Langley Flying School

PA-34-200 GURW

(December 30, 2000)

Airspeeds (MPH) for Safe Operation

V_y (all weights)	105
V_x (all weights)	90
En Route Climb	120
V_{mc}	80
V_{yse}	105
V_{xse}	93
V_r	80
V_r (25° Flaps)	70
V_a (2743 lbs.)	133
V_a (4200 lbs.)	146
V_{fe} (flap extension)	125
V_{le} (gear extension)	150
V_{lr} (gear retraction)	125
V_{ref} (final approach, 40° Flaps)	90 – 95
Maximum Crosswind	15
Maximum Altitude	25,000’
Maximum CHT	435° F
Maximum Auto Pilot Speed	195

Caution: During towing, do not turn nose gear more than 20° as this will result in damage to nose gear and steering and cause possible gear failure.

Cockpit Checks

Fire Extinguiser	Check/Secure
First-aid Kit	Check
Life Jackets (if required)	Check
Flight Supplement	Check
Aircraft Journey Log	Review for Airworthiness
Pilot Operating Handbook	Check
Oxygen Masks (if required)	Check
All Electric Switches	Off
Control Locks	Removed
Seat Belts not in Use	Secured
Circuit Breakers	Checked In
Avionics Master	Off
Landing Gear Control	Down
Master	On
Landing Gear Indictors	3 Green
Fuel Gauges	Check
Throttles	Closed
Mixtures	Idle Cut-off
Fuel Pumps (Individually)	On, pressure check, Off
Pitot Heat	On
Stall Indicator	Check Horn and Light
Pitot Mast	Check Heat
Pitot Heat	Off
Master	Off
Aircraft	Conduct Inspection

PRE-START

Avionics

Master	On
Avionics Master	On
Transponder	Standby
Transponder Code	Set
HSI Slaving	Test
ATIS	Record
Altimeters	Set
Clearance Delivery (if applicable)	Contact
Marker Beacon Lights	Check
GPS	Check & Test
GPS Flight Plan (FPL)	Set
Nav/Com #1	Test & Set
ADF	Test, Set, and Slaved
Nav/Com #2	Test & Set
Avionics Master	Off
Master	Off
Takeoff and Departure Procedures	Brief[1]
Communications Failure (if applicable)	Brief
Engine Failure Procedures	Brief
Forward Baggage Door	Secure
Oxygen	On or Off
Passengers	Brief
Brake Handle	On
Cowl Flaps	Open
Fuel Selectors	LEFT Crossfeed—RIGHT On

[1] Runway length; crosswind condition; rotation and climb speeds, departure procedures.

ENGINE START

Caution: Limit start operation to 30-second periods, separated by several minutes cooling period.
Flooded Start-if required, see Special Procedures.

Cold Start

Mixtures	Idle Cut-off
Master	On
Throttles	Open ¼ inch
Propellers	Forward
Magnetos	On

Each Engine (Left Engine First)

Fuel Pump	On
Mixture	Set Rich
Throttle	Advance 75%
Fuel Flow	Stabilised for 3 Seconds
Throttle	Closed
Mixture	Closed
Propeller	Clear
Starter	Engage
As Engine Starts:	
Mixture	Advance
Oil Pressure	Above red line
Throttle	800 RPM
Alternator	On
Fuel Pump	Off
Fuel Pressure	Check
Mixture	Set Rich

Hot Start

Mixtures	Idle Cut-off
Master	On
Throttles	Open ¼ inch
Propellers	Forward
Magnetos	On

Each Engine (Left Engine First)

Propeller	Clear
Starter	Engage
As Engine Starts:	
Mixture	Advance
Oil Pressure	Above red line
Throttle	800 RPM
Alternator	On
Fuel Pressure	Check
Mixture	Set Rich

Flooded Start

Fuel Pumps	Off
Mixtures	Idle Cut-off
Propellers	Forward
Master	On
Magnetos	On

Each Engine (Left Engine First)

Throttle	Full Open
Propellers	Clear
Starter	Engage
As Engine Starts:	
Throttle	Retard Rapidly
Mixture	Advance Slowly
Oil Pressure	Check
Alternator	On
Throttle	800 RPM
Fuel Pressure	Check
Mixture	Set Rich

TAXI

Caution: Taxi using minimum power and minimum braking.

Avionics Master	On
GPS	Set NAV 4
GPS	Set Moving Map Range
GPS	Set/confirm Active Waypoint
GPS	Set OBS or LEG mode
GPS	Altimeter and Altitude (ALT) Set
GPS	Load Approach (if applicable)
Fuel Selectors	RIGHT tank Cross-feed
	LEFT tank On
Taxi Clearance	Obtain if required
Wing Clearance	Check
Brakes	Release and Check
Instruments	Check

RUN-UP

Throttles	1000 RPM
Propeller Blast Area	Check Clear
Propeller Blades	Clear of Water or Debris
Brakes	Set
Trim	Set
Electric Trim	Test
Vacuum	Check 5”Hg ±1”
Landing and Navigation Lights	On
Alternators	Check
Landing and Navigation Lights	Off
Pitot Heat	Check load draw
Fuel Sectors	RIGHT & LEFT On
Mixtures	Full Rich
Throttles	2000 RPM
Magnetos	Check[2]
Oil Temperatures and Pressures	Check
Propellers (Individually)	3 Cycles @ 300 RPM Max.
Propeller Governors (Simultaneously)	Check[3]
Mixtures	Check Flow
Throttles	Set 1500RPM
Propellers (Individually)	Feather Check[4]
Throttles	Close
Oil Pressure	Check
Throttles	1000 RPM

PRE-TAKEOFF

Harness/Hatches/Seat	Check and Secure
Flight Instrument	Set and Checked
Magnetos	Both
Auto Pilot	All Off
Fuel Supply	Sufficient
Fuel Selectors	On
Engine Gauges	Check
Propellers	Full Forward
Mixtures	Full Rich
Turbochargers	Off
Cowl Flaps	Set
Control Column	Free and Correct
Time	Record

[2] Maximum Drop 175 RPM; maximum difference 50 RPM.

[3] Propellers set to 1900 RPM; Throttles advance 1”Hg; RPMs check1900 (RPMs should remain constant); Throttles retard 1”Hg; Throttles set 2000 RPM.

[4] RPM must drop to 1000 RPM in 1 to 3 seconds—slower feathering indicates inadequate dome pressure.

RUNWAY

Anti-collision Lights	On
Fuel Pumps	On
Pitot Heat (IFR)	On
Transponder	Set ALT

TAKEOFF

Landing Lights	On
Power	Set 2000 RPM
Engine Gauges	Check
Throttles	Advance Maximum Power
Power Gauges	Check for Equal (no split needles)
ASI	Check
VSI	Check

POST TAKEOFF

Speed	V_2—105 MPH
Gear Selector	Up (no runway remaining)

POST TAKEOFF—400’

(not below 400’—clear all obstacles)

Speed	V_2+15—120 MPH
Power	Set 25”Hg
Propeller	Set 2500
Flaps	Retract

POST TAKEOFF—1000’

(not below 1000’)

Landing Lights	Off
Fuel Pumps	Off Individually
Engine Gauges	Check

LEVEL/CRUISE

Throttles	Set
Propellers	Set
Mixture	Set[5]
Cowl Flaps	Close
EGT	Check
Mixtures	Adjust as required

[5] Do not lean at or below 4000’ ASL.

PRE LANDING

Seat backs	Erect
Seat belts	Secure
Landing Light	On
Fuel Pumps	On
Fuel Selectors	On
Auto Pilot	Off
Brakes	Checked
Approach	Briefed[6]

FINAL APPROACH

G (Gas)	Fuel pumps and Selectors On
U (Undercarriage)	Gear—3 green one in the Mirror
M (Mixtures)	Mixtures full Forward
P (Propellers)	Propellers full Forward

Limiting Speeds

10° Flaps	**160 MPH**
Gear Extension	**150 MPH**
25° Flaps	**140 MPH**
40° Flaps	**125 MPH**

Circuit Speeds

Proximity	**120 MPH**
Downwind	**115 MPH**
Base	**110 MPH**
Final (40° Flaps)	**90 MPH**

POST LANDING

Pitot Heat	Off
Cowl Flaps	Open
Mixtures	Set Rich
Landing Lights	Off
Fuel Pumps	Off
Anti-collision Lights	Off
Transponder	Standby
Landing Time	Record

ENGINE SHUTDOWN

Parking Brake	On
Throttles	Set 800 RPM
ELT	Check 121.5 MHz
Avionics Times	Record
Radio Master	Off
Navigation Lights	Off
Overhead Lights	Off
Avionics and Instrument Lights	Off
Throttles	Close
Magnetos	Dead Mag. Check
Mixtures	Idle Cut-off
Magnetos	Off
Alternators	Off
Master	Off
Parking Brake	Off
Aircraft	Secured

[6] Procedures, Runway, Winds, $V_{ref.}$

High Altitude Operations

CLIMB PASSING 13,000’

Oxygen Masks	AllOn
Oxygen Flow	Confirmed
Engine Temperatures	Check
Cowl Flaps	Set as required

CLIMB PASSING FL180

Altimeter	Set 29.92”Hg
Oxygen Flow	Confirmed
Passengers	OxygenCheck
Engine Temperatures	Check
Cowl Flaps	Set as required

Caution: **Maximum Continuous** Turbocharger Operation above FL200 is 25”Hg @ 2700 RPM

Caution: Reduce **Vne** 5 MPH per 1000’ above 19,200’.

Caution: **Minimum speed** at Maximum Turbocharged Power: 112 MPH IAS plus 1 MPH per 1000’ above 10,000’.

DESCENT PASSING FL180

Altimeter	Set Local Pressure

Emergency Procedures

Note: Items delineated in dotted lines indicate Phase I Emergency Actions that must be performed from memory.

Decision Speeds (V_1):

Confined Runways:
90 MPH

Non-confined Runways:
105 MPH or above 105 MPH with sufficient runway

Engine Failure—Takeoff

Below V_1:

Reject Takeoff
Land/Stop Straight Ahead
Maximum Braking

Above V_1:

Control Aircraft
Power Maximum
Drag—Flaps and Gear Retracted
Identify Dead Engine
Verify Dead Engine
Feather Dead Engine
Fire-check Dead Engine
Speed—Blue Line

Engine Failure—Cruise

Control Aircraft

Power—mixtures, propellers, throttles (as required)

Drag—Flaps and Gear Retracted

Identify Dead Engine

Verify Dead Engine

Fire-check Dead Engine

Cause Check[7]

Feather Dead Engine

Take care of **Good** Engine[8]

Take care of **Bad** Engine

Engine Fire—Flight

Fuel selector	Off
Throttle	Close
Propeller	Feather
Mixture	Idle cut-off
Firewall	Closed[9]

Engine Fire—Ground

Throttles	Close
Mixtures	Idle cut-off
Fuel Selectors	Off
Firewall	Closed[10]
Passengers	Evacuate (left or right)
Fire Extinguisher	Remove
Magnetos	Off
Radio	Communicate if safely able
Master	Off

Engine Fire—Start

Starter	Crank Engine to start if possible
Mixture	Idle cut-off
Throttle	Open
Fuel Pump	Off
Fuel Selectors	Off
Firewall	Closed[11]
Passengers	Evacuate left or right Passengers
Fire Extinguisher	Remove
Magnetos	Off
Radio	Communicate if safely able
Master	Off

Electrical Fire in Cabin

Master	Off[12]
Cabin Vents	Open

Land as soon as practicable

Single Engine Landing

Feather inoperative engine.

Do not extend landing gear until landing is likely.

Do not extend full flaps unless landing is assured.

Single Engine Go-around

Throttle	Open Cautiously, guarding V_{mc}
Speed	Blue line
Flaps and Gear	Retract

Emergency Descent

Throttle	Close
Speed	150 MPH
Gear Selector	Down

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[7] Fuel (pumps and selectors), Spark (magnetos), and Air (alternate air—not applicable to GURW)

[8] Check power settings (mixture, propellers, and throttles), engine heat, and fuel supply (selector and pumps).

[9] Heater/defroster off.

[10] Heater/defroster off.

[11] Heater/defroster off.

[12] If select electrical equipment is required, turn off all individual electrical items; then cautiously turn on master and required items, observing for smoke and fire.

Auto Pilot Malfunction (Disabling)

Activate trim disconnect switch.

Overpower manually with control wheel or trim wheel.

Propeller Overspeed

Throttle	Close
Speed	Blue line
Overspeed Propeller	Low RPM
Throttle	Slowly open to engage governor
Throttle and Propeller	Slowly increase as required[13]

Terminate flight as soon as practicable.

Induction Icing

Turbocharger air source may be used as an additional head source in accordance with the following:
Each engine individually:

1. Retard throttle to 15”Hg.
2. Smoothly engage turbocharger control full ON.
3. Advance throttle carefully to desired MP.
4. Caution: monitor closely to avoid over-boost during descent; adjust throttle accordingly.
5. Smoothly disengage turbochargers exiting icing conditions or prior to landing.

Gear Extension Failure

Check the following before proceding:

1. Check Circuit breakers.
2. Ensure Master is on.
3. Ensure alternators are on.
4. Ensure navigation lights are off.

To manually extend gear:

1. Reposition the clip covering the emergency disengage control—move downward to clear the knob.
2. Reduce speed—not to exceed 100 MPH.
3. Place Landing Gear Selector in “GEAR DOWN LOCKED” position.
4. Pull emergency gear extension knob.
5. Check for 3 green lights

Gear-up Emergency Landing

Depending on skill level and safety consideration should be given to landing at normal speed with engines shut-down and propellers feathered.

1. Approach at normal speed.
2. Leave flaps up to reduce wing damage.
3. Close throttles and feather engines before touchdown.
4. Turn off the master and ignition switches.
5. Turn fuel selectors to OFF.
6. Contact surface at minimum airspeed.

Alternator Failure

1. Verify failure.
2. Reduce electrical load as much as possible.
3. Alternator circuit breaker CHECK.
4. Alternator—switch OFF for one second, then ON.
5. If no output, Alternator switch OFF, reduce electrical load, and land as soon as practical.

Loss of Fuel Pressure

Fuel Pump	On
Fuel Selector	Crossfeed

Land as soon as possible.

Door Open in Flight

If both upper and lower latches are open, the door will trail slightly open and airspeeds will be reduced slightly.

To close the door in flight:

- Speed 100 MPH
- Cabin vents Close
- Storm Window Open
- If upper latch is open, Latch.
- If lower latch is open, open top latch, push door further open and close rapidly. Then latch top latch.

Slipping in direction of open door will assist latching

[13] See Pilot Operating Handbook, P. 3-20.

Operational Requirements

Add oil at the 6 US quarts level.

Keep cabin doors secured at all times.

Langley Flying School's Aircraft Status Board must be reviewed prior to flight

Relay all emergencies through Flight Service (1-800-INFO-FSS). Also contact Langley Flying School at (604) 532-6461 or (604) 581-0358.

As per Transport Canada requirements, maintenance on this aircraft (other than the adding of fuel, oil, or air) is prohibited without the consent of the Maintenance Manager for Langley Flying School.