



**Information & operations manual for
Nautitech Open 44 2023
'Duality II'**

Welcome



Welcome to Horizon Yacht Charters and your Nautitech Open 44 "Duality II". We hope you had a pleasant journey and are looking forward to a fantastic holiday and some of the finest sailing in the world here in the British Virgin Islands.

This manual is here to guide you through the ins and outs of your yacht. Please take the time to read this manual and don't hesitate to ask any of our professional, friendly staff if you have any questions.

All the yachts in the Horizon fleet are maintained to the highest standards so that you may enjoy a trouble-free vacation, on a beautiful yacht. Please remember that these yachts are all privately owned, and we ask that you care for it like it was your own.

Best wishes for a great vacation,

Andrew
Directors

Office Hours:

Monday – Sunday 08:30 – 17:30

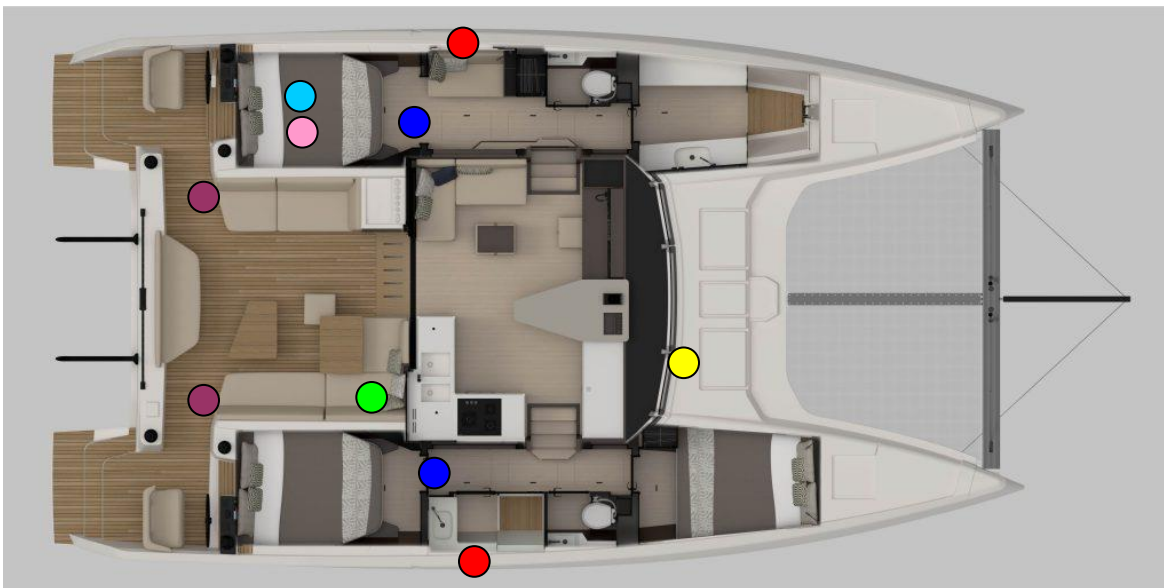
Telephone: (284) 494 8787

Duty Manager: (284) 542 8788 *(Technical questions, damage reports and emergencies)*

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1. Yacht specifications



Length	43' 8"
Beam	24' 2"
Draft	4' 9"
Fuel	120 gallons
Water	160 gallons (80G x 2)
Engine	2 x 30 hp Volvo Penta D1-30F
Generator	Cummins Onan 7.5KW MDKBJ

Location of:

- Fresh water refills (**foredeck**)
- Diesel refills (**aft cockpit – under floor grills**)
- Manual bilge pumps (**each cockpit locker**)
- Propane tank (**under stbd cockpit seat**)
- Windlass breaker (**under port aft cabin bunk**)
- Electric winch breaker (**under port aft cabin bunk**)
- Diesel cut off valves (**under each aft cabin berth**)

2. 12-volt systems and Sailsense

Welcome to the future of Yachting. The majority of the 12-volt systems on Duality II are computer controlled and operation of all this is carried out on a touchscreen device through a software interface called 'Sailsense'.

There are two B&G Zeus 2 touchscreen chartplotters installed, one at the Starboard helm and one at the inside nav desk. Any of these can be used to operate the Sailsense system. The Master unit is located at the nav desk; therefore, the stbd helm unit can only be turned on through this Master unit. **It is always recommended to leave all two units on.**



Access the 12-volt functions through the Sailsense software.



Sailsense pages

Notifications

Notifications

☑ SHDG 185 °M 15:51:37 12.5 ft

DISMISS ALL

NO NOTIFICATIONS
 IF YOU'RE LOOKING FOR NOTIFICATIONS, YOU CAN TRY REMOVING FILTERS OR SHOWING DISMISSED NOTIFICATIONS.

SHOW HISTORY

STATUS:
 BOAT SPEED kn: 0.00
 HDG °M: 185
 AWS kn: 9.5
 TWS kn: 9.5
 TIME LOC: 15:51:37
 DEPTH ft: 12.5
 Tortola 0.83 ft 02:45 L
 1.6ft

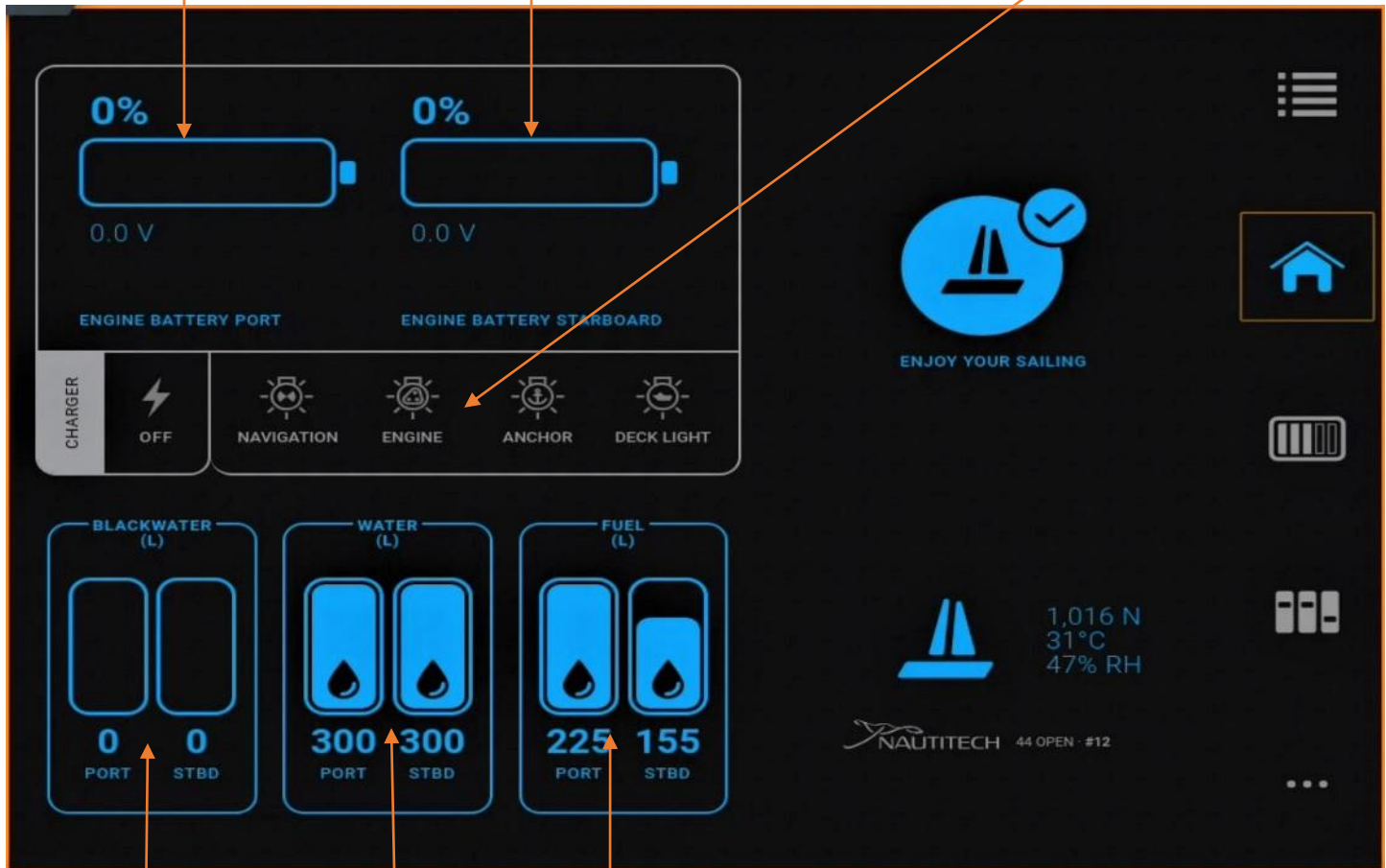
AUTOPILOT:
 ?
 !
 ✖

Home Page (Gauges)

Port Engine Battery

Stbd Engine Battery

Lights (Navigation, Engine, Anchor and Deck Light)



Blackwater

Water

Fuel

The capacity of each fuel tank is 66 US gallons. **The generator draws only from the stbd tank** so you will notice this level reducing quicker than the port tank if you are running the generator. Fuel consumption for the generator should be 1 UG gallon per hour under full load. It may prove to be lower than this but better to be safe than sorry! The fuel pickup for the generator is higher in the fuel tank than the pickup for the engine so even if the generator runs out of fuel, there will be enough remaining for the engine to run to enable you to get to a refueling station.

12-Volt Switches



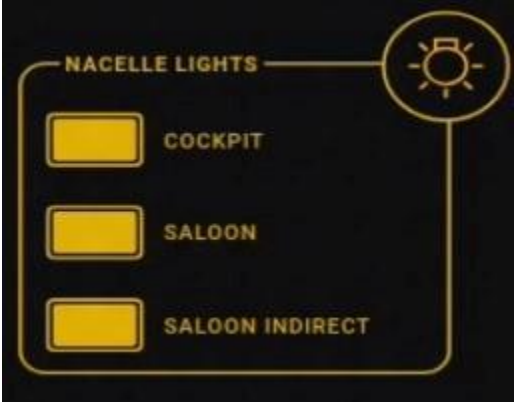
Port Lights



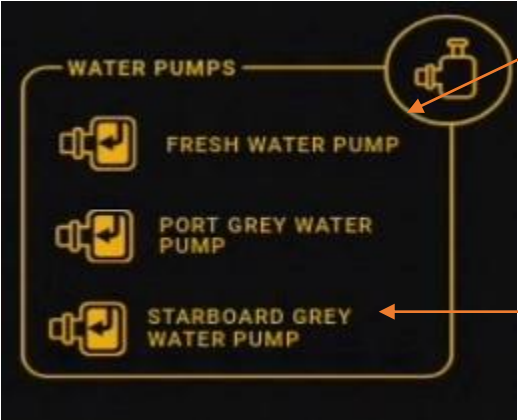
Starboard Lights



Cockpit and Saloon Lights



Water Pumps

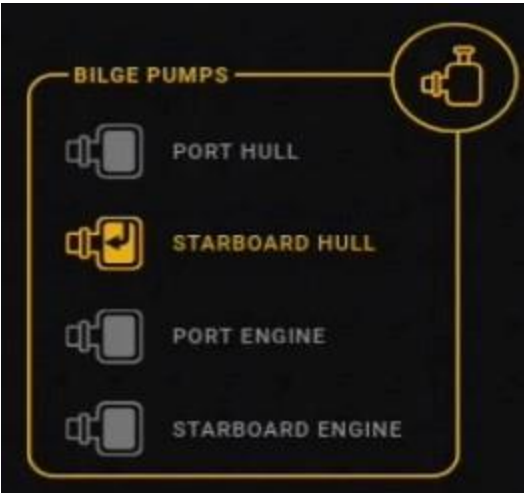


Fresh Water Pumps (All fresh water onboard including the deck shower)

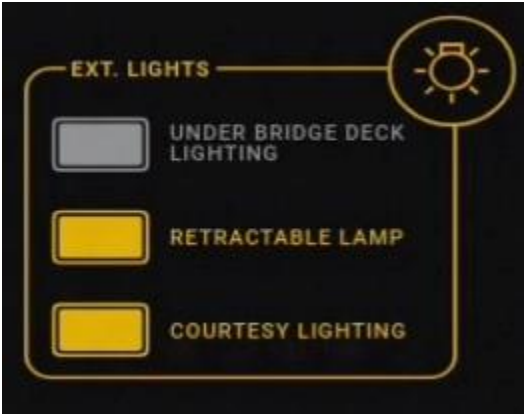
Port shower drain.

Starboard Shower drain.

Bilge Pumps



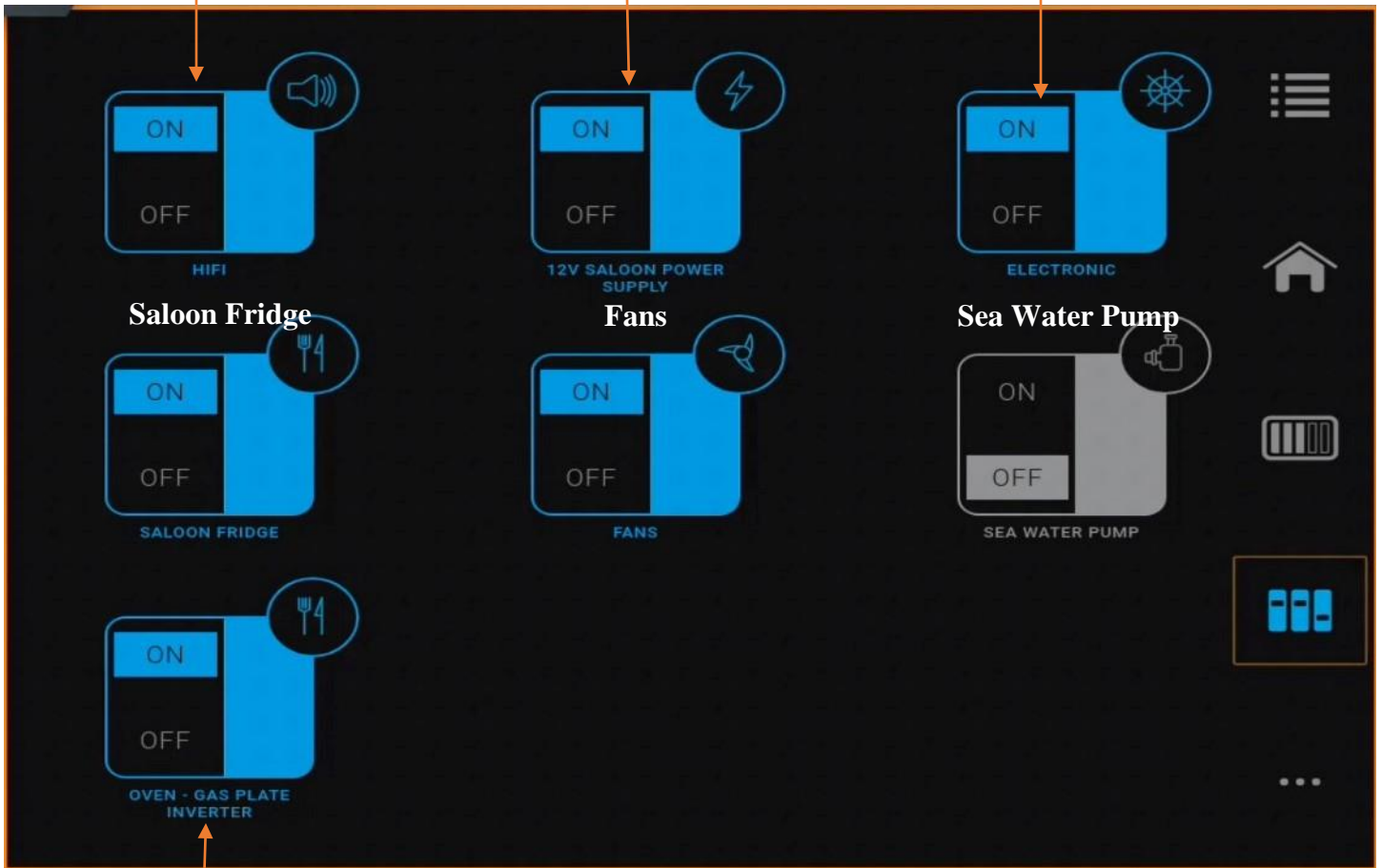
Exterior Lights



Stereo

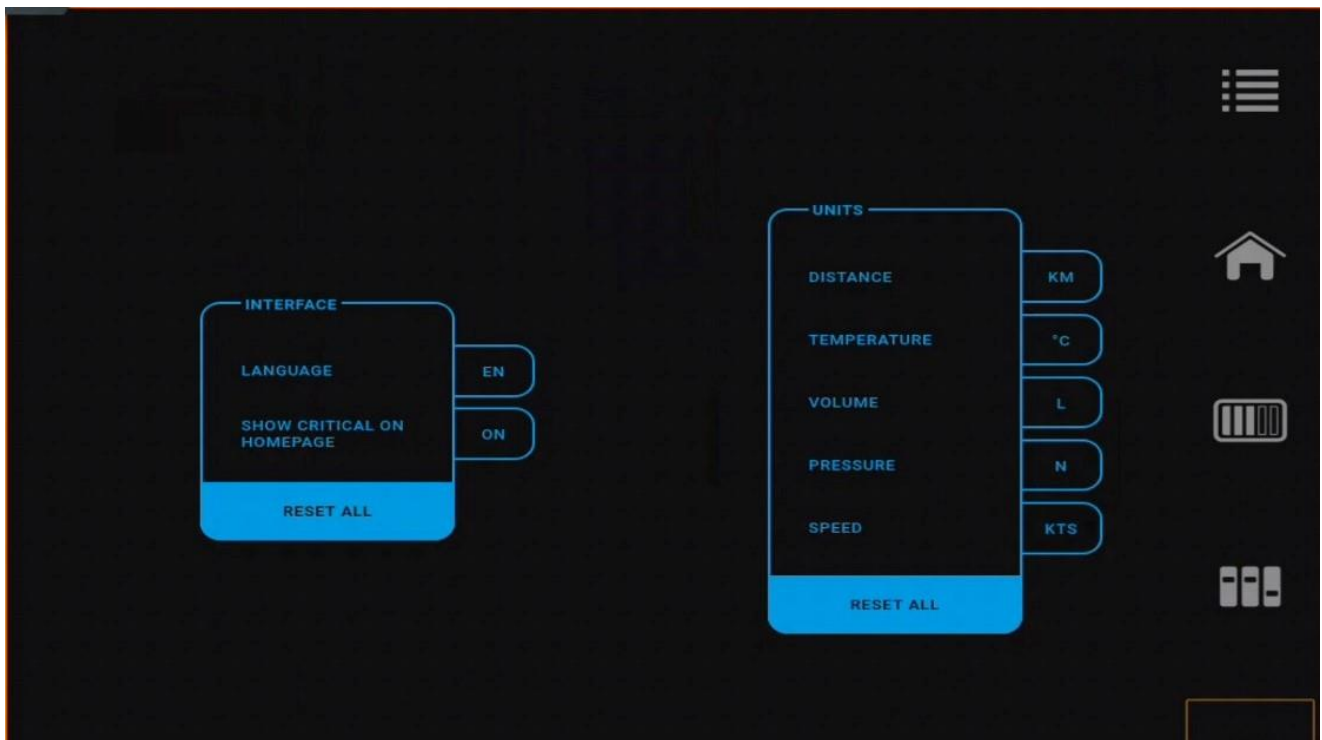
12-Volt Power

Nav Instruments



Oven Clicker

Settings (Do not touch)



Emergency 12-Volt Switches



Bilge Pumps

Fresh Water Pump

System failure

In the event of a failure of the Sailsense system, there are some override switches installed to get you safely back to base. These are installed in the locker just right of the nav desk.

3. 110-volt systems and breakers

The 110v breakers are in the cupboard in the starboard companionway.

The 110-volt outlets will operate whilst you are plugged in to shore power or running the generator. If the outlets do not work, then ensure that the 110v breakers are in the 'On' position. Note that there are 3 green LEDs illuminated. This should always be the case whether on shore power or generator. The second LED from the left will only illuminate when the generator is running.



There is no selector switch for Shore power / Generator. The yacht is equipped with the ability to detect whether the generator is running, or shore power is connected. **It is critical that the generator is not turned on while shore power is connected, or the breakers shown below may trip.**

Main 110-volt breakers in the starboard engine room



4. Inverter / Charger

Warning: Leaving the Inverter on will severely deplete the house batteries. For that reason, it is better to run the engines when using an inverter. The generator automatically provides power to the outlets so there is no need to turn on the inverter when running the generator.



Toggle switch

When on shore power, ensure that the toggle switch on **BOTH** the battery charger **and** the Digital Multi Control are set to 'Charger only'.

TO USE THE INVERTER:

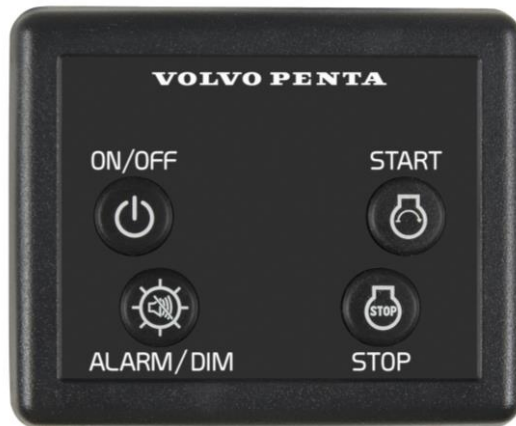
1. Start the yacht's engines and bring the rpm up to 1400 **IN NEUTRAL**.
2. Move the switch on the battery charger / inverter to 'On'
3. Move the toggle switch on the Digital Multi Control to 'On'. The 'Inverter On' light above the switch will then illuminate.
4. All the 110v outlets are now live.
5. **Switch off the inverter when you are finished with it to prevent your house batteries from depleting.**
6. Run the engine for ten minutes after the inverter is switched off and check the battery levels 15 minutes after the engine is turned off.

Toggle switch



5. Engine start procedure.

- Make sure the engine is neutral.
- Press the On/Off switch to turn the ignition panel on.
- Press the start button until the engine is running.
- When the engine is running check there is water coming out of the exhaust.
- To stop the engine, push the **STOP** button and then press the **OFF** button to turn off power to the panel.



Should you hear an engine alarm during operation, check which symbol appears on the tachometer and immediately shut down the engine-CALL HORIZON

All our yacht engines run on diesel fuel. There are two diesel filler caps located under floor grills at the aft end of the cockpit which are clearly marked "DIESEL" **DO NOT PUT WATER IN HERE.**

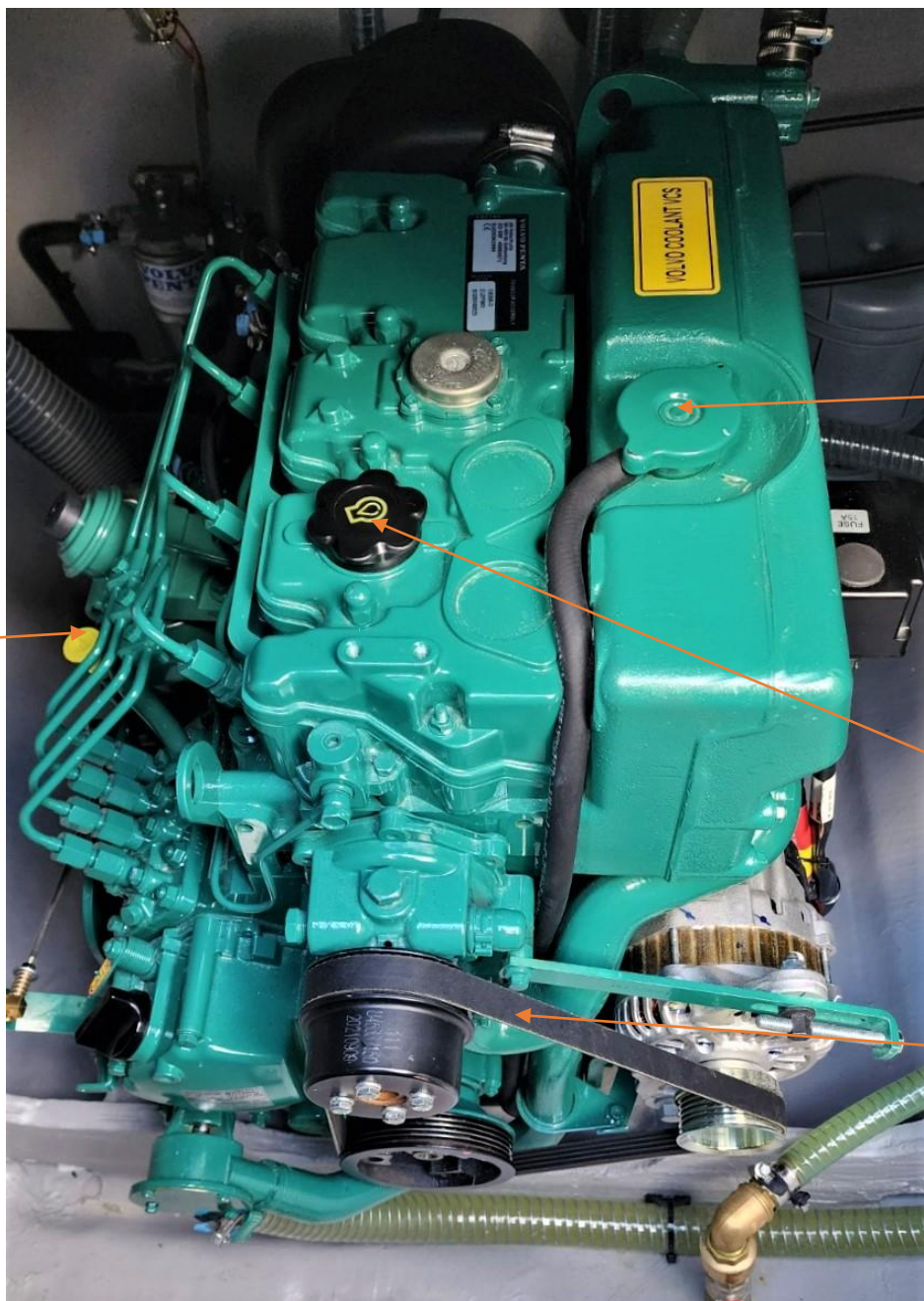


6. Daily Engine Checks

- Check the oil level using the yellow dip stick located to the left-hand side of the engine. The level should be at least halfway between the empty and full marks. To add oil, open the oil filler cap on the top of the engine.
- To the side of the engine is the seawater filter, **do not** remove the cap.
- To the front of the engine is the engine coolant reservoir. The coolant level should be between the maximum and minimum lines.
- Check for any engine leaks or bilge water below engine.
- Check the belt for any damage and correct tension (rear of engine).

KEEP HANDS CLEAR OF ALL MOVING PARTS.

ANY PROBLEMS CALL HORIZON



Oil dipstick

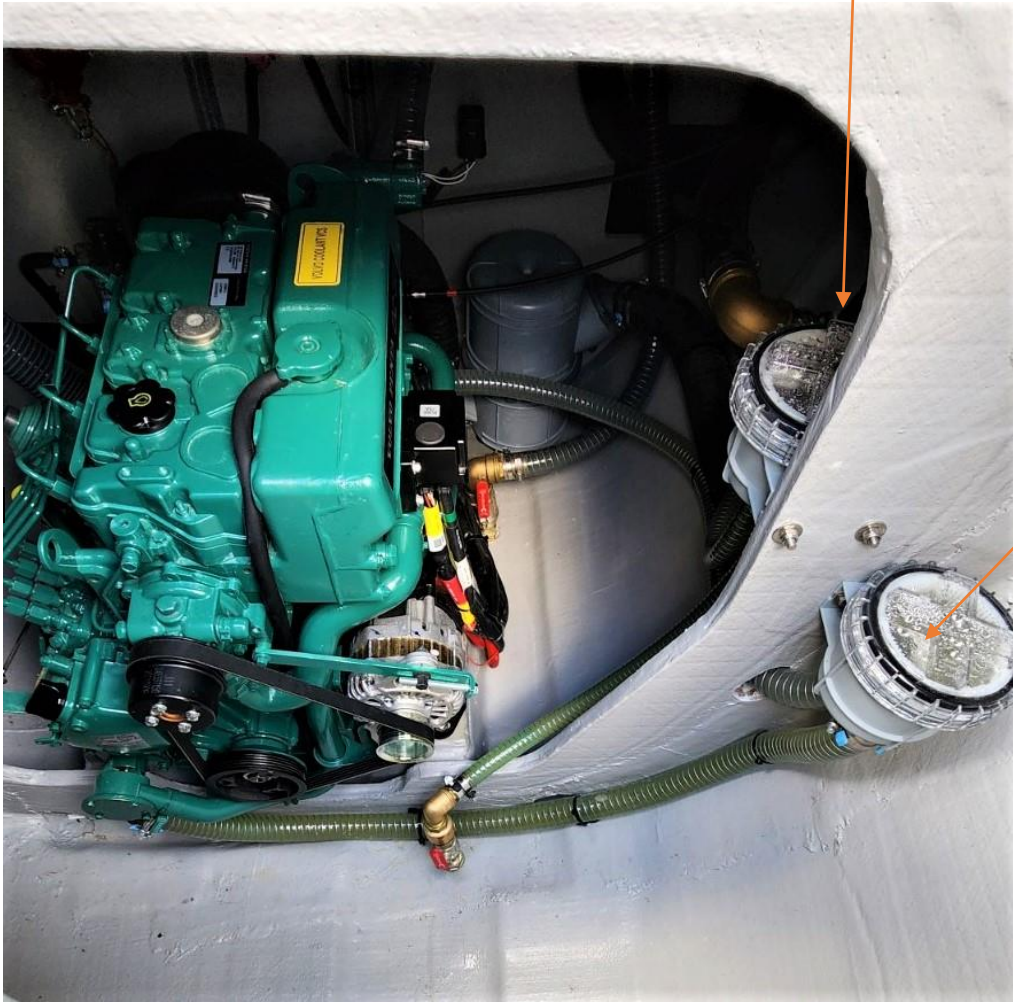
Coolant filler cap

Oil filler cap

Alternator belt

Engine and Generator strainers.

Generator Strainer

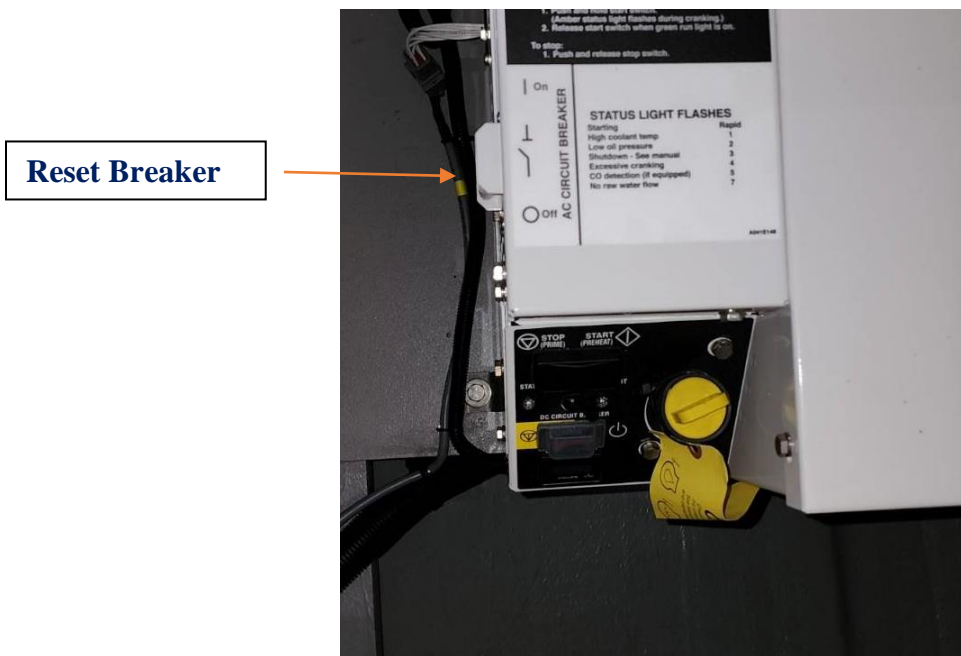


Engine Strainer

7. Generator

You must not run the generator when underway.

Duality II is fitted with its own 7.5KW generator which will run the 110v outlets, the air conditioning and will also charge the batteries in place of the engine. **The generator is located under the stbd aft berth** and the start panel is inside the yacht in the galley.



There is no selector switch for Shore power / Generator. The yacht is equipped with the ability to detect whether the generator is running, or shore power is connected. **It is critical that the generator is not turned on while shore power is connected, or the breakers shown below may trip.**

The reset breaker for the generator is located on the left side of the generator, towards the back.

Starting the Generator



To start the generator

- Make sure all the 110v systems have been switched off prior to starting the generator.
- Press the Start button once. The panel will light up and establish communications with the generator control.
- On the display the genset Status should be 'Stopped'.
- Press **and hold** the Start button again until the Genset Status moves from stopped to starting and then to running. The generator starts and a solid green LED lights up next to 'Generator' on the panel. This will take a few seconds.
- On the display the generator status is 'Running'.
- Allow the generator to warm up for 5 minutes and then gradually load up the system, adding one load every 5 minutes.

Stopping the generator

Stopping the generator

- **Allow the Generator to cool down for 5 mins under no load before shutting it down.**
- Press the Stop button once. The generator will shut down. The start panel will turn itself off after a preset period.

Generator raw water strainer:

Please do not run the generator when sargassum seaweed is present. The generator raw water strainer is the starboard engine compartment and can pick up seaweed and other debris in the water. This can cause your generator to malfunction because of the lack of water flow.

Cleaning the raw water strainer:

1. Before you clean the strainer ensure the raw water intake valve is closed.
2. Remove the housing cover, this can be done with a filter wrench.
3. Remove and clean the strainer.
4. Refit strainer.
5. Prime the strainer by pouring water into it until it overflows.
6. Refit housing cover.
7. Open the raw water intake valve.
8. Start the generator.
9. Make sure water is coming out of the exhaust.

If you still have a problem running the generator after cleaning the strainer, check for water in the strainer. If there is no water in the strainer it means the raw water intake is blocked.

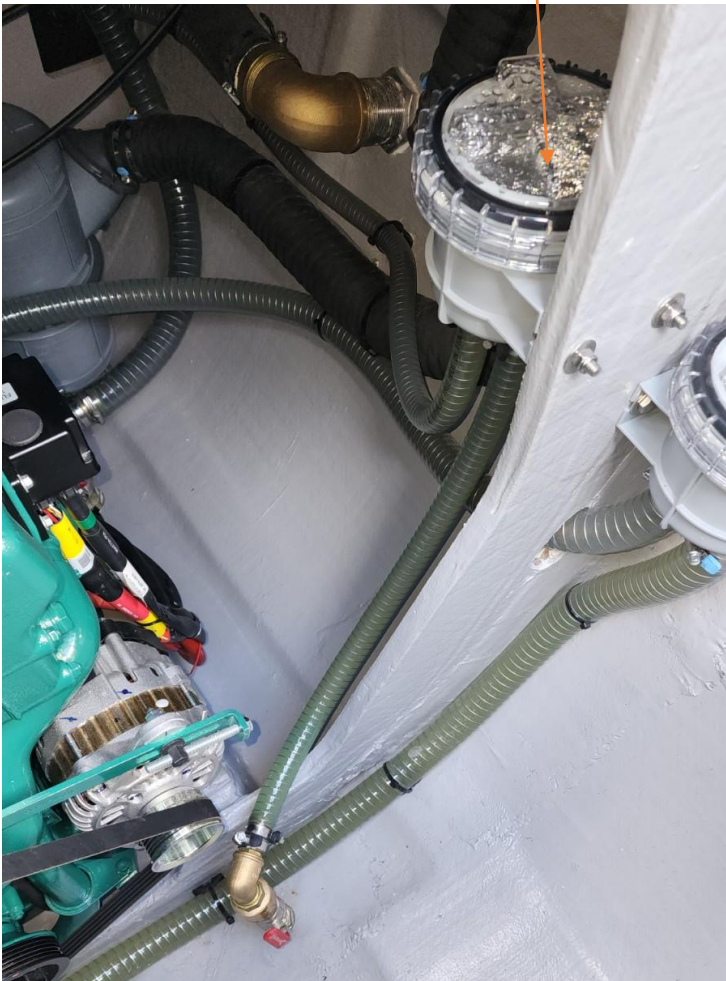
Clearing a blockage from the generator raw water intake:

1. Get the dinghy air pump.
2. Close the intake valve.
3. Remove cover and strainer from the housing.
4. Place the nozzle of the dinghy pump into the opening that is connected to the intake hose.
5. Open the intake valve.
6. Use the pressure of the dinghy pump to force the blockage out.
7. Once you have cleared the blockage, prime the strainer by pouring water into it until it overflows.
8. Refit housing cover and start generator.
9. Make sure water is coming from the generator exhaust.

If you are unable to open the strainer, remove the intake hose where it is connected to the strainer by undoing the hose clamps and use the dinghy pump to force out the blockage.

Please contact the manager on duty for further instructions.

**Generator raw water
strainer.**



**Fit dinghy pump nozzle
and force the blockage
out.**



8. Air conditioning

The 4 x air conditioning units will operate when the vessel is plugged in to shore power or when the generator is running. Each cabin has its own individual air con unit and there are 2 units located in the saloon. The owner cabin has an additional unit in the shower room.

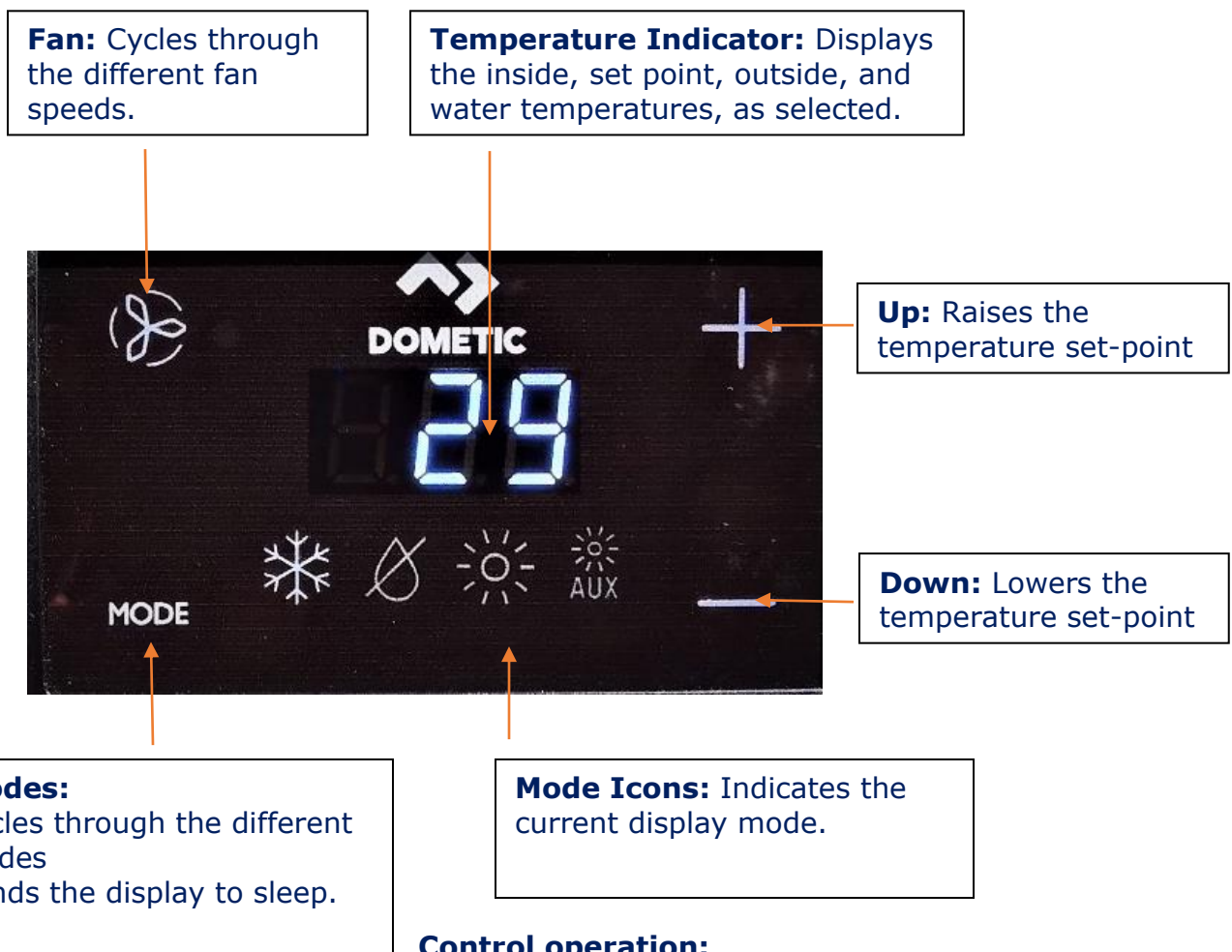
The air conditioning units should be turned on **after** the generator has been running for 5 minutes (or once the boat is plugged into shore power) and the breakers should be shut **off** before stopping the generator or unplugging from shore power.

Ensure the companionway and all hatches are closed; otherwise, the compressors will freeze up.

Starting the air conditioning:

- Switch on the required units 5 minutes apart.
- Each of these units also has an individual control which allows users to alter the settings for the individual units.

Using the AC Cabin Controls:





The four mode icons indicate the different modes of control: Cool, Moisture, Heat and Aux Heat.

Press the Mode icon to select a mode:

- Display icons illuminate to indicate the selected mode.
- The display locks into the last mode selected after five seconds of activity, they display the room temperature. The selected mode LED remains lit.
- After 10 seconds of inactivity, the display shows the room temperature and enters the IDLE state.
- OFF displays on the screen to indicate the off state.
- When the display is making a call for heating, cooling, aux heat, or humidity, the appropriate mode icon blinks for two seconds On and two seconds OFF.

Press any icon to wake up the control from the OFF or Idle state.

Press the mode icon for three seconds to initiate a SLEEP state:

- The display goes dark.
- Normal operation continues.

Press the mode icon for an additional three seconds to wake up the control.



Cool: The cool icon illuminates when the COOL mode is selected or when the unit is in an AUTOMATIC mode cooling cycle. Only the cooling system operates. If the ambient temperature drops below the set point, the system will not automatically switch to the HEAT mode.



Moisture: This mode controls humidity during periods when the vessel is unoccupied and prevents the cabin temperature from dropping below the minimum default temperature setting.



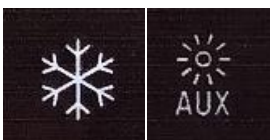
Heat: Only the heating system operates. If the ambient temperature rises above the set point, the system will not automatically switch to COOL mode.



Aux Heat: The electric heating system is in operation. If the ambient temperature rises above the set point, the system will not automatically switch to COOL mode.



Automatic modes: Switches to cooling or heating as required to satisfy the temperature set-point. When Automatic mode is selected the system provides both heating and cooling, as required.



Air Conditioning Fault Codes:

ASF: Air Sensor Failure

FIL: Filter, indicates the filter needs to be cleaned or replaced.

HPF: High Pressure Fault, indicates high refrigerant pressure. The fault is not applicable in HEAT mode. Can also mean there is air in the lines and reducing your raw water flow, you will have to bleed the system if this is the case.

LAC: Low AC Voltage

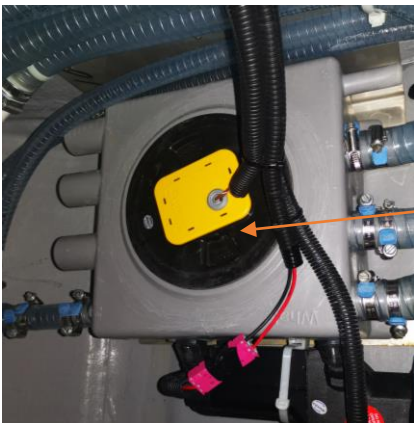
LPF: Low Pressure Fault indicates low refrigerant pressure. The fault has a 10 min shut down delay.

PLF: Pump Sentry Fault, indicates high-water temperature in the condensing coil.

The air conditioning unit will operate when the vessel is plugged in to shore power or when the generator is running. Each cabin has its own individual air con unit and there is a 5th unit located in the saloon.

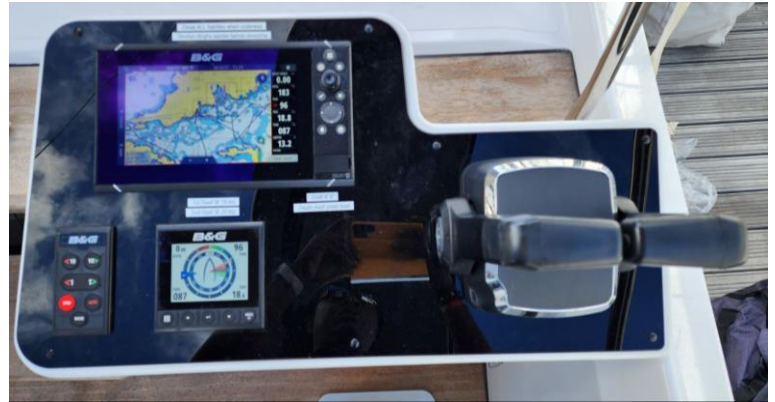


Load up the generator with one air conditioning unit every five minutes so that the generator does not overload. If all the air conditioning units fail to turn on, check the reset breaker on the left side of the generator



All AC units drain into automatic sump boxes, one in each hull; therefore, you will hear intermittent pump operation of the drain pump when running the Air conditioning

9. Instruments



Located on the Flybridge are a B&G Triton² digital display and autopilot controller, B&G Triton² Autopilot control and a B&G Zeus³ 3 Chartplotter.

B&G Triton² digital display and autopilot display



1. Pages key

- With no menu active:
- Press to scroll through the enabled data pages (Wind speed + Direction, depth, boat speed and autopilot)
- Press and hold to display a list of enabled pages from where you can directly select the page to display.
- Menu and dialog operation: Press to return to previous menu level or to exit a dialog.

Speed/Depth page

Basic speed in knots and depth (Depth on Luna is in ft). Depth is read from under the keel.



Autopilot:

Safe operation with the autopilot

⚠ Warning: An autopilot is a useful navigational aid but DOES NOT replace a human navigator.

Note: You can disengage the autopilot at any time by pressing the **STBY** key on the Triton² Pilot controller.

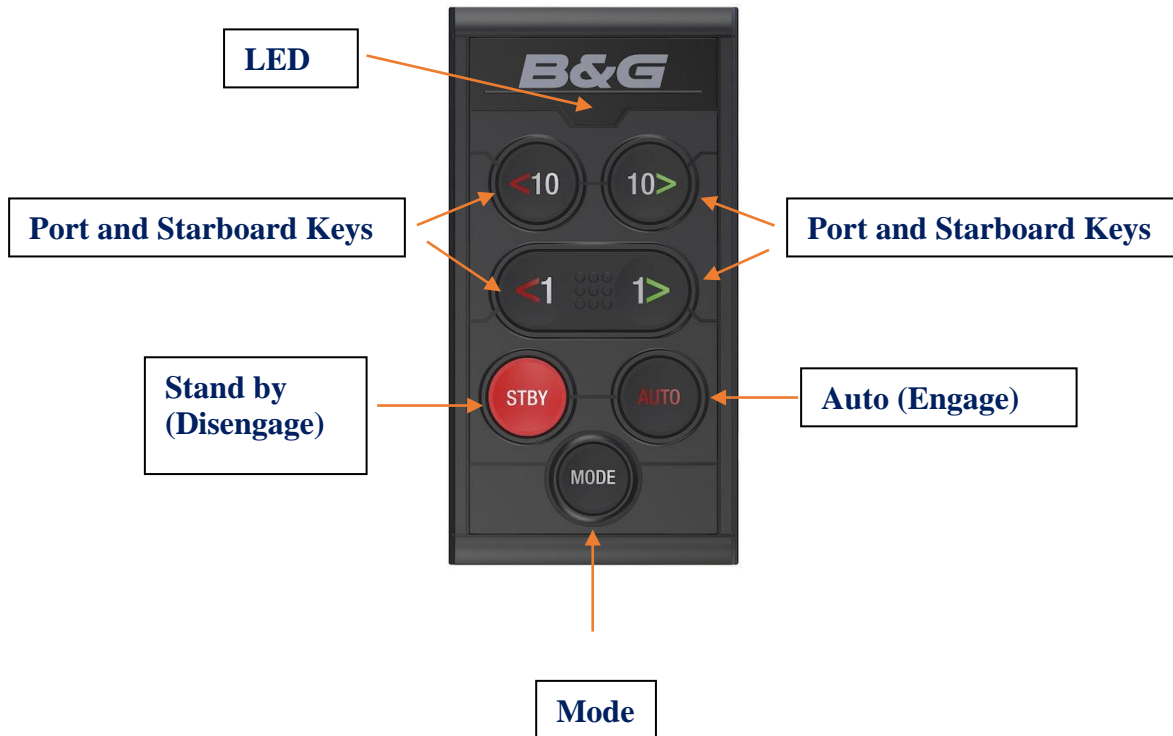
Do not use automatic steering when:

- In heavy traffic areas or in narrow waters
- In poor visibility or extreme sea conditions
- When in areas where use of an autopilot is prohibited by law

When using an autopilot:

- Do not leave the helm unattended.
- Do not place any magnetic material or equipment near the heading sensor used by the autopilot system.
- Verify at regular intervals the course and position of the vessel
- Always switch to Standby mode and reduce speed in time to avoid hazardous situations.

B&G Triton² Autopilot control



LED:

Mode and alarm indicator

Port and starboard keys:

In Standby mode: press to activate Non-Follow Up mode (NFU).

In AUTO mode:

- Press a key to change the set heading 1° or 10° to port or starboard.
- For boat type set to SAIL: Press and hold both port keys or both starboard keys to start a tack/gybe

In NoDrift mode:

- Press a key to change set heading 1° or 10° to port or starboard

In Wind mode:

- Press to change set wind angle 1° or 10° to port or starboard.
- Press both 1° keys to start a tack/gybe.

AUTO key:

Press to activate AUTO mode.

MODE key:

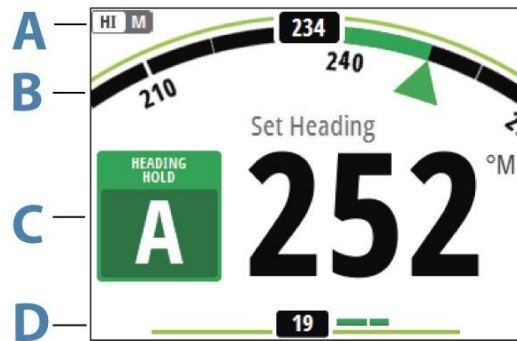
Note: Only used when the autopilot is in AUTO or NoDrift mode.

Press once to select mode:

- For boat type set to SAIL: activates Wind mode (A)
- Press and hold to activate NAV mode (C)
-

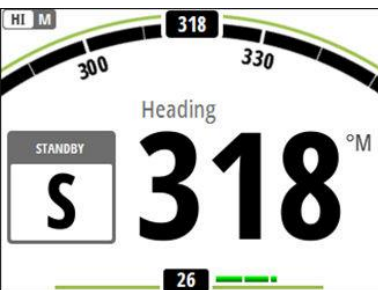
STBY (Stand by) key):

Press to activate Standby mode.



- A. Performance/Response/Profile mode
- B. Heading indicator, analog and digital
- C. Autopilot mode indication
- D. Rudder indicator, analog and digital

Autopilot modes

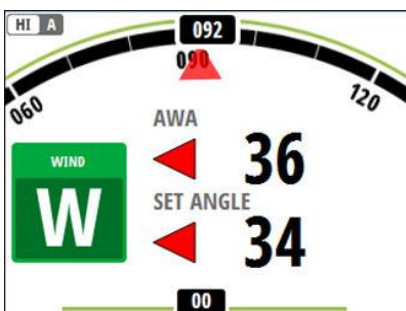


Standby mode:

Standby mode is used when you steer the boat at the helm.

- Switch to Standby mode by pressing the **STBY** key.

Note: If you press one of the port or starboard keys while in Standby mode, the autopilot will switch to Non-Follow Up mode.



Wind mode:

Note: Wind mode is only available when the boat type is set to SAIL. It is not possible to activate wind mode if wind information is missing.

When wind mode is engaged, the autopilot captures the current wind angle as steering reference and adjusts the heading of the

boat to maintain this wind angle.

Prior to entering wind mode, the autopilot system must be operating in AUTO mode and with valid input from the wind transducer.

- Switch to Wind mode by pressing the MODE key when the autopilot is in AUTO mode.

The autopilot will now keep the boat on the set wind angle until a new mode is selected or a new wind angle is set.

⚠ Warning: In wind mode the autopilot steers to the apparent or true wind angle and not to a compass heading. Any wind shift could result in the vessel steering on an undesired course.

B&G Zeus³ Chartplotter

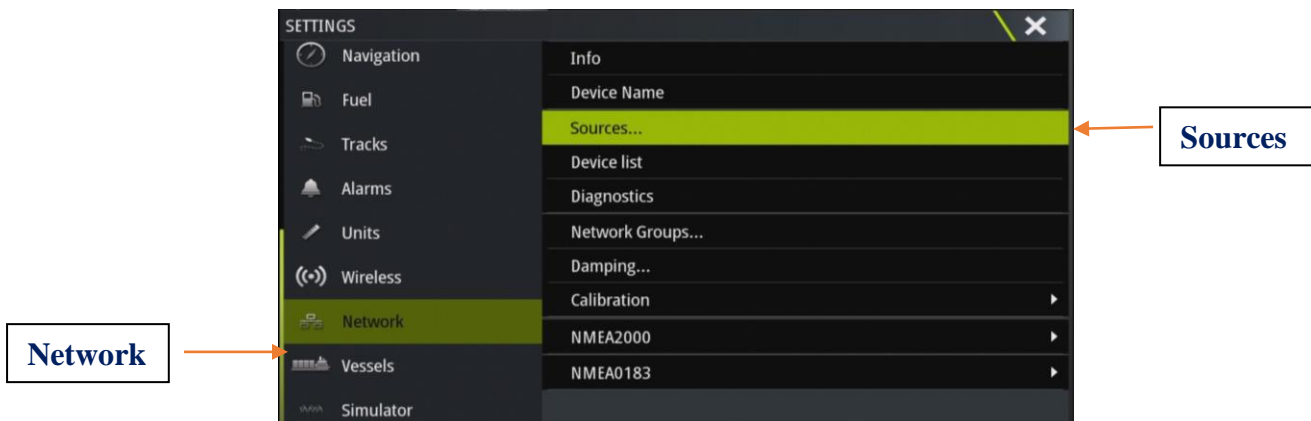


Trouble Shooting Nav Instruments:

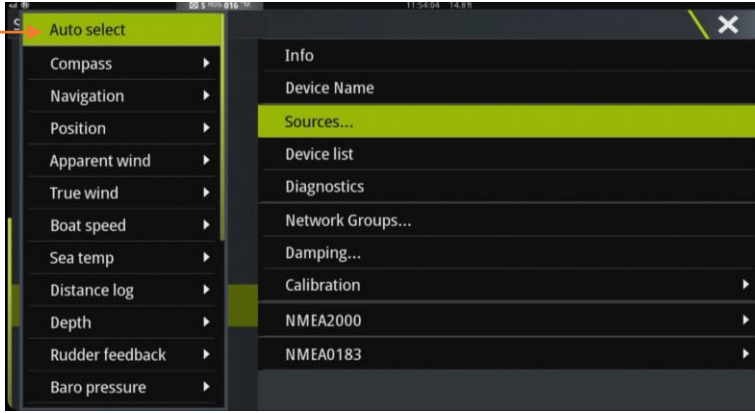
If you are no longer seeing data for specific sources (Depth, Windspeed, rudder position) on the chart plotter or the Triton digital display it means the data sources are no longer communicating with the system. This is an easy fix, just follow the steps below.

1. Select Settings.
2. Select Network.
3. Select Sources.
4. Hit Auto select.
5. Hit Start.

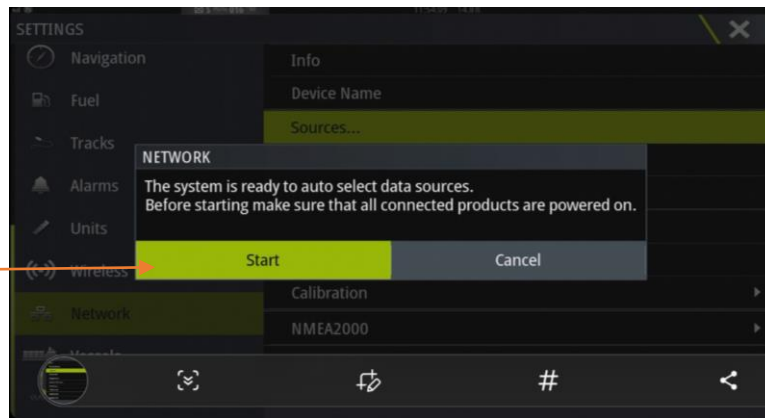
The system will then auto-select all the relevant data sources. Hit okay to complete.



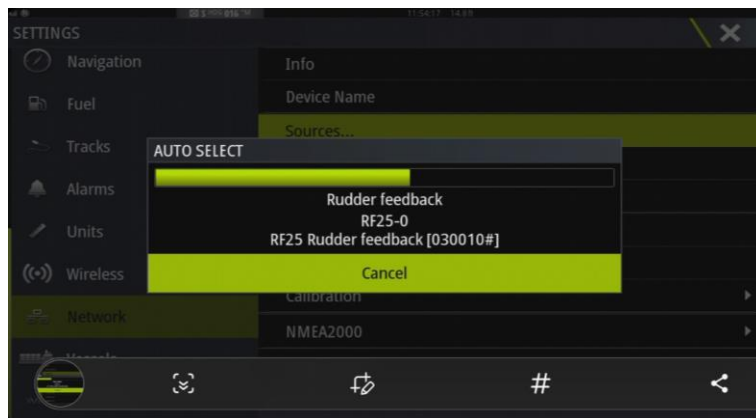
Auto select



Start (System is ready to auto select data sources)



System auto selecting data sources



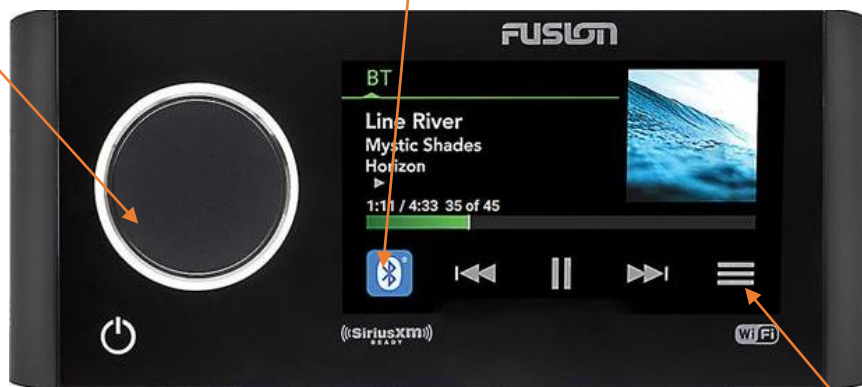
Fusion Apollo RA770 stereo

Dial:

- Turn to adjust volume.
- Press to switch between zones.
- Press to move through the menus or adjust a setting.

Source Icon:

- Press to change the source.



Menu:

- Select to open a menu for the current source.

Source menu



Connecting to Bluetooth

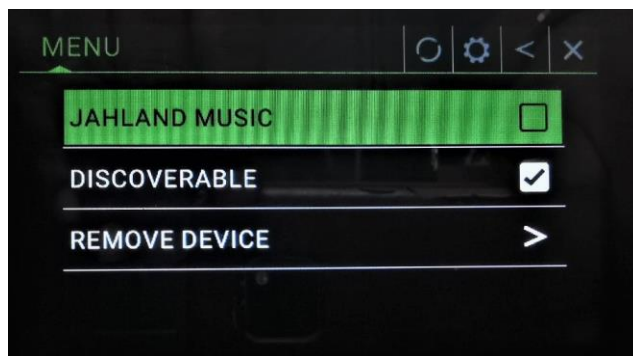
1. Select BT (Bluetooth) from the source menu.



2. Select menu to open the Bluetooth menu/settings.



3. Select discoverable to make the stereo visible to your compatible Bluetooth device.



4. Enable Bluetooth on your compatible device.
5. On your device search for Bluetooth devices.
6. Select Duality II from your list of Bluetooth devices.
7. Follow the onscreen instructions on your device to pair and connect.

When pairing, your compatible Bluetooth device might ask you to confirm a code on the stereo. The stereo does not display code, but it does connect correctly when you confirm the message on your Bluetooth device.

10. VHF Procedure



Failure to report any accidents or incidents in a timely manner may result in nullification of your hull damage insurance.

Types of emergencies:

In the unlikely event that you are involved in an emergency stay calm and follow these steps. You will also have an Emergency Procedure card next to your VHF.

Distress: "MAYDAY, MAYDAY, MAYDAY." This is an International Distress signal and an imperative call for assistance. It is used only when a life or vessel is in grave and imminent danger.

Mayday Relay: used to summon help for a vessel which is either too far offshore to contact the coastguard directly, without radio capabilities or whose radio has been damaged or destroyed.

Urgency: "PAN-PAN, PAN-PAN, PAN-PAN" This is the International Urgency Signal and is used when a vessel or person is in some jeopardy but is not considered to be in grave and imminent danger.

Medical emergency: "PAN-PAN MEDICO, PAN-PAN MEDICO, PAN-PAN MEDICO" (Pronounced med-ick-oh). This is an International Urgency Signal that should be used when medical advice is needed.

Safety: "SECURITE, SECURITE, SECURITE" (Pronounced Say-cure-it-tay). This is an International Safety Signal and is a message about some aspect of navigational safety or a weather warning.

How to issue an emergency message

Select Channel 16 and press the transmit button on handset.

Say slowly and clearly 'MAYDAY, MAYDAY, MAYDAY, CALLING ALL STATIONS

This is.... (vessel name)' and repeat vessel name 3 times

Give position – vessel's position in degrees of latitude and longitude or nautical miles from, and bearing to, a navigational landmark

Describe emergency – list the problem, the type of assistance needed; number of passengers aboard (boat length, hull colour and type is also useful)

Wait 1 minute for a response, repeat message.

ALTERNATIVELY: Dial either 767 (SOS) or 999 from any BVI cell phone or call 494-HELP (4357)

11. Batteries

There are three ways to recharge your batteries:



Keeping your house batteries charged is essential to ensuring your 12volt systems will work. Fridges, lights, fans, stereos, and Navigation instruments are some of the most important ones and of course using them draws power from your house batteries. If you conserve energy, you will not need to charge as often. If something is not being used, then turn it off. We often explain that 12-volt power is like water; you need to replace what you use. You can recharge your batteries with the auxiliary engine(s) or your 110-volt battery charger when running the generator or on shore power.

Engines:

Motoring to a destination will automatically charge your batteries. When anchored or moored you can run your engine(s) in neutral at 1400 RPMs to charge your batteries.

If your batteries get to 12.2 volts, then it is time to recharge your batteries. At 12.2 volts it should take about 1.5 hours of charging to get them back to a good charge. It is important that you recharge the batteries completely every day. This may take 2 or 3 charges per day. But you can break this up into more charges for shorter periods of time. Once you think you have charged enough or you just want to go for a sail, turn off the charging system. Wait about 15 minutes and then check the voltage of your house battery. A fully charged battery should come to rest around 12.8 volts. If the batteries do not get to this level, then they need more charging. Please note that you will see elevated voltage readings when charging and just after charging. The latter is why you should wait 15 minutes before checking your voltage after charging.

Charging with shore power and generator:

Using the 110volt charger via generator or shore power will charge your batteries; Just check that the battery charger is turned on as this is not completely automatic. And check that you see your house battery has an elevated charge level, 13 volts or more whilst charging.

Generator not charging batteries:

- Check battery charger breakers are in the on position.
- Check the main breaker on the left side of the generator. When this breaker is off the generator will run but there is no power going to the chargers and air conditioning units.

Not Receiving Power from Shore:

- Check breakers in the stbd engine compartment.
- Check the cable is plugged in all the way, you should be able to twist the cable clockwise on both ends.
- If you are still not receiving power from shore move the shore cable to another pedestal and ensure the breakers on the pedestal are in the on position.

Charge at 1400 rpms or more.

Hold to disengage transmission gradually moving throttles forward.



The batteries are located under the port aft cabin berth. They do not require any checks whilst on charter.

Three battery isolators are installed on right side of the nav desk.



**Shore power charger
and outlets**

**Shore power air
conditioning**



12. Anchoring & the windlass



Chain: 225ft
Marked: Every 30ft
Minimum scope: 5:1
Always use bridle.
Test anchor in reverse 1500rpms

Setting your anchor:

Preparation:

- Establish a nonverbal communication system between helmsperson and windlass operator, as with the noise of the engine and wind, verbal communication proves difficult.
- Shorten the painter so that it cannot go under the yacht and wrap around the prop.

Location:

- Choose a clear area to anchor in and you can see the bottom. A white bottom is sand and perfect for anchoring. A brown or green bottom will be grass, rock, or coral. **Only anchor in sand.** The maximum depth would be 1/5th of your anchor rode. Remember the depth is set from the bottom of your keel so keel draft should be added to the reading of your depth gauge.
- Anchoring on a lee shore is not recommended and would recommend using both your primary and secondary anchor if you choose to anchor off a lee shore. (See below)

Action:

- Always have your engine revs increased to @ 1400 rpms before windlass operator touches the windlass remote. The windlass needs optimum energy to operate correctly.
- Minimum scope is 5:1. In heavy weather you may want to increase that, always ensuring your swing area is clear of any obstacles.
- Use the elements; approach from downwind or current, whichever prevails.

- Have the anchor ready to deploy. This may require you to slack the chain and manually push the anchor slightly overboard so that it will go deploy when you press down on the remote.
- Once the yacht is stationary use the electric windlass to drop the anchor to the sea floor. The elements will push you back and away from the anchor. Keep deploying chain until you have acquired the correct scope. Attach the snubbing line.
- **Always attach the snubbing line before setting the anchor with the engine and whilst you are anchored. The snubbing line protects the windlass, and it is important that you attach the snubber every time you set the anchor. Attach the hook around the chain link (the hook is too big to go through the link) and cleat off the bitter end of the line to a bow cleat. Pay out enough chain so that the snubbing line becomes taut.**
- If the hook falls of the chain, it means that there is not enough tension on the line. You may need to hold slight tension on the snubbing line as you deploy more chain until the snubber takes the load of the anchorage. Engage reverse, slowly building up to 1500 rpm to really drive your anchor into the sand. Take transits as you set the anchor so that you know that the anchor is not dragging.
- It is always advisable to snorkel the anchor and ensure it is bedded in correctly and not just lying on its side or hooked on a rock.

Retrieving Primary Anchor:

- Never use the windlass to pull the yacht to the anchor. The windlass operator should point in the direction of the anchor chain so that the helmsman can move slowly in that direction. As soon as there is some slack on the anchor chain the bowman tells the helmsman to put the engine in neutral and then increase RPMs. Bowman then retrieves all the slack chain. When the chain becomes taut then you repeat the process from the beginning. Ensure the anchor does not swing into the bow of the yacht.

Setting a secondary anchor:

- Your secondary anchor is a quick set type of anchor and is usually stored in the cockpit locker. It has 30 feet of chain and about 170 feet of line. For this reason, we have always found it easiest to put this chain in the dinghy with two people and deploy it from there. Take note where your primary is and drive away from the yacht at a 45-degree angle of the primary. Drop the anchor with the shank pointed at the yacht and deploy the rode as you drive back to the bow of the yacht. Tie off at the bow. Once back on the yacht and dinghy secured, manually take the slack out of the 2nd rode and tie off. Now engage reverse to 1500 RPMs as before.

Always review where windlass switches and breakers are and the manual operation (next section) before anchoring in case the windlass trips a breaker etc. Be aware that the chain can sometimes get jammed in the windlass or in the anchor locker. That is the first place to look if the windlass stops moving. If the windlass stops working, let the helmsperson know and then look for the reason. Do not keep pressing the buttons on the remote.

Should the windlass be overloaded a breaker located **under the port cabin bunk** will trip. Push the yellow reset lever back up to reset it.



Another problem may be that the yacht battery power is too low to run the windlass. Please run the engine @1500 rpm for 15 min and try again. If the windlass still refuses to operate, please call Horizon.

If you have any doubts or concerns, please call Horizon first. Before replacing the fuse, however, ensure that the windlass breaker on the 12v panel is switched on, and that the green light is not illuminated. If it is illuminated, this indicates that the fuse is NOT blown, and that the yacht battery power is too low to run the windlass. Please run the engine @1500 rpm for 15 min and try again. If the windlass still refuses to operate, please call horizon.

Manual operation of the windlass

To drop the anchor, insert the windlass handle into the center star fitting on the side of the windlass.

Turn this center fitting counterclockwise. It will take some force. This will also act as your brake to slow the descent of the anchor and chain. So, keep the handle in there and be ready to break when you deploy the anchor. If you do not apply the brake to slow the decent then the entire chain will deploy and deploy rapidly.

Push the anchor overboard with a slight tension on the brake. Ease the anchor to the sea floor. Deploy enough anchor rode for the depth and conditions and then tighten the brake/center star fitting. Fit your snubber and set your anchor as described in previous section.



Electric Winch

The main halyard winch at the stbd helm can be operated manually or electrically. **Extreme care should be taken if using the winch electrically as accidental damage or injury can easily occur.**



Electric/manual winch

Single speed winch button

Should the electric winch be overloaded a **breaker under the port aft cabin bunk** will trip. Push the Reset lever back up to reset it.



13. Picking up a mooring buoy

- Ensure the dinghy painter is tied off short on the bow or amidships and is clear of the prop.
- Approach the mooring buoy, keeping the bow into the wind or current, whichever prevails.
- Have a crew member on the bow to pick up the mooring pennant with the boat hook.
- The bowman will direct the helmsman to the mooring, using the already established non-verbal communication system. Once at the mooring, inspect the buoy and pennant for any signs of wear and tear; if you are unsure about a mooring buoy's integrity, choose another location to moor up.
- The bowman should ready a line to a bow cleat to slip through the eye of the mooring pennant. This line is then shortened and brought back to the same cleat.
- Once set your mooring buoy will be attached either on the port or starboard cleat and the yacht will be head to wind. Remember to centralize the wheel and lock it in place to avoid the yacht sailing around the buoy.
- Next attach a second back up line to the mooring. Attach a line from the opposite bow cleat and if possible, attach it directly to the mooring buoy. It is always easier to do this from the dinghy. Do not try to make the lines of equal length, the first line should be taking all the weight of the boat.
- To depart, release the back up line first. Slowly motor the boat forward to create slack, release the line from the cleat and allow the pennant to slip from the line into the water. Fall back with the wind or current and be careful not to foul your prop on the pennant.
- **Remember to tie your dinghy away from the stern whenever you are maneuvering in close quarters.**

14. Bilge Pumps

Your yacht is equipped with a fully automatic bilge pump in each hull and in each engine compartment. A manual pump is in each of the cockpit locker with diverter valves which allow the pump to be used in either the hulls or engines compartments. Their use will be demonstrated to you during your brief.



Manual bilge pump with diverter valve



15. Freshwater system

Duality II is equipped with two water tanks with a total capacity of 160 gallons.



The two water tanks are connected so there is only one water fill on Duality II

Before filling the tanks let the water run from the hose for a while before placing the end into the fillers that are located on the foredeck. Please ensure that the correct fillers are used, NOT the holding tanks or the diesel fill.

To use the freshwater system, turn on the freshwater pump using the Sailsense system described previously and open a faucet.



16. Heads

Nothing is to be put down the head unless it has been digested first.




Blocked heads due to any other blockage other than mechanical failure of parts is at the charterer's expense as per your charter contract. This includes the chase boat and technician's fee.

Electric Heads:



Flush/ Rinse Bowl

**Wet Bowl (Left)
Dry Bowl (Right)**

- Before using it, ensure that there is enough water in the bowl.
- If the bowl is empty, hold the lower Flush Control Switch on Wet Bowl  position until the flushing pump is primed, and water enters the bowl.
- During use, pump as necessary to keep the contents of the bowl low enough for comfort.
- After use, hold the upper Flush Control Switch Flush/Rinse bowl  until the water in the bowl is clear (Flush for as long as possible so the waste travels all the way through the lines).
- When the water in the bowl is clear, hold the lower Flush Control Switch on the Dry Bowl  side until the bowl is empty. Always leave the bowl empty to minimize odor and spillage.

AFTER USE DRY BOWL (SHUT) () THE FLUSH CONTROL.



**Holding tank
Discharge valve
in each bilge slightly
forward of midships**

17. Showers

Your yacht has a hot & cold, fresh-water shower in each head and at the deck shower on the stbd transom.

If the engine has been running, the hot water can be very hot – be cautious!

To use the showers, the fresh-water pump must be activated on the 12V panel.

The head showers drain into a sump box which has an automatic float switch and pump, so the water will be pumped out automatically (ensure that the shower pump is selected on the NaviOps system as described previously).



Shower sump box in each hull

Transom Shower

The valve on the left has two functions:

- By pushing the valve up or down you can turn on the water and adjust the water pressure.
- By turning the knob clockwise and counterclockwise you can change the temperature of the water. Be careful. The water can be extremely hot. Test before showering.

To use the shower head simply pull it out and press the lever on the back. If no water comes out make sure that the 12V water switch is on, that the shower hose is not kinked (access from the stbd eng compartment) and that the water pressure valve is in the correct position.



18. Refrigeration

Duality II is installed with two fridges and a freezer. All these are 12v systems. They are designed to run 24hrs a day if you wish. To ensure that they do not fail there are two things you should do.

- Firstly, keep your batteries charged. If the level goes below 12v the system will malfunction. Refer to section 10 for charging instructions.
- Secondly, **do not chip at the ice or use any other sharp items in the fridge.** If something is frozen to the side of the fridge do not force it away. Pour warm water on it if you need to melt the ice.

There are thermostats in each unit to adjust the temperature. **There are no drains on any of these units.**

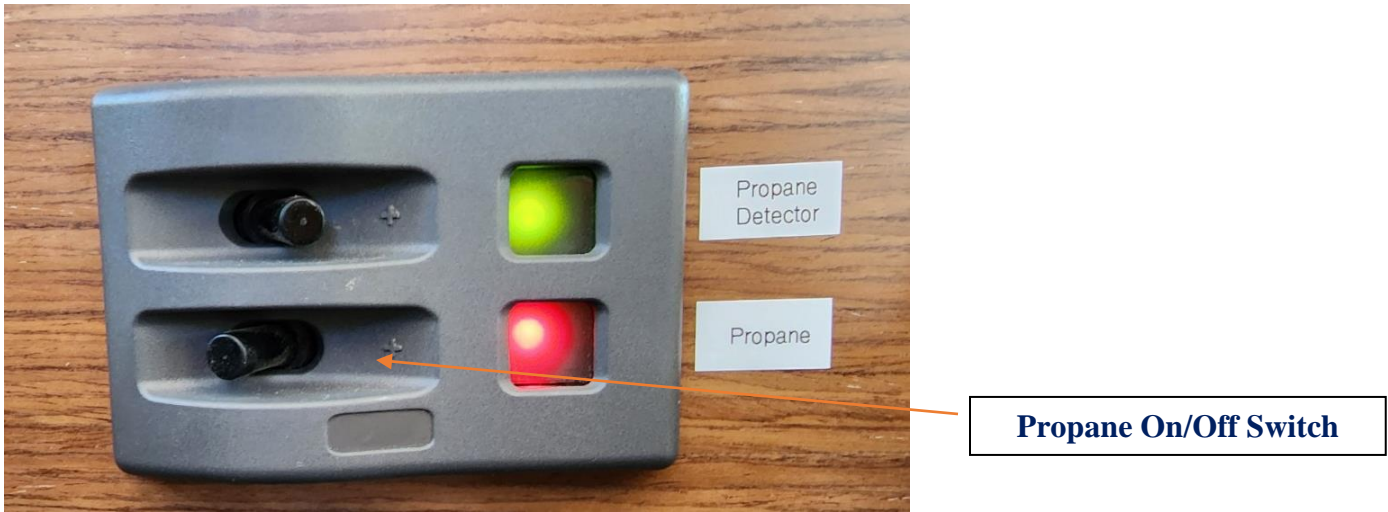
Ask one of our staff for a deck cooler if you would like one for storing your drinks. It will keep the drinks cooler and the refrigeration colder, as people will not be going in it every 5 minutes for a drink.

Please note that we are in the tropics and we cannot guarantee that items will remain frozen when placed in the fridge and that fruit, vegetables and other fresh produce may have a shortened shelf life.



19. Propane and stove

The propane tank locker is located under the stbd cockpit seat.



To use:

- Press the switch located You will see the switch red LED illuminate.
- To light, turn the relevant knob 90 degrees counterclockwise, push the knob in and light the burner with the electric igniter button.
- Hold the knob in for 5-10 seconds, then release. Make sure that the flame goes all the way around. Reduce any wind that may hinder this.
- If you cannot get it to light, check the manual shut off on the propane tank.

The 12v solenoid system is a USCG approved device. You do not need to shut any manual valves unless you wish.

Three burner stove.



Oven



Gas safety

All our yachts are fitted with propane detectors. The propane 'sniffer' has been placed in the bilge (propane is heavier than air and so will sink into the bilge). The detectors are sensitive to several types of gas and will trigger the alarm. The alarm can also be triggered if there is moisture in the bilge. If the alarm sounds it does not necessarily mean that the propane system is leaking, so don't panic!!



If the alarm goes off, follow these steps:

- Close the valve on the propane tank.
- Check the stove and surrounding area for propane smell.
- If detected, open all bilges and hatches. Point the boat downwind and use the manual bilge pump to pump out the bilges.
- Call Horizon immediately

Under no circumstances should you use the electrical bilge pumps or any other electrical system if you suspect a gas leak.

20. BBQ

- When using the BBQ, tie your dinghy off at the side of the yacht, not off the stern.
- Never use the BBQ while sailing.
- Never use the BBQ on a dock.
- Never change propane tanks when using the BBQ.
- Make sure someone is always tending the BBQ when hot.
- Call us if you have too much food.



Regulator



Propane canisters needed for Grill.



21. Fire Safety

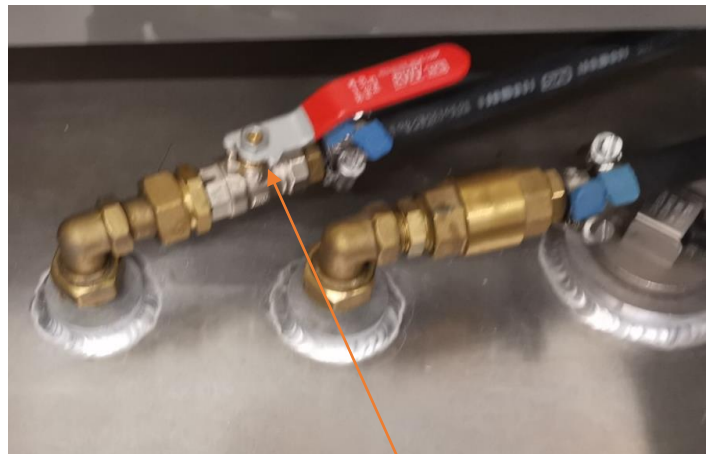
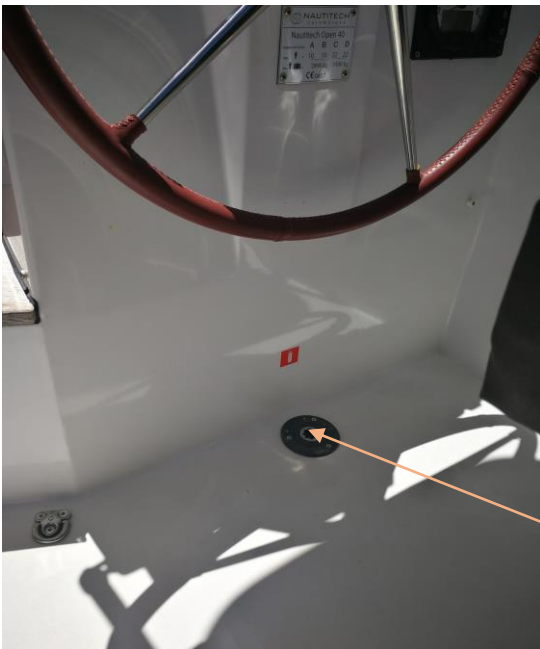
Please read instructions on all safety equipment before taking off.

Prevention is the best answer to fire safety.

- Always switch off the safety solenoid when stove is not in use
- Never leave the stove or oven burning unattended.
- Never change propane tanks whilst barbequing.
- Never smoke below decks.
- Never smoke when changing propane tanks.
- Safely store any flammable liquids (for example charcoal lighter fuel).
- Keep matches away from children.

Engine compartment fire:

In the event of a fire in the engine compartment external access can be gained by removing the star shaped deck fitting below each helm wheel. Close fuel shut off valve under each aft cabin bunk.



Fuel shut off valves under each aft cabin bunk.

External access for engine fire.



Open fire:

- Pull out the yellow safety tab.
- Point the extinguisher at the base of the fire and press down on the red button to discharge contents.
- Generously cover the base of the fire and surrounding area to ensure the fire is under control and cannot spread. Continue discharging extinguisher until the fire is out.



Galley fire:

- Take the fire blanket out of its container. Read the instructions for use carefully.
- Ensure hands and limbs are protected from the fire by the blanket.
- Carefully lay the blanket over the fire, laying the blanket away from you and keeping yourself always protected from the flames.

Once in place leave the blanket until all heat has gone from the scene of the fire, this way you can be sure that the fire has gone out and will not re-ignite.

22. Dinghy & Outboard

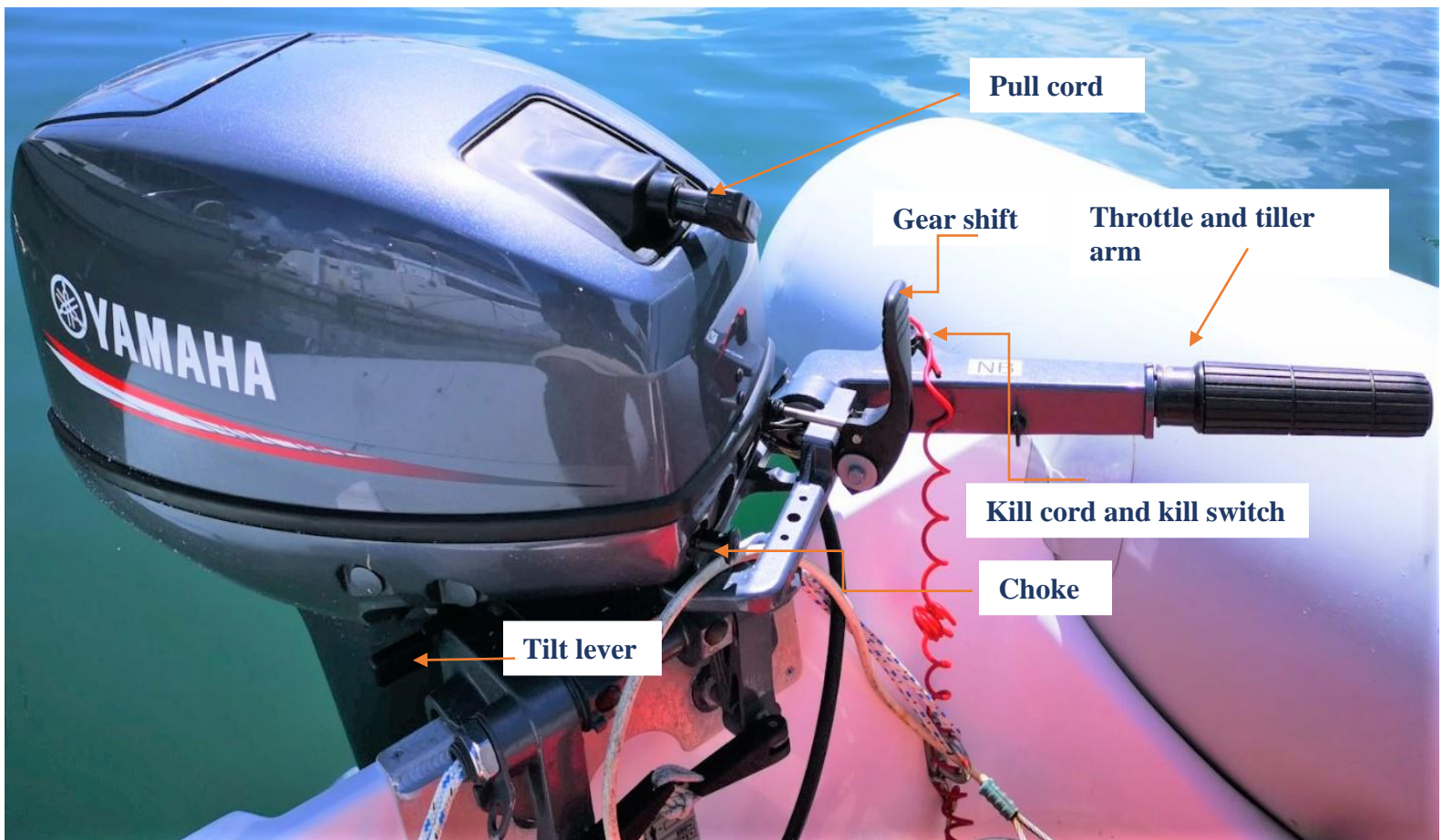
The driver of the dinghy must be over 18 and must always be wearing the kill cord. Never operate the dinghy under the influence of alcohol or drugs.

- Always tow your dinghy on a long line while motoring or sailing. Always tow with the engine leg up as it gives you an extra half knot.
- Most of the time it is fine to leave the outboard on the dinghy, but if conditions are very rough, the outboard needs to be mounted on the push-pit.
- When going ashore for an evening's entertainment allocate a dinghy captain, someone who will bring the whole crew back to the boat safely, allowing the rest of the crew to enjoy themselves and sample the local cocktails.
- To start the engine, lower the motor into the water using the lever on the starboard side of the engine. The lever position corresponds to the motor position, up and fwd for towing and back and down for driving. Check you are in neutral, and **the safety cord is in place**. For starting an engine that has been at rest for 3 or more hours use the choke. Pull the choke out and set a few revs with the throttle. Do not twist the throttle trying to prime the engine. You will only flood it. Face the engine and pull the start cord and push the choke back in as soon as it runs. If it runs for a second but cuts out, try again without choking.
- To stop the engine, press the button on top of the kill cord, or pull the kill cord out.
- Keep the kill cord with you to prevent anyone from borrowing it. **You have been provided with a dinghy lock and cable. Always use them.**
- **Never take the dinghy onto a beach or anchor it off. If docking, always deploy the dinghy anchor from the stern to prevent damage from going under or hitting the dock.**
- Do not speed in and around other yachts, speeding fines have been introduced.
- At night, an all-round white light must be displayed along with red & green side lights, and it is always a good idea to have a flashlight with you, to show the way, and warn other vessels of your presence.
- Wear the life preservers provided when in the dinghy.
- GAS to OIL ratio
 - 1 US Gallon = 3 ounces (80ml)
 - 2 US Gallons = 6 ounces (160ml)
 - 3 US Gallons = 9 ounces (240ml)
 - 4 US Gallons = 12 ounces (320ml)
 - 5 US Gallons = 15 ounces (400ml)

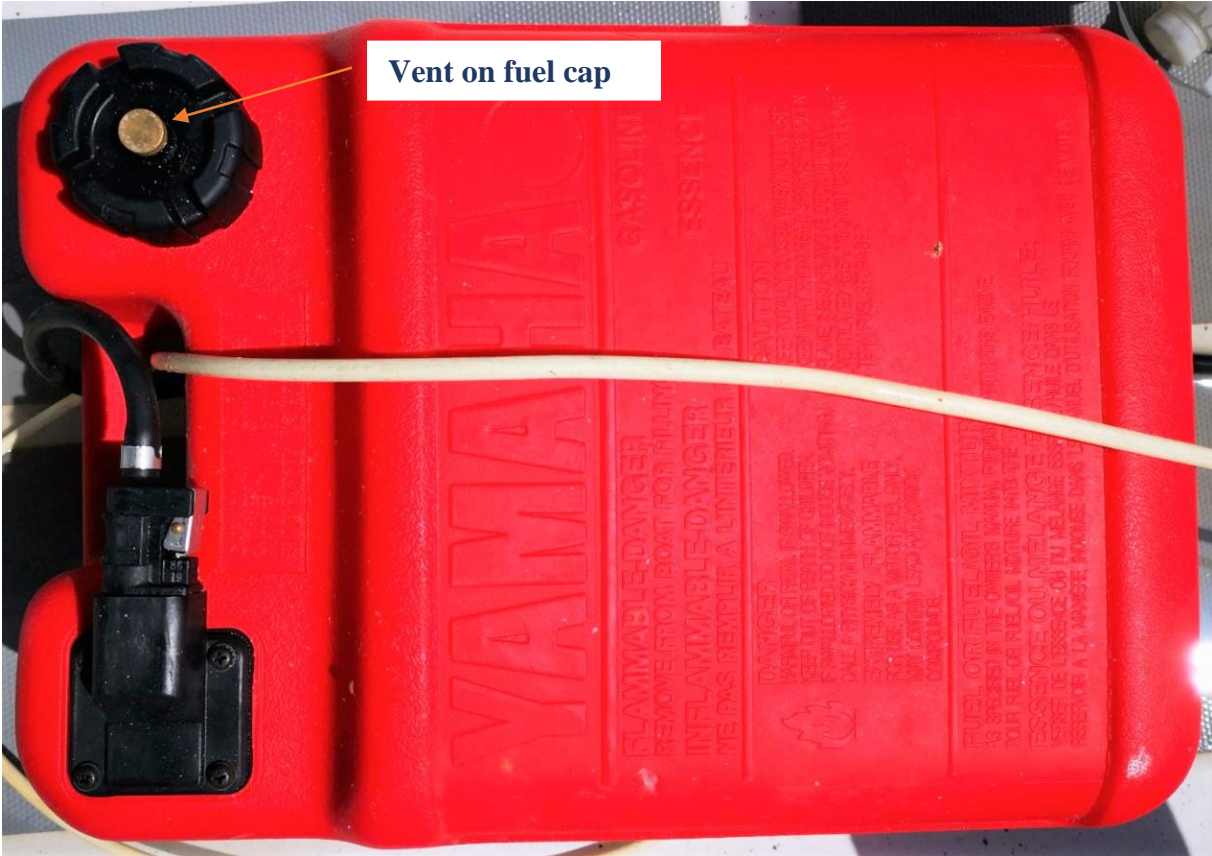
Outboard start procedure:

1. Place Kill cord under kill switch (Dinghy driver must always wear the kill cord).
2. Open vent on fuel tank cap (this vent can stay open; it allows air out but will not allow water to go in). **The fuel in the tank expands in this climate and if the vent is left closed it can damage the tank and cause a fuel leak.**
3. Few pumps on fuel line bulb.
4. Make sure outboard is neutral.
5. Add some revs using throttle on tiller handle.
6. Pull on start pull cord.
7. If the outboard does not start then pull choke and try again, as soon as the outboard start push choke back in.

Outboard



Fuel tank – INSTALLED IN BOW LOCKER



Vent on fuel cap

Dinghy Davit Lift:

- Refit the dinghy plug if it was removed to drain water from the dinghy while on the davits.
- Ensure the davit line is around a winch before opening the clutch to lower the dinghy.
- When lifting the dinghy, the davit line can go from the davits to the winch in the cockpit.
- Ensure the clutch is closed when lifting the dinghy.
- Secure the davit line so it cannot fall in the water.
- Secure both safety pelican hooks and a safety line to D-Ring at the stern of the dinghy.

