

Boat Driving Safety

Reference Material



Acknowledgements

This Coach Workbook has been compiled from resources produced by various safe boating authorities. WSWC is also indebted to the Water Ski and Wakeboard Ontario and its personnel for sharing its technical information for the Reference Material, which served as a sound model for further development of this coaching program.

We would like to thank Transport Canada for developing the rules and regulations of Canadian navigable waters and for allowing us the use of some artwork and ideas from their Pleasure Craft Operators courses.

We would also like to thank the following companies for allowing us to use their photos and artwork:

Correct Craft Inc. the manufacturer of Nautique Boats – www.nautique.com - for all full boat and hull pictures and illustrations.

BoaterExam.com - www.boaterexam.com - for "Rules of the Road" diagrams.

Boat Ed – <u>www.boat-ed.com</u> - for engine illustrations.

Boating, Sailing, and Kayaking Guide – www.boatingsailingandkayakingguide.yolasite.com – for the rope diagram.

In addition, we wish to thank the Boat Driving Safety Workgroup for volunteering their time to develop this great learning resource.

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Reference Material

Water Ski and Wakeboard Canada (WSWC) is committed to providing a safe experience to all involved in towed water sports in Canada. To this end, WSWC has designed a course aimed at providing boat drivers the tools to perform their tasks effectively and safety whether in a recreational or tournament capacity.

Safety is everyone's responsibility. It is "Rule One". It is an attitude in which everyone assumes responsibility for their own equipment, safety and well being and looks out for the safety and well being of others as well.

Water Ski and Wakeboard Canada is keen to promote a safety-first attitude throughout the sporting experience. This course (and reference material) will outline the mandatory criteria and obligations as well as provide best-practices for boat driving. The reference material has been created to service the towed water sports.



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Overview

	CONTENT	DURATION	PAGE
1	Section 1: Safety (On Land)	30 min	1
2	Communication Signals	15 min	5
3	360 Degrees of Awareness	15 min	6
4	Key Hold Turn - Picking Up a Fallen Participant	30 min	7
5	Driving for the Basic Start	30 min	8
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7	Getting a Fallen Participant into the Boat	15 min	10
8	"Landing" a Participant	15 min	11
9	Beginner Loop	15 min	12
10	Barbell Pattern	15 min	13
11	Docking	1 hour	14
12	Exam	1 hour	19
	TOTAL COURSE TIME	5 hours	





Section 1: Safety





Setting the Scene

Water Ski and Wakeboard Canada (WSWC) is committed to providing a safe experience to all involved in towed water sports in Canada. To this end, WSWC has designed a course aimed at providing boat drivers the tools to perform their tasks effectively and safety whether in a recreational or tournament capacity.

Safety is everyone's responsibility. It is "Rule One". It is an attitude in which everyone assumes responsibility for their own equipment, safety and well being and looks out for the safety and well being of others as well.

Water Ski and Wakeboard Canada is keen to promote a safety-first attitude throughout the sporting experience. This course (and reference material) will outline the mandatory criteria and obligations as well as provide best-practices for boat driving. The reference material has been created to service the towed water sports community.

The goals of the course are:

- For new boat drivers to complete all on-water training and leave the course with a realistic measurement of their safe boat driving ability
- For drivers to leave the course with relevant tools and references to continue improvement in boat driving skills
- Make it more enjoyable for future participants.
- New instructors or people who are new to the sport will improve their boat driving skills to make the environment safer.
- Driving a boat for pleasure versus towing a participant has various technical differences that one should be aware of. By acknowledging these differences, one aids in creating the safest environment possible.

Key Components for Safe Boat Driving:

- Use a competent and knowledgeable observer
- Choose a safe area away from channels, swimming areas, skin-divers, fishermen, shallow/unknown waters and restricted areas
- Be familiar with emergency procedures and make sure staff are trained properly
- Be aware of oil and gas levels at all times
- Be sure that the boat contains all proper safety equipment as per the Canadian Coast Guard.
- Drive responsibly and defensively



Boating Regulations

Boating in Canada is governed by several important acts, codes and regulations that apply to all operators and vessels.

When operating a boat, you are responsible for the vessel, your guests and crew and any damage caused by your boat's movement through the water, including damage from the boat's wash. Operators and/or owners of pleasure craft that do no comply with Canadian laws and regulations could be subject to fines or penalties under the following:

- Small Vessel Regulations (http://www.tc.gc.ca/eng/marinesafety/vessels-pleasure-1279.htm)
- Collision Regulations (http://www.tc.gc.ca/eng/marinesafety/tp-tp14070-menu-1648.htm)
- Canada Shipping Act (http://www.tc.gc.ca/eng/acts-regulations/acts-2001c26.htm)
- Boating Restriction Regulations (http://www.tc.gc.ca/eng/marinesafety/debs-obs-resources-publications-restriction-menu-245.htm)
- Chart and Nautical Publications Regulations (http://www.tc.gc.ca/eng/marinesafety/tp-tp14070-2917.htm)
- Criminal Code of Canada (http://laws.justice.gc.ca/en/c-46/) can't find exact boat section

Enforcement

Boating in Canada falls under several different jurisdictions and can be enforced by several different law enforcement agencies on one body of water. These can include and are not limited to The Canadian Coast Guard, The Royal Canadian Navy, The RCMP, Provincial Police, and Municipal enforcement.

Boat Insurance

All provincial offices offer discounts on boat insurance. Check out the link below to see what we have to offer you:

www.waterski-wakeboard.ca/programs_adaptive_e.php?p=programs_towsmartboatinsurance_e

Required Safety Equipment

Canadian Vessels are required by law to have a standard set of safety equipment which is determined by the Canadian Coast Guard. Safety standards change based on vessel size and type. Below is the required safety equipment for the average size tow boat. <u>Please see appendix 3A for the full safety equipment standards.</u>



Safety Requirements for Canadian Vessels up to 9m (29ft)

- Class 5BC fire extinguisher
- Bailing Device or manual bilge pump with sufficient hose to reach over the gunwale
- Whistle or manual air signaling device
- Paddles or Anchor with minimum15m rode
- Water Tight Flashlight
- Canadian Coast Guard approved life jacket or PFD for each person on board as well as for the participant behind the boat. (note most ski vests are not approved life jackets)
- 15m(50ft) Buoyant heaving line (if using a tow rope the handle must float)
- Appropriate navigation lights are required for night operation
- 6 Flares type A,B,C (required only if vessel is on a waterway where a vessel may be more than 1 nautical mile (1.85km) from shore
- One re-boarding device. (Note: Not necessary if boat has a swim platform)

Safety Requirements for Canadian Personal Water Crafts (PWC's)

*NOTE: There must a seat for the participant behind the boat *

- Canadian Coast Guard Approved Life Jacket or PFD for each person on board as well as skier (note most ski vests are not approved life jackets)
- 15m(50ft) Buoyant heaving Line
- Paddles or Anchor with minimum15m rope
- Bailing Device or manual bilge pump with sufficient hose to reach over the gunwale
- Water Tight Flashlight
- Whistle or Manual Air Horn
- Fire extinguisher class 5BC fire extinguisher

Note* If operator and everyone on board is wearing an approved life jacket or PFD paddle, anchor, bailer/manual pump, and fire extinguisher are NOT required.



The Boat Driver & Their Responsibilities

The Boat Driver is responsible for the overall safe conduct of everyone participating in towed water sport activity. This includes the athletes and all members of the boat crew. Responsibilities include both legal and moral obligations.

Federal/Provincial/Municipal Boating Regulations

The Boat driver is responsible for ensuring they (and all participants) conform to all provincial and/or federal boating regulations while on the water, including:

Driver has a valid Pleasure Craft Operator (PCO) card and is carrying the card

Other Provincial or Municipal regulations are observed

The boat has all the necessary safety equipment

Towing activities are allowed in the period from one hour prior to dawn to one hour after dusk

Criminal Code of Canada

From a legal point of view in Canada, behaviours by the boat driver that are offences under the <u>Criminal Code</u> of Canada include:

- Operating a vessel dangerously
- Operating a vessel while impaired
- Towing athlete's without a spotter
- Failing to stop at the scene of an accident
- Operating an unseaworthy vessel

Zero-tolerance Policy - Consumption of alcohol and Illicit Drugs

Although the legal limit of alcohol for a boat driver in Canada is 0.05, it is Water Ski Wakeboard Canada's position that any boat driver participating in towed water sport activities maintain a zero blood alcohol level. As with any job driving a vehicle you should consume zero alcohol or illicit substance prior to or during operation. It is important to understand that **any alcohol** can have a negative impact or distort perception. These include:

- · Reducing the driver's reaction time
- Raising legal issues arising from consumption and then responding to an incident
- Creating a negative environment (athletes, boat crew, etc. have seen consumption of alcohol)
- Charges related to operating a vessel with a blood alcohol level in excess of the legal limit will result in losing your marine licence as well as your motor vehicle licence.



Site Inspection

The boat driver, prior to any towed water sport activity, should complete a site inspection to ensure the area is safe and should include the following:

Take-off and landing areas: (e.g. docks and the waters adjacent to the dock) to see that they are free of rocks, broken glass or other hazardous objects.

Prior to any participant being towed, complete a full scan of the water way to ensure it is free of debris

Weather and Water Conditions

Participating in towed water sports where visibility is limited can be very dangerous as obstacles, other boats or even fallen skiers/boarders can be very difficult to see in a timely manner. If you cannot see where you are going, you cannot participate safely. Participating in towed water sports before dawn and after sunset is obviously dangerous and, is in fact, against the law in Canada. Fog, mist and heavy rain offer the same hazards. The boat driver has the responsibility to stop the towed activity should visibility be reduced to an unsafe level.

All boating and towed water sport activity should cease immediately if thunder (and/or lightning) is present. The general rule of thumb is to wait 30 minutes after the last rumble or lightning strike before returning to the water.

Once thunder or lightning is detected, the most prudent action is to dock (or trailer) the boat. Once the boat is moored everyone on board should disembark the vessel and seek an appropriate shelter on land.

Water Conditions

Towed water sports should be confined to areas free from any sort of congestion. This includes all boat traffic, marinas and harbors as well as swimming and scuba diving areas. The water must be free from obstacles both below and above the surface, such as rocks, sunken logs, shoals and sandbars - as well as diving boards and other similar objects that project over the water, either from the shore or from floating rafts. The water must also be free from floating debris.

Ideal water is calm. As the roughness of the water increases, so does the risk of the athlete falling and potentially injuring themselves. As the driver you must constantly monitor the surface conditions of the water and determine if your athlete is able to safely ride through any sort of surface chop. If you are unsure of an athlete's ability to cope with any type of surface condition, cease towing, bring the rider back on the boat and relocate to an area that has better conditions.



Section 2: Driving





Communication Signals

There are eight communication signals that all members of the boat crew (driver, observer and participant) should know and use while participating in towed water sport activities. They are:

SPEED UP



The 'Thumbs Up" gesture or palm up is used to indicate an increase in speed.



SLOW DOWN	E	The "Thumbs Down" or palm down is used to indicate a decrease in speed.
TURN (AROUND)		When either the participant or the driver uses a circling motion above their head with the arm, a turn is indicated. This signal can be followed by pointing in the direction of the turn.
BACK TO DOCK or "Home"		A pat on the top of the head indicates the desire to return to the dock.
CUT MOTOR	(F)	A finger motion across the throat indicates the boat is to stop immediately. This can be used by the participant, driver and/or observer.
STOP	M	Hand raised with fingers outstretched (similar to indicating the number 5) means the participants is finished and wants the boat to stop.
O.K. AFTER FALL		Both hands clasped over the head as soon as the participant is sure he is alright indicate to the observer the participant's condition.
O.K		"0" made with the thumb and index finger indicates everything is satisfactory.

360 Degrees of Awareness

One of the keys to driving a boat is being completely aware of your surroundings. The boat driver is responsible for not only the boat and its occupants but also the participant. Don't expect others to know the rules on the water. Surroundings that the driver should be aware of:



- Swimmers
- Boats (the driver must never assume that the other boat is aware of them)
- Paddle boats, personal watercraft (i.e. Jet Ski), sailboats, windsurfers, and canoes.
- Offshore buoys (indicating shallow water or swimming water), navigational buoys, swimming rafts.

The boat driver should be aware of the participant at all times; the boat driver greatly influences the success of the participant. The following are participant elements that the driver is responsible for:

- Taking up slack in the rope in a slow and controlled manner to ensure that the participant is not pulled off balance when preparing to start.
- Proper acceleration to pull the participant out of the water; take into account the weight and skill of the participant.
- Maintain the proper participant speed for the skill level of the participant, especially through a turn.
- Using the turning pattern best suited to the skill level of the participant.
- Proper deceleration of the boat to sink the participant at the dock.
- Watching the participant at all times when in the water (after a fall or swimming to the dock).

Driving for the Basic Start

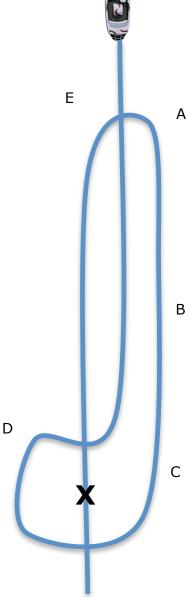
- Idle the boat slowly out from the dock tell the skier to wait for your signal before entering the water
- Slowly line up the skier so they are directly behind the boat with the rope tight
- Wait for the skier to signal their readiness or the Instructor's signal
- Before accelerating, straighten the motor or rudder and look forward to ensure that you have a clear boat path
- Speed of accelerating depends on the weight and skill level and type of skier. Regardless of the speed of acceleration, the acceleration should always be **constant**. The ensure the proper acceleration speed, watch the skier the entire time they are being pulled out of the water (or as much as is safe for your surroundings)
- As the boat planes on the water, set the proper skier speed by watching where the water breaks on the ski or wakeboard. For a basic two skier, the water should be breaking at the skier's toes. A boat driver should be able to determine a proper speed for a skier without using a speedometer or tachometer.

Maintaining and Controlling Boat Speed

Consistency is crucial when driving for any type of towed water sport. The speed should be held constant by always keeping your right hand on the throttle. If a speed change does need to be made, it should be done in a slow and controlled manner.



- A) When a skier falls, the observer will inform the driver, who will decelerate to idle speed and then proceed to turn back to pick up the fallen skier. Then turn should only be made after the boat has decelerated. The driver should ask the observer if the athlete gave the "OK" signal.
- B) Return to the fallen athlete at idle speed, always keeping the athlete on the driver's side of the boat.
- C) The driver maneuvers the boat in a 'keyhole' pattern around the skier, keeping a safe distance of 10-15 feet or 3-5 metres as the boat circles the skier and the skier retrieves the rope
- D) Slowly tighten the rope, using forward and neutral as you line up the skier directly behind the boat and wait for the skier to get the handle and get ready.
- E) Wait for the skier's ready signal. Straighten the motor and look forward to ensure a clear and safe boat path. Watch the skier as much as is safe for your surroundings as you accelerate smoothly.





Getting a Fallen Participant into the boat

If you do not have a situation where you can return your participant back to the dock, you will need to get the skier into the boat. Please consider from the participant's viewpoint a boat approaching them. In most cases your skier or rider will be new to the sport or new to you as a coach. For that reason, a large boat approaching a participant in the water might be very scary for the person in the water. You should always be prepared to shut the boat off at any time. If you get into a dangerous situation the best move is to just shut the engine off to limit harm from the spinning propeller to the athlete.

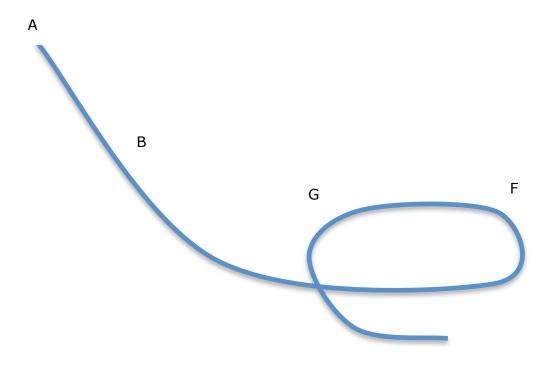
- Approach a fallen athlete on the driver's side. In the same way as your keyhole, approach the skier 10-15 feet away. This will help alleviate any fear and make the approach safer.
- Approach the skier slowly using forward and neutral to keep the speed down. It is much safer for them to swim a few feet than to try to drive the boat close to them.
- Provided you are a safe distance away you should use a little reverse to slow your forward momentum. However, please remember that in most inboard boats that will cause the stern of the boat to swing toward the athlete. If you are driving an outboard or inboard/outboard beware which direction your engine is turned.
- As soon as you have reached a safe distance from the participant and have stopped the forward momentum, turn the engine off. Regardless of the type of boat you are using, the propeller can still spin when the boat is in neutral. As a result, when a participant is in the water anywhere near the boat the engine should be shut off.
- When a participant is entering the water from the boat the engine should be turned off until the skier has entered the water and swam a safe distance from the boat and propeller.





"Landing" a Participant

- A. Have the observer give the participant the "head home" signal and begin the boat's approach into the dock/landing area.
- B. Plan your return path to the dock/landing area, with consideration to the movement of other water craft, and also any possible swimmers in the water. Do not approach the dock/landing area unless you are certain your path is safe and clear.
- C. The boat should come parallel to, and at a safe distance of at least 90 feet or 25 m from the edge of the dock and any other obstacles or hazards.
- D. As the boat approaches and passes the dock, the driver begins to pull back on the throttle, and slows the boat and participant. This will take away the participant's momentum, preventing the participant from attempting to cut into the dock and potentially hurt themselves or others. Time the deceleration so that the participant can let go and gently sinks into the water near the dock. If the participant makes a sudden cut to the dock, the driver can quickly slow the boat to try to prevent the participant from a collision with the dock.
- E. The driver should watch the participant swim into the dock and get out of the water.
- F. The observer should bring in the rope.
- G. Once the rope has been retrieved and the participant is safely on the dock, return slowly to the dock.

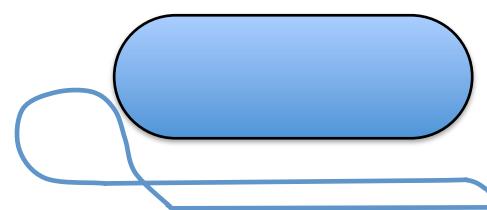




Beginner Loop

The beginner loop should be used whenever possible for all beginner towed water sports. The advantage of the beginner is loop is consistency. The turns happen very gradually and thus do not throw off the skier in anyway. In addition, the wide pattern allows the boat's wake to dissipate and spread out, making it easier for the athlete to cross.





Barbell Pattern

The barbell pattern is for more advanced skiers and riders. This should only be used after the participant is very comfortable. The advantage of this pattern is long straight palses, and only brief interference from the boat's wake.

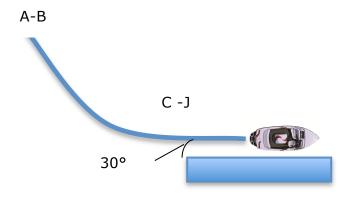
Ex:



Docking

Due to varying weather conditions, docking your boat will be different every time. So before performing your docking procedures, take into account the wind and water conditions.

- A. Approach the dock slowly at a 45 degree angle.
- B. Dock the boat on the drivers' side (starboard).
- C. Aim at the centre of where you wish to dock.
- D. Turn to port (left) when you are about 1 ½ boat lengths (25 feet) away.
- E. Slip the boat into gear (no throttle) to swing the stern around almost parallel with the dock.
- F. As it starts to rotate, slip it into reverse to stop the forward motion.
- G. As the forward motion is stopped, bring the throttle to neutral.
- H. Allow the boat to drive toward the dock.
- I. If the boat has a stern drive or out drive, you can use the steering to adjust the pull of the prop into the dock.
- J. The propeller is all you have for brakes don't shut your engine off until you have stopped.





Section 3: Appendixes





Section 3A: Safety General Safety

The boat driver is responsible for ensuring that:

- Any additional weight added to the towboat (including its occupants) does not exceed the limits specified on the towboat's maximum occupancy plate
- Towing attachments (fixed to the hull of the vessel) other than those supplied as standard equipment or approved by the towboat manufacturer should not be used. (Note: Currently, several boat manufacturers include extended pylons or booms as standard equipment.)



- The tow boat has on board, enough Canadian Coast Guard-approved Type III PFD or Canadian Coast Guard approved type V PFD's for all occupants of the tow boat (driver, observers, and judges) plus one additional approved PFD for the athlete.
- Surroundings to watch for:
- Swimmers
- Other boats (don't ever assume that the other driver is aware of you)
- Any other kind of watercraft, such as paddleboats, PWC's, sailboats, windsurfers and canoes
- Offshore buoys indicating shallow water, navigational buoys, swimming rafts, etc.
- Nails or other objects that could cause damage while docking the boat or while the skier is entering or exiting the water.

While you are pulling a skier, you also need to be aware of their performance at all times. As the boat driver you greatly influence the success of the skier. The skier elements that the boat driver is responsible for are:

- Going over the proper skier signals for good on-water communication
- Idling out and taking up slack in the rope while ensuring that the skier is not pulled off balance while preparing to start
- Proper acceleration to pull the skier out of the water, taking into account the weight and skill of the skier
- Maintaining proper skier speed for the skill level and weight of the skier, especially throughout the turn
- Turning pattern best suited to the skill level of the skier.
- Proper deceleration of the boat to sink the skier at the dock, to prevent the skier from unsafely cutting towards the dock
- Watching the skier at all times when in the water after a fall or swimming back to the dock.

Crew Orientation

The Observer:

By law, a boat towing a skier must have a 'safety observer' who:

- Is of a mature age to handle responsibilities of being an observer
- Can swim and is ready to enter the water if necessary
- Is aware of the proper skier signals and keeps the driver informed
- Keeps the driver informed of skier's progress and any falls
- Speaks clearly and loudly in order not to be misunderstood by the driver. A rear-view mirror can be used for additional assistance but in no way replaces a spotter.

The Other Occupants:

• The boat driver is ultimately responsible for the safety of his/her crew while the boat is in operation. The crew must listen to the driver at all times and follow the instructions as necessary.

Emergency Action Plan

An Emergency Action Plan (EAP) is a plan designed to assist in responding to emergency situations. The idea behind having such a plan prepared in advance is that it will help you respond in a responsible and clear-headed way if an emergency occurs. An EAP should be prepared for any area



in which you plan on boating in. An EAP can be simple or elaborate but should cover the following items:

- Designate in advance who is in charge in the event of an emergency (this may very well be you).
- Have a cell phone with you and make sure the battery is fully charged. If this is not possible, find out exactly where a telephone that you can use is located. Have spare change in the event you need to use a pay phone.
- Have emergency telephone numbers with you (fire, police, ambulance) as well as contact numbers (parents/guardians, next of kin, family doctor) for the participants.
- Prepare directions to provide Emergency Medical Services (EMS) to enable them to reach the site as rapidly as possible. You may want to include information such as the closest major intersection, one-way streets, or major landmarks.
- Have a first aid kit accessible and properly stocked at all times (all drivers are strongly encouraged to pursue first aid training).
- Designate in advance a "call person" (the person who makes contact with medical authorities and otherwise assists the person in charge). Be sure that your call person can give emergency vehicles precise instructions to reach your facility or site. When an injury occurs, an EAP should be activated immediately if the injured person:
 - Is not breathing
 - Does not have a pulse
 - Is bleeding profusely
 - Has impaired consciousness
 - o Has injured the back, neck or head
 - o Has a visible major trauma to a limb

Public Lake Etiquette

Many of our water ski members have private ski sites or private ski clubs and never have to experience sharing their water space with other members of their community. However, for the most part, our ski community was born, and still ski, on the public waterways throughout the country.

Here are some recommendations to ensure everyone on the water has an enjoyable day:

- Always try to ski or ride in a line or set up a slalom course or obstacles in an area of the lake where there are no houses and as little boat traffic as possible. Keep in mind, low boat traffic will generally mean flat water!
- Make your neighbours aware that you are putting a slalom course or obstacles in the lake and be sure to acquire all the necessary permits before installation.
- Offer to show any neighbours on the lake how the slalom course obstacles are used or direct them to WSWC's website. Offer for any of your neighbours to use the slalom course, even the personal water craft (PWC) riders. Only skilled riders should be using obstacles.
- Show respect for people fishing. If someone is fishing in the area when you want to use it, idle away slowly and respectfully. If time and water conditions permit come back when they have finished fishing.
- Be conscious of your noise level on the water; sound carries across water and can be mistaken for recklessness. This includes loud speaking, loud engines, and loud music. Please also be cautious of music content.

Tying the Boat



Tie the boat securely; NOTE: No passengers should exit the boat until the vessel has come to a complete stop and the driver has said it is safe to exit the boat. It is also important not to leave the vessel without a rope or at least be holding onto the boat.

As a Safety precaution once you have the boat securely fastened to its moorings, push the boat away to ensure that all lines tighten and the boat remains properly tied so no damage will occur to the vessel or its surroundings.

First Aid Kit Requirements

On average a basic first aid kit can be ordered or created for approximately \$25. All items including bandages should be non-latex. The following should be contained in a Basic First Aid kit:

- 4 or 5 standard size bandages (1"x3")
- 15 or more assorted bandages (small, medium, large)
- 1 Triangular bandage, with safety pins
- Assorted knuckle and/or fingertip bandages
- Minimum 1 roll of ½" adhesive tape (preferably waterproof)
- Minimum 3 3" sterile gauze pads
- Minimum 1 4" pressure bandage
- Minimum 1 roll of 2" gauze
- Minimum 3 antiseptic towelettes
- Minimum 2 pair of non-latex (either vinyl or nitrile) examining gloves
- 1 pair of scissors
- 1 pair of tweezers
- Antiseptic ointment (or iodine) sachets
- Minimum five (5) ziplock bags (used to dispose of used bandages, gloves or to be used for ice)
- Current edition First Aid Manual

<u>Pleasure Craft Safety Equipment Requirements</u>

Personal Watercraft (PWC)

- Canadian Coast Guard Approved Life Jacket or PFD for each person on board as well as skier (note most ski vests are not approved life jackets)
- 15m(50ft) Buoyant heaving Line
- Paddles or Anchor with minimum15m rope
- Bailing Device or manual bilge pump with sufficient hose to reach over the gunwale
- Water Tight Flashlight
- Whistle or Manual Air Horn
- Fire extinguisher class 5BC fire extinguisher

Note: If operator and everyone on board is wearing an approved life jacket or PFD paddle, anchor, bailer/manual pump, and fire extinguisher are NOT required.

Not over 6m Powered

Personal Protective Equipment:

One Government of Canada (Department of Transport) approved personal flotation device (PFD) or a life jacket for small vessels of appropriate size for each person on board. One buoyant heaving line of not less than 15m in length



Boat Safety Equipment:

- One manual propelling device (paddle or oars) OR an anchor with not less than 15m of cable, rope or chain in any combination
- One Class 5BC fire extinguisher (if the craft is equipped with an inboard engine, a fixed fuel tank of any size, or a fuel burning cooking, heating or refrigerating appliance).
- One bailer or one manual water pump fitted with sufficient hose to enable one person using the pump to pump water from the bilge of the vessel over the side of the vessel. (A bailer or manual water pump is not required for any multi-hull vessel that has subdivided multiple-sealed hull construction.)
- Distress Equipment:
- A watertight flashlight or 3 Canadian approved flares of type A,B or C
- Navigation Equipment:
- A sound signaling device or a sound signaling appliance audible at distances of one-half a marine mile (0.93 km)
- Navigation lights that meet the applicable standards set out in the Collision Regulations if
 the pleasure craft is operated after sunset and before sunrise or in periods of restricted
 visibility.

Vessels over 6m but not over 9m

Personal Protective Equipment:

- One Government of Canada (Department of Transport) approved personal flotation device (PFD) or a life jacket for small vessels of appropriate size for each person on board
- One buoyant heaving line of not less than 15m in length or one approved life buoys with an outside diameter of 610 mm or 762 mm that is attached to a buoyant line of not less than 15m in length
- a re-boarding device if the freeboard of the vessel is greater than 0.5 m

Boat Safety Equipment:

- One manual propelling device (paddle or oars) OR an anchor with not less than 15m of cable, rope or chain in any combination
- One bailer or manual water pump fitted with or accompanied by sufficient hose to enable a
 person using the pump to pump water from the bilge of the vessel over then side of the
 vessel
- One Class 5BC fire extinguisher, if the pleasure craft is a power driven vessel, plus another class 5BC fire extinguisher if the pleasure craft is equipped with a fuel burning cooking, heating or refrigerating appliance

Distress Equipment:

- a watertight flashlight
- 6 Canadian approved flares of Type A,B or C
- You are exempt from carrying pyrotechnic distress signals if:
- operating in a river, canal or lake in which it can at no time be more than one mile from shore OR
- engaged in an official competition or in final preparation for an official competition and has no sleeping arrangements.



- Navigation Equipment:
- a sound signaling device or a sound signaling appliance
- navigation lights that meet the applicable standards set out in the Collision Regulations if the pleasure craft is operated after sunset and before sunrise or in periods of restricted visibility

Section 3B: Driving

Maintaining and Controlling Speed

Ensure the boat is running at speed that is comfortable for the participant. Have the observer relay and encourage hand signals from the participant to go faster, slower, or to confirm that the boat speed is okay.

Waterskiing

A good indicator of the boat speed is to find out where the water is breaking on the water ski. If it is too far forward, they may be going too slow, resulting in excessive drag and fatigue. If it is too far back, the boat may be going too fast, and will have problems edging and controlling the skis. Note that the boat speed will be affected by several actions:

The boat will be slowed down by the pull on the rope as the participant cuts back and forth When the boat turns, the additional drag on the boat will cause it to slow. The boat will also speed up again as the boat exits the turn and straightens out.

Compensate for the above by small, smooth adjustments to the speed with the throttle. Use the speedometer and tachometer to measure and judge the speed of the boat. For stronger skiers that exert more pull on the boat, try to time the throttle adjustments to the rhythm of the skiing and the pull on the rope. Do not over-react to speed changes – it is better to under correct and allow the boat to speed up and slow down with the rhythm of the skier (in other words, less is better).

Wakeboarding

Wakeboarding happens at slower speeds. The average speed of beginner wakeboarding is 10-15 mph. With a beginner wakeboarder the boat should never exceed a speed of 15 mph. Only when a wakeboarder is ready to jump over both wakes should a boat speed greater than 15 mph be considered. There may be some difficulty in maintaining the boat at this slow speed. This is because at the lower speed, the boat sits lower in the water, which affects its handling and acceleration. With practice this will become easier to drive for.

Site Inspection

All towed water activities should be completed a safe distance away from shore and away from shallow water. There are two goals with respect to the minimum distance from shore:

- A greater distance provides the boat driver with maximum flexibility to react to situations. When running too close to shore, the driver is prevented from being able to react to the shore side in an emergency situation (or risk running the boat onto shore).
- A greater distance will ensure that if the athlete does fall, he or she does not run the risk of being carried onto shore or into the shallows. Remember that skiers, boarders and tubers are on a towrope and will travel some distance away from the boat. For example, a skier using a standard 18 m (60 foot) ski line is capable of pulling at least 15 metres away from the centre line of the boat. If they let go or fall while pulling away from the centre line, they



can travel several more metres. It is therefore very important for the driver to be an appropriate distance from shore.

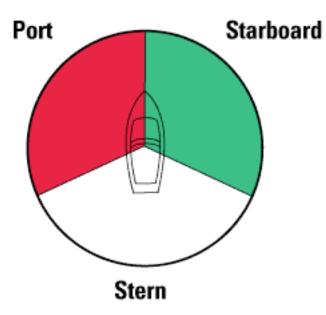
Some provinces have adopted speed limits of 10 km/h within 30 m (98'5") of shore on all waters within their boundaries. This speed limit applies in Ontario, Manitoba, Saskatchewan, Alberta and the inland waters of British Columbia and Nova Scotia. This limit is in effect whether it is posted or not. Exceptions include:

- Recreational towing where the boat follows a path at a 90° angle to the shore in an area designated by buoys for recreational towing;
- Rivers less than 100 m (328') wide, as well as canals and buoyed channels; and
- Waters where another speed limit is set in a schedule to the regulations.
- For more information, see Canadian Safe Boating Guide. Also, consider the environment; this means, be knowledgeable of noise pollution and your vessel's wakes which erode the shoreline.

Minimum Water Depth

Although the minimum competitive water depth is 1 metre (3'), it is strongly suggested that for recreational activities, minimum water depth used for towed water sports exceed 2 metres (6'). This depth will allow for safe passage of the boat as well as sufficient depth to allow an athlete to fall without hitting the bottom of the waterway. Beware of shallow areas within the waterway caused by sandbars, rocks, and other underwater obstacles.

Right of Way



Port: If a power-driven vessel approaches within this sector, maintain with caution, your course and speed.

Starboard: If any vessel approaches within this sector, keep out of its way. (Note: This rule may not always apply if one or both vessels are sailboats.)

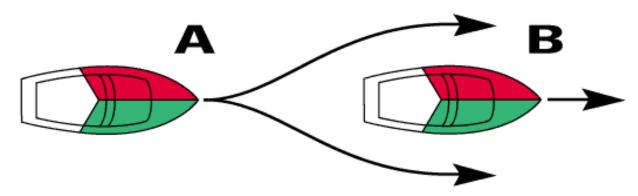
Stern: If any vessel approaches this sector, maintain with caution, your course and speed.

Rules of the Road

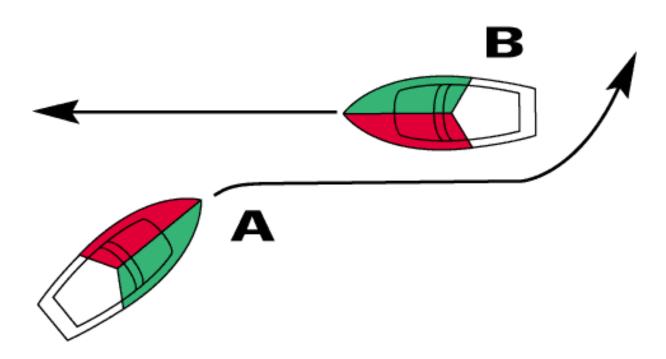
The rules of the road in navigation are often similar to the rules on land. The Collision Regulations contain many rules pertaining to navigation; however, four rules are basic to navigation.

A boat that is overtaking another must steer clear of the overtaken vessel's path.



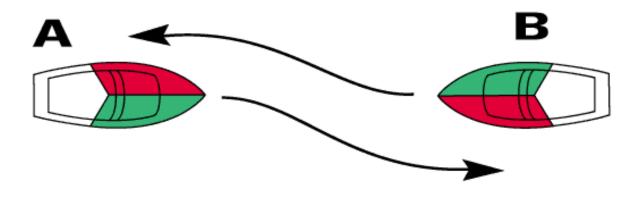


A vessel approaching from the port side must give way. (A) keeps clear of and must avoid crossing ahead of (B).

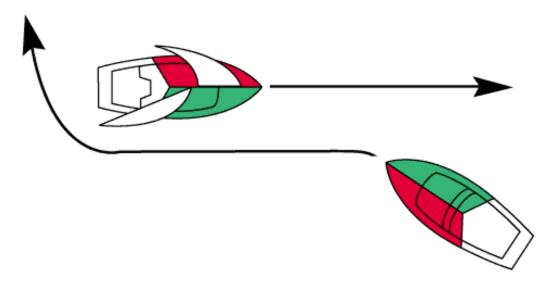


When two vessels are heading toward each other, each must reroute and pass to the right of the other. (A) blows one blast and alters course to starboard, (B) blows one blast and alters course to starboard.





As a general rule, rowboats, sailing vessels and canoes have the right-of-way over power- driven boats. However, if one vessel is unable to maneuver as it normally would, the most maneuverable vessel gives way.



Responsibility for avoiding collisions is shared by everyone using the waterway. Common sense must be used along with alertness and caution.

The concept of taking early and substantial action must be applied in all cases.

Before You Leave the Dock Checklist

The best way to ensure a successful ski run, and avoid any problems, is to be prepared. This process begins before you leave the dock. The following is a list of some of the things to consider:

• Check the gas level in the boat. Running out of gas in the middle of towing someone on open water is a frustrating experience for everyone.



- Check that the boat is equipped with the required safety equipment. If a situation occurs, this equipment can make the difference in avoiding or limiting injury.
- All participants are encouraged to wear their PFDs. If an emergency arises, there is no time to find and put on a PFD.
- If you are unfamiliar with the lake, have someone point out any potential hazards.
- Make sure that your boat crew is aware of their roles and responsibilities as observers, and review the Hand Signals with both the boat crew and the water skier
- Be aware of wind, waves, and other weather conditions that will affect the performance of the participant.
- You should also consider the operation of other water craft in the area, such as other ski and wakeboard boats, personal water craft, kayaks, canoes, and sail boats, sail boards and kite boards. Each of these crafts have particular abilities and patterns of operation, and all pose different risks to your participant.

Casting off

Once you are sure that the boat, the crew, and the water-skier are ready, you are ready to head out. The following lists some of the steps in the casting off process:

- The boat driver should monitor the loading of the boat, of both equipment and people.
- Stay within the capacity restrictions and capabilities of the boat.
- Ensure that all movement in and out of the boat is done safely. This can be facilitated by making sure the boat is held close to the dock and as stationary as possible.
- Plan your exit from the dock. Make sure that your exit path is clear and safe.
- Designate someone to manage the rope lines from the dock. Once everyone is in position, seated in the boat, and ready to leave, instruct your crew to release the lines.
- Leave slowly and under control. Observe any shoreline speed restrictions.
- As you leave, be aware of movement not only in front of the boat, but also to both sides, and behind the boat.

Other Watercraft

Another Boat Following Directly Behind Towed Athlete

- Don't stop your boat
- Have your observer signal athlete to ski/board directly behind wake (i.e. reduce chance of fall)
- If possible, change course away from following boat
- If possible, have your observer signal following boat to move to one side or another
- Failing this, have your observer signal athlete to cut away towards nearest shore (away from following boat) and stop.
- The driver should turn immediately (away from following boat) and ensure athlete is protected from being run over.



Personal Watercraft Jumping Tow Boat Wakes

- Don't stop your boat
- Have your observer signal athlete to ski/board directly behind wake (i.e. reduce chance of fall)
- If possible, change course away from following personal watercraft
- Have your observer signal following PWC to move to one side or another (if possible) and signal stop jumping (e.g. cross forearms)
- Failing this, have your observer signal athlete to cut away towards nearest shore (away from following boat) and stop.
- The driver should turn immediately (away from following boat) and ensure athlete is protected from being run over.

Canoes or Kayaks

If you encounter canoes or kayaks try to:

- Find another location to do your towed water sport activities
- Try not to complete 'donuts' near to canoes or kayaks as the wake patterns created are also unpredictable and difficult to handle
- Reduce your wake size by slowing to an idle until the canoeists and/or kayakers have passed
- Be respectful and share the waterway in a safe and controlled manner

Other Towed Water Sport Enthusiasts

Our Canadian waterways are home to many towed water enthusiasts. Encountering others on the same stretch of water is common. The best way for all to enjoy is to follow these key points:

- Single direction (e.g. straight line) where possible to reduce bounce back/unpredictable wakes
- Share, don't compete for the water (take your turn, stop and wait for the others to take their turn)
- Be sure to stop out of the way of other boaters

Section 3C: Equipment

Safe Re-fuelling

The following guidelines are suggested for the safe re-fuelling of any watercraft:

- Tie up the boat or personal watercraft securely
- Stop engine(s) and unload passengers
- Do not smoke and extinguish all open flames
- Fill any portable fuel tanks out of the boat and preferably on shore
- Do not operate any electrical switches (potential to create a spark)
- Avoid fuel spills by:
- Keep the nozzle in contact with the fill pipe
- Don't overfill
- Turn nozzle up when replacing (prevents drips)
- Put the cap back on
- Wipe up spilled fuel immediately



- Operate blower for at least 5 minutes prior to restarting engine(s)
- Check for fuel smell
- Startup engine, then reload passengers

Be sure to have absorbent materials on hand items such as rags and oil booms in the advent case that fuel is spilt that it can be contained and has a minimum impact on the body of water.

Competition Driving

Advanced driving skills and competition driving are beyond this course. Please contact your provincial organization for more details on advanced driving courses.

Personal Flotation Devices (PFDs)

PFD: Personal floatation device, will not always keep your head above water. **Lifejacket:** Designed to roll you over in order to keep your head above the water. It is recommended that all athletes participating in towed activities should wear a Coast Guardapproved Type III PFD or a Coast guard approved type V PFD.

In certain situations, at the athlete's own personal risk, they may wear a NON Coast Guard approved device, such as a neoprene, nylon, or similar material, covered suit. A normal wet suit or dry suit alone is not considered to provide adequate protection or floatation.

In all cases where the athlete/participant chooses not to wear a Coast Guard approved Type III Personal Flotation Device, there must be one available for each crew member and one available for the skier.

Attaching Ropes

Tow ropes should always be securely fastened to the boat and checked twice for security. Given the amount of strain that is exerted on the rope, the potential for injury from an unintended release of the rope can be quite serious. A break or release will typically happen suddenly, and with great force.

Attaching the rope seems like a simple task, but it is crucial step in safely towing a participant. Because attaching the tow-rope to the boat happens so often during a session, it can done just out of habit, without the care and attention it deserves.

When attaching the rope, here are a few things to consider:

- Always use a rope rated for the towed water sport
- Check that the pylon, tower, or ski eye is secure
- Inspect all ropes for wear and tear prior to use
- Being careful of crew at the back of the boat where they can interfere with ropes and/or get injured if rope is released or breaks.
- No-one should be seated anywhere that the rope could contact them if it releases.
- Any loose rope should be safely located so that it will not catch or contact any passengers or any items in the boat if the rope is released from the boat
- Passengers must keep away from the tow rope at all time, especially hands and feet

Cutting ropes (driving over by accident)



If you drive over a rope by accident:

- Immediately stop the engine (put in neutral, turn off)
- Never touch the propeller or swim under the boat unless the key is removed from the ignition
- Take your time and try to unwind the rope
- Cut if necessary
- It is a good idea to keep a knife and goggles in the boat to avoid this taking all day







CLOVE HITCH

Also used for making a line fast to a piling, rail or post. Will not slip once it is taut, yet easy to untie.



SHEET BEND

Most commonly used to tie two lines of different size together.



BOWLINE

(Pronounced Boh-lynn) - Sometimes called the king of knots. It makes a loop that will not jam and cannot slip.



TWO HALF HITCHES

Easy to learn and easy to tie. A very useful knot for making a line fast to a piling, rail or post.

SQUARE OR REEF KNOT

Properly tied (with the parallel lines coming out on the same side as shown) this knot will not slip or jam. It is most frequently used for tying two lines of the same size together.



FISHERMAN'S BEND

Used to secure a rope to a buoy or a line to any anchor. Also called Bucket Hitch because it is often used for tying a line to a bucket.



BELAYING OR MAKING FAST TO A CLEAT

Make one complete turn around the cleat followed by one or two figure-eight movements and finish with an underhand loop.



Difference in Boats

General Handling of a Boat:

Every boat performs differently. As the boat driver, you are responsible for familiarizing yourself with the particular driving characteristics of any boat prior to towing a skier of any skill level. Knowing how a boat handles and operates before towing a skier increases the success rate and the quality of the experience for the skier.

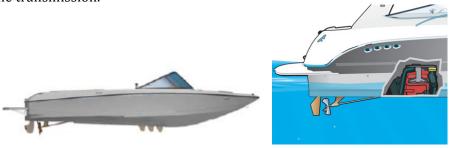
Different Types of Boats

Inboards

An inboard boat is a boat in which the engine is inside the hull of the boat. With an inboard engine the propeller underneath the boat is fixed. Inboards have a separate rudder that is responsible for steering.

Inboards typically come in two styles:

1. Direct drive (direct inboard): engine in center of boat, transmission is facing towards the stern of the boat and the drive shaft and propeller are all in a straight line. Direct drives are the drive of choice for performance ski boats because the engine in the centre of the boat creates a good balance to keep a small wake and the engine has the most available torque because it runs directly through the transmission.



2. V-Drive (vector drive): engine is located in the hull but at the back of the boat facing in reverse. The transmission is mounted at the forward end and has a gear box with angled gears to re-direct the power to the prop at the stern. The V drive is the engine of choice for performance wakeboard boats. It has the torque benefits of a direct drive however the weight is in the stern of the boat which helps the wake, as well as providing a more comfortable seating arrangement.



All inboards regardless of make or type typically behave in the same manner. Because the rudder is separate from the drive mechanism (propeller), steering is different than a typical out drive. They are steered by the rudder directing the thrust of the propeller; this creates immediate and accurate steering response in forward gear. Keep in mind that there is very limited steering in neutral. The



reason that inboard boats are used for water skiing is that the engines produce a huge amount of low end torque (pulling power) and allow for consistent speed. This is very important as a coach or instructor is able to focus on the student instead of keeping the boat traveling at a consistent speed. The hull design has a very flat footprint onto the water which allows for cleaner wakes.

The main difference is in reverse. Inboards will pull one way or the other in reverse. This is called torque steer because the boat is steering due to the thrust of the propeller. Because the rudder is behind the propeller when the thrust is reversed the rudder is not effective. Inboards will pull gradually to the side that they torque steer to the most common direction is to the starboard (drivers side) however some older boats, with a right hand rotation prop, pull to the port (passengers side). It is important to know which side the boat pulls to before docking and close quarters maneuvering. It is valuable to practice maneuvers out in the middle of the lake to get a feel for these handling characteristics.

When starting an Inboard it is important to run the blower for a minimum of 5 minutes prior to starting the ignition. Because the engine is contained within the hull it does not receive proper ventilation and if the engine were to spark of backfire it could result in an explosion. It is also advised to run the blower when operating below cruising speeds to prevent carbon monoxide buildup inside the cockpit of the boat.

Many families are now moving toward inboard engine boats as the propeller is located underneath the hull of the boat. This allows for a large swim platform to be located at the back of the boat. Also, the propeller location makes it very safe, as someone would have to swim under the boat to get near the propeller.

Outboards

Outboards are a type boat in which the engine is located outside the hull at the transom (back) of the boat. Steering is accomplished by turning the entire engine (which changes the propellers direction) in relation to the boat. Because the whole engine is turned steering is effective regardless of the speed the boat is traveling, including the ability to steer in neutral. Also, since the whole engine turns the driver has the ability to steer in any direction in reverse. Outboard engines are often more difficult to steer because you must move the entire engine, most outboards have cable based steering which has no power assist and while the engine is at speed can be difficult to move. Also many drivers find it very difficult to hold a consistent speed, especially under 25 mph. Outboards are the choice for barefooting due to their high power to weight ratio it allows them to run at higher speeds because larger engines can be mounted on smaller boats. Outboards have the ability to be trimmed up and down. A better explanation of trim can be found in the Trim section of this manual.





Inboard/Outboard

Inboard/Outboards (I/O) has the engine inside the hull at the back of the boat, but the drive and propeller is outside the transom at the rear the boat.

I/Os behave like outboards steering and is accomplished by turning the lower drive unit (which changes the propellers direction) in relation to the boat. Because the drive unit is turned, steering is effective regardless of the speed the boat is traveling, including the ability to steer in neutral. Also, since the whole engine turns the driver has the ability to steer in any direction in reverse. However, the disadvantage of inboard/outboard engines is that they do not have a lot of low-end torque or pulling power. This is due to the extra gears in the outdrive of the engine. In addition, many drivers find it very difficult to hold a consistent speed, especially under 25 mph.

When starting an Inboard/Outboard it is important to run the blower for a minimum of 5 minutes prior to starting the ignition. Because the engine is contained within the hull it does not receive proper ventilation and if the engine were to spark of backfire it could result in an explosion. It is also advised to run the blower when operating below cruising speeds to prevent carbon monoxide buildup inside the cockpit of the boat.



Non-Ski Boat Driving

Personal Watercraft (PWC) as Tow Boats

A personal water craft (PWC) is a recreational watercraft that the rider sits or stands on, rather than inside of, as in a boat. A Jet Boat is a boat with a regular engine with a water pump that "jets" the water out the stern at very high velocity. PWCs and Jet Boats have an inboard engine driving a pump jet that has an impeller to create thrust for propulsion and steering.

These water vehicles are sometimes referred to as Sea Doos, Jet Skis and Waverunners. Please note that these are manufacture's brand names.

Since Personal Watercraft and Jet boats have a jet drive they perform very differently than traditional boats. Thrust is accomplished by sucking water in through the intake grate on the hull and shooting it out the nozzle on the back. Jet drives have no transmissions and therefore the jet is always engaged, there is no true neutral. Neutral and reverse are accomplished by blocking the jet nozzle and redirecting the thrust. Because the suction pump is running at all times you must be aware of over passing objects at all time because it may draw the object into the grate and wrap it around the shaft.

Jet propelled watercrafts are steered solely by directing the thrust from the jet pump with the nozzle. Because they have no rudders or steering fixtures, you must apply throttle to steer. This is a



potentially dangerous situation and drivers should practice emergency maneuvers on the lake a safe distance from shore and any other boats to understand how your craft maneuvers.

In order to meet Federal regulations, any PWCs being used to tow athletes in any discipline must have both a driver and an observer on board and must have a seat available for each person towed. This Federal requirement obliges events to use at least 3-person PWCs.

Speed Control Systems

As marine technology advances more and more boats are beginning to offer speed control systems. Most new Inboard Boats now offer it as standard equipment, and I/Os and outboards and even PWCs are now beginning to offer cruise systems. Cruise control systems are great tools for drivers as they allow you to focus less on maintaining a consistent speed, and more on the rider and the boat surroundings. However speed control is only a tool and should not be relied on as primary for m a driving. A driver should always have one hand on the throttle while driving. Each cruise control system is different in its components and functionality and as a responsible driver you should be familiar with the manual of the specific cruise control system and use it without a skier to become comfortable with how it works.

Trim

Outboards and I/Os have the advantage of power trim which allows the engine to move up and down. By doing this you change the height of the nose of the boat. This thus changes how the boat planes, (which allows the angle of the prop thrust to be adjusted to raise or lower the bow), allowing it to run more efficiently in different conditions.

Power trim is useful to help clean up the wake of the boat as well. When towing a skier you should begin with the trim in the down position this allows the boat to plane out quickly because it forces the bow down. Once the boat is on plane the engine can be raised (brought up) slightly. This will eliminate bow steering and allow the boat to travel through the water more efficiently. This also changes the wake shape which can benefit towed water sports activity.

Balancing the Boat

No matter what boat type you are using it is important the boat remains balanced. The weight should be equally distributed port to starboard (left to right) and bow to stern (front to back). Even for wakeboarding, too much weight in the back of the boat will make the boat difficult to drive. Too much weight in the front of the boat will cause the bow to plow through the water.

The weight port to starboard should also be even. This will directly influence the wake shape. If there is too much weight on the port side of the boat, the wake on the port side will be dark and clean; however, the starboard side will be white and washy. When the weight in the boat is even, both sides will be clean and dark.





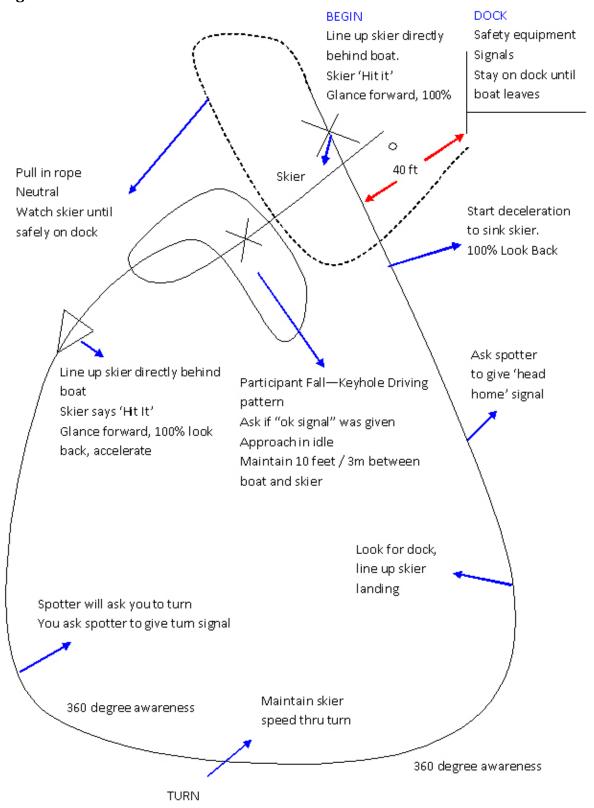


BALANCED

UNBALANCED



Section 3D: Resources Driving Test Pattern





Boat Driving Safety Course Exam

Name:	Group				
Note: I	Novice skier has skied a few times. Use begin	ner turn. Tell s	kier to stay behir	nd the bo	at.
1)	Hand signals				/2
2)	Safety equipment				/2
3)	Driver instructs skier to remain behind the	boat on appro	ach to landing		/2
4)	Safe departure from dock, (360)				/2
5)	Rope tightens slowly prepared to reverse				/2
6)	Rope perpendicular to boat				/2
7)	360 Awareness				/3
8)	Gradual acceleration	too slow	too fast		/6
9)	Controlled speed	too slow	too fast		/4
FALL					
10) Asks for Ok				/2
11) Safe return to skier	too slow	too fast		/2
12) Key hole turn, skier on drivers side	too close	too far		/6
13) Skier successfully retrieves rope	(Y/N)			/2
14) Rope perpendicular to transom				/3
15) 360 awareness			/4	
16) Acceleration	too slow	too fast		/4
17) Controlled speed after acceleration	too slow	too fast		/2
18) Turn signal	asks "have	they seen it"		/2
19) 360 awareness				/3
20) Controlled speed after turn				/2
21) Landing signal	"have they s	seen it"		/2
22) Land skier in correct place under control				/3
23) General handling of boat				/6
24) General control of skier				/6
25) Overall impression of driving				/16
26) Docking of boat				_/10



__/100

Section 4 - Boat Driving Safety Questions 1. Make a list of all the safety equipment that should be in a boat.					
2.	Compare your answer with others in your group and adjust your list if necessary and compare your list to the equipment list provided Technical Manual#130. Are there any items that you need to add to your list?				
3.	Working with your group members, identify the most important duties of an observer. What qualities do you look for when selecting an observer?				
4.	There are eight safety signals that every skier must know. Have each member of your group identify and demonstrate a signal. Keep going until you have identified all eight, list them below.				



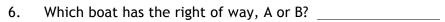
5.	n the space below, draw and label a key-hole pattern for picking up a skier who has fallen.
Compa manua	e and discuss your answer with others in your group. Now check the information in thi and compare your diagram with the diagram. Adjust your drawing as needed.

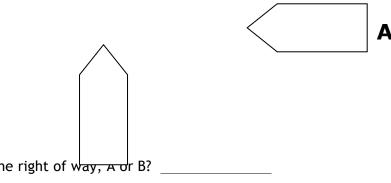


SELF TEST— BOAT DRIVING SKILLS

1.	What is the proper boat-driving pattern when towing a beginner skier on two skis?		
2.	What is the proper distance to sink a skier from the dock?		
3.	During what hours is water skiing legally permitted?		
4.	You are the boat driver. The skier you are towing cuts toward the dock. a. What do you do?		
	b. What do you tell the skier after you are on the dock?		
5.	You are pulling a skier and a small sail boat appears to be heading into your boat path. Who has the right of way? Why?		







7. Which boat has the right of way, A or B?



Draw and label **A** letail, a complete driving/skiing patt **B** nclude all safety 8. equipment and docking.



ACTION CARD

T III CTART	
I will START	
	,
I will STOP	
I will CONTINUE	

