

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
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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 $\Delta$ 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
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'