Secure
Cabin Doors	Closed
Flight Controls	Free & Correct
Autopilot	Check, Off
Flight Instruments	Check & Set
Fuel Quantity	Check
Fuel Selector	Both

Runup Flow

Mixture	Full Rich
Throttle	Approx. 1700 RPM
JPI	normalize
Oil PressureTemp	Green
Cylinder Head Temp	Green
Ammeter	Check
Annunciators	Check
Vacuum	Green
Magnetos	Check R & L (max drop 150; max Δ 50)
Carb Heat	Check
Propellor	Cycle 3X
Circuit Breakers	In
Alternate static	Check
Throttle	Idle
Mixture	Lean for Taxi

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

Before Takeoff

Doors & Windows	Secured
Carburetor heat	Off
Flaps	Set
Trim	Set
Cowl Flaps	Full Open
Lights	As Desired

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
Mixture	Full Rich or Target EGT
Throttle	Full Power
Rotate at speed	70 KIAS
Adjust Trim	As Required

IF I LOSE THE ENGINE,
I WILL PUSH IMMEDIATELY!

Enroute Climb

Airspeed	120-140 KIAS
Power	23"/2450 RPM
Throttle	Full Power
Mixture	Rich
Cowl Flaps	Open as Req.

Cruise

Power	15"-23"/2200-2450 RPM
Mixture	Leaned
Trims	Adjust
Cowl Flaps	Open as Req.

Descent

Fuel Selector	Both
Mixture	Rich
Power	As Desired
Carb Heat	As Req.
ATIS, Arrival, & Approach	Briefed
Terrain & Taxi	Briefed
Specials	Briefed

Before Landing

Seat & Belts	Secure
Fuel Selector	Both
Mixture	Rich
Propellor	High RPM
Cowl Flaps	Closed
Carb. Heat	If JPI
Rudder Trim	Neutralize

Normal Landing

Airspeed	80 KIAS flaps up
Wing Flaps	0 to 40
Airspeed	70-80 KIAS flaps down

After Landing

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

Shutdown

Hobbs & Tach	Record
Lights	Off
Avionics	Off
Throttle	700 RPM
Mixture	Idle Cutoff
Magnetos	Off & Pull Key
Master Switch	Off
Position Plane	Chocks
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 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'