



**Waterloo Wellington
FLIGHT CENTRE**

SOP-PA28

Standard Operating Procedures – PA28

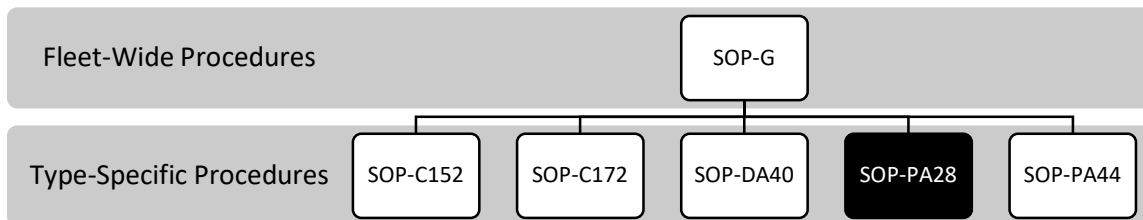
January 02, 2024

SECTION 0 - FRONT MATTER

0.1 - INTRODUCTION

To ensure safety and regulatory compliance, flights must be conducted in accordance with regulations, ATC clearances, personal capability, aircraft operating limitations described in the applicable Pilot Operating Handbook, and WWFC's Flight Training Operations Manual. WWFC has attempted to ensure that the information contained here does not contradict anything listed in any of our fleet Pilot Operating Handbooks, but if there is any disagreement, **the Pilot Operating Handbook is the final authority.**

0.2 - SOP ORGANIZATION CHART



0.3 - VERSION INFORMATION

Version Date
January 02, 2024

Jan 2024 version

- Updated section 4 profiles (page 10-12)
- Updated section 5.6 to remove reference to wing mirror (page 14)

0.4 - CONTENTS

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0.5 - ACRONYMS

Acronym	Definition
AFM	Aircraft Flight Manual
AGL	Above Ground Level
ASL	Above Sea Level
ATC	Air Traffic Control
DH	Decision Height
EFB	Electronic Flight Bag
FAF	Final Approach Fix
IFR	Instrument Flight Rules
KIAS	Knots Indicated Airspeed
KTAS	Knots True Airspeed
MAP	Missed Approach Point
MDA	Minimum Descent Altitude
MSA	Minimum Sector Altitude
PIC	Pilot in Command
POH	Pilot Operating Handbook
SID	Standard Instrument Departure
SOP	Standard Operating Procedure
TOC	Top-of-Climb

SECTION 1 - NORMAL CHECKLISTS

Piper PA28R	NORMAL PROCEDURES																																																																																																																																																																																																				
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TAKEOFF	(Technique)
NORMAL TAKEOFF	
Mixture	RICH
Flaps	SET
Trim	SET
Accelerate to 65 to 75 KIAS	
Control Wheel	smoothly ROTATE
<i>When positive rate established and insufficient ... runway remains</i>	
Gear	UP
<i>When desired climb speed is obtained</i>	
Flaps	slowly RETRACT
OTHER TECHNIQUES per POH	

AFTER TAKEOFF	F&R
Attitude	pitch for desired speed
Vy (flaps up)	90 KIAS (78 KIAS gear down)
Vx (flaps up)	78 KIAS (72 KIAS gear down)
Enroute	104 KIAS
Lights	as req'd
Electric Fuel Pump	OFF at desired altitude

CRUISE	F&R
Power	SET per power table
Mixture	ADJUST
<i>At intervals, to maintain fuel balance</i>	
Electric Fuel Pump	ON
Fuel Selector	switch tanks
Fuel Pressure	CHECK
Electric Fuel Pump	OFF

DESCENT	F
Power	AS DESIRED
Mixture Controls	ADJUST for smooth operation
Altimeter	SET

BEFORE LANDING	F&R
Fuel Selector	PROPER TANK
Seat Backs	ERECT
Belts/Harness	FASTEN
Lights	as req'd
Electric Fuel Pump	ON
Mixture	SET (full rich)
Propeller	FULL INCREASE
Gear	DOWN – 129 KIAS max
Flaps	SET – 103 KIAS max
Trim	set for desired approach speed (75 KIAS)

AFTER LANDING	F&R
Radios	ground frequency SET
Flaps	RETRACT
Electric Fuel Pump	OFF
Pitot Heat	OFF
Lights	as req'd
Transponder	standby / 1200
Mixture	SET (lean for taxi)

SHUTDOWN	R&D
ELT	check 121.5
RADIO MASTR Switch	OFF
Electrical Switches	OFF
Propeller	FULL INCREASE
Throttle	CLOSED
Mixture	IDLE CUT-OFF
Magnetos	OFF
ALTR Switch	OFF
BATT MASTR Switch	OFF

SECURING	F
Parking Brake	SET
Flaps	FULL UP
Control Wheel	SECURED with belts
Wheel Chocks	IN PLACE
Parking Brake	RELEASE
Tie Downs	SECURE

SECTION 2 - EMERGENCY PROCEDURES

Piper PA28R

EMERGENCY PROCEDURES

ENGINE FIRE DURING START

Starter CRANK ENGINE
Mixture IDLE CUT-OFF
Throttle OPEN
Electric Fuel Pump OFF
Fuel Selector OFF
If fire continues..... ABANDON

ENGINE POWER LOSS DURING T/O

If sufficient runway remains..... LAND AHEAD
If area ahead is rough:
Gear Selector Switch UP
If altitude permits attempted restart:
Safe airspeed..... MAINTAIN
Fuel Selector..... SWITCH to tank containing fuel
Electric Fuel Pump..... ON
Mixture RICH
Alternate Air OPEN
If power is not regained, proceed with power off landing.

ENGINE POWER LOSS IN FLIGHT

If at low altitude, prepare for power off landing.
Airspeed..... MAINTAIN 79 KIAS minimum
If altitude permits:
Fuel Selector..... SWITCH to tank containing fuel
Electric Fuel Pump..... ON
Mixture RICH
Alternate Air OPEN
Engine Gauges CHECK for indication of cause
If no fuel flow/pressure is indicated, double check that selected tank contains fuel
If power is not restored, prepare for power off landing.
Trim..... 79 KIAS
If power is restored:
Alternate Air CLOSE
Electric Fuel Pump..... OFF

POWER OFF LANDING

Trim 79 KIAS
Suitable Field..... LOCATE
Establish a spiral pattern and arrive 1000 ft above field at downwind position for normal approach and landing.
When field can easily be reached..... 72 KIAS
Proceed with Gear Down Emergency Landing or Gear Up Emergency Landing procedure.

LOSS OF FUEL FLOW/PRESSURE

Electric Fuel Pump ON
Fuel Selector CHECK on tank containing fuel

GEAR DOWN EMERGENCY LANDING

Touchdown should be made at the lowest possible airspeed with full flaps.

When committed to landing:

Landing Gear Selector..... DOWN
Flaps AS DESIRED
Throttle CLOSE
Mixture..... IDLE CUT-OFF
BATT MASTR Switch OFF
ALTR Switch..... OFF
Fuel Selector OFF
Seat Belts and Harness..... TIGHT

GEAR UP EMERGENCY LANDING

In the event a gear up landing is required:

Flaps AS DESIRED
Throttle CLOSE
Mixture..... IDLE CUT-OFF
Ignition..... OFF
BATT MASTR Switch OFF
ALTR Switch..... OFF
Fuel Selector OFF
Seat Belt and Harness..... TIGHT
Contact surface at minimum possible airspeed.

ENGINE FIRE

Fuel Selector OFF
Throttle CLOSED
Mixture..... IDLE CUT-OFF
Electric Fuel Pump CHECK OFF
Heater and Defroster OFF
Proceed with Power Off Landing Procedure

ENGINE ROUGHNESS

Mixture..... ADJUST for maximum smoothness
Alternate Air..... OPEN
Electric Fuel Pump ON
Fuel Selector SWITCH TANKS
Engine Gauges..... CHECK
Magneto Switch..... L then R then BOTH

If operation is satisfactory on either magneto, proceed on that magneto at reduced power with full RICH mixture to a landing at first available airport. If roughness persists, prepare for precautionary landing.

LOSS OF OIL PRESSURE

or

HIGH OIL TEMPERATURE

Land as soon as possible and investigate cause. Prepare for Power Off Landing Procedure

Piper PA28R

EMERGENCY PROCEDURES

ELECTRICAL FIRE

Flashlight (at night)..... LOCATE
 BATT MASTR Switch..... OFF
 ALTR Switch..... OFF
 Vents..... OPEN
 Cabin Heat..... OFF
 Land..... AS SOON AS POSSIBLE

ELECTRICAL FAILURE

ALT annunciator light illuminated:
 Ammeter..... CHECK to VERIFY inop. alt.
If ammeter shows zero:
 ALTR Switch..... OFF
Reduce electrical load to minimum, then:
 ALTNR FIELD cb..... CHECK and RESET as req'd
 ALTR Switch..... ON
If power not restored:
 ALTR Switch..... OFF
 Electrical Load..... REDUCE
 Land..... AS SOON AS PRACTICAL

ELECTRICAL OVERLOAD

Alternator over 20 amps above known load.
 BATT MASTR Switch..... OFF
If ammeter reading does NOT decrease:
 ALTR Switch..... OFF
 Land..... AS SOON AS POSSIBLE
If ammeter reading DOES decrease:
 BATT MASTR Switch..... ON
 Ammeter..... MONITOR
If ammeter reading does NOT Begin to decrease within five minutes:
 BATT MASTR Switch..... OFF
 Land..... AS SOON AS POSSIBLE
CAUTION: Battery depletion will require emergency gear extension. Gear position lights will be INOP.
NOTE: Operation w/ ALTR switch ON and BATT switch OFF to be avoided unless req'd by electrical system failure.
If ammeter reading DOES begin to decrease within five minutes:
 Proceed with flight.
 Ammeter..... MONITOR

PROPELLER OVERSPEED

Throttle..... RETARD
 Oil Pressure..... CHECK
 Propeller Control..... FULL DECREASE rpm, then set if any control available
 Airspeed..... REDUCE
 Throttle..... AS REQUIRED to remain <2700 rpm

GEAR UNSAFE INDICATION

If Gear Unsafe light remains on after extension or retraction or landing gear indicator lights do not illuminate upon extension.
 BATT MASTR Switch..... CHECK ON
 ALTR Switch..... CHECK ON
 Circuit Breakers..... CHECK
 NAV LIGHT Switch..... OFF (in daytime)
 Gear Indicator Bulbs..... CHECK
 Emergency Gear Ext. Lever..... CHECK NORMAL POSITION (up)

EMERGENCY GEAR EXTENSION

NOTE: Refer to POH 4.39 for emergency gear extension for training purposes.

Gear Unsafe Indication Checklist..... COMPLETE
If landing gear does not check down and locked:
 Airspeed..... REDUCE BELOW 87 KIAS
 Landing Gear Selector..... GEAR DOWN
If gear has still failed to lock down
 Emergence Gear Ext Lever..... EMERG. POSITION

If gear has still failed to lock down, yaw the airplane abruptly from side to side with rudder.

If nose gear will not lock down, slow aircraft to lowest safe speed and:
 Landing Gear Selector..... GEAR DOWN
If landing gear does not check down, recycle gear through UP position then select gear DOWN.

SPIN RECOVERY

Rudder..... FULL OPPOSITE to SPIN DIRECTION
 Control Wheel..... FULL FWD/AILERONS NEUTRAL
 Throttle..... IDLE
 Rudder..... NEUTRAL (when rotation stops)
 Control Wheel..... AS REQUIRED to recover from dive
 Level Flight Attitude..... REGAIN

OPEN DOOR

Airspeed..... slow to 87 KIAS
 Cabin Vents..... CLOSE
 Storm Window..... OPEN
If upper latch is open
 Upper Latch..... LATCH position
If side latch is open
 Armrest..... PULL to close door
 Side Latch Handle..... LATCH position
If both upper and side latch are open, latch side latch then top latch.

SECTION 3 - PILOT BRIEFING CARD

PA28R Pilot Briefing Card

Passenger Briefing

Smoking / Seatbelts / Doors
Emergency Exits/Equipment

Takeoff Briefing

Takeoff Procedure
Runway
Flap Setting / Retraction Schedule
Speeds:
 Rotation
 Initial Climb
Go/No-Go
Memory items for engine failures:
 On the runway
 After takeoff w/ and w/out rwy rem.
Threats

Arrival Briefing

VFR
 Field Elevation
 Circuit Altitude
 Circuit Joining Procedure
 Type of Landing (planned config)
 Stable Call Altitude
IFR
 Approach Type & Name
 Minimum Altitudes
 Overshoot (Missed) Procedure
 Radios / RNAV Config'd
 Timing / Type of Landing
 Special / Stable Call Altitude

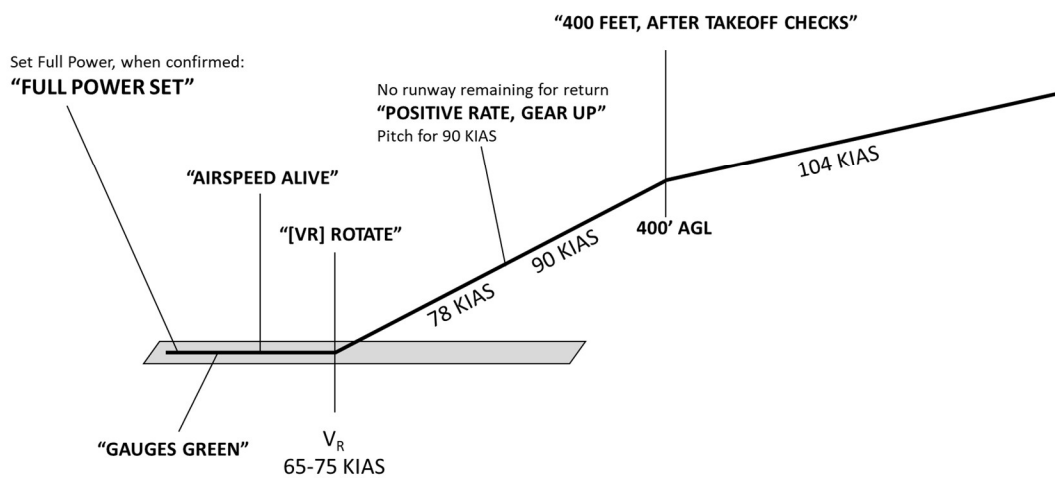
Speeds – all KIAS

V _S 60	V _{LO} (ret) 107	2 nd Stage Climb 104
V _{SO} 55	V _{LO} (ext) & V _{LE} 129	V _{APP} 75
V _A (2750) 118 / (1865) 96	V _R flap 0° 65-75	V _{REF} 72 (norm. *&* eng. out)
V _{TURB} 103	V _R flap 25° 55-65	
V _{NO} 146	Gear Up (Flaps 0°)	MDXW 17
V _{NE} 183	V _Y 90 / V _X 78	
V _G 79 (clean!)	Gear Down (Flaps 0°)	2200/22" = 115 ^{UP} / 95 ^{DOWN}
V _{FE} 103	V _Y 78 / V _X 72	

SECTION 4 - PROFILES

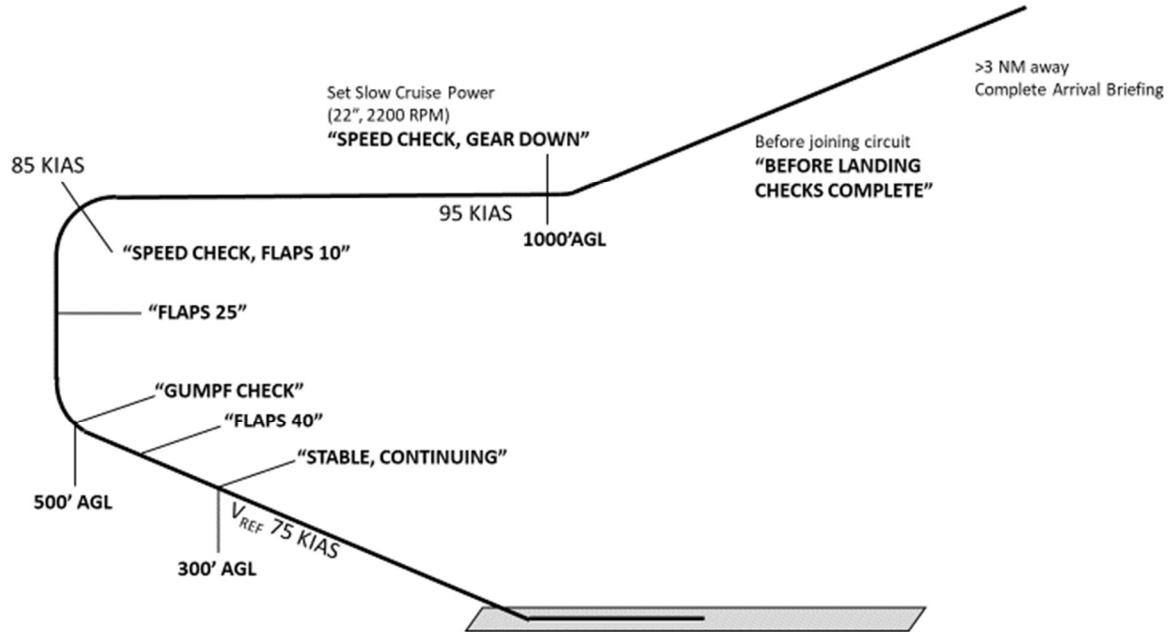
4.1 - NORMAL TAKEOFF

PA28R – Normal Takeoff



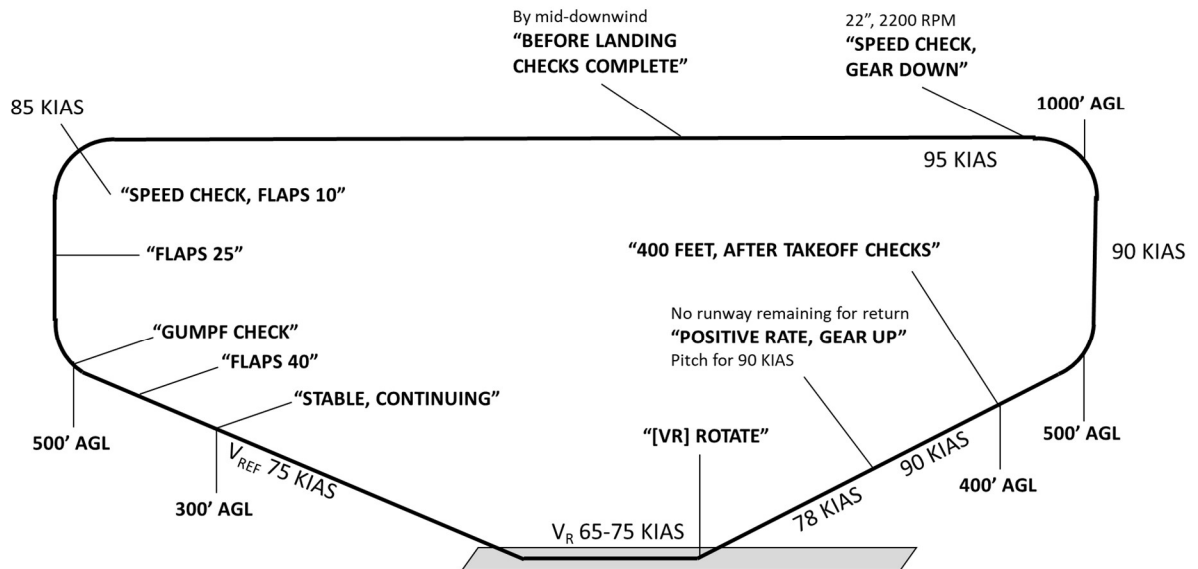
4.2 - NORMAL LANDING

PA28R – Normal Landing



4.3 - NORMAL CIRCUIT

PA28R – Normal Circuit



SECTION 5 - TECHNIQUES & CONSIDERATIONS

This section is reserved to address type-specific techniques and essential pilot considerations. The guidance here is intended to supplement the procedures provided by the Aircraft Manufacturer in the POH.

5.1 - PREFLIGHT INSPECTION / BEFORE START

- (1) **Walkaround.** Note the temperature of the engine during the external check. If it is hot or warm to the touch, plan to omit the priming step of the Normal Start procedure.
- (2) **Emergency Gear Extension Lever:** After boarding, ensure the lever has not been pushed down accidentally and is in the Normal Position (up). This is easy to step on during boarding, and if it's pushed down, the gear may indicate an unsafe state.

5.2 - ENGINE START

- (1) **Consider engine temperature.** A hot or warm engine does not require priming. Ambient temperature is irrelevant – the actual temperature of the engine is the determining factor.
- (2) **Startup difficulties.** If the engine was primed for a cold start and the start attempt is unsuccessful, assume the engine is flooded.

5.3 - TAXI / RUN UP

- (1) **“Propeller – Exercise”.** Perform during run up as described in POH amplified procedure; move propeller control through full range but take care not to allow RPM to drop more than 500 RPM during the check (i.e., move the control quickly back to full RPM). Repeating three times is important in cold weather.

5.4 - TAKEOFF / DEPARTURE

- (1) **Rotation Speeds.** Selection of exact rotation speed within the POH-specified range of rotation speeds (65 to 75 KIAS) should be based on weight.
- (2) **Initial Climb Speeds.** Consider that Best Angle (VX) and Best Rate (VY) differ for Gear UP and Gear DOWN configurations, so a speed change at that point of the departure is required to achieve maximum performance.
- (3) **Autopilot Engagement.** Activation of the autopilot (i.e., mode selection) should take place no earlier than when the aircraft is established in an enroute climb on a constant heading. STEC55 APs require a roll mode (HDG, NAV) to be active before any vertical modes (VS, ALT) may be enabled.

5.5 - CRUISE

- (1) **Cruise Power Selection.** Cruise at or below 75% power using the performance tables in the POH.

- (2) **Fuel Balance.** The aircraft does not have a lateral imbalance limitation, but fuel should be used alternately to maintain balance.
- (3) **Electric Fuel Pump Use.** Per the POH, the electric pump should normally be turned off during cruise unless changing fuel tanks.

5.6 - ARRIVAL / LANDING

- (1) **Autopilot Disengagement.** Unless flying an instrument approach procedure, cancel all autopilot modes before passing below 1000' AGL.
- (2) **Flap Setting.** Per the POH, full flaps should be used for landing unless wind conditions make reduced settings more desirable.
- (3) **GUMPF Check.** The GUMPF check is an important defense technique against inadvertent gear-up (or otherwise improperly configured) landings. The GUMPF check is only effective if it is employed properly - is **not** the normal point of landing gear extension. It must happen **separately and at a later point** than the planned landing gear extension.

5.7 - AFTER LANDING

- (1) **Flap Retraction.** To reduce the risk of an inadvertent landing gear retraction, leave flaps in the landing position until the aircraft is stopped at a suitable point to complete the after-landing checklist and confirm the correct lever is used.