



**SOSU**



**Quick Reference**

**Handbook**

**Piper PA-44-180**

**Southeastern Oklahoma State University  
Piper PA-44-180 Quick Reference Handbook**

**Record of Changes:**

Revision 1.0	7/18/2023	Original Version
Revision 1.1	9/27/2023	Initial Release
Revision 2.0	2/09/2024	See Master Record of Changes

The procedures herein are an abbreviated form of those found in the FAA approved airplane flight manual and pilots operating handbook. This handbook does not supersede those documents in which it is based on.

Any questions or comments relating to this document should be directed to the Chief Pilot at [KThomas@se.edu](mailto:KThomas@se.edu) or [LComeau@se.edu](mailto:LComeau@se.edu)

## Normal Checklist

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**AIRSPEEDS FOR NORMAL OPERATIONS**

**Takeoff Rotation**

Normal .....	75 KIAS
Short Field, Flaps .....	70 KIAS

**Climb**

Best Rate of Climb.....	88 KIAS
Best Rate of Climb One Engine Inoperative .....	88KIAS
Best Angle of Climb .....	82 KIAS

**Landing Approach**

Normal Approach Flaps Up.....	89-70 KIAS
Normal Approach Flaps Down .....	75/85 KIAS
Short-Field Approach Flaps Down.....	75 KIAS

**Go Around**

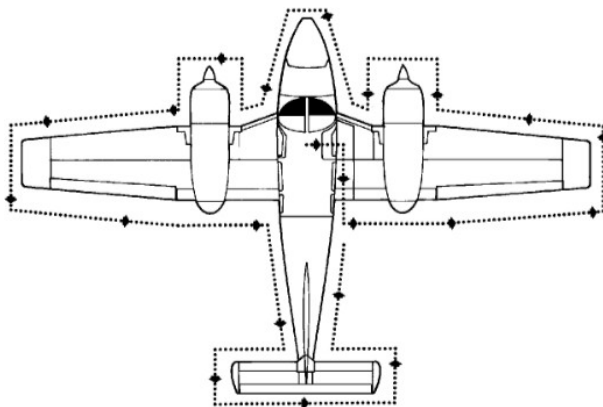
Full Power.....	88 KIAS
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**Maximum Operating Maneuvering Speed**

3800 .....	135 KIAS
2870 .....	115 KIAS

**Maximum Demonstrated Crosswind Velocity**

Takeoff or Landing .....	18 KNOTS
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**PREFLIGHT INSPECTION**

**Cockpit**

- Control Wheel ..... Release Restraints
- Flight Controls..... Free and Correct
- Parking Brake ..... SET
- Static System ..... DRAIN
- Alt Static Source ..... CLOSED
- L/R Magneto Switches ..... OFF
- L/R Fuel Pump Switches..... OFF
- Gear Lever..... DOWN
- Throttles ..... IDLE
- Mixtures ..... CUTOFF
- Cowl Flaps ..... OPEN
- Stab & Rudder Trim ..... NEUTRAL
- Fuel Selectors ..... ON
- All Electrical Switches ..... OFF

**PREFLIGHT INSPECTION – (Continued)**

Battery Master Switch ..... ON  
Fuel QTY Indications..... CHECK  
Gear Position Indications..... 3 GREEN  
Pitot Heat..... CHECK  
External Lights ..... CHECK  
Battery Master Switch ..... OFF  
Emergency Exit..... CHECK  
Wing Flaps ..... EXTEND  
Windows ..... Check/ Clean  
Papers..... A.R.O.W  
Baggage..... SECURE

**Right Wing**

Fuel Sump Drains ..... DRAIN  
Surface Condition ..... CLEAR  
Flap ..... CHECK  
Ailerons ..... CHECK  
Static Wicks..... CHECK  
Wing Tip & Lights ..... CHECK  
Scupper Drain..... CLEAR  
Fuel Vent ..... CLEAR  
Tie Down..... REMOVE  
Nacelle Fuel Filler Cap..... CHECK & SECURE  
Engine Oil & Cap ..... CHECK & SECURE

**PREFLIGHT INSPECTION – (Continued)**

Propeller & Spinner..... CHECK  
 Air Inlets ..... CLEAR  
 Cowl Flaps ..... CHECK  
 Main Gear Strut & Tire ..... CHECK  
 Brakes ..... CHECK  
 Chocks .....REMOVED

**Nose**

General Condition ..... CHECK  
 Windshield ..... CLEAN  
 Battery Vents ..... CLEAR  
 Landing Lights ..... CHECK  
 Heater Air Inlet..... CLEAR  
 Chocks .....REMOVED  
 Nose Gear Strut and Tire ..... CHECK

**Left Wing**

Surface Condition..... CLEAR  
 Main Gear Strut and Tire.....CHECK  
 Brakes .....CHECK  
 Chocks .....REMOVED  
 Cowl Flaps ..... CHECK  
 Engine Oil & Cap ..... CHECK  
 Propeller & Spinner .....CHECK

**PREFLIGHT INSPECTION – (Continued)**

Air Inlets.....	CLEAR
Nacelle Fuel Filler Cap.....	CHECK
Scupper Drain.....	CLEAR
Fuel Vent .....	CLEAR
Tie Down.....	REMOVE
Stall Warning Vanes .....	CHECK
Pitot Static Head .....	CLEAR
Wing Tip & Lights .....	CHECK
Ailerons .....	CHECK
Wing Flaps .....	CHECK
Static Wicks.....	CHECK

**Fuselage and Empennage**

Condition .....	CHECK
Emergency Exit.....	CHECK
Antennas .....	CHECK
Fresh Air Inlet .....	CLEAR
Stabilator & Trim Tab .....	CHECK
Rudder & Trim Tab.....	CHECK
Static Wicks.....	CHECK
Tie Down.....	REMOVE
Baggage Door.....	CLOSED
Cabin Door .....	CHECK



**BEFORE STARTING ENGINE**

- Preflight Inspection..... COMPLETE
- Cabin Door ..... CLOSE & LATCH
- Seats & Seat Belts ..... ADJUST & SET
- Parking Brake ..... SET
- Gear Lever ..... DOWN
- Throttles ..... IDLE
- Propellers ..... FULL FORWARD
- Mixtures ..... CUTOFF
- Friction Handle ..... ADJUST
- Alt-Air ..... CLOSE
- Cowl Flaps ..... OPEN
- Stabilator & Rudder Trim ..... SET
- Fuel Selectors ..... ON
- L/R Alternator Switches ..... ON
- Emergency Battery..... ARM
- Verify E-Volts is >23.3V**
- Avionics Master Switch..... OFF
- Strobe Lights.....FIN STROBE
- All Other Electric Switches..... OFF
- Cabin Heat Switch ..... OFF
- Circuit Breakers ..... CHECK

**STARTING ENGINE**

- Battery Master Switch.....ON
- Gear Position Indications ..... 3 GREEN
- CAS Messages ..... Consider Any Illuminated
- PFD Annunciations ..... Consider Any Illuminated
- Throttles ..... OPEN ¼ INCH
- Propellers ..... FULL FORWARD

**START LEFT ENGINE FIRST**

- \*Fuel Pump.....ON
- \*L/R Magneto Switches .....ON
- \*Mixture .....PRIME then CUTOFF

*Wait for fuel flow to reach approximately 3 GPH.*

- \*Propeller Area..... CLEAR
- \*Starter ..... ENGAGE
- \*Mixture ..... ADVANCE
- \*Throttle..... 1000 RPM
- \*Oil Pressure ..... CHECK

**\*REPEAT FOR RIGHT ENGINE**

- Fuel Pumps .....OFF
- Ammeter/ Voltmeter..... CHECK

**BEFORE TAXI**

- Battery Master.....VERIFY ON
- Fuel Selectors..... BOTH XFEED
- Avionics Master Switch.....ON
- MFD Splash Screen..... CHECK DATES
- Fuel Totalizer..... FOB SYNC or Enter Manually
- Wing Flaps..... RETRACT
- CAS/ PFD Messages.....Consider Any Illuminated  
*System messages may be present after startup.*
- ANN Test Softkey.....PRESS
- Standby Flight Instruments..... NO RED X's
- Altimeters/ STBY Altimeter ..... SET
- Radios & Avionics ..... CHECK & SET
- Lights ..... AS REQUIRED
- Cabin Heat ..... AS REQUIRED
- Autopilot.....Verify Self-Test Complete
- Fuel Selectors..... VERIFY ON
- Passenger Briefing ..... COMPLETE
- Parking Brake..... RELEASE

**TAXIING**

- Throttles.....APPLY
- Brakes ..... TEST
- Steering ..... CHECK
- Instruments ..... CHECK

**GROUND CHECK**

- Parking Brake ..... SET
- Mixtures ..... FULL RICH
- Propellers ..... FULL FORWARD
- Engine Instruments ..... CHECK
- Throttles ..... 1500 RPM
- Propellers ..... FEATHER CHECK  
(Max drop 500 RPM)
- Throttles ..... 2000 RPM
- Magnetos ..... CHECK
- Maximum drop 175 RPM- Maximum difference 50 RPM**
- Alt Air ..... CHECK
- Throttles ..... 2200 RPM
- Propellers ..... EXERCISE  
(Max drop 300 RPM)
- Throttles ..... IDLE CHECK
- Fuel Pumps ..... ON
- Throttles ..... 1000 RPM
- Friction Handle..... SET

**BEFORE TAKEOFF**

- Flight Controls ..... FREE & CORRECT
- Flight Instruments ..... CHECK
- Engine Instruments ..... CHECK
- Fuel QTY ..... SUFFICIENT
- Propellers ..... FULL FORWARD

Mixtures ..... FULL RICH  
Alt Air ..... CLOSE  
Cowl Flaps ..... OPEN  
Stabilator and Rudder Trim ..... SET  
Fuel Selectors ..... ON  
CAS/PFD Messages ..... Consider Any Illuminated  
Transponder ..... SET  
Door ..... LATCHED  
Parking Brake ..... RELEASE  
Takeoff Briefing ..... COMPLETE

**PRE-TAKEOFF FLOW**

Fuel Selectors ..... ON  
Flaps ..... UP  
Cowl Flaps ..... OPEN  
Air Conditioner ..... OFF  
Lights ..... ALL ON  
Mixtures ..... AS REQUIRED  
Propellers ..... FULL FORWARD  
Fuel Pumps ..... ON

**TAKEOFF**

**Normal Takeoff**

- Wing Flaps..... 0°
- Stabilator & Rudder Trim..... SET
- Throttles.....FULL
- Rotation Speed ..... 75 KTS
- Climb Speed ..... 88 KTS
- Gear..... UP

**CLIMB (500 AGL)**

- Throttles..... 25” Hg
- Propellers..... 2500 RPM
- Mixtures ..... FULL RICH
- Airspeed ..... 105 KTS
- Cowl Flaps.....AS REQUIRED
- Fuel Pumps.....ON

**CRUISE**

- Throttles ..... SET
- Propellers ..... SET
- Fuel Pumps ..... OFF
- Mixtures ..... ADJUST
- Cowl Flaps .....AS REQUIRED
- Trim .....AS REQUIRED

**DESCENT**

- Weather .....OBTAIN
- Altimeter ..... SET
- Mixtures ..... AS REQUIRED
- Throttles..... AS REQUIRED
- Cowl Flaps..... AS REQUIRED

**APPROACH AND LANDING**

- Seats, Seatbelts, and Harnesses ..... UPRIGHT & SECURED
- Fuel Pumps.....ON
- Fuel Selectors.....ON
- Gear .....DOWN Below 140KIAS
- Gear Pos Indications ..... 3 GREEN
- Nacelle Mirror.....CHECK
- Mixtures ..... FULL RICH
- Propellers..... FULL FORWARD
- Alt-Air..... AS REQUIRED
- Autopilot..... DISCONNECTED

**NORMAL LANDING**

- Wing Flaps..... AS REQUIRED
- Airspeed..... 75-85 KIAS
- Trim ..... AS REQUIRED
- Throttles..... AS REQUIRED
- Touchdown..... MAIN WHEELS
- Braking ..... AS REQUIRED

**BASE AND FINAL CHECKS**

Mixture.....FULL RICH  
Propellers ..... FULL FORWARD  
Landing Gear.....3 GREEN & NOSEWHEEL IN MIRROR  
Fuel Pumps .....ON  
Seats & Seatbelts .....ON & SECURE

**GO AROUND**

Mixtures .....FULL RICH  
Propellers ..... FULL FORWARD  
Throttles .....FULL  
Attitude.....Positive Rate of Climb  
Wing Flaps ..... RETRACT  
Gear ..... UP  
Cowl Flaps .....AS REQUIRED

**AFTER LANDING**

Wing Flaps .....RETRACT  
Cowl Flaps ..... OPEN  
Alt-Air ..... CLOSE  
Fuel Pumps ..... OFF  
Lights.....AS REQUIRED  
Pitot Heat..... OFF  
Cabin Heat (If Running)..... FAN



**ENGINE SHUTDOWN & SECURING**

Cabin Heat ..... OFF

**RUN VENT FAN 2 MINUTES PRIOR IF CABIN HEAT ON**

Vent Fan ..... OFF

Avionics Master ..... OFF

Emergency Battery ..... OFF

L/R Alternator ..... OFF

L/R Fuel Pump ..... OFF

All Other Electrical Equipment ..... OFF

Throttles ..... IDLE

Mixtures ..... CUTOFF

L/R Magneto Switches ..... OFF

Interior/ Exterior Lights ..... OFF

Battery Master ..... OFF

Standby Flight Instruments ..... VERIFY SHUTDOWN

Wheel Chocks ..... PLACED

Tiedowns ..... SECURE

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### **Emergency Checklist**

Engine Failure in Flight.....	E-1
Engine Feathering & Securing.....	E-1
Unfeathering and Restart .....	E-2
Engine Fires .....	E-3
Landing Gear Malfunction .....	E-4

### **AIRSPEEDS FOR EMERGENCY OPERATIONS**

#### **Engine Inoperative**

<b>V<sub>MCA</sub></b> .....	<b>56 KIAS</b>
<b>V<sub>XSE</sub></b> .....	<b>82KIAS</b>
<b>V<sub>YSE</sub></b> .....	<b>88KIAS</b>
<b>Single Engine Approach</b> .....	<b>90KIAS</b>

#### **Maximum Operating Maneuvering Speed**

<b>3800</b> .....	<b>135 KIAS</b>
<b>2870</b> .....	<b>115 KIAS</b>
<b>Emergency Gear Extension</b> .....	<b>100 KIAS</b>
<b>Never Exceed</b> .....	<b>202 KIAS</b>

**ENGINE FAILURE IN FLIGHT**

Directional Control ..... MAINTAIN  
 Airspeed ..... 88 KIAS  
 Mixtures ..... FULL RICH  
 Propellers ..... FULL FORWARD  
 Throttles ..... FULL  
 Inoperative Engine ..... IDENTIFY & VERIFY

Fuel Quantity ..... CHECK  
*Crossfeed as Required*  
 Fuel Pump ..... BOTH ON  
 Mixtures ..... FULL RICH  
 Alt-Air ..... BOTH OPEN  
 Magnetos ..... CHECK  
 Oil Pressure & Temperature ..... CHECK

**ENGINE FEATHERING & SECURING**

Inoperative Engine ..... IDENTIFY & VERIFY  
 Throttle (Inop. Engine) ..... CLOSE  
 Propeller (Inop. Engine) ..... FEATHER  
 Mixture (Inop. Engine) ..... CUTOFF

Cowl Flap (Inop. Engine) ..... CLOSE  
 Magneto Switches (Inop. Engine) ..... OFF  
 Fuel Pump (Inop. Engine) ..... OFF  
 Alternator (Inop. Engine) ..... OFF  
 Fuel Selector (Inop. Engine) ..... OFF  
 Electrical Load ..... REDUCE

**UNFEATHERING AND RESTART**

- Fuel Selector (Inop. Engine) .....ON
- Magneto Switches (Inop. Engine).....ON
- Fuel Pump (Inop. Engine) .....ON
- Throttle (Inop. Engine) ..... OPEN ¼ INCH
- Propeller (Inop. Engine) ..... FULL FORWARD

**ONCE PROPELLER IS WINDMILLING**

- Mixture (Inop. Engine) .....ADVANCE
- Throttle (Inop. Engine) ..... ZERO THRUST
- Alternators .....ON
- Fuel Pumps..... AS REQUIRED
- Cowl Flaps ..... AS REQUIRED
- Alternate Air..... AS REQUIRED

**If engine is not windmilling within 5-7 seconds, use of starter to achieve restart may be necessary.**

**STARTER ASSISTED UNFEATHERING AND RESTART**

- Propeller (Inop. Engine) .....STOPPED
- Starter (Inop. Engine)..... ENGAGE
- Mixture (Inop. Engine) .....ADVANCE
- Throttle (Inop. Engine) ..... ZERO THRUST
- Alternators .....ON
- Fuel Pumps..... AS REQUIRED
- Cowl Flaps ..... AS REQUIRED
- Alternate Air ..... AS REQUIRED

**ENGINE FIRES**

**If Engine Has Not Started**

- Mixture ..... CUTOFF
- Throttle.....FULL
- Starter..... CRANK

If engine has already started and is running, continue operating to try pulling the fire into the engine.

**IF FIRE CONTINUES**

- Fuel Selectors ..... OFF
- Fuel Pumps ..... OFF
- Mixtures..... CUTOFF
- Throttles .....FULL
- Aircraft..... EVACUATE
- Fire Extinguisher ..... OPERATE

**Engine Fire in Flight**

- Fuel Selector (Affected Engine) ..... OFF
- Throttle (Affected Engine) ..... IDLE
- Propeller (Affected Engine) ..... FEATHER
- Mixture (Affected Engine) ..... CUTOFF
- Cowl Flap (Affected Engine) ..... OPEN

*Complete Engine Securing Procedure*

**IF FIRE PERSISTS**

- Airspeed.....INCREASE  
to blow out fire

**LAND AS SOON AS POSSIBLE**

**LANDING GEAR MALFUNCTION**

- Circuit Breaker ..... CHECK
- Battery Master Switch ..... ON
- L/R Alternators ..... CHECK

**MANUAL GEAR EXTENSION**

- Airspeed ..... UNDER 100 KIAS
- Gear Lever ..... DOWN
- Emergency Gear Extension Knob ..... Unguard & PULL
- Gear Position Indications ..... 3 GREEN

*Leave gear extension knob out*

**MASTER RECORD OF CHANGES**

**Revision 1.0**                      **7/18/2023**

- Document Created

**Revision 1.1**                      **9/27/2023**

- General Formatting and Grammar

**Revision 2.0**                      **2/9/2024**

- Addition of:

    Takeoff Briefing

    Pre-Takeoff Flow

    Alternate Air in *Unfeather and Restart*

- General Formatting and Grammar



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## **TAKEOFF BRIEFING**

### **Type of Takeoff**

*We will be performing a \_\_\_\_\_ takeoff.*

### **Rotation & Climb Out Speed.**

*We will rotate at \_\_\_\_\_ Kts and climb out at \_\_\_\_\_ Kts*

### **In the Event of an Emergency**

\_\_\_\_\_ (Instructor/Student) will have controls.

### **Abnormalities on takeoff roll**

*We will bring throttles to idle and exit the runway.*

### **Engine Failure After Liftoff With Gear Down**

*We will bring throttles to idle and land straight ahead.*

### **Engine Failure After Liftoff With Gear Up**

*We will run emergency procedures, evaluate aircraft performance, and determine if a return to the airport is possible.*