



C172N (17-02)

Airspeeds for Safe Operation¹

Normal Climb (after takeoff)	70-80 KIAS
Climb short field (10° Flap)	55 KIAS
Climb short field (no flap)	59 KIAS
Enroute climb flap up	75-85 KIAS
Vr	55 KIAS
Vx (Best Angle Climb)	59 KIAS
Vy (Best Rate Climb)	73 KIAS
Vsl (Stall Speed Clean Configuration)	47 KIAS
Vso (Stall Speed Landing Configuration)	41 KIAS
Va (2300 Lbs)	97 KIAS
Va (1950 Lbs)	89 KIAS
Va (1600 Lbs)	80 KIAS
Vfe (10 Deg)	110 KIAS
Vfe (10-40 Deg)	85 KIAS
Maximum Distance Glide (Clean)	65 KIAS
Normal Approach Flap Up	60-70 KIAS
Normal Approach 40° Flaps	55-65 KIAS
Short field Approach 40° Flaps	60 KIAS
Balked Landing (Max power, Climb Attitude, Flaps 20°)	55 KIAS

Initial Cockpit Checks 1

Control Column	Unlocked
Fire Extinguisher	Secured and Checked
First-aid Kit and Survival Kit	Checked
Pilot Operating Handbook	Checked
Aircraft Documents	Checked
Journey Log (on board if required)	Checked
Unoccupied Seats	Belts Secured
Flight Supplement	Checked
Navigation Charts	Checked
Life Jackets	Checked
Avionics Master	OFF
Circuit Breakers	Checked
Ignition	OFF
Master Battery Switch	On
Fuel Gauges	Checked
Fuel Quantity	Check
Avionics Cooling Fan	Check Audibly
Fuel Selector	Both ON
Baggage Door	Lock
Lights	ON

(Taxi light, landing light, Nav lights, strobe and beacon)

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¹ Speeds are listed here as “indicated” airspeeds. They are based upon POH recommended approach speeds of “60-70 kts w/ flaps up; 55-65 kts w/ flaps down”, and are based on max gross weight

Initial Cockpit Checks Continued

External Lights	Check
Lights	OFF
Flaps	Extend to 40°
Master battery	OFF

Conduct External Pre-flight Inspection

Note: Add oil at the 5 US quarts level.

Passenger Briefing 2

ELT	Location and Function
Door / Emergency Exit	Operation
Fire Extinguisher	Location & Operation
Seat & Seat Belts	Operation
Baggage	Stowage
First Aid Kit	Location
Survival Kit	Location
Smoking	No Smoking
Emergency	Review Procedure
Life Jacket Briefing	
(Bags - stowed, seat backs- upright, seat belts - tight, sharp objects – remove from pockets, eye glasses - remove, dentures – remove, brief passenger re. opening door prior to landing).	

Pre-Start 3

Brake	Apply and maintain toe brakes
Area	Clear
Fuel Selector	Left Tank
Avionics Power	OFF
Hobbs and Time	Record
Beacon light	On
Master Switch	On

Engine Start 4

Cold Engine 4a

Prime	2-6 times
Carburetor Heat	Cold
Throttle	Open 1/8”
Mixture	Set Rich
Propeller	“Clear”
Ignition Switch	START
Ignition Switch (Release to both when engine starts)	
Oil Pressure	Checked
Throttle	Set 1000 RPM
Master Alternator -Turn On and Check Ammeter	
Flaps	Retract

Warm Engine 4b

Mixture	Set Rich
Carburetor Heat	Cold
Throttle	Open 1/8"
Propeller	"Clear"
Ignition Switch	START
Ignition Switch	(Release when engine starts)
Oil Pressure	Checked
Throttle	set 1000 RPM
Master Alternator -Turn On And Check Ammeter	
Flaps	Retract

Very Cold Engine (-18°C and lower) 4c

With preheat: (using external preheater & external power source)	
Ignition Switch	OFF
Throttle	Closed
Prime	4-8 times (as propeller is turned by hand)
After priming: PUSH all the way IN and LOCK	
Propeller	"Clear"
Master Switch	ON
Mixture	Set Rich
Throttle	Open 1/8"
Ignition Switch	START (Release to both when engine starts)
Oil Pressure	Checked
Throttle	Set 1000 RPM
Master Alternator -Turn On And Check Ammeter	
Flaps	Retract

Flooded Engine Start 4d

"Weak intermittent firing followed by puffs of black smoke from the exhaust stack indicates overpriming or flooding (POH P. 4-11)."

Caution: A flooded engine start should not be attempted until all fuel at the bottom of the engine cowling has evaporated.

Mixture	Idle Cut-off
Throttle	Full Open
Propeller	Clear
Starter	crank until engine start

When engine starts:

Throttle	Closed
Mixture	Set Rich
Oil Pressure	Checked
Throttle	set 1000 RPM
Fuel Pressure	Checked
If Not successful Normal start after starter motor cooled down	

Taxi 5

Avionics Power	On
Transponder	Set Standby and Squawk 1200
ATIS (if available)	Checked
Altimeter	Set To ATIS/Elevation
Communications (as applicable)	Position/Intention
Altimeter (if applicable)	Re-set
Transponder (if applicable)	Set Discrete Code
Fuel Selector	Right Tank
Brakes	Check
Flight Instrument	Ground Roll Check

Warning: The **survival equipment** on board this aircraft contains minimal content for operational training in the temperate west-coast climatic area. When flying outside this area, Langley Flying School requires that it is the pilot's responsibility to ensure survival equipment appropriate to the climatic conditions as per *CAR 602.61*.

Warning: With the exception of emergencies, Langley Flying School prohibits the landing of this aircraft at any aerodrome not certified by Transport Canada or the US FAA.

Run-up 6

Brake	Apply and maintain toe brakes
Throttle	Set 1000 RPM
Area	Clear
Fuel Selector	Both On
Fuel Quantity	Check
Throttle	Set 1700 RPM
Mixture	Check And Set Rich
Suction Gauge	Check
Magnetos	Check (125 RPM max. drop & 50 RPM max. difference)
Carburetor Heat	Check
Ammeter	Load Check
Engine Instruments	Check
Carburetor Heat	ON
Throttle	Closed
Oil Pressure	Idle Check
Carburetor Heat	Off
Throttle	Set 1000 RPM
Throttle Friction Lock	Adjust
Radio	Set

Pre-Takeoff 7

Seats and Harnesses	Secure
Cabin Doors	Closed and Locked
Heading Indicator	Set
Flight Instruments	Check and Set
Magnetos	Both
Fuel	Sufficient
Engine Gauges	Check
Mixture	Set
Flight Controls	Free and Correct
Elevator Trim	Set
Flaps	Check and Set

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Pre-Takeoff Checks Continued

Takeoff Briefing

Runway Length	Verify Sufficient
Crosswind Condition	Check Windsock
Rotation and Climb Speeds	Review
Departure Procedures	Review

Engine Failure Vital Actions **Review**

Immediately after takeoff

Airspeed (flap up)	65 KIAS
Airspeed (flaps down)	60 KIAS
Mixture	Idle Cut-off
Fuel shutoff Valve	Off
Ignition	Off
Wing Flap	As required
Master Switch	Off

Above 800'

Control Gentle Turns avoid fix objects	
Glide Speed	65 KIAS Flaps up
Carburetor Heat	ON
Fuel Selector Valve	Both
Mixture	Rich
Primer	In & Locked
Ignition Switch -	Both
(or START if propeller is stopped)	

Holding Short **8**

Time	Record
Traffic and Runway	Checked and Clear
Communications	Clearance and/or Intentions ²

Runway **9**

Traffic	Clear
Landing Light	On
Anti-collision Lights	On
Navigation Lights (as required)	On
Transponder	Set ALT
Heading Indicator	Confirm Runway Heading
Aileron Inputs	For Crosswind as required
Maximum Power	Confirmed

Post Takeoff (500' AGL) **10**

Oil Pressure	Green
Oil Temperature	Green
Flaps	Retract

Level/Cruise **11**

Throttle	Set (2100-2700)
Mixture	Set (do not lean at or below 3000')
Carburettor Heat	Check
Heading Indicator	Confirmed/Set

Pre-descent **12**

Mixture Idle Cut-off	Set Full Rich
Altimeter	Set

Pre-landing **13**

Seat, Seat belt, Shoulder Harness	Secure
Fuel Selector	Both On
Mixture	Rich
Carburetor Heat	ON
Brakes	Check

Post-landing **14**

Wing Flaps	Up
Carb Heat	Off
Trim	Set for takeoff
Landing Light	Off
Anti-collision Light	Off
Transponder	Off
Time	Record

Engine Shut-down **15**

Brake	Set
Throttle	Set 1000 RPM
Radio	Select 121.5 & Check ELT
Avionics	OFF
Throttle	Close
Magnetos	Check Dead Mag
Mixture	Idle cut-off
Magnetos	Off
Key	Dash
Master	Off
Hobbs and Time	Record
Control Column	Secure as required
Aircraft	Secure as required

² Note: All clearance from a Control Tower authorising movement on to a runway or takeoff from a runway must be read-back to the controller.

EMERGENCY PROCEDURES

Engine Failure during Takeoff Run

Throttle	Idle
Brakes	Apply
Wing Flap	Retract
Mixture	Idle cut-off
Ignition	Off
Master	Off

Engine Failure Immediately after Takeoff

Airspeed (flap up)	65 KIAS
Airspeed (flap down)	60 KIAS
Mixture	Idle Cut-off
Fuel shutoff Valve	Off
Ignition	Off
Wing Flap	As required
Master Switch	Off

"The proper action to be taken if loss of power occurs during takeoff will depend on circumstances.

1. If sufficient runway remains for a normal landing, land straight ahead.
2. If insufficient runway remains, maintain a safe airspeed and make only a shallow turn if necessary to avoid obstructions. Use of flaps depends on circumstances. Normally, flaps should be fully extended for touchdown."

Engine Failure In Flight (Restart Procedures)

Glide Speed	65 KIAS Flaps up
Carburetor Heat	ON
Fuel Selector Valve	Both
Mixture	Rich
Primer	In & Locked
Ignition Switch	Both

(or start if propeller is stopped)

If power is not restored, proceed with "POWER OFF LANDING" procedure.

EMERGENCY PROCEDURES

Power Off landing

Glide Speed	65 KIAS Flaps up 60 KIAS Flaps Down
Radio	Mayday 121.5 MHz
Transponder	Squawk 7700
Mixture	Idle Cut-off
Fuel shutoff Valve	OFF
Ignition Switch	OFF
Wing Flaps	As required (40 deg Recommended)
Master Switch	Off
Doors	Unlatch prior to touch down
Touchdown	Slightly Tail Low
Brakes	Apply Heavily

Precautionary landing

Wing Flaps	20 Degree
Glide Speed	60 KIAS
Selected field	Flyover and inspect
Electrical Switches	OFF
Wing Flaps	30 Deg
Airspeed	60 KIAS
Doors	Unlatch prior to touch down
Touchdown	Slightly Tail Low
Ignition switch	OFF
Brakes	Apply Heavily

Ditching

Radio	121.50 Transmit MAYDAY
Transponder	SQUAWK 7700
Approach	High wind Heavy Seas- INTO the wind Light Wind, Heavy Swells Parallel to Swells
Wing Flap	20-40 Deg
Power	establish 300Ft/Min at 55 KIAS If no power available 65 KIAS with Flaps up or 60 KIAS with 10 deg Flap
Cabin Doors	Unlatch
Touchdown	Level attitude at established rate of descent
Face Cushion	at touchdown with folded coat
Airplane evacuate	through cabin doors. If necessary, open window and flood cabin to equalize pressure so door can be opened.
Life Vest and raft	Inflate out of plane

Engine Fire during Start

Starter Continue Cranking Engine

If engine starts:

Power 1700 for few minutes

Engine - Shutdown & inspect for damage

If engine fail to start:

Throttle Full Open

Mixture Idle Cut-off

Cranking Continue

Fire extinguisher Obtain

Engine Secure

Master OFF

Ignition Switch OFF

Fuel Selector Off

Fire Extinguish using fire extinguisher, wool Blanket, or dirt.

Fire Damage – INSPECT, repair damage, or replace damaged components or wiring before another flight

Abandon aircraft if fire continues.

Engine Fire In Flight

Mixture Idle Cut-off

Fuel Selector Off

Master OFF

Cabin Heat and Air OFF

Aircraft Control Airspeed 100 KIAS

(if fire is not extinguished, increase the glide speed to find incombustible mixture)

Forced Landing Execute

Electrical Fire during Flight

Master Off

Avionics Power OFF

All Other switches (except ignition) OFF

Vents Closed

Cabin Heat Closed

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Emergency Procedures Continued

Fire Extinguisher Activate

After discharging an extinguisher with a closed cabin, ventilate the cabin

If fire appears out & electrical power is necessary for continuance of flight:

Master Switch ON

Circuit Breakers Check, Do not Reset

Radio switches Off

Avionics Power Switch On

Radio/Electrical Switches ON

One at the time with delay after each until short circuit is localized.

Vents/ Cabin Air/Hear Open

When it is ascertained that fire is completely extinguished

Cabin Fire

Master Off

Vents Closed

Cabin Air/Heat Closed

Fire Extinguisher Activate (if available)

After discharging an extinguisher with a closed cabin, ventilate the cabin

Land the airplane as soon as possible to inspect for damage

Wing Fire

Landing/Taxi lights OFF

Pitot Heat Switch OFF

Navigation lights OFF

Strobe Light Switch OFF

Performed a sideslip to keep the flames away from the fuel tank and cabin, and land as soon as possible using flaps only as requires for final approach and touchdown

ICING

- **Pitot Heat** On

- **Turn back or change altitude**

- **Cabin Heat and defroster** Full Open

- **Throttle** Open to increase engine speed

- Watch for the signs of carburetor air filter ice and apply carburetor heat as requires

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Emergency Procedures Continued

- Land at nearest airport, in extreme icing condition plan for off airport landing
- Leave the flap retracted
- Open the left window, if its practical scrape ice from a portion of the windshield for visibility
- Use Forward slip on approach to increase visibility

Approach 65-75 KIAS
Land in level attitude

Static source Blockage

Static Pressure Alternate Valve Pull On

In an emergency on airplane not equipped with Alternate static source, break the VSI glass

Air speed consult calibration table in Section 5 POH

Landing with Flat Main tire

Approach Normal

Touch down Good tire first, hold on good tire as long as possible

Ammeter shows excessive rate of charge (Full Scale Deflection)

Alternator OFF

Nonessential Electrical Equipment OFF

Flight Terminate as soon as practical

Emergency Procedures Continued
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Low voltage light during flight

(Ammeter Indicates Discharge)

Illumination of low-voltage light may occur during low RPM conditions with an electrical load on the system such as during low RPM taxi. The Master switch should not be recycled.

Avionics Power Switch OFF

Master Switch OFF (both sides)

Master Switch ON

Low Voltage Light Check OFF

Avionics Power Switch ON

If Low- Voltage light illuminates again:

- **Alternator** OFF

- **Nonessential radio and equipment** OFF

- **Flight - Terminate as soon as practical**

Operational Requirements

Add oil at the 5 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 (778) 255-2560 after hours.

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.

The pilot is responsible to ensure that the aircraft is properly equipped with survival equipment as per the *Canadian Aviation Regulation 602.61*.

Operational Phone Numbers:

Langley Flying School (877) 532-6461
LFS outside office hours (778) 255-2560

Kamloops FIC (866) 992-7433
Canadian FSS Toll Free (800) 463-6377
US FSS Toll Free (800) WX-BRIEF
Canadian Customs² (888) CAN-PASS
CYNJ TWR (emergency Only) 604-534-9443

CYXX TWR (emergency Only) 604-855-1199
CYYJ TWR (emergency Only) 604-946-0911
VIC TML (emergency Only) 604-586-4500

Caution: Check Current Charts as data may be incomplete or outdated.

Abbotsford		CYXX
ATIS	119.8	
Gnd	121.8	
Twr (inner)	119.4	
Twr (outer)	121.0	
MF	119.4	
Boundary Bay		CZBB
ATIS	125.5	
Gnd	124.3	
Twr (inner)	118.1	
Twr (outer)	127.6	
MF	118.1	
Chilliwack		CYCW
ATF	122.7	
Delta Heritage Air Park		CAK3
ATF	123.3	
Fort Langley		CBQ2
ATF	123.2	
Langley		CYNJ
ATIS	124.5	
Gnd	121.9	
Twr	119.0	
MF	119.0	
Hope		CYHE
ATF	123.3	
Nanaimo		CYCD
Radio	122.1	
MF/ATF	122.1	
Pitt Meadows		CYPK
ATIS	125.0	
Gnd	123.8	
Twr	126.3	
MF	126.3	
Sechelt-Gibsons		CAP3
ATF	123.5	
Surrey / King George Airpark		CSK8
ATF	123.5	
Vancouver Harbour		CBC7
ATIS	126.8	
Twr	118.4	
ATF	118.4	
Vancouver Intl		CYVR
ATIS	124.6 / 124.75	
Cinc Del	121.4	
Gnd (South)	121.7	
Gnd (North)	127.15	
Twr (South)	118.7	
Twr (North)	119.55	
Twr (Outer)	124.0	
Victoria Intl		CYYJ
ATIS	118.8	
Cinc Del	126.4	
Gnd	121.9	
Twr (Inner)	119.7	
Twr (Outer)	119.1	

Useful Local Radio Frequencies:

³ Note: Canada Customs must be advised prior to departure for a return flight to Canada, including the estimated ETA, the airport of entry, the citizenship, name, and birthdate of all passengers on board the aircraft, and any declarations related to purchases made in the US. Also note the limited times at which CYXX is a valid airport of entry.