

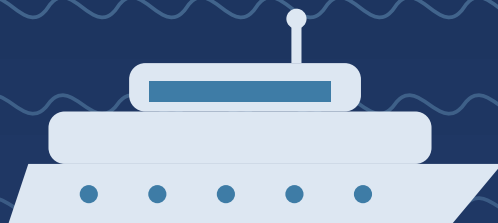


US NAUTICS PRESENTS

The Ultimate New Boat Owner's Handbook



From first sea trial to winter lay-up — the complete guide to dock lines, life jackets, marine GPS, seamanship and boat care.



The Ultimate New Boat Owner's Handbook

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Disclaimer

This handbook is provided for **general educational and informational purposes only**. It is not a substitute for hands-on boating instruction, an approved boating safety course, your vessel's and engine's owner's manuals, or the current regulations of the U.S. Coast Guard and your state and local authorities — all of which take precedence over anything written here.

Boating involves inherent risks. Laws, equipment requirements and best practices change over time and vary by state and waterway; while this book was carefully researched, no warranty is made as to the accuracy, completeness or currency of its contents. **US Nautics and the authors accept no liability** for any loss, damage or injury arising from the use of, or reliance on, the information in this handbook. Always exercise your own judgment as skipper — the safety of your vessel and crew is, and remains, your responsibility.

Product references and prices mentioned are illustrative examples current at the time of writing, not endorsements or guarantees. For up-to-date gear guides and expert reviews, visit **usnautics.com**.

Welcome Aboard, Captain

There's a moment every boater remembers: the first time the lines come off the dock and the boat is yours. The horizon opens up, the engine settles into a hum, and suddenly weekends look completely different.

This handbook exists to get you to that moment safely, confidently, and without the expensive lessons most first-year owners learn the hard way. At US Nautics we spend our days testing dock lines, life jackets, marine GPS units and American boating gear — and answering the same great questions from new owners again and again. We've distilled those answers into the sixteen chapters that follow.

Boating has never been more popular in America: there are more than eleven million registered recreational boats in the country, and every spring tens of thousands of families join the fleet for the first time. The learning curve is real — but it is short, and it is genuinely fun to climb. Every skill in this book can be practiced in a single calm afternoon.

How to Use This Book

- **Read chapters 1–5 before you buy.** They cover choosing the right boat, surviving the purchase process, the paperwork, and the safety gear the U.S. Coast Guard requires from day one.
- **Keep chapters 6–13 aboard.** Lines and knots, docking, anchoring, navigation, radio, weather, trailering and pre-departure checks — the skills you'll refine on every single trip.
- **Study chapter 14 before you need it.** Emergencies are rare, and rarer still for crews who have rehearsed them.
- **Return to chapters 15–16 each season.** Maintenance and winterization protect the investment you just made.

■ A Note on Safety

Nothing in this handbook replaces a hands-on boating safety course. Most U.S. states now require one for operators of motorized boats, and insurers frequently discount premiums for graduates. NASBLA-approved courses are available online and in person — many are free, and most take a single afternoon.

11.6M+

registered recreational
boats in the USA

16

chapters to master in this
handbook

100 hrs

typical first-year time on
the water

1

boat that is finally yours

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CHAPTER

01

Choosing Your First Boat

Match the hull to the mission, the water,
and the way you actually live.



Start With the Mission, Not the Boat

The most common first-boat mistake isn't buying too small — it's buying for an imagined life instead of a real one. Before you fall for gelcoat and cupholders, answer three questions honestly:

- **Who** is aboard on a normal Saturday — two adults, or two adults, three kids, a cooler and a dog?
- **Where** will you actually boat — a small lake, a wide bay, a big river, open coast?
- **What** will you do most — cruise, fish, tow tubes, or overnight? “All of it” is how people buy the wrong boat.

Your honest answers point to a hull type, a size range and a power level. Everything else — brand, color, electronics — is detail.

The Main Contenders

Boat Type	Typical Size	Best For	Watch Out For
Bowrider	17–25 ft	Family day cruising, tubing, swimming	Open bow is wet in chop
Pontoon	18–27 ft	Calm-water entertaining, stability, easy boarding	Slower; lots of windage when docking
Center console	18–35 ft	Fishing, rougher water, 360° deck access	Limited shade and seating comfort
Cuddy / cruiser	22–35 ft	Weekending with a berth and head aboard	Higher purchase & marina costs
Aluminum fishing	14–20 ft	Lakes and rivers, budget-friendly, easy to trailer	Basic comfort, loud in chop

Boat Type	Typical Size	Best For	Watch Out For
Deck boat	19–26 ft	Max seating with sporty handling	Compromise hull — not the best at anything
Personal watercraft	10–13 ft	Solo thrills, minimal storage footprint	Limited passengers and range

New vs. Used vs. Brokerage

A new boat brings full warranty coverage, current technology and zero history — but like a car it depreciates fastest early; industry rules of thumb put first-year depreciation around 15–20%. A well-surveyed used boat lets someone else absorb that curve, and the used market is deep every spring. Boats above roughly \$50,000 are often sold through brokers, who handle listing, escrow and paperwork for a commission paid by the seller — as a buyer, a good broker costs you nothing and catches paperwork mistakes.

The Money Conversation

Budget the purchase price, then add roughly **10–20% of the boat's value per year** for fuel, insurance, storage, maintenance and gear. A \$40,000 boat in a \$4,000-a-year slip with \$1,200 insurance is a very different proposition from the same boat on a trailer in your driveway. If you finance, marine loans commonly run 10–20 years — keep the term shorter than the time you realistically expect to keep the boat.

■ Captain's Tip — The Beginner Sweet Spot

For most first-time owners, 18–24 feet is the sweet spot: big enough for a family and moderate chop, small enough to trailer, dock single-handed and afford to run. You can always move up later — experienced boaters call it 'two-foot-itis' for a reason. Buy your second boat first only if the budget truly allows it.



CHAPTER

02

Buying Smart

Surveys, sea trials and negotiation —
buy with your head, not just your heart.



The Purchase Process, Step by Step

Boats are emotional purchases sold on sunny days. A disciplined process is your best defense — and your best negotiating tool.

Step 1 — The Walkthrough

- Look for **gelcoat stress cracks** around cleats, the bow eye and transom corners — signs of impact or structural flex.
- Check the **transom and stringers** for softness: tap with a screwdriver handle and listen — a crisp knock is healthy, a dull thud can mean wet core.
- Pull the **engine dipstick**: milky oil means water intrusion. Walk away, or budget for major work.
- Lift hatches and sniff the **bilge** — fuel odor, oil sheen or standing water all tell a story the seller won't.
- Check **hour meter vs. condition**: a lightly used boat that sat for years often needs more work than a well-run one. Around 50–100 hours per year is normal use.

Step 2 — The Marine Survey

For any boat beyond pocket money, hire an accredited marine surveyor (look for SAMS® or NAMS credentials). Expect roughly \$20–25 per foot. Most insurers and lenders require a survey on older boats anyway — and every defect it lists is a line item you can negotiate against the asking price. For larger engines, add a separate **engine survey with compression or leak-down tests and an oil analysis**; the powerplant is half the boat's value.

Step 3 — The Sea Trial

Never buy a boat you haven't run. On the trial: cold-start the engine yourself and watch for hard starting or smoke; watch gauges come up to temperature; run to wide-open throttle and confirm the engine reaches its rated RPM range; make

hard-over turns in both directions; back down briefly and listen for clunks; and try the boat at the dock speeds you'll actually use. Bring the surveyor if you can schedule both the same day.

Step 4 — Paperwork & Payment

- Verify the **Hull Identification Number (HIN)** on the transom matches the title exactly — character for character.
- Confirm the title is **lien-free**, or get a written lien-release plan executed at closing.
- Use a **bill of sale** listing hull, engine(s) and trailer serial numbers separately — trailers are titled separately in most states.
- For brokerage deals, funds should move through an **escrow account** — never directly to a private seller before documents transfer.

■ Captain's Tip — Negotiation Reality

Well-priced boats in spring can sell in days, but the average listing sits much longer. Survey findings, high engine hours, tired canvas and out-of-season timing (late fall) are all legitimate leverage. A respectful offer 10–15% under ask, backed by the survey report, is standard practice — not an insult. The seller expected it.



CHAPTER

03

Registration, Titles & Insurance

The unglamorous chapter that keeps you
legal, financed and protected.



Getting Legal on the Water

State Registration

Every state requires motorized boats to be registered, typically through the DMV or a fish-and-wildlife agency, with renewal every one to three years. You'll receive registration numbers (for example **FL 1234 AB**) that must be displayed on both sides of the forward hull in block letters at least three inches high, plus a validation decal placed within six inches of the number. Boats are registered in the state of *principal use* — not necessarily where you live. Moving a boat between states usually gives you 30–90 days to re-register.

Federal Documentation

Vessels of five net tons or more — most boats over about 26 feet — may instead be **documented with the U.S. Coast Guard**. Documentation is preferred by lenders for larger boats, allows a proper vessel name and hailing port on the transom instead of state numbers, and simplifies international cruising. Documented vessels may still owe state use decals and taxes, so check both sets of rules.

Insurance: What Actually Matters

Term	What It Means for You
Agreed value	Insurer pays a fixed, pre-agreed amount on total loss. Costs a little more, removes arguments. Best for newer boats.
Actual cash value	Pays market value at the time of loss — depreciation applies. Cheaper premiums, smaller payouts.
Liability	Covers damage and injury you cause to others. Marinas commonly require \$300k–\$500k minimum.
Uninsured boater	Protects you when the other operator carries nothing — far more common on the water than on the road.

Term	What It Means for You
Navigation limits	Your policy defines where coverage applies (inland, coastal, offshore). Cross the line, lose the cover.
Lay-up period	Discounted months when the boat is declared out of service — running it then voids coverage.
Salvage & wreck removal	Separate coverage that pays to raise or remove a sunk boat — you are legally responsible either way.

Taxes and the Document Pouch

Expect sales or use tax at purchase in most states, and in some counties an annual personal-property tax on the boat. Keep every receipt: documented maintenance raises resale value and supports insurance claims. Then build a **document pouch** in a dry bag aboard: registration, insurance card, radio license if applicable, and your boating-education card. Most states require these during a stop, and the Coast Guard can board any U.S. vessel at any time — a calm, organized skipper makes those stops short.

■ Captain's Tip — Discounts Hiding in Plain Sight

Insurers routinely discount for a NASBLA-approved safety course certificate, automatic fire suppression, diesel power, declared lay-up periods, and bundling with home or auto policies. Ask explicitly — the discounts rarely volunteer themselves.



CHAPTER

04

USCG-Required Safety Equipment

What federal law says must be aboard —
before your first mile under way.



The Federal Minimums

These are the items a Coast Guard boarding officer will ask about.

Requirements scale with boat length; this table covers typical recreational powerboats under 40 feet.

Equipment	Under 16 ft	16 – 26 ft	26 – 40 ft
Life jackets (wearable, USCG-approved)	One per person	One per person	One per person
Throwable device (Type IV ring or cushion)	Not required	Required — 1	Required — 1
Fire extinguisher (min. rating; varies with fuel and engine setup)	1 × 5-B*	1 × 5-B*	2 × 5-B or 1 × 20-B*
Sound device	Whistle or horn	Whistle or horn	Bell + whistle/horn
Visual distress signals (coastal waters)	Night signals	Day + night (e.g., 3 flares)	Day + night
Navigation lights	If run at night	If run at night	Required
Ventilation & backfire arrestor (inboard gas)	Required	Required	Required

*Extinguishers must be unexpired: since 2022, disposable extinguishers more than 12 years past their manufacture date are non-compliant and must be replaced. Check the date stamped on the bottle.

The Kill Switch Is Now Law

Since 2021, federal law requires operators of boats under 26 feet to use the **engine cut-off switch link (ECOS)** — the red lanyard or wireless fob — whenever running on plane or above displacement speed. It exists because an operator thrown from the helm leaves a circling, driverless boat. Clip it to your belt or jacket every time; make it as automatic as a seatbelt.

Beyond the Minimum — What Experienced Owners Add

- **VHF radio**, fixed or handheld: channel 16 reaches the Coast Guard and every boat around you when your phone has no bars (much more in Chapter 10).
- **Anchor and rode, paddle, bailer, flashlight and first-aid kit** — required by several states, common sense everywhere.
- **EPIRB or PLB** for coastal and offshore runs: a registered satellite beacon turns a bad day into a rescue instead of a search.
- **A ditch bag**: waterproof bag with beacon, handheld VHF, flares, water, and a strobe — grabbed in seconds if you ever must leave the boat.

■ Captain's Tip — Get the Free Check

The Coast Guard Auxiliary and U.S. Power Squadrons offer free Vessel Safety Checks every season. No citations, no records — just a sticker if you pass and a friendly to-do list if you don't. It's the cheapest peace of mind in boating.



CHAPTER

05

Life Jackets & PFDs

The single most important purchase
you will make as a boat owner.



Why This Chapter Exists

Year after year, Coast Guard accident statistics tell the same story: roughly three-quarters of boating deaths are drownings — and in the overwhelming majority of those, about 85%, the victim was not wearing a life jacket. Owning jackets is the law; wearing them is the difference.

~75%

of boating deaths are drownings

~85%

of drowning victims wore no jacket

1 each

wearable PFDs required per person

22 lbs

buoyancy of a typical adult jacket

Choosing the Right Type

Style	Best Use	Notes
Inherently buoyant vest (foam)	All-purpose, kids, non-swimmers, watersports	No maintenance, works instantly, bulkier to wear
Inflatable (auto or manual)	Adults who will actually wear it all day	Slim and cool; needs armed CO ₂ cylinder checks; not for under-16s, PWC or towed sports
Hybrid	Anglers and paddlers	Foam plus an inflation chamber — the compromise option
Throwable (Type IV)	Ring buoy or cushion kept at the helm	Required on boats 16 ft and over — keep it reachable, never buried in a locker

Fit Is Everything

A jacket that rides up over your chin in the water is the wrong size. The two-minute fit test: buckle and zip everything, then have someone lift firmly at the shoulders — the jacket should not move past your ears. For children, choose by **weight rating** (infant, child, youth), never “room to grow”, and insist on a crotch

strap and head-support collar on infant models. Test kids' jackets in shallow water so the first float isn't a surprise.

Care and the Law

Jackets must be in **serviceable condition**: no torn straps, broken buckles, compressed or waterlogged foam, or expired inflator cylinders. Rinse after salt use, dry out of the sun, and never use jackets as boat fenders or kneeling pads — crushing foam removes buoyancy. Federal law requires children under 13 to wear one on a moving boat unless below decks or in an enclosed cabin; many states set their own ages, so learn yours.

■ Captain's Tip — The Habit That Sticks

Make it a boat rule from day one: engines on, jackets on — at minimum for every child, and for everyone when running in open water, cold water, rough weather or after dark. Crews copy the captain: if you wear yours, so will they. Buy jackets people actually like wearing and half the battle is over.



CHAPTER

06

Dock Lines, Knots & Fenders

Rope work is cheap insurance
for hulls, docks and egos.



Your Boat Is Only as Secure as Its Lines

Choosing Dock Lines

Nylon is the dock-line material of choice: strong, UV-resistant, and elastic enough to absorb surge instead of jerking cleats out of the deck. Double-braid is stronger, stays supple and looks sharp; three-strand stretches more and costs less — both are correct answers. Never use polypropylene (the yellow floating rope) for docking: it degrades in sunlight and has no stretch.

- **Diameter:** about 1/8 inch for every 9 feet of boat — a 22-footer runs 3/8" lines, a 30-footer 1/2".
- **Length:** bow and stern lines about two-thirds of boat length; spring lines equal to boat length.
- **How many:** four lines minimum aboard, plus two spares — lines age, chafe and occasionally swim away.

The Four-Line Tie-Up

- **Bow line** — forward from the bow cleat to the dock: stops sideways drift at the bow.
- **Stern line** — aft from the stern cleat: the bow line's partner.
- **Forward spring** — runs aft from the bow area: stops the boat surging forward.
- **Aft spring** — runs forward from the stern area: stops it surging backward. In wind and boat wake, the springs do most of the real work.

Leave a little slack for tide where it applies — a boat tied drum-tight at high water will hang from its cleats at low. In a permanent slip, add chafe protection at every contact point and check lines after the first storm.

Three Knots That Cover 95% of Boating

Knot	Use It For	Memory Cue
Cleat hitch	Securing any line to a cleat	Full wrap around the base, two figure-eights, finish with a locking half-hitch
Bowline	A fixed loop that never slips yet unties easily	"The rabbit comes out of the hole, around the tree, and back down the hole"
Clove hitch	Hanging fenders from a rail — fast and adjustable	Two crossing turns; add a half-hitch if it must hold long-term

Practice each knot twenty times on the couch with a length of line until your hands know it without your eyes. Docking in wind is not the moment to be learning.

Fenders: Cheap Hull Insurance

Carry at least three, ideally four. Rule of thumb: one inch of fender diameter per 4–5 feet of boat length, and a fender roughly every 10 feet of hull. Hang them at dock height *before* you approach — not while drifting into the pilings — and position them to cushion the widest point of the hull. For rough walls and pilings, a flat fender board across two fenders spreads the load.

■ Captain's Tip — Chafe Kills Lines

Where a line crosses a chock, rail or dock edge, it saws itself apart invisibly. Slip chafe guards — or lengths of old garden hose — over wear points, and retire any line with fuzzed strands cut deeper than the surface. A \$30 line is protecting a hull worth thousands.



CHAPTER

07

Boat Handling & Docking

Slow is pro. Everything else
is footnotes.



The Physics You Must Respect

Boats have no brakes, steer from the stern, and are pushed constantly by wind and current. Accept those three facts and docking becomes geometry instead of drama.

Core Principles

- **Never approach a dock faster than you're willing to hit it.** Idle speed, short shifts in and out of gear.
- **Steer with the throttle, not the wheel, at low speed.** A brief burst of power over a turned rudder or outdrive pivots the boat; sustained power just builds speed you don't want.
- **Read the wind first — every time.** Approach into wind or current when possible; they become your brakes. With wind blowing onto the dock, stop half a boat-width off and let it lay you gently alongside.
- **Assign roles before the approach.** One person drives, one handles lines, everyone else sits down. Shouting is not a docking technique.
- **Know your pivot point** — roughly one-third back from the bow. The stern swings wider than the bow in every turn; that's what clips pilings.

A Standard Approach, Step by Step

- 1. Rig fenders and lines on the dock side early; brief the crew on which cleat gets the first line (usually a spring or bow line).
- 2. Approach at 20–30° to the dock at bare steerageway.
- 3. A boat-length out, shift to neutral and let momentum carry you.
- 4. As the bow nears, turn away from the dock and give a short burst of reverse — the stern tucks in and the boat stops parallel.

- 5. Get one line on a cleat and **work the engine against it** to hold position while remaining lines go on. Crew steps off — never jumps.

Leaving the Dock

Departure catches more new owners than arrival. With wind pinning you on, use a **spring line**: leave the aft spring attached, turn the helm toward the dock and idle forward — the stern swings out; release, reverse clear, then go. Reverse this logic to spring the bow out instead. Practice both on a calm morning at an empty fuel dock until they feel boring.

Handling Underway

On plane, trim the engine or drive so the bow rides just off the spray — over-trimmed boats porpoise, under-trimmed boats plow. Cross large wakes at a slight angle at reduced speed, never parallel. In following seas, keep speed matched to the waves so the bow doesn't bury. And always look behind before turning: your wake is your responsibility, legally and morally.

■ Captain's Tip — The Golden Hour

Pick one calm weekday morning early in your first season and spend a full hour doing nothing but approaches, stops and pivot turns near an empty dock. That single hour of deliberate practice will do more for your confidence than a whole summer of Saturdays.



CHAPTER

08

Anchoring Like a Pro

Scope, sets and swinging room —
stop worrying and enjoy the cove.



Ground Tackle Basics

Your anchor system — anchor, chain, rode and connectors — is both a convenience and a piece of emergency equipment. If the engine dies near a lee shore, the anchor is what saves the boat.

Common Anchor Types

Anchor	Holds Best In	Notes
Fluke / Danforth	Sand, mud	Light and stows flat — the default on trailer boats; weak in grass and rock
Plow / scoop (Delta, Rocna-style)	Most bottoms	Excellent all-rounders; want a bow roller; modern scoops reset well after wind shifts
Claw / Bruce	Rock, coral, mixed	Sets easily, moderate holding per pound
Mushroom / grapnel	Dinghies, PWC	Light-duty only — lunch gear, not storm gear

Size the anchor to the boat using the maker's chart, then **go one size up** — nobody has ever regretted a slightly bigger anchor in a blow. Add a boat-length of chain between anchor and nylon rode: it keeps the pull horizontal, resists chafe on the bottom, and dramatically improves holding.

Scope: The Number That Matters

Scope is the ratio of rode paid out to the vertical distance from your bow roller to the bottom — depth *plus* bow height. Aim for **5:1 minimum for a lunch stop, 7:1 for overnight**, and more in heavy weather. Example: in 10 feet of water with a 3-foot bow, 7:1 means about 90 feet of rode. A boat that drags almost always has too little scope out — it is the first thing to fix, not the anchor brand.

Setting the Hook

- 1. Choose the spot: check the chart for bottom type, depth at low tide, and swinging room clear of other boats — who all swing differently than you.

- 2. Head slowly into the wind or current, stop the boat, and lower — never throw — the anchor to the bottom.
- 3. Fall back slowly, paying out rode to your chosen scope; cleat off at the bow.
- 4. **Power-set:** idle in reverse and watch two fixed points ashore. If they hold steady under load for thirty seconds, you're set.
- 5. Note your position — GPS anchor alarm or shore landmarks — and re-check after every wind shift.

Retrieving and Rafting

To weigh anchor, motor slowly toward it while a crew member takes in rode, then break it free with the bow directly above — the boat's buoyancy does the work, not your back. If it's stuck, cleat the rode short and idle in a slow circle to change the pull angle. Rafting with friends? One well-set anchor from the largest boat, fenders everywhere, and split up before the afternoon breeze arrives.

■ Captain's Tip — Never Anchor from the Stern

Small boats are pulled under and swamped this way every season. Boats are designed to take wind and waves on the bow — always anchor from the bow cleat, and never tie the rode to a ski pylon or stern eye.



CHAPTER

09

Navigation Rules & Buoyage

Red right returning, who gives way,
and reading the water's road signs.



The Rules of the Road, Distilled

The Navigation Rules exist so two skippers who have never met can predict each other's moves. Learn these five situations and you've covered nearly every encounter a recreational boater has.

- **Meeting head-on** (power vs. power): both alter course to starboard and pass port-to-port — like driving on the right.
- **Crossing**: the boat that sees the other on its **starboard side gives way**; the other stands on. Give way early and obviously — slow down and pass astern, never cut ahead.
- **Overtaking**: the overtaking vessel keeps clear, whichever side it passes on.
- **Sailboats under sail, vessels fishing with gear, and anything large in a narrow channel** generally have priority over recreational power — and in practice, tonnage always wins. Stay out of shipping lanes when you can, and cross them at right angles when you must.
- **At night, read the lights**: red is another vessel's port side, green its starboard, white a stern or anchor light. Red and green together means a boat is pointed straight at you — act early.

Above all, Rule 5: **keep a proper lookout at all times**, by sight and hearing. No right-of-way rule excuses a collision you could have avoided.

Buoys: Red Right Returning

In U.S. waters, keep **red, even-numbered nun buoys on your right when returning** from sea toward harbor; green, odd-numbered cans stay on your left. Heading out, reverse it. Numbers increase as you head upstream. Where channels meet, junction buoys with red and green bands mark the preferred side. Regulatory white buoys with orange markings are the water's road signs: diamonds warn of danger, crossed diamonds mean keep out, circles mark speed

or wake restrictions.

Sound Signals Worth Knowing

Signal	Meaning
One short blast	"I intend to leave you on my port side" (passing situations)
Two short blasts	"I intend to leave you on my starboard side"
Three short blasts	"I am operating astern propulsion" — backing up
Five or more short blasts	Danger / I don't understand your intentions — stop and sort it out
One prolonged blast	Warning at blind bends, leaving a berth, or in fog every 2 minutes

■ Captain's Tip — The Constant-Bearing Trick

Watch another boat against your rail or a window frame. If its bearing doesn't change while the distance shrinks, you are on a collision course — no math required. Alter course early enough that the other skipper can see you did.



CHAPTER

10

Marine GPS, Electronics & VHF

Position, depth and a voice —
making technology earn its keep.



The Modern Helm

Three pieces of electronics transform a new owner's confidence: a chartplotter that always knows where you are, a depth sounder that sees what you can't, and a VHF radio that summons help when phones fail.

Chartplotters & GPS

A modern chartplotter — or a charting app on a waterproof-mounted phone with a battery pack — overlays your position on official NOAA charts, records your track home in fog, and drives an anchor alarm at 2 a.m. When choosing, prioritize **chart quality for your region**, **screen readability in direct sunlight**, and **sonar support** if you fish. Save key waypoints on day one: home ramp, fuel dock, harbor entrance, favorite reef. Learn the man-overboard (MOB) button before you need it — one press marks the spot and navigates back.

Depth & Sonar

Even a basic transom-mount sounder pays for itself the first time it keeps you off a sandbar. Set a **shallow-water alarm** a few feet deeper than your draft and let it nag you. Remember the reading is under the transducer — the bottom ahead can be shallower, so slow down when the numbers trend down.

VHF Radio: Your Lifeline

- **Channel 16** is the international hailing and distress channel — monitor it whenever underway, and move routine chats to a working channel (68, 69, 71, 72).
- Range is line-of-sight: a fixed radio with a masthead antenna reaches far beyond a handheld — carry a waterproof handheld as backup either way.
- Get an **MMSI number** (free registration) and connect the radio to GPS: pressing the red **DSC distress button** then broadcasts your identity and exact position automatically.

- Radio checks: use an open working channel or automated check services — not channel 16.

The Distress Calls

Call	When — and How
MAYDAY	Grave and imminent danger to life or vessel. Ch. 16: "MAYDAY × 3, vessel name × 3, position, nature of distress, people aboard, description." Then listen.
PAN-PAN	Urgent problem, not yet life-threatening — engine failure drifting toward shore, medical concern.
SÉCURITÉ	Safety broadcast — hazards, debris, weather warnings. You'll hear the Coast Guard use it daily.

■ Captain's Tip — Electronics Fail; Skills Don't

Carry a paper chart or printed overview of your home waters and keep the 60-second habit of knowing roughly where you are on it. A dead battery should be an inconvenience, not an emergency. And GPS shows where you are — your eyes still find the crab pots, swimmers and floating logs it can't see.



CHAPTER

11

Weather, Tides & Float Plans

The forecast is a tool.
The sky is the truth.



Weather Judgment for Small Boats

Most weather trouble on recreational boats isn't a surprise storm — it's a forecast that was available and ignored. Build a two-step habit: check before you go, and keep looking up while you're out.

Before You Leave

- Check the **marine forecast** — NOAA/NWS marine zones, VHF weather channels WX1–WX7, or your app's marine layer — not just the beach forecast. Wind speed *and direction*, wave height and wave period matter far more than temperature.
- Know your boat's honest comfort limit. For many boats under 24 feet, sustained winds above 15–20 knots — or any **Small Craft Advisory** — is a stay-home signal.
- Wave **period** is the hidden number: 3-foot seas at 10 seconds are gentle swells; 3-foot seas at 4 seconds are a punishing washing machine.
- Check **tides and currents**: a ramp that floats you at 9 a.m. may be a mudflat at 3 p.m., and wind blowing against current stacks steep, ugly chop in inlets and passes.

While Underway — Read the Sky

- Towering, cauliflower-topped cumulus by early afternoon is a thunderstorm engine warming up. Head in **before** the anvil top forms, not after.
- A sudden wind shift, a dark line advancing on the water to windward, or a fast temperature drop means a gust front is minutes away: secure loose gear, jackets on everyone, and take the wind and spray on the bow, never the beam.
- If lightning threatens: get everyone low and centered, disconnect and stow electronics, avoid touching metal, and head for shelter early. There is no fully

safe place on an open boat — the only winning move is leaving before it starts.

- Fog rolling in? Slow to a crawl, sound one prolonged blast every two minutes, lights on, everyone listening, GPS track ready to retrace.

The Float Plan

Before any longer trip, tell a reliable person ashore: where you're launching, where you're going, who's aboard, what the boat looks like, and **exactly when to call the Coast Guard if they haven't heard from you**. A two-line text counts. Then — crucially — close the loop when you're back, so nobody launches a search for a skipper who's eating dinner. Search-and-rescue crews call the float plan the cheapest piece of safety gear that exists.

■ Captain's Tip — When in Doubt, Don't Go Out

Conditions offshore are usually worse than they look from land, and the following sea you ran out on becomes a head sea you must pound back through. If the forecast makes you hesitate at the dock, that hesitation is the answer. The water will be there next weekend.



CHAPTER

12

Trailer & Launching

Half of boating happens on land.
Win at the ramp.



The Rig, the Ramp, the Routine

For most first boats, the trailer is the marina. Master it and you unlock every lake and ramp in the state; neglect it and it will humble you in front of an audience.

The Rig Itself

- **Capacity:** the trailer's rated load must exceed boat + engine + fuel + gear (figure fuel at ~6.3 lbs per gallon). Your tow vehicle's rating must exceed the whole package.
- **Tongue weight** should be roughly 5–10% of total trailer weight — too little causes dangerous sway, too much squats the tow vehicle.
- **Before every tow:** tire pressure (trailer tires fail from age and underinflation, not wear), bearing check, lights working, winch strap + **safety chains crossed** under the coupler, engine trimmed up and supported, drain plug decision made NOW.
- Boat straps: bow eye winched tight plus transom tie-downs. A boat has bounced off a trailer for every skipper who skipped them.

Launching Without Drama

- 1. **Prep away from the ramp** in the staging area: plug in, straps off (except winch), fenders and lines rigged, gear loaded, key in, battery on.
- 2. Back down slowly — small wheel corrections, use mirrors, or put a hand at six o'clock on the wheel: move it the direction you want the trailer to go.
- 3. Stop when the fenders are at the water and the stern begins to float. Set the parking brake.
- 4. Release the winch, walk the boat off with lines — or have your helper idle it off — and move it clear to the courtesy dock.
- 5. Park, breathe, go boating.

Retrieving

Reverse the movie: drive the boat gently onto the submerged trailer until the bow nears the winch post, winch the last feet (never power-load hard — it scours craters at the foot of ramps and is banned in many places), then **pull up to the staging area** before unloading gear, strapping down and pulling the plug. If your boat has been in different waters, drain and rinse hull, bilge and livewell — clean-drain-dry is how boaters stop invasive species hitchhiking between lakes.

■ Captain's Tip — The Empty-Lot Rehearsal

Before your first ramp day, spend thirty minutes backing the empty trailer around cones in an empty parking lot. Ramp pressure is 90% audience; competence you built in private makes the audience disappear.



CHAPTER

13

Engine, Fuel & Pre-Departure Checks

Ten minutes at the dock prevents most bad days on the water.



Know Your Powerplant

Whether you run an outboard, sterndrive or inboard, the enemies are the same: bad fuel, blocked cooling water, and neglected small parts. Modern four-stroke outboards are remarkably reliable — when fed clean fuel and flushed after salt use.

Cooling: The Tell-Tale Habit

Most outboards spit a steady stream of cooling water — the **tell-tale** — while running. Glance at it every time you start and periodically underway; a weak or missing stream means a blocked intake or failing impeller, and minutes matter. Replace the water pump impeller every 2–3 seasons regardless of appearance; it's a rubber part that ages even sitting still.

Fuel Discipline

- **The 1/3 rule:** one-third of your fuel to get there, one-third to get home, one-third in reserve. Gauges lie; engine hours × known burn rate doesn't.
- Use **E10 or ethanol-free gasoline** per your engine manual — never E15, which is prohibited in marine engines and voids warranties. Ethanol absorbs water; add stabilizer whenever fuel will sit more than a few weeks.
- Fit and **change the fuel-water separator filter** on schedule — commonly every 50–100 hours or annually. It is the cheapest engine protection money buys.
- While fueling: crew ashore, engines and stoves off, no smoking. On inboards, run the **bilge blower four full minutes** and do the sniff test before hitting the starter — gasoline fumes are heavier than air and collect low.

The 10-Minute Pre-Departure Ritual

- Weather and tide checked; float plan sent; **drain plug IN** — yes, really; it tops the tow-service statistics
- Fuel and oil levels confirmed; battery switch on; bilge dry; blower run (inboard gasoline)
- Life jackets out and sized to today's crew; kill-switch lanyard clipped to the driver
- Engine started: tell-tale streaming, gauges normal, shift and throttle smooth, steering lock-to-lock
- Lines, fenders, anchor, VHF and phone aboard; nav lights tested if you might be out past sunset
- Crew briefed: where jackets, extinguisher and throwable live, and who does what when docking

■ Captain's Tip — Record the Healthy Idle

Take a 10-second phone video of your engine idling when everything is right. Later, when something sounds 'a little off', you'll have a baseline to compare — and a clip your mechanic will genuinely thank you for.



CHAPTER

14

Emergencies on the Water

Rare events, rehearsed responses.
Calm is a skill you practice.



When Things Go Wrong

Real emergencies are rare — and dramatically rarer for crews who have talked through them once on a calm day. Walk your regular crew through this chapter at the dock; it takes fifteen minutes.

Person Overboard

- **Shout “Man overboard!” and point.** One crew member does nothing but point at the person in the water — heads vanish in chop shockingly fast.
- Press the **MOB button** on the plotter, throw the Type IV cushion or ring toward them, and slow down.
- Approach from downwind at idle, **engine in neutral (or off) for the final pickup** — propellers and people never share water. Recover over the stern or boarding ladder.
- Practice once a season with a fender and bucket. It's a fifteen-minute drill that turns panic into procedure.

Fire

Cut the engine and fuel, position the boat so flames blow away from people, and attack with the extinguisher using **PASS**: Pull the pin, Aim at the base, Squeeze, Sweep. Fuel and electrical fires aboard escalate fast — if the fire isn't dying immediately, make the MAYDAY call and get everyone into jackets and ready to leave the boat upwind.

Taking on Water

Find it before you fix it: check hoses, through-hulls, and the transom first. Slow or stop — speed forces water through a hull breach. Stuff cushions, towels or plugs into the hole, get pumps and a bailing bucket working, and if you're losing the race, call early and run for shallow water: a boat aground on a sandbar is recoverable; one sunk in sixty feet is a salvage job.

Breakdown, Grounding & Capsize

- **Dead engine:** anchor immediately if drifting toward danger — that is the anchor's real job. Then troubleshoot: kill-switch clip, battery switch, fuel vent, primer bulb, filters.
- **Soft grounding:** stop, trim up, check for damage, shift weight, and back off slowly the way you came in. Rising tide is your friend; power and pride are not.
- **Capsize or swamping: stay with the boat** — it floats, it's visible, and it's what searchers find. Climb on top of the hull, keep everyone together, signal.
- **Cold water:** the danger starts with the gasp reflex, not hypothermia. Jackets keep airways up through the first shock — another reason they're worn, not stowed.

■ Captain's Tip — Call Early, Cancel Later

The Coast Guard would far rather hear a PAN-PAN that gets cancelled than a MAYDAY that comes twenty minutes too late. Escalating early costs nothing; hesitating can cost everything. Nobody competent will criticize a cautious call.



CHAPTER

15

Maintenance & Cleaning

Boats don't wear out. They corrode, mildew and UV-fade out.



The Rhythm of Boat Care

Boat care isn't one big job — it's a handful of small habits on three clocks: every trip, monthly, and seasonal. Keep the small clocks and the big bills mostly never arrive.

After Every Trip — The 15-Minute Routine

- **Flush the engine** with fresh water after salt or brackish use — muffs on the intakes or the built-in flush port, per your manual.
- Rinse hull, deck, hardware and trailer; chamois the gelcoat if you're proud of it. Salt left to dry is sandpaper plus corrosion, on a timer.
- Pump the bilge, prop open hatches to air out, remove trash and wet gear — mildew is a stowaway that pays no rent and never leaves voluntarily.
- Tilt the outboard down briefly to drain, then store trimmed as the manual directs.

Monthly / Every 50 Hours

- Check the propeller for dings, and remove any fishing line wrapped at the shaft — line quietly destroys prop-shaft seals, which quietly destroys gearcases.
- Inspect sacrificial **anodes (zincs)** and replace at 50% gone — they corrode so your outdrive doesn't.
- Grease fittings per the manual; check battery terminals for corrosion; eyeball belts, hoses and clamps; test the bilge-pump float switch and every light.
- Wash with marine soap; treat vinyl and canvas with UV protectant. The sun does more cumulative damage than the sea.

Seasonal & Annual

Season	Priority Jobs
Spring	De-winterize, batteries in and charged, impeller and anodes checked, safety-gear audit (flare dates, extinguisher gauge), wax coat #1, registration decal current
Summer	Flush after every salt trip, 50-hour items on schedule, watch bottom growth if the boat stays wet, wax coat #2
Fall	Winterize engine and systems (Chapter 16), fuel stabilized, cover on, trailer tires blocked and lightened
Winter	Check the cover after storms, battery maintainer on, order gear and plan upgrades at off-season prices

Annually — or per the hour schedule in your manual — change engine oil and filter, gearcase lube (milky lube means a failing seal: fix it now), fuel filters, and spark plugs as specified. None of these jobs is beyond a careful owner with the manual open, but there is no shame in a trusted mechanic doing the annual service while you handle the rest.

■ Captain's Tip — The Logbook Habit

Keep a simple maintenance log: date, engine hours, what was done, by whom. It keeps warranties valid, catches patterns early, and at resale a fat, boring logbook is worth real money to a buyer reading Chapter 2 of this very handbook.



CHAPTER

16

Winterization & Storage

Water expands 9% when it freezes.
Your engine block will not.



Putting the Boat to Bed

A cracked engine block is the most expensive preventable failure in boating — and it happens in driveways, not storms. If you're in a freezing climate, winterization is not optional; the only choice is who does it.

The Core Jobs (Freezing Climates)

- **Fuel:** fill the tank to ~90%, add marine stabilizer, and run the engine long enough to pull treated fuel through the whole system.
- **Engine cooling:** drain raw-water cooling completely and/or fill with **marine propylene-glycol antifreeze** (the pink stuff — never automotive ethylene glycol, which is toxic in waterways). Outboards stored tilted fully down are self-draining, which is why they winter best vertical.
- **Engine internals:** fog the cylinders or run fogging oil per the manual, and change the oil *before* storage — used oil holds acids that etch bearings all winter.
- **Gearcase:** drain and refill lube now; any water inside will freeze and crack the housing.
- **Water systems:** drain freshwater tanks, water heater and lines; pump non-toxic antifreeze through pumps, faucets, washdowns and the head.
- **Batteries:** remove or disconnect, store on a smart maintainer — a charged battery resists freezing, a dead one splits.

Storage Choices

Option	Pros	Cons
Driveway on trailer	Cheapest, boat is nearby for tinkering	HOA rules, weather exposure, security
Outdoor yard	Inexpensive, professional access	Exposure — invest in shrink-wrap or a quality cover

Option	Pros	Cons
Indoor rack / barn	Best protection, no cover needed	Cost; access usually by appointment
In-water (mild climates)	Convenience year-round	Bottom growth, blisters, requires bubbler where ice is possible

Cover It Properly

Whatever the location, the boat needs a **breathable cover or professional shrink-wrap with vents**, supported so water and snow can't pool. Trailer stored? Block the frame to take weight off tires, over-inflate slightly, and consider removing wheels to deter theft. Leave lockers and hatches cracked with moisture absorbers inside, and take electronics, jackets and cushions home to a dry closet.

Come spring, reverse it all with the Chapter 15 checklist — and enjoy the smugness of an engine that starts on the second crank while the neighbors call the mechanic.

■ Captain's Tip — Pay Once, Learn Forever

Not confident the first fall? Pay the yard for a documented winterization and ask to watch or get the checklist of what was done. Next year, do it yourself with their list and your manual. Either way, get it in writing — freeze damage claims are routinely denied without proof of winterization.

Your First-Season Checklist

Clip this page to the fridge. Work top to bottom and you'll cover everything this handbook teaches — in the right order.

Before You Buy

- Defined mission, waters and realistic annual budget (Ch. 1)
- Marine survey and sea trial completed; HIN and title verified (Ch. 2)

Before First Launch

- State registration displayed / USCG documentation aboard (Ch. 3)
- Insurance bound — agreed value, correct navigation limits (Ch. 3)
- NASBLA boating-safety course completed by every operator
- USCG gear aboard: jackets, throwable, extinguisher in date, horn, flares, lights (Ch. 4)
- Properly fitted life jacket for every regular crew member — kids by weight (Ch. 5)
- Dock lines sized to the boat, 4+ fenders, chafe guards (Ch. 6)
- Anchor, chain and 150+ feet of rode rigged to the bow (Ch. 8)
- GPS/chartplotter or charting app set up; home waypoints saved; VHF with MMSI (Ch. 10)
- Trailer: capacity, tires, bearings, lights, straps checked (Ch. 12)

Every Trip

- Marine forecast and tides checked; float plan sent (Ch. 11)
- 10-minute pre-departure ritual completed — drain plug! (Ch. 13)
- Crew briefed on jackets, kill switch and person-overboard roles (Ch. 14)
- Post-trip flush, rinse and bilge check done (Ch. 15)

End of Season

- Engine and systems winterized; fuel stabilized; batteries on maintainer (Ch. 16)
- Maintenance log updated; off-season upgrade list started

Plain-English Glossary

Aft / Astern — Toward or behind the back of the boat.

Beam — The width of the boat at its widest point.

Bilge — The lowest interior space of the hull, where water collects.

Bow / Stern — The front / the back of the boat.

Chine — The angle where the hull bottom meets the hull side.

Cleat — A fitting that lines are secured to.

Draft — How deep the boat sits — the minimum water depth you need.

ECOS — Engine cut-off switch — the kill-switch lanyard, required by law under 26 ft.

Fender — The cushion between hull and dock (a bumper protects the dock).

Freeboard — Height of the hull above the waterline.

Gelcoat — The glossy pigmented outer layer of a fiberglass hull.

Gunwale — The upper edge of the hull side — say “gunnel”.

Head — The marine toilet, or the compartment containing it.

Helm — The steering station; whoever drives “has the helm”.

HIN — Hull Identification Number — the boat's VIN, molded into the transom.

Knot — One nautical mile per hour = 1.15 mph. Never say “knots per hour”.

Lee / Leeward — The sheltered, downwind side. A “lee shore” is downwind of you — dangerous.

MMSI — Your radio's registered identity number for digital distress calls.

Plain-English Glossary (continued)

Nautical mile — 1.15 statute miles; one minute of latitude.

PFD — Personal Flotation Device — a life jacket.

Planing — When the hull rises and skims the surface at speed.

Port / Starboard — Left / right when facing the bow. Port has four letters, like “left”.

Rode — The line and/or chain connecting the anchor to the boat.

Scope — Ratio of rode paid out to depth-plus-bow-height. See Chapter 8.

Sea trial — The on-water test drive before purchase.

Spring line — A dock line led diagonally to stop fore-and-aft surge.

Tell-tale — The stream of cooling water an outboard spits while running.

Transom — The flat vertical surface at the stern, where outboards mount.

Trim — The running angle of boat or engine; small changes, big effects.

Underway — Not anchored, moored, docked or aground — you’re boating.

VHF — Marine radio. Channel 16 is hailing and distress — monitor it.

Wake — The waves your boat creates. You are responsible for yours.

Waypoint — A saved GPS position — ramp, reef, harbor mouth.

Windward — The side the wind is coming from.



Fair Winds and Following Seas

You now know more than most second-season owners.
The rest is time on the water — go get it.

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