AIRHART AVIATION

FLOAT PLANE SAFETY

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Updated June
2022

FLOAT PLANE SAFETY

RULE ONE : COMMON SENSE AND PROPER JUDGMENT

The pilot of a floatplane is pretty much on their own. Floatplane pilots have to choose their own landing sites for each landing and determine if they are safe. Are there any floating logs or debris, deadheads or rocks under the water? Is the water deep enough, too rough, glassy - what about boat traffic? Which way is the wind blowing? Is it gusty? Can you turn the plane around? How is the dock? All you can do in these situations is use your best judgment based on the situation, and your own experience and training.

RULE TWO : DON'T RUSH YOURSELF

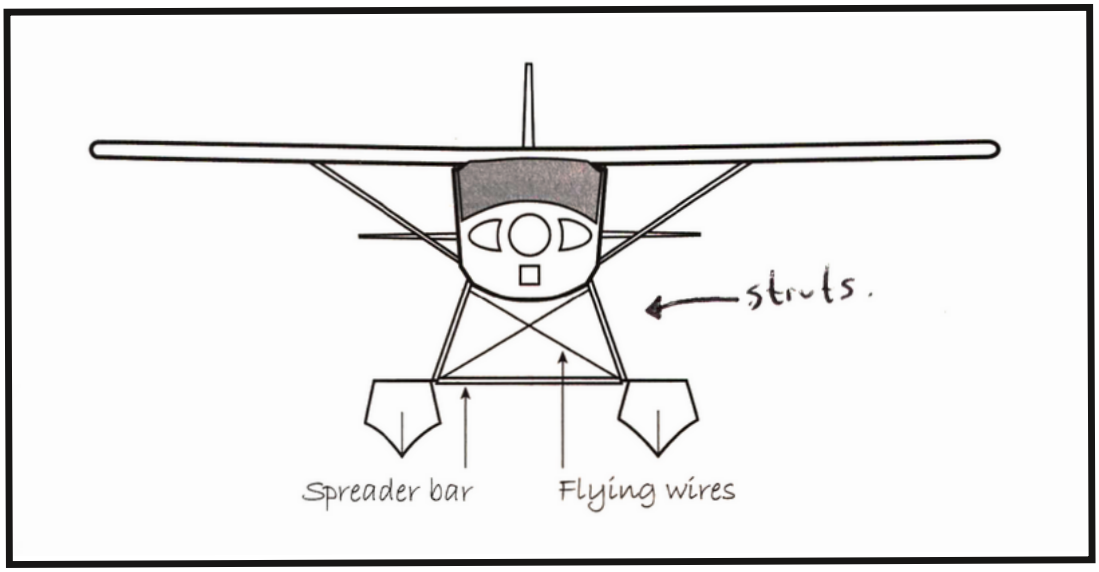
You will be flying into situations where there is no air traffic controller to tell you the wind direction, speed, runway condition, or when to land. This is up to the pilot and there is nothing wrong with flying over an unfamiliar area several times until you're sure you can land safely. There are a lot of things to look for, especially if you're flying into an area for the first time.

RULE THREE : PLAN YOUR STRATEGY

The most important rule to follow in a floatplane. What is going to happen next? When you untie a floatplane from the dock and let go of the ropes - what is going to happen next? When you land and have no brakes, no reverse, vague steering, gusty winds, and a dock with eight foot piles on it - what is going to happen next? Landing downstream in
a fast moving river - what will happen when you are off the step and taxiing in the river? Always think through each situation thoroughly before reacting to it!

RULE FOUR : KNOW YOUR LIMITS

It is very important to be aware of your limitations. Put your pilot ego aside and fly where you know you can fly. A small glassy mountain lake requires a lot of experience. Docking in a swift moving river requires experience. Do not get caught up in the NO PROBLEM syndrome and get yourself into a situation you can't handle.



Images from "Notes of a seaplane instructor" by Burke Mees - Sold in our office!

THE FLOAT PLANE

THE FLOATPLANE IS IDENTICAL TO THE LANDPLANE WITH THE FOLLOWING EXCEPTIONS:

1. Floats, incorporating a water rudder steering system, replace the landing gear wheels, strut and springs. A water retraction lever, connected to the water rudders by cables and springs, is located on the cabin floor.
2. A ventral fin is installed at the rear of the tailcone for additional directional stability.
3. An additional structural "V" brace is installed between the top of the front door posts and the cowl deck.
4. Additional fuselage structure is added to support the float installation.
5. Interconnect sprints and cables are added between the rudder and aileron control systems, and centering springs and cables are added to the rudder control system to improve stability in flight.

NOTE:

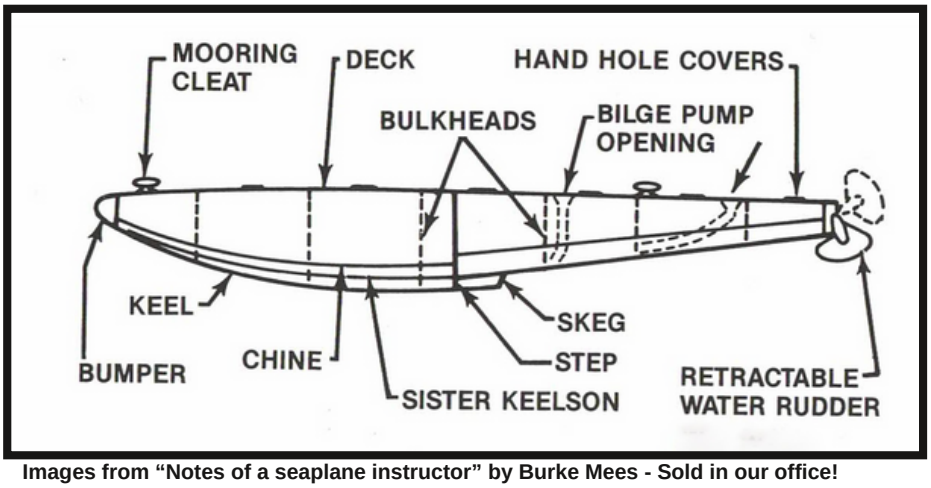
If the airplane is returned to the landplane configuration, these items need to be removed.

6. The airplane has additional corrosion-proofing and stainless steel cables.
7. Hoisting provisions are added to the top of the fuselage.
8. The left hand cabin door is equipped with removable hinge pins for ease of door removal when loading large cargo.
9. Fueling steps and assist handles are mounted on the forward fuselage, and steps are mounted on the wing struts to aid in refueling the airplane. Inboard fuel fillers are added when long range fuel tanks are installed.

NOTE:

A reduction of approximately five gallons of usable fuel in each tank will result when inboard fillers are used to fill the long range fuel tanks.

10. The standard propeller is replaced with a propeller of larger diameter (88 inches).
11. A reinforced engine mount replaces the standard engine mount.
12. Cowl flap linkage is extended to increase the opening of the cowl flaps for improved engine cooling.
13. Floatplane placards are added.



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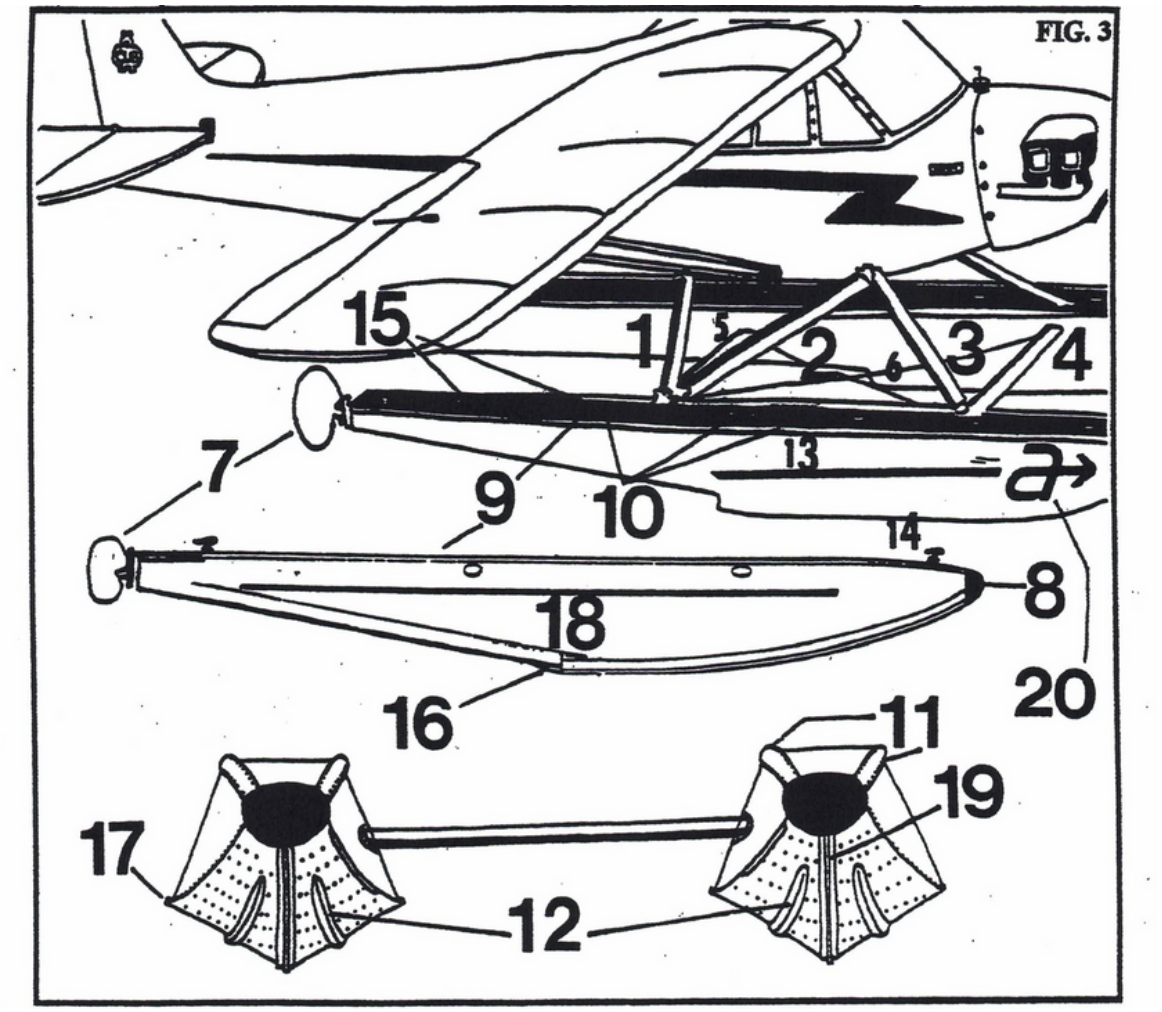
FLOATS



1. Aft Strut
2. Diagonal Strut
3. Forward Strut
4. Forward Spreader Bar
5. Aft Spreader Bar
6. Bracing Wires
7. Water Rudders (Retractable)
8. Rudder Nose Bumpers
9. Flat Deck
10. 7 Water tight compartments in each float
11. Slip resistant edge rails
12. Hydrodynamic Lift Boosters (or Sister Keelsons)
13. Hinged Access Compartments Cleat
14. Forward and Aft Mooring
15. 7 Bilge Pump Holes (one for each compartment)
16. Skeg
17. Chine
18. Step
19. Keel
20. Logo

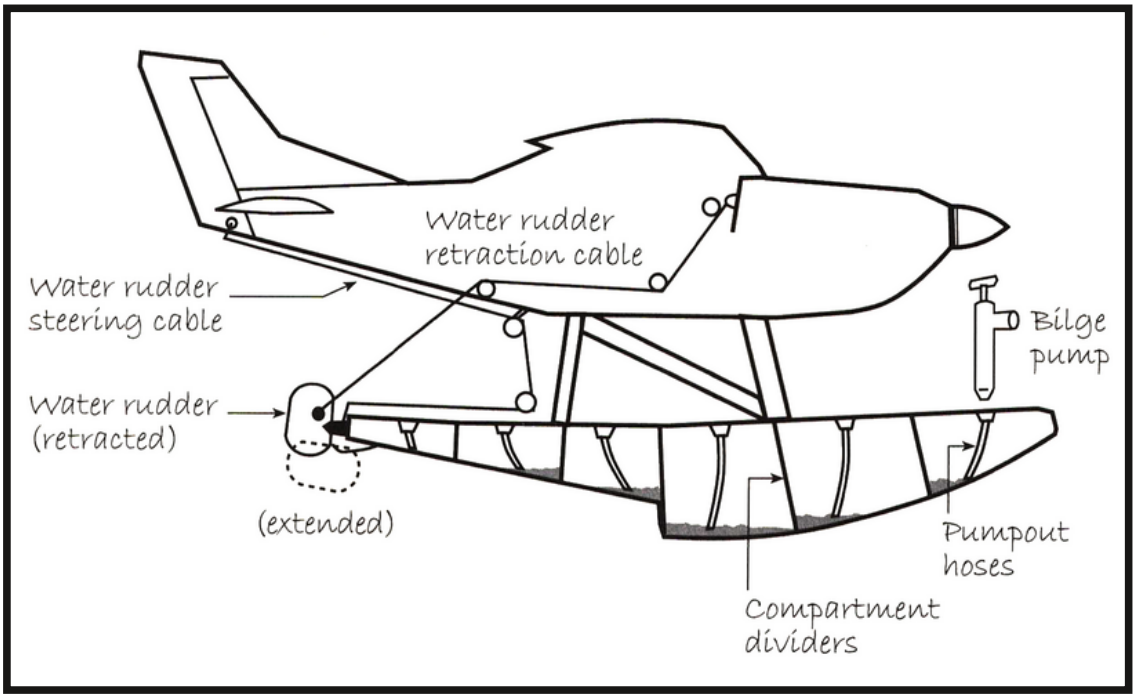
WATER RUDDER STEERING SYSTEM

Retractable water rudders, mounted at the aft end of each float, are connected by a system of cables and springs to the airplane rudder pedals. Normal rudder pedal operation moves the water rudders to provide steering control for taxiing.

A water rudder retraction lever, located on the cabin floor tunnel, is used to manually raise and lower the water rudders. During take-off, landing, and in flight, the retraction lever is normally full aft in the “RETRACT” position. With the lever in this position, the water rudders are up. When the lever is moved full forward to the “EXTEND” position, the water rudders are down.

The retraction lever incorporates a spring-loaded catch device located near the mid-point of the lever. The catch is designed to latch over a locking pin when the retraction lever is pulled aft to “RETRACT”, thereby securing the lever in the retracted position.

Pulling the exposed end of the retraction lever catch aft, while pushing downward slightly on the retraction lever with the right hand, will release the lever from the retraction locking pin. The lever can then be allowed to rotate full forward to extend the water rudders for taxiing on the water.



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CONSTANT SPEED PROCEDURES

POWER QUADRANT

The Throttle is a push/pull type control; Prop and Mix are Vernier type controls. Dial the prop control clockwise to increase RPM. Dial counterclockwise to decrease RPM. For Full fine pitch/Max RPM push the button to the top of the control.

Do not over-tighten Vernier-type controls by dialling past the control stop. Mix operation is the same procedure.

CONSTANT-SPEED PROPELLER OPERATION

The engine is started with the propeller control in the Full Fine Pitch/Max RPM position. This position reduces the load or drag of the propeller, producing an easier start and warm-up of the engine.

During the run-up, the propeller blade changing mechanism should be operated slowly and smoothly through a full cycle. Run-up is done with prop lever full into Max RPM and the throttle increased to produce about 1700-1800 RPM. Low engine speed, and with the props pushed in, the throttle will control RPM. Next, we will pull out the prop lever to lower/coarse pitch to achieve an RPM decrease of about 300-400 RPM, and then push in the prop lever back to full fine pitch/Max RPM. Watch for the recovery of the RPM to ensure governor operation. Do this 3 times when the engine is cold and 2 times if the engine is warm.

This should be done for two reasons: to determine whether the system is operating correctly (watch for RPM recovery), and to circulate fresh warm oil through the propeller Governor system. It should be remembered that the oil has been trapped in the propeller cylinder, and the oil tends to congeal, especially if the outside air temperature is low. Consequently, if the propeller isn't exercised before take-off, there is a possibility that the engine may over speed on take-off.

An airplane equipped with a constant-speed propeller has better take-off performance than a similarly powered airplane equipped with a fixed-pitch propeller. This is because, with a constant-speed propeller, an airplane can develop its maximum rated horsepower (red line on the tachometer) while motionless. An airplane with a fixed-pitch propeller, on the other hand, must accelerate down the runway to increase airspeed and aerodynamically unload the propeller so that the RPM and horsepower can steadily build-up to their maximum. With a constant-speed propeller, the tachometer reading should come up to within 40 RPM of the red line as soon as full power is applied, and should remain there for the entire take-off.

CONSTANT SPEED PROCEDURES

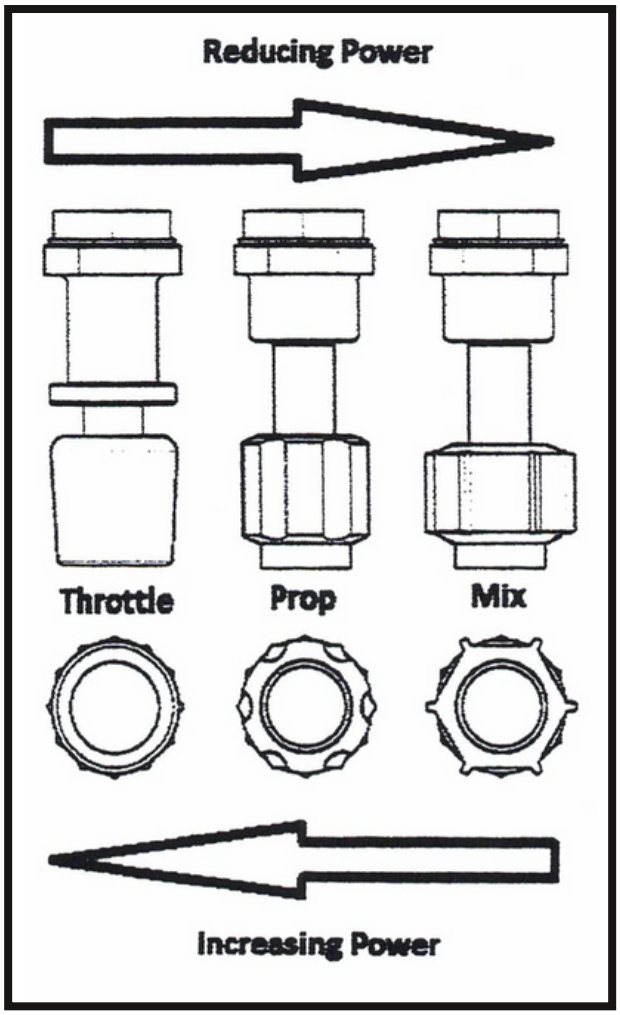
Excessive Manifold pressure raises the cylinder compression pressure, resulting in high stresses within the engine. Excessive pressure also produces high engine temperatures. A combination of high manifold pressure and low RPM can induce damaging detonation. In order to avoid these situations, the following sequence should be followed when making power changes;

When reducing power, decrease the manifold pressure first, and then decrease the RPM.

When increasing power, increase the RPM first, and then the manifold pressure.

All power changes should be made smoothly and slowly to avoid over-boosting and/or over-speeding. Always twist Vernier controls slowly to the desired RPM or MP. Button is for full rich or full fine pitch/Max RPM.

Preparing for the Overshoot will be done with the prop unloaded, or with a relatively low manifold pressure, to minimise the work the governor does. Less work, less maintenance. Usually, when we turn onto final, we have a lower power setting. We prepare for the Overshoot by double-checking the mix is rich and we push the props to full fine/max RPM using the buttons on the Vernier controls.



FLOATPLANE POWER SETTINGS

GYVBCESSNA R172K HAWK XP

TAKE OFF POWER:
Full MP - MAX RPM (2600) - Full Rich

CLIMB POWER:
25" MP - 2500 RPM-FULL RICH

CRUISE SPEED:
23" MP - 2300 RPM-9.5 GAL/HOUR

LANDING POWER
19" MP - 2300 RPM - FULL RICH 17" MP - 2300 RPM - FULL RICH 15" MP - MAX RPM - FULL RICH

FWJC CESSNA180K SKYWAGON

TAKE OFF POWER:
Full MP - MAX RPM (2400) - Full Rich

CLIMB POWER:
23" MP - 2400 RPM-FULL RICH

CRUISE SPEED:
22" MP - 2200 RPM-11.3 GAL/HOUR

LANDING POWER
16" MP - 2200 RPM - FULL RICH 14" MP - 2200 RPM - FULL RICH 12" MP - MAX RPM - FULL RICH

WHAT IS THE STARTING PROCEDURE OF THE AIRPLANE?

1.

2.

3.

4.

5.

DEPARTING THE DOCK

Boats and floatplanes have one steering trait in common; they steer from the rear. When turning to the left, the bows are not pulled to the left rather the stern is pushed to the right. If you are up against a dock and apply left rudder to turn out from the dock the front of the plane will not turn out rather the rear of the plane will turn into the dock. Rather than pulling away from the dock, you will slide along it. If there are boats ahead of you or obstructions on the dock (large piles) you could run right into them.

1. 90 DEGREE DEPARTURE
2. RAMP START
3. PUSH OUT

REMEMBER:

Get your airplane ready to go (pre-flight inspection done, passengers and cargo loaded, engine ready to start.) As soon as you push away from the dock, the plane will be free to drift with the wind or current, so you want to minimise the time it takes to get in the airplane and start the engine and get ready to go. Take a moment and determine the best path to open water, other traffic, and whether you will clear other docks or obstacles in the area. When you are satisfied, you're ready to go then depart from the dock.

TAXIING

DISPLACEMENT TAXI

Slowest taxi speed, not over 1000 rpm, but most of the time with the engine turning over slightly faster than idle rpm.

STEERING

Keep float tips up. Use Ailerons properly. Weathercocking (weathervaning) tendency. Taxiing downwind.

PLOW TAXI

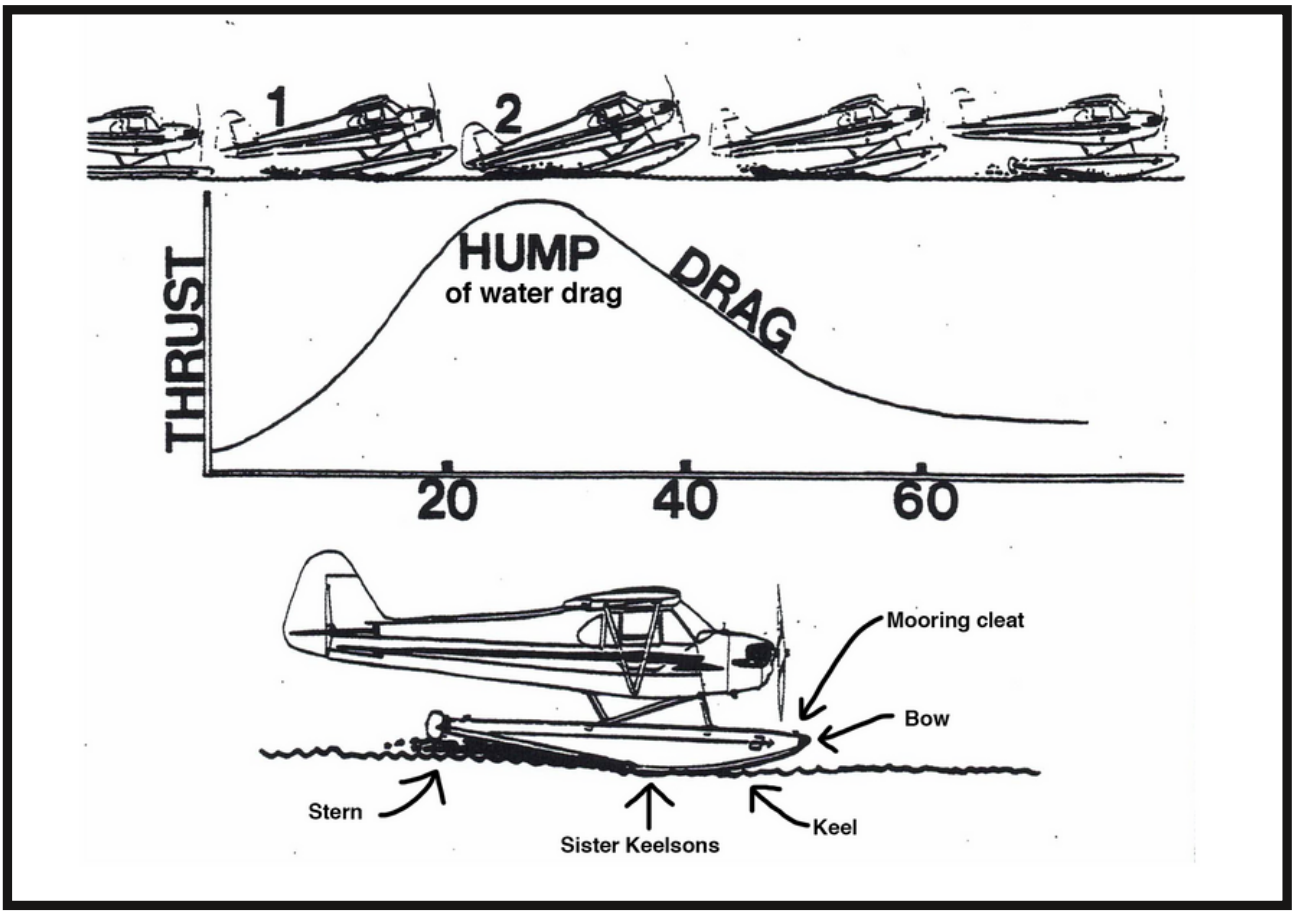
Slightly higher speed where the floatplane is taken from an idle altitude to a nose-high plowing attitude.

STEP TAXI

Fastest form of taxiing in the takeoff roll or "on the step".

THE STEP

The drag of the water or Hydrodynamic drag is great. This drag reaches the greatest at approximately 28 KTS. This is called the “hump of water drag.” and starts the float to aquaplane on the Step. Once the step stage is reached water drag will then start to decrease, the Sister Keelsons or Hydrodynamic Lift Boosters decrease the time the float is exposed to the “hump” stage.

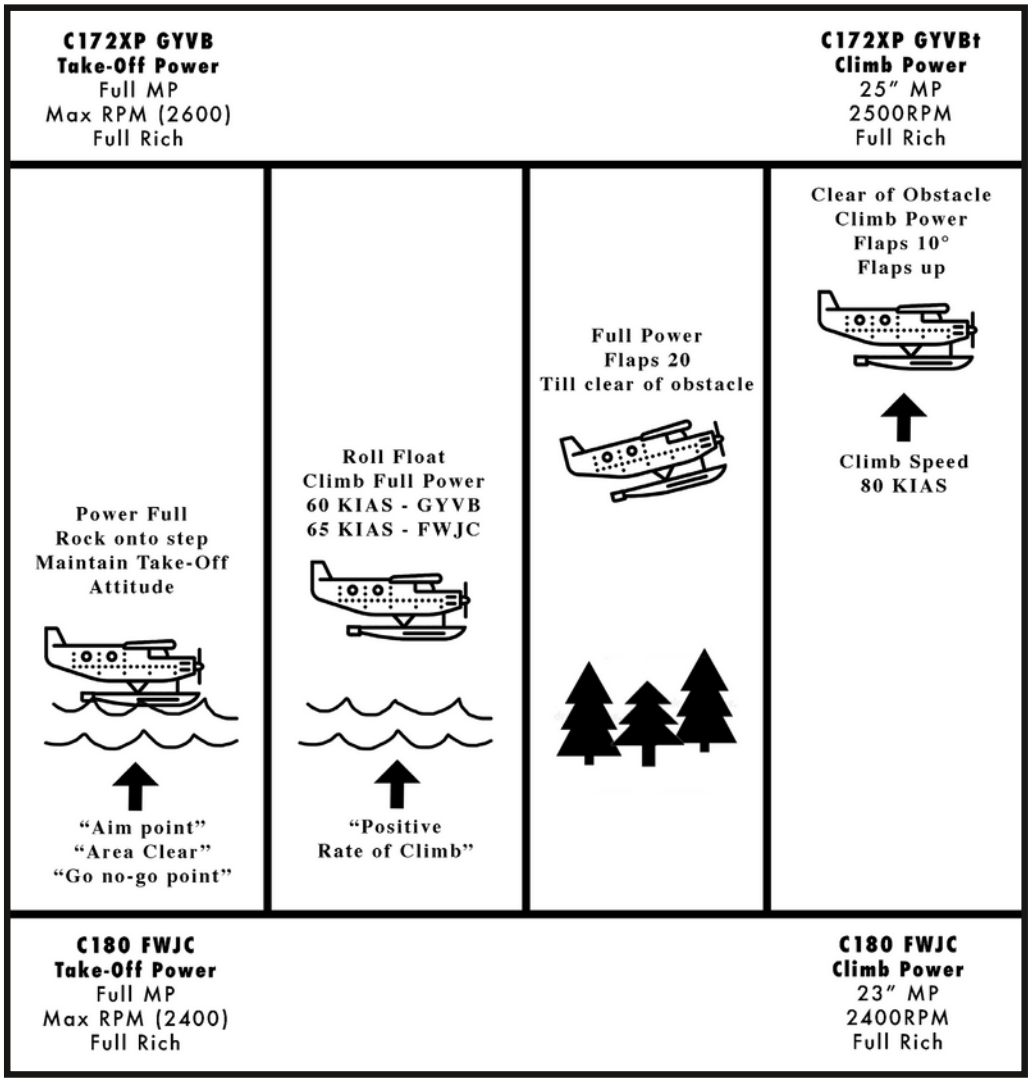


TAKE OFF

MEMORISE THIS TECHNIQUE!

GUMPFS: below is the gumpfs check. It is your Pre-Takeoff/Landing Checklist

G - Gas on both - Quantity Sufficient
U - Undercarriage, Water Rudders UP
M - Mixture Full Rich, Carb Heat OFF
P - Props - Full Fine
F - Flaps - 20° for take-off, Cowls Open
S - Switches - Circuit breakers, Mags Both, Master Both, Primer in/locked, Lights
Aim Point, Area Clear, Go-No-Go Point



CIRCUIT CHECKS

CESSNA 180 FWJC + CESSNA 172XP GYVB

G - Gas on both - Quantity Sufficient

U - Undercarriage, Water Rudders UP

M - Carb Heat On, Mixture Full Rich

P - Props - (To come) Full Fine on Final

F - Flaps - As required for landing

S - Switches - Circuit breakers, Mags Both, Master Both, Primer in/locked, Lights

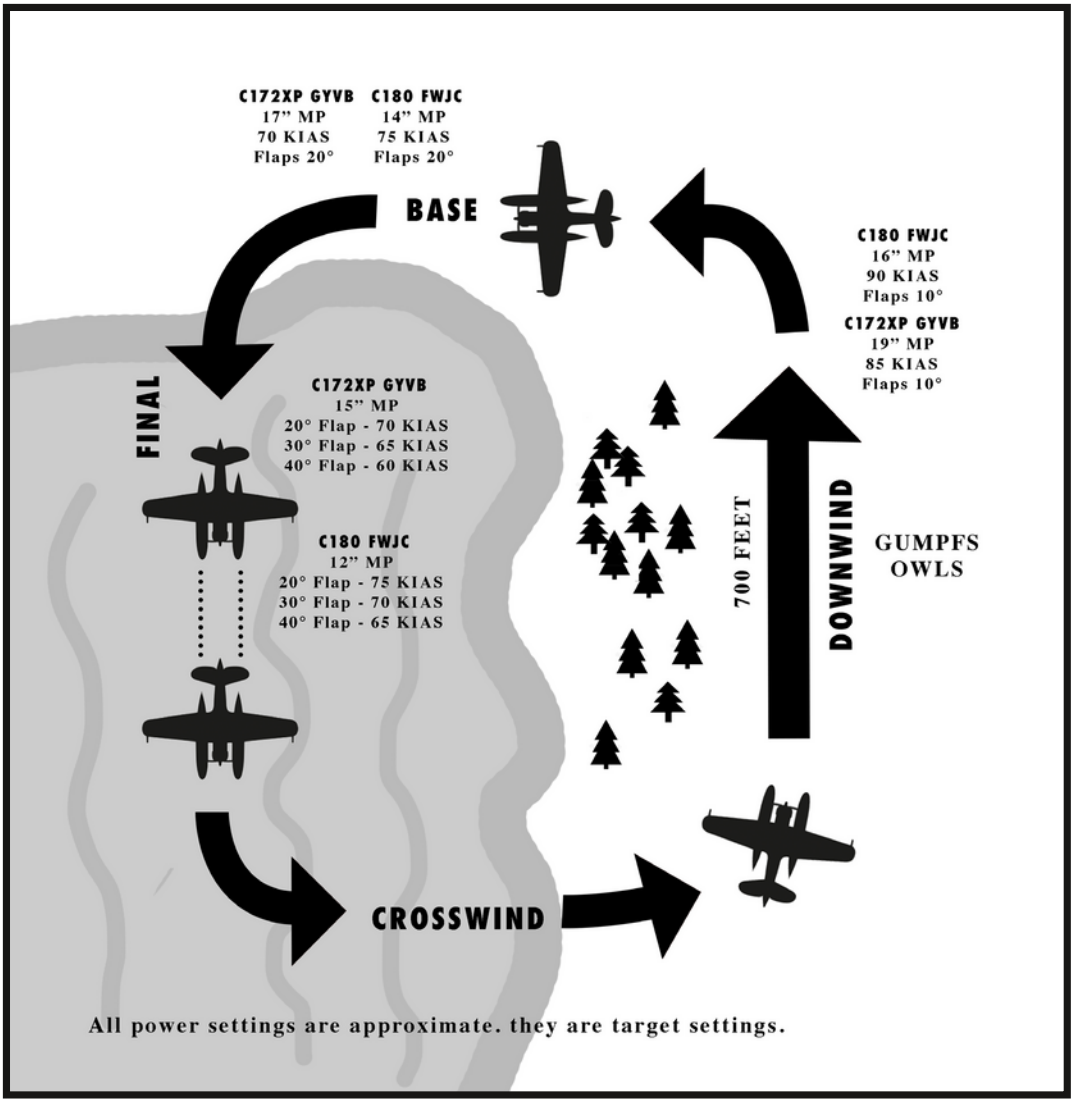
(172 XP - Also check Fuel is ON)

O - Obstacles

W - Wind

L - Length

S - Surface



CIRCUIT CHECKS
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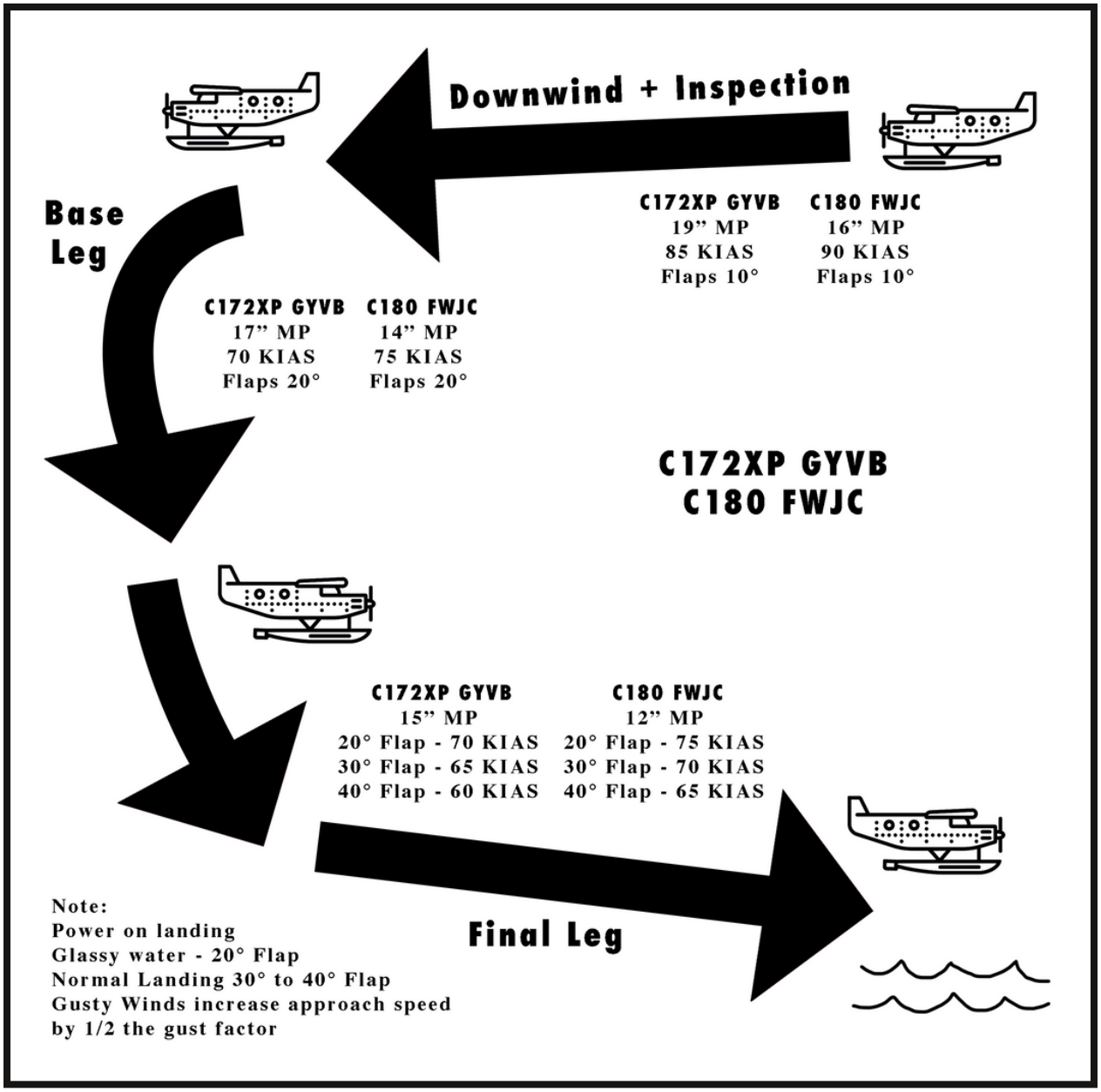

LANDING

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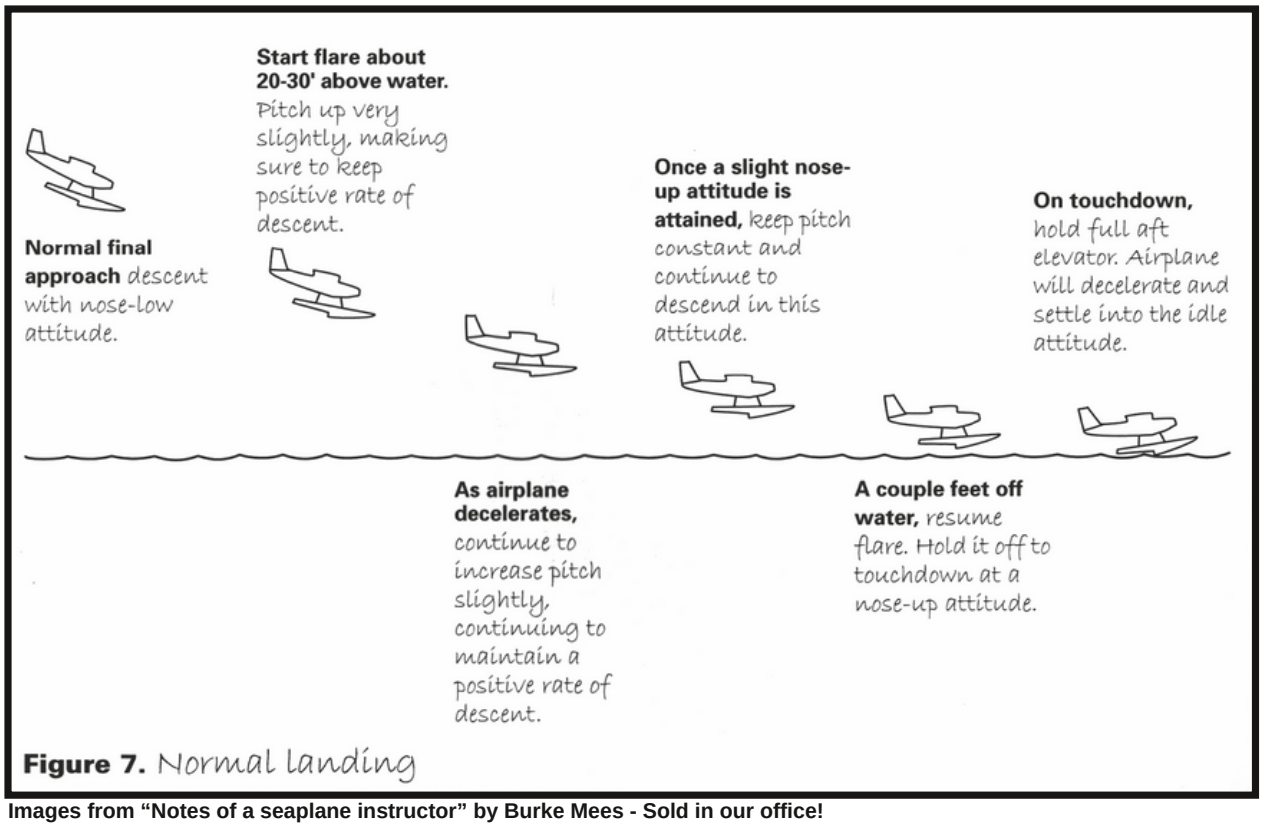


Figure 7. Normal landing

Images from "Notes of a seaplane instructor" by Burke Mees - Sold in our office!

WIND

Deciphering the wind by looking at the lake is a seaplane pilot's best tool. For this reason a thorough knowledge of wind is imperative. There are four basic ways in which to judge wind direction. They are as follows;

1. Glassy band of slick water

This runs along the shoreline from where the wind is coming from. As the wind blows over the tops of the trees, it sinks them and strikes the top surfaces of the water. This causes wavelets to form. A narrow band of slick water on the leeward side of the lake will form above 5 KTS.
See Figure 21


FIG. 21

2. Rough side of lake

As the wind continues over the lake, the downwind side of the waves build in height and intensity. Depending on the lake's size, the windward side can be quite rough. The windward side will be the roughest part of the lake.
See Figure 22

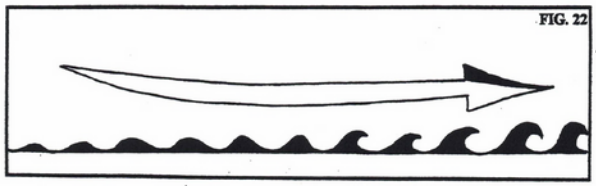


FIG. 22

3. Wind streaks are parallel to the wind direction

To a well-trained pilot, wind streaks can be visible at wind speeds as low as 5 KTS. When the waves are starting to white cap, at about 8 to 12 KTS, wind streaks are extremely prevalent. This is caused by the wind blowing the foam off the top of the white cap. The foam now settles in the trough of each wave. Should the streaks look smudged, this is an indication of wind direction changing.
See Figure 23

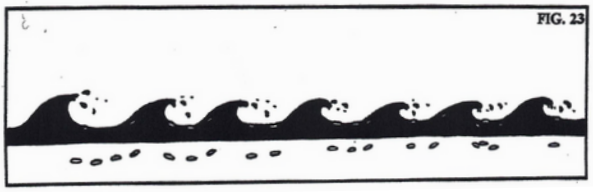


FIG. 23

4. Waves

Waves are caused by the wind. As the wind drives the wave, downwind it will swell up. If the wind is strong enough, above 8 KTS, white caps will form on the downwind side of the wave. The waves will always be perpendicular or 90 degrees to the wind.


FIG. 24

A wave starts out its life as a ripple. Wind of 1 to 3 KTS will cause this. As the wind increases, small wavelets form at around 4 to 7 KTS. As the wind picks up to about 8 to 12 KTS, wavelets become much bigger and the downwind side of the wave begins to break forming a white cap.

When the wind gets even stronger in the region of about 12 to 17 KTS, the wave takes on a longer and higher appearance and white caps abound. Pushing the wind meter up in excess of 20 KTS causes the wave to roll downwind. Above 25 KTS the waves start to roll and heave. Wave's white caps consistently spray abound and we need to look for a safe haven for our machine. When the wind reaches anything above 31 KTS they are only pretty from the dock. Even though the wind can be extremely strong, waves can behave out of character to wind speed. A perfect example of this would be a small lake surrounded by trees. The waves will, however, become more in character on the windward side of the lake.
See Figure 24

SAILING

Sailing is used in stronger winds (weathercocking is a problem). Use the wind to your advantage for maneuvering two kinds of sailing: Power-on + Power-off (usually used in combination).

POWER-OFF SAILING

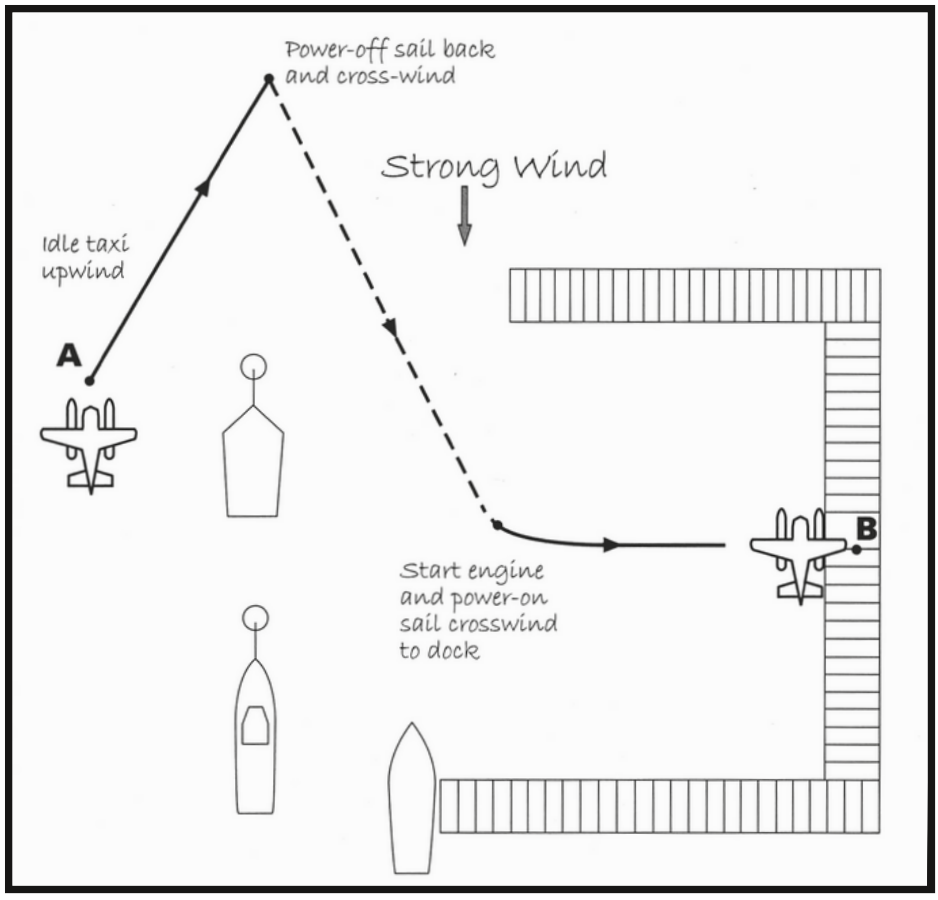
Used for maneuvering the plane while drifting downwind. Not a huge range of motion (Weathervaning limits how far AC travels). Trial and error.

HOW TO:

1. Shut down the engine.
2. Water rudders up (counter direction travel of AC).
3. Point the tail of the AC to where you want to go using the rudder pedals.
4. Turn the CC into the wind (X-wind inputs). This helps turn the AC in the direction we want to go. The down-going aileron makes more drag.
5. In strong winds, CC forward to keep the heels of the floats from digging in.

EXAMPLES: to the dock and from the dock.

Getting from point A to point B on the water in a strong wind situation can involve a creative combination of idle taxiing upwind. Power-on sailing crosswind and power-off sailing downwind and crosswind. An illustration of this is shown below.



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SAILING

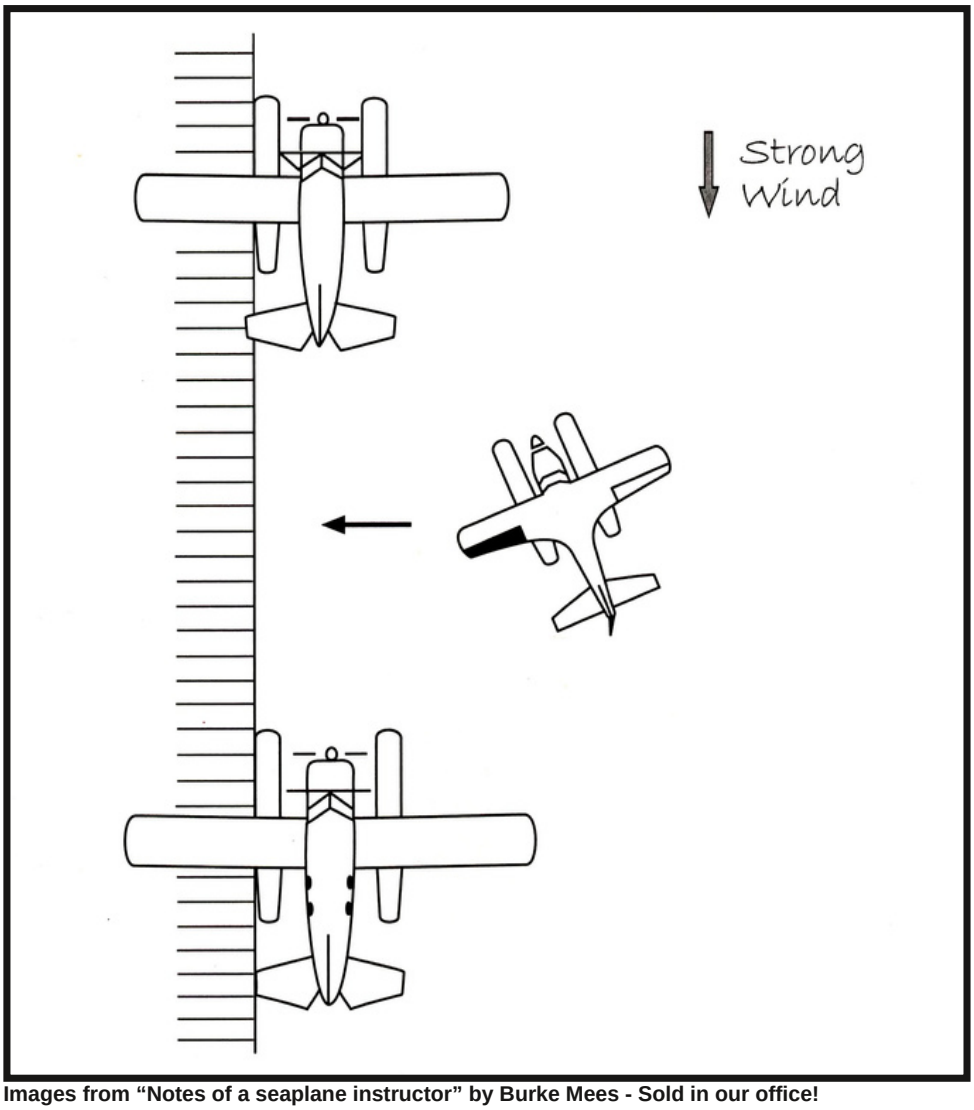
POWER-ON SAILING

Used to maneuver the AC crosswind. Match the wind speed with our forward thrust. Needs strong winds to hold AC from going forward.

HOW TO:

1. Keep the engine running,
    - Throttle up or down to match the wind
    - Slow engine down more than idle
    - One mag
    - Carb heat on
2. Water rudders down (helps maneuverability).
3. Walk the nose of the AC, with rudders towards the direction of travel intended.
4. CC turned opposite the direction of travel (X-wind inputs).
5. CC full-back to keep float tips up.

The example below: Maneuvering into tight spaces in strong wind conditions.



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Emergency Procedures

Rough Running Engine

Carb Heat ..... On
Mix ..... Rich
Fuel ..... Re-select both + sufficient
Engine Gauges ..... Ts/Ps in the Green
Primer ..... In and Locked
Mags ..... Cycle then Both

Communication Failure

Radio ..... Check Frequency, Volume, Squelch
Master ..... Both Off
Electrical Equip ..... Off
Circuit Breakers ..... Check
Master/Electrical Equip ..... On
Transponder ..... 7600 Light
Signals ..... Green-Clr land, Red-Cont Circling Contact
Tower Emergency Line 250-765-3426
Or Divert to Alternate Airport

Engine Fire in Flight

Mix ..... Idle Cut Off
FuelSelector ..... Off
Master ..... Off
Cabin ht + air vents ..... Closed
Airspeed ..... 105 knots or higher
Forced Landing ..... Land Safely!

Electrical Fire in Flight

Master ..... Both Off
Cabin ht + air vents ..... Closed
Fire Extinguisher ..... Activate
Ventilate ..... Cabin
Check circuit breakers ..... Dont reset!!!
Switches except ignition ..... Off
Master ..... On
Switches ..... Turn on one at a time slowly
Terminate Flight ..... ASAP

Forced Landing

Pitch best glide ..... 75 Kts
Initial cause check ..... Mix rich, fuel re-select both
Carb heat ..... On
Pick field ..... Plan approach
Cause check

1. Fuel Sufficient
2. Oil temp + Pressure green
3. Primer in + locked
4. Master - both
5. Mags cycle, then both
6. Throttle Vary
7. Mix vary
8. Props full fine
9. Fuel reselect both

Attempt ..... Restart
Mayday Call ..... On current Freq or 121.5
Transponder 7700
Passenger ..... Quick brief
Secure engine ..... .Shutdown

MAKE THE FIELD

Secure Aircraft/Shut Down

Avionics Master ..... Off
Switches ..... Off
Live Mag Check ..... Off/Both
Mixture ..... Idle Cut Off
Mags ..... Off
Master ..... Off
Keys ..... Out!

Control Lock ..... Install
Secure Aircraft ..... 4 ropes securely tied
Radios/Equip ..... Off

Airhart aviation

1979 C180M FWJC

Checklist

Empty Wt. 2198 lbs
Gross Wt. 3190 lbs
Teledyne Continental O-470-U Power
230 HP @ 2400 rpm
Oil W100 - 8-10 qts

Take-Off KIAS

Normal Climb ..... 70 50' Max
Performance -20° Flap 60
Vx - SL63/10K66
Vy - SL79/10K72
Best Glide 75

Enroute

Cruise @ 75% ..... 22"/2200 RPM
Va - Maneuvering Speed ..... 3190 lbs - 108

Vs - Stall 58
Vso - Stall/Flaps 54
Vne - Never Exceed Speed 167
Vno - CAUTION - Yellow arc 139

Land

Vfe - Flaps Extended 10° 120
20° - 40° Flap 90

Preflight Check

Weather / NOTAM
AIRWOLLE - CCC
Defects / Airtime

Preflight

Walk Around ..... Complete(rudders/prop/etc)
Flaps ..... Extend
Fuel 80gal total ..... Check quantity- Secure Caps
37.5 gal/side Usable(75) ..... 13 gal/hr
Sump fuel ..... Grade/Water/Sediment
Oil- 8-10QTS 8min/10max
Floats ..... Pump
Control Lock ..... Remove
Master ..... On
Lights ..... On/Check/Off
Master ..... Off
Passenger Brief ..... Complete

Before Start

Preflight ..... Complete
Water Rudders ..... Down
Fuel Selector Valve ..... Both
Cowl Flaps ..... Open
Mix ..... Rich
Props ..... Fine
Radios/Transponder ..... Off
Circuit Breakers ..... In
Avionics Master ..... Off
Throttle ..... In 1/8"
Carb Heat ..... Cold
Primer 4-6 Strokes ..... In and Locked

Start

Master ..... On
Prop Area ..... CLEAR!
Ignition Switch ..... Start
Oil Pressure ..... Check Rise into green
Taxi 900RPM
Radio/Electronics ..... On
Transponder ..... ALT

Run Up/Before Take Off

Control column ..... Full aft
Nav Lights ..... On
Runup area clear ..... No obstructions - Into wind
Doors/belts/windows ..... Secure
Flight Controls ..... Free/Correct
Instrument check ..... T.C. / A.I. / M.C.
Elevator Trim ..... Take-Off
Instruments Set ..... D.G. / A.I. / Alt
Engine Temperatures ..... Starting to Rise
Throttle ..... 1800 RPM
Engine Instruments ..... Ts/Ps in the Green
Mixture ..... Lean Check
Prop ..... Cycle twice
Magnetos ..... 150 RPM Max Drop
Left/Both/Right/Both ..... 50 RPM Difference
Suction ..... in the green
Alternator ..... Load Check
Carb Heat ..... Hot - 100 RPM drop
Throttle ..... Idle
Carb heat ..... Cold
Throttle ..... 800 RPM
Radios ..... Set
Throttle Friction Lock ..... Adjust
Review ..... Departure/Emergency Procedures

TAKE OFF AS REQUIRED

Take-Off GUMPFS

Record the Time

Gas ..... Both + sufficient
Under Carriage ..... Water Rudders up
Mix ..... Full Rich
Props ..... Full Fine
Flaps/cowl flaps open ..... 20°
Switches ..... Circuits in, mags both, master on
Primer ..... In + locked
Carb Heat ..... Cold
Throttle ..... Advance slowly to full power
Confirm ..... Static RPM (over 2400)
Ts/Ps ..... in the Green
Climb power ..... 23", 2400 rpm
Confirm ..... 70 kts/ Positive rate of climb
Flaps ..... Retract in stages

Cruise Checks

Throttle ..... 21" MP
Props ..... 2200 RPM
Confirm throttle ..... 22"MP
Trim ..... Adjust
Mixture ..... Lean 50° rich of peak Carb
Heat ..... Check
Radio Call ..... As Required

Pre-Landing OWLS GUMPFS

Gas ..... Both and sufficient
Under Carriage ..... water rudders up
Mix ..... Full Rich
Props/flaps ..... To come
Switches ..... Circuits in, mags both, master on
Primer ..... In + locked Engine
Instruments ..... Ts/Ps in the Green Passenger
Brief ..... Belts/Doors/Windows
Radio Call ..... As Required
Carb Heat ..... On
Throttle ..... Reduce in stages
Flaps ..... as required

Balked Landing

Power ..... Full Throttle
Carb Heat ..... Off
Flaps ..... Retract to 20°
Build Airspeed ..... 70 kts
Confirm ..... 2400 rpm/Ts+Ps in the Green
Climb Power ..... 23"mp/2400rpm
Confirm ..... 70 kts/Postitive rate of climb
Retract Flaps ..... Slowly/maintain pitch

After Landing

Record the Time

Touch Down ..... Slightly tail low
Throttle ..... Idle
Carb Heat ..... Cold
Flaps ..... Retract
Control Wheel ..... full AFT as plane decelerates
Throttle ..... <1000 RPM
Water Rudders ..... Down gently

Emergency Procedures

Rough Running Engine

Mix ..... Rich
Fuel ..... Re-select both + sufficient
Engine Guages ..... Ts/Ps in the Green
Primer ..... In and Locked
Mags ..... Cycle then Both

Communication Failure

Radio ..... Check Frequency, Volume, Squelch
Master ..... Both Off
Electrical Equip ..... Off
Circuit Breakers ..... Check
Master/Electrical Equip ..... On
Transponder ..... 7600 Light
Signals ..... Green-Clr land, Red-Cont Circling
Contact Tower Emergency Line 250-765-3426
Or Divert to Alternate Airport

Engine Fire in Flight

Mix ..... Idle Cut Off
Fuel Selector ..... Off
Master ..... Off
Cabin ht + air vents ..... Closed
Airspeed ..... 105 knots or higher
Forced Landing ..... Land Safely!

Electrical Fire in Flight

Master ..... Both Off
Cabin ht + air vents ..... Closed
Fire Extinguisher ..... Activate
Ventilate ..... Cabin
Check circuit breakers ..... Don't reset!!!
Switches, except ignition ..... Off
Master ..... On
Switches ..... Turn on one at a time slowly
Terminate Flight ..... ASAP

Forced Landing

Pitch best glide ..... 70 kts
Initial cause check ..... Mix, fuel reselect both
Aux fuel pump ..... Low 3-5 sec then off
Pick field ..... Plan approach
Full ..... Cause check

1. Fuel Sufficient
2. Oil temp + Pressure green
3. Fuel shutoff in
4. Primer in + locked
5. Master - both
6. Mags - cycle, then both
7. Throttle Vary
8. Mix vary
9. Props full fine
10. Fuel reselect both

Attempt ..... Restart
Mayday Call ..... On current Freq or 121.5
Transponder 7700
Passenger ..... Brief
Secure engine ..... Shutdown

MAKE THE FIELD

Secure Aircraft/Shut Down

Avionics Master ..... Off
Switches ..... Off
Live Mag Check ..... Off/Both
Mixture ..... Idle Cut Off
Mags ..... Off
Master ..... Off
Keys ..... Out!

Control Lock ..... Install
Secure Aircraft ..... 4 ropes securely tied
Radios/Equip ..... Off

Airhart aviation

1977 C172xp GYVB

Checklist

Empty Wt. 1895 lbs
Gross Wt. 2550 lbs
Teledyne Continental fuel injection IO-360-K
Power 195 BHP @ 2600 rpm
Oil W100 - 6-8 qts

Take-Off KIAS

Normal Climb ..... 60-70 50'
Max Performance -20° Flap 56
Vx - SL56/10K60
Vy - SL72/10K66
Best Glide 70

Enroute

Cruise @ 75% ..... 23"/2300 RPM
Va - Maneuvering Speed ..... 2550 lbs -105
2300 lbs - 99
2050 lbs - 93
Vs - Stall 48
Vso - Stall/Flaps 42
Vne - Never Exceed Speed 163
Vno - CAUTION - Yellow arc 129

Land

Vfe - Flaps Extended 10° - 40° 85

Preflight Check

Weather / NOTAM
AIRWOLLE - CCC
Defects / Airtime

Preflight

Walk Around ..... Complete (rudders/prop/etc)
Flaps ..... Extend
Fuel 52 gal total ..... Check quantity- Secure Caps
24.5 gal/side Usable (49) ..... 10 gal/hr
Sump fuel ..... Grade/Water/Sediment
Oil- 6-8QTS 6min/8max
Floats ..... Pump
Control Lock ..... Remove
Master ..... On
Lights ..... On/Check/Off
Master ..... Off
Passenger Brief ..... Complete

Before Start

Preflight ..... Complete
Water Rudders ..... Down Fuel
Selector Valve ..... Both
Cowl Flaps ..... Open
Mix ..... Rich
Props ..... Fine
Radios/Transponder ..... Off
Circuit Breakers ..... In
Avionics Master ..... Off
Throttle ..... Full
Master ..... On
Boost Pump ..... High 14 psi
Master ..... Off
Throttle ..... In 1/8"
Primer ..... In + locked
Fuel shutoff ..... In

Start

Master ..... On
Prop Area ..... CLEAR!
Ignition Switch ..... Start
Oil Pressure ..... Check Rise into green
Taxi 900RPM
Radio/Electronics ..... On
Transponder ..... ALT

Run Up/Before Take Off

Control column ..... Full aft
Nav/Strobe Lights ..... On
Runup area clear ..... No obstructions - Into wind
Doors/belts/windows ..... Secure
Flight Controls ..... Free/Correct
Instrument check ..... T.C. / A.I. / M.C.
Elevator Trim ..... Take-Off
Instruments Set ..... D.G. / A.I. / Alt
Engine Temperatures ..... Start to rise
Throttle ..... 1800 RPM
Engine Instruments ..... Ts/Ps in the Green
Mixture ..... Lean Check
Prop ..... Cycle twice
Magnetos ..... 150 RPM Max Drop
Left/Both/Right/Both ..... 50 RPM Difference
Suction ..... in the green
Alternator ..... Load Check
Throttle ..... Idle
Throttle ..... 800 RPM
Radios ..... Set
Throttle Friction Lock ..... Adjust
Review ..... Departure/Emergency Procedures

TAKE-OFF AS REQUIRED

Take-Off GUMPFS Record the Time

Gas ..... Both + Sufficient
Under Carriage ..... Water Rudders up
Mix ..... Full Rich
Props ..... Full Fine
Flaps/cowl flaps open ..... 20°
Switches ..... Circuits in, mags both, master on
Primer ..... In + locked
Throttle ..... Advance slowly to full power
Fuel shut off ..... In
Confirm ..... Static RPM
Ts/Ps ..... in the Green
Climb power ..... 25", 2500 rpm
Confirm ..... 60 kts/ Positive rate of climb
Flaps ..... Retract in stages

Cruise Checks

Throttle ..... 22" MP
Props ..... 2300 RPM
Confirm throttle ..... 23" MP
Trim ..... Adjust
Mixture ..... Lean 50° rich of peak
Radio Call ..... As Required

Pre-Landing OWLS GUMPFS

Gas ..... Both and sufficient
Under Carriage ..... water rudders up
Mix ..... Full Rich
Props/flaps ..... To come
Switches ..... Circuits in, mags both, master on
Primer ..... In + locked
Fuel Shut off ..... In
Engine Instruments ..... Ts/Ps in the Green
Passenger Brief ..... Belts/Doors/Windows Radio
Call ..... As Required
Throttle ..... Reduce in stages
Flaps ..... as required

Balked Landing

Power ..... Full Throttle
Flaps ..... Retract to 20°
Build Airspeed ..... 60 kts
Confirm ..... 2500 rpm/Ts+Ps in the Green
Climb Power ..... 25'mp/2500rpm
Confirm ..... 60 kts/Postitive rate of climb
Retract Flaps ..... Slowly/maintain pitch

After Landing Record the Time

Touch Down ..... Slightly tail low
Throttle ..... Idle
Flaps ..... Retract Control
Wheel ..... full AFT as plane decelerates
Throttle ..... <1000 RPM Water
Rudders ..... Down gently

1979

Cessna 180k **FWJC**	WEIGHT	ARM	MOMENT
Basic Empty	2198 lbs	40	87,920
Front seat		38	
Back seat		73	
Bag 1 (max 120 lbs)		95	
Bag 2 (max 50 lbs) max combined wt 200 lbs		123	
Usable Fuel/lbs (75 Gals) 6lbs/gal		48	
Take-off weight/moment		C of G	
Gross Weight	3190 lbs		

IS THE AIRCRAFT WITHIN C of G LIMITS? Y / N
DEFECTS? Y / N
TIME LEFT? _____

GFA: ☐
METAR/TAF: ☐
Notams/Pireps: ☐
SIGMENTS/AIRMETS: ☐

Signature:_____

Date: _____

Less Burn (13gals/hr)		48	
LANDING WEIGHT		C of G	

1977

Cessna 172xp **GYVB**	WEIGHT	ARM	MOMENT
Basic Empty	1895 lbs	38	72,010
Front seat		37	
Back seat		73	
Bag 1 (max 200 lbs)		95	
Bag 2 (max 50 lbs) max combined wt 200 lbs		123	
Usable Fuel/lbs (49 Gals) 6lbs/gal		48	
Take-off weight/moment		C of G	
Gross Weight	2550 lbs		

IS THE AIRCRAFT WITHIN C of G LIMITS? Y / N
DEFECTS? Y / N
TIME LEFT? _____

GFA: ☐
METAR/TAF: ☐
Notams/Pireps: ☐
SIGMENTS/AIRMETS: ☐

Signature:_____

Date: _____

Less Burn (10gals/hr)		48	
LANDING WEIGHT		C of G	

50 HOUR FLOAT RATING CHECKLIST

Ground Brief			
Constant Speed Propellers		Docking	
Power Management		Floatplane terminology	
Water Handling		Seaplane vs. landplane performance	
Takeoffs		Water Aerodrome Supplement	
Approach & Landings			

Planning & Preparation	
Aircraft specifications/performance	
Pre-flight inspection	
Passenger safety briefing	
Engine starting procedure	
Departing the dock	

Pre-Solo (Float Rating)	
Water Handling	
Rules for watercraft	
Weathercocking	
Yoke position	
Aileron inputs	
Rudder control	
Displacement taxi	
Plow taxi - Run-up	
Take-Off	
Normal	
Glassy water	
Approach & Landing	
Inspection	
20 Flap	
30 Flap	
40 Flap	
Glassy Water	
Hover Drill	
Docking	
Securing the floatplane	
Pilot side	
Passenger side	

Water Handling	
Intermediate	
Step taxi	
Step taxi turns	
Advanced	
Plow taxi - High wind turn	
Sailing - Power on	
Sailing - Power off	
Abnormal Situations	
Submerged floats	
Step taxi - Quick avoidance	

Takeoff	
Intermediate	
Float rolling	
Short field	
Over an obstacle	
Advanced	
Rocking onto the step	
Step turn approach	
Crosswind	
Downwind	
Rough water	
Low - level turns	
Abnormal Situations	
Porpoising	
Quick avoidance	
Aborted take-off	
Engine failure after take-off	
Gusty wind conditions	

Approach & Landing	
Intermediate	
Touch and go	
Short field - No obstacle	
Short field - With obstacle	
Advanced	
Crosswind	
Downwind	
Rough water	
Low-level circuit	
Abnormal Situations	
Overshooting	
Emergency Landings	
Gusty wind conditions	

Docking	
Intermediate	
Nose in	
Beaching	
Paddling	
Advanced	
Crosswind	
Downwind	
High Wind	
Mooring	

Special Operations	
Low Level Navigation	
Small Lakes	
Rivers	
Cold Weather Operations	
Mountain Operations	
External Loads	
Emergency Egress	

STUDENT NAME : _____