Preflight — Seminole PA44-180

1.	**Fuel Level**	**30 Gal each Min**
2.	Hobbs Book	**CHECK #'s**
3.	Paperwork	**ARROW-AV1ATE**
4.	Seat Height	**SET UP**
5.	Control Lock	**REMOVE**
6.	Instruments	**0's, INOP FLAGS**
7.	Fuel Selectors	**ON**
8.	Gear Lever	**GEAR DOWN**
9.	Emergency Gear	**LEVER SECURE**
10.	Trim Elevator	**SET "NEUTRAL"**
11.	Trim Rudder	**SET "NEUTRAL"**
12.	Flaps	**DOWN**
13.	Static Drain	**PRESS/DRAIN**
14.	Battery Master	**ON**
15.	Fuel Qty	**CHECK**
16.	Turn Coordinator	**LISTEN**
17.	Gear Indicators	**3 GREEN LIGHT**
18.	Beacon/Nav/Lights	**CHECK LIGHTS**
19.	Annunc/Stall Horn	**TEST LIGHTS**
20.	Heater Overheat	**PRESS TO TEST**
21.	Pitot Heat	**CHECK**
22.	Master	**OFF**
23.	Preflight	**WALK AROUND**
	☐ Fuel Level	**VISUAL CHECK**
	☐ Fuel Sumps	**DRAIN X SUMPS**
	☐ Oil	**4-6 Quarts**
	☐ Static Port	**CHECK**
	☐ 360 Walk	**TIE-DOWNS**

Passenger Briefing Checklist

1.	Seat Belts	**EXPLAIN and ON**
2.	Door / Exiting Plane	**EXPLAIN**
3.	First Aid/Fire Ext	**LOCATE**
4.	Scanning for Traffic	**ASSIST**
5.	Exchange Controls	**EXPLAIN**
6.	Seat Rail Locks	**CHECK**

Engine Start Checklist

1.	Brakes	**SET**
2.	Electrical	**ALL OFF**
3.	Circuit Breakers	**ALL IN**
4.	Fresh Air Fan	**OFF**
5.	Flaps	**UP**
6.	Mixture(s)	**FULL RICH**
7.	Carburetor Heat(s)	**OFF**
8.	Propeller (both)	**FULL FWD**
9.	Cowl Flap (both)	**OPEN**
10.	Lights (NAV)	**OFF for day**
11.	Master Switch	**ON**
12.	Alternators	**ON**
13.	Beacon	**ON**
14.	Throttle (both)	**CLOSED**
15.	Fuel Pump (both)	**ON/CHECK/OFF**
16.	Prime (both)	**AS REQ'D (4-10)**
17.	Primer (both)	**BOTH LOCKED**
18.	Magnetos L & R	**BOTH ENGINES ON**
19.	Area	*******"CLEAR"*******
	LEFT engine then **RIGHT** engine	
20.	Throttle	**CYCLE 2 TIMES**
21.	Throttle	**1/4 inch OPEN**
22.	CRANK ENGINE	**10 second max**
23.	Throttle	**800-1000 RPM**
24.	Mixture	**LEAN for TAXI**
25.	Oil Pressure	**30 Sec. GREEN**
26.	Ammeter	**Less than 20Amp**
27.	Fuel Selectors	**CROSS FEED BOTH**
28.	Fuel Selectors	**ON after 10 sec**
29.	Avionics Master	**ON**
30.	Instruments	**DG to Compass**
31.	Radios	**ON, TUNE, TEST**
32.	Transponder	**1200 "STANDBY"**
33.	ATIS	**SET Altimeter**

Contact GROUND for Taxi to Runway

While Taxi Checklist

Brakes	**TEST both sides**
Verify Instruments	**6 PACK CHECK**
	Compass/TC/DG
Position at Run-up	**INTO WIND**

Run-Up Checklist

1.	Brakes	**SET**
2.	Doors/Windows	**CLOSED**
3.	Belts/Harness	**SECURED**
4.	Controls	**CHECK**
5.	Trim	**SET NEUTRAL**
6.	Instruments	**SET AI / DG**
7.	Alt Static	**PULL CHECK VSI**
8.	Primers	**BOTH LOCKED**
9.	Fuel Selectors	**BOTH ON**
10.	Blast Area	**CLEAR BEHIND**
11.	Throttles	**BOTH 2000 RPM**
12.	Mixture LEFT/RIGHT	**100 rich of Peak**
13.	Propellers	**BOTH 1800 RPM**
14.	Propellers	**BOTH FULL FWD**
15.	Engine Instruments	**ALL GREEN**
16.	Mag LEFT/RIGHT	**175 Max, 75 Diff**
17.	Carb Heat LEFT/RIGHT	**CHECK**
18.	Throttles	**BOTH 1500 RPM**
19.	Props LEFT/RIGHT	**3 times, -300RPM**
20.	Ammeters	**+CHARGING**
21.	Vac/OilPress/Temp	**ALL GREEN**
22.	Throttle	**800-1000 RPM**
23.	Cowl Flaps	**OPEN**
24.	Fuel Pumps	**ON**
25.	Auto-Pilot	**OFF**
26.	*IFR: Pitot Heat*	***Turn On for IFR***

Ready for Takeoff Checklist

Lights	**STROBE/LANDING LITES**
Camera	**TRANSPONDER "Alt"**
Action	**Note TAKEOFF TIME**
Review	**Vspeeds**
Review	**Take Off Engine Loss**

Contact Ground or Tower

Airspeeds

V1	abort takeoff	53 **KIAS** (50% Rwy)
Vs0	stall w/Flaps	55 **KIAS**
Vmc	min controllable	**56 KIAS**
Vs1	stall clean	57 **KIAS**
Vr	rotate	**75 KIAS**
Takeoff Climb		**88 KIAS**
Vx/Vxse	best angle	82 **KIAS**
Vsse	safe speed engine	82 **KIAS**
Vy/Vyse	best rate	88 **KIAS** Blue Line
Vbest	glide	95 KIAS
Vfe	flaps extend	111 **KIAS** full flaps
Va	maneuvering	112 **KIAS**- 2700 lbs
Vno	max cruise	169 **KIAS**
Vne	never exceed	202 **KIAS**
Vlo	gear operation	109up 140down **KIAS**
Vle	gear extended	140 **KIAS**
Landing: 15" MP		**90 base/final–80 over #'s**

Takeoff (Normal)

Trim	SET TAKEOFF
Flaps	UP
Vrotate	**75 KIAS Vrotate**
Climb Out	**88 then 100KIAS >1000agl**
Landing Gear	UP when Clear

Short Field Takeoff

Flaps	**UP** (25 DEGS optional)
Vrotate	**70 KIAS Vrotate**
Vx	**75 Flaps 25° (82 Flaps Up)**

Retract Flaps to 10°, Gear up on +Rate

Climb Checklist

1.	Landing Gear	**UP**
2.	Throttles	**24" MP**
3.	Propeller	**2500 RPM**
4.	**88 KIAS then 105 KIAS > 1000' agl**	
5.	Fuel Pumps	**OFF (one at time)**

Cruise Checklist

1.	Lean Mixture	**AS REQUIRED**
2.	Throttles	**17" MP – FULL**
3.	Propeller	**2100-2500 RPM**
4.	Altimeter/DG	**SET**
5.	Landing Light	**OFF**
6.	Cowl Flaps	**AS RQD**

Pre Landing Checklist

C - Cowl Flaps	CLOSE
C - Carb Heat	ON
G - Gas	ON BOTH
U - Undercarriage	GEAR DOWN
M - Mixture	RICH if Necessary
P - Props	FULL FWD
P - Pumps	FUEL PUMPS ON
S - Switches	Landing Light ON
S - Safety	Seat Belts ON

Landing

Downwind	**100 KIAS @ 18" MP**
Abeam #'s	**90 KIAS @ 15" MP**
Flaps	**10° (1 Notch)**
Over the #'s	**80 KIAS 25° FLAPS**
Short Field	75 KIAS FULL FLAPS

*Not full stall landing
*Gusty or Cross Winds - No Flaps, SLIP
*ILS: Gear at FAF, SE use 18"-20" at FAF

Go Around (ABORTED LANDING)

Throttle	**FULL THROTTLE**
Carb Heat	**OFF**
Flaps	**Retract to 25°**
Airspeed	**Establish 75+ KIAS**
Landing Gear	**UP when clear**
Flaps	**Retract SLOWLY**

Clear Runway Checklist

Trim	**SET "TAKEOFF"**
Flaps	**UP**
Fuel Pumps	**OFF**
Heater Switch	**FAN**
Carb Heat	**OFF**
Landing Light	**OFF**
Transponder	**1200 "STDBY"**
Cowl Flaps	**OPEN**
Mixtures	**LEAN for Taxi**
IFR: Instruments	***CHECK 6 pack***

Shutdown Checklist

Electrical	**AVIONICS OFF**
Throttles	**IDLE**
Mixtures	**IDLE CUTOFF**
Magnetos	**OFF**
Master	**OFF**
Alternators	**OFF**
Control Lock	**SECURE**
Tiedowns	**SECURE, WINDOWS,…**

CLOSE FLIGHT PLAN

Emergency Procedures

Engine Failure Seminole

1. **Airspeed** Pitch 88 KIAS Blue Line
2. **Bank** Into Inop engine 3-5°
3. **Rudder** Ball Half in Half Out
4. **Mixture** Full Rich
5. **Prop** Full Forward
6. **Throttle** Full Forward
7. **Flaps** UP
8. **Gear** UP
9. **Identify** Dead Foot, Dead Engine
10. **Verify** Close Throttle Inop Engine

Decide Fix or Feather

Go to RECOVERY Procs IF ALTITUDE OR Feather and Secure

Inop Engine Prop FEATHER (>950rpm)
Inop Engine Mixture CUTOFF/IDLE
Go to SECURE Inoperative Engine

RECOVERY Procedures (Inop Engine)

1. **Trim** As RQD
2. **Fuel Pumps** ON
3. **Magnetos** CHECK
4. **Oil Pres/Temp** CHECK
5. **Fuel Pressure** CHECK
6. **Fuel Quantity** CHECK
7. **Throttle** HALF OPEN
8. **Carb Heat** ON
9. **Primers** LOCKED
10. **Cowl Flaps** As RQD
11. **Fuel Selector** ON

Secure Inoperative Engine

1. Trim As RQD
2. Throttle IDLE
3. Propeller FEATHER before 950rpm
4. Mixture IDLE CUTOFF
5. Magnetos OFF
6. Fuel Pump OFF
7. Alternator OFF
8. Fuel Selector OFF (Inop Engine)
9. Fuel Selector X-feed (Op Engine)
10. Cowl Flaps CLOSED
11. Electrical Unnecessary Items OFF
    Landing light, Fresh Air fan, …

Engine Failure Before Rotation

1. **Throttles CLOSED**
2. **Stop STRAIGHT AHEAD**
3. **If not enough runway to stop**
   - **Master Switch OFF**
   - **Fuel Selectors OFF**
   - **Stop Straight Ahead**
4. **Evacuate Aircraft**

Engine Failure After Rotation

1. **Adequate Runway Remains**
   - **Throttles CLOSE**
   - **Flaps AS RQD**
   - **Land/Stop Straight Ahead**
2. **Not Enough Runway Remains**
   - **Perform In-Flight Engine Failure**

Engine Fire on Ground

Starter CONTINUE CRANKING
Engine has NOT started
- **Mixture IDLE CUTOFF**
- **Throttle OPEN**

Engine HAS started
- **Continue running to Pull Fire In**

If Fire Continues
- **Fuel Selectors OFF**
- **Mixture OFF**
- **Master OFF**
- ***Extinguish the Fire***

Engine Fire in Flight

Mixture IDLE CUTOFF
Throttle CLOSED
Fuel Selector OFF
Cabin Air/Heat CLOSE VENTS
Cowl Flaps OPEN
Flaps FULL FLAPS
Proceed with Emergency Descent

Electrical Fire in Flight

Master OFF
Avionics OFF
All Switches OFF
Vents/Cabin Air CLOSED
Fire Extinguisher ACTIVATE
Fire EXTINGUISHED
Vents/Cabin Air VENT CABIN
If electrical power is necessary, then:
- **Master ON**
- **Circuit Breakers CHK, do not reset**
- **Radios OFF**
- **Avionics Master ON**
- **Radios/Switches ONE AT A TIME**

Air-Start (unfeather procedure)

Fuel Selector ON
Carb Heat OFF
Mixture FULL Rich
Prop FULL FWD
Magnetos ON
Fuel Pump ON
Throttle Cycle 2 times, then 1/4"
Starter CRANK (8 seconds max)
Throttle Wait until un-Feathered
Throttle 15" MP Until CHT Green
Alternator ON
Avionics ON
Cruise Checklist PERFORM

Landing Gear Failure

Nav Lights **OFF**
Master Switch **ON**
Circuit Breakers **CHECK IN**
Alternators **ON**
Ammeter **CHECK**
Gear Lever **Cycle / Down**
Gear Indicator Bulbs **CHECK / SWAP**
Airspeed **BELOW 100 KIAS**
Emergency Ext Knob **PULL OUT**
Indicator Lights **GREEN**
Emergency Ext Knob **LEAVE OUT**

Prop Overspeed

Throttle **RETARD**
Oil Pressure **CHECK**
Prop Control **Decrease to Feather Detent**
Do NOT Feather
Set RPM if any control
Airspeed **REDUCE**
Throttle **AS RQD < 2700RPM**
Engine Shutdown **If Necessary**
Land **ASAP**

Alternator Light Illuminate

Ammeters **CHECK 0 on BOTH**
Reduce Electrical Loads **AS RQD**
Inop Alt Switch **TURN IT OFF**
Circuit Breakers **CHECK**
Each Alt Switch **ON 1 at a time**
Ammeter with least Output **ALT-> ON**
Other Alternator **OFF**
Electrical Load **60 Amps Max**

Emergency Descent

Throttles **Closed**
Props **FULL FORWARD**
Mixtures **RICH**
Cowl Flaps **CLOSED**
Gear Lever **DOWN**
Airspeed **120 KIAS (140 MAX)**
Resume: Pitch up, Gear on Pos Rate, power
Clearing Descending Turns

Single Engine Approach

When Certain of Making the Field
- Gear Down **BEFORE LANDING**
- Flaps **10deg**

When Landing Assured
- Airpseed **90 KIAS**
- Flaps **25° (2nd notch)**

Heater Operation

Air Intake **OPEN**
Heater Temp **SET**
Heater Switch **ON**

Heater Shutdown

(on ground) Air Intake Open, Heater Switch FAN
(in air) Air Intake Open, Heater Switch OFF
Let cool down 2 minutes
Heater Switch OFF, Air Intake CLOSED

SPIN RECOVERY

Throttles IDLE
Rudder OPPOSITE Rotation
Elevator RELAESE BACK PRESSURE
Elevator FULL FORWARD
Ailerons NEUTRAL
Rotation STOPPED
Controls NUETRALIZE
Recover SLOWLY

Entry Door Open in Flight

Land and fix (or go read POH)

	Wx	Twr/Ctaf	Gnd		Wx	Twr/Ctaf	Gnd
KBJC	126.25	118.6	121.7	KAPA	120.3	118.9	121.8
KLMO	120.0	122.975		KGXY	135.175	122.8	
KEIK	133.825	123.0		KBDU	118.825	122.725	
KFNL	135.075	118.4	121.65	Practice	123.175		

All Maneuvers Fuel Pumps ON, > 3000agl

Steep Turns: 17" MP, 2500RPM, 115 KIAS

Slow Flight: 13"MP, Full Fwd, 65 KIAS
Gear **DOWN**, Flaps **DOWN**
Then 15"-21" MP as RQD

Power-Off Stalls: Full Fwd, 13"MP then Idle
Gear **DOWN**, Flaps **DOWN**
Recover: 82 then 88 KIAS, Get Pos Rate
Retract Flaps to 10° Immediate on Pos Rate Gear UP, Flap UP

Power-On Stalls: 13"MP, 2500RPM,
Gear **UP**, Flaps **UP**
Slow to 75-80 KIAS,
then 17"MP, Pitch up 1kt/sec
Recover: 82 then 88 KIAS, Get Pos Rate
On Pos Rate Gear UP

Accellerated Stalls: 18"MP, 2500RPM, 110-120kts
Flaps UP, Gear UP
power to idle, 45° bank, pull hard stall

E-Descent: Idle, 45°bank, Gear DOWN, 110 KIAS

Vmc Demo:
- Gear/Flaps **UP/UP, Props FULL**
- Airspeed **Slow to 88-100 KIAS (13"MP)**
- Throttle **LEFT IDLE, RIGHT FULL**
- Pitch UP **Pitch UP 1 knot per second**
- Block Rudder @ **80 KIAS**

Recover at first indication of Yaw or Stall:
- Engine power REDUCE to IDLE on OE
- Reduce Angle of Attack, PITCH DOWN
- **Advance power on Op Engine ONLY**
- Accelerate **Vyse (88 KIAS)** +/- 5
- Heading Within 20° of original

Drag Demo: >4000 (don't descend below 3000agl)
Flaps UP, **Gear UP**, Both 15"MP cool-down
Power **ZeroThrust / Full Power**
Pitch for **88KIAS**, note VSI as starting reference
Pitch for **78**, note VSI. Pitch for **98**, note VSI
Resume 88KIAS. **Gear DOWN**, note VSI
Flaps DOWN, note VSI. **Gear UP**, note VSI
Flaps UP, note VSI. Inop engine **IDLE**, note VSI