Operation Manual

Salted Caramel Dufour 460 GL

2019

Control Panel

Yacht Control Panel Overview

The yacht control panel is an essential electronic device that allows remote control of various onboard systems, including:

✅ **Windlass** (anchor control)

✅ **Thrusters** (maneuvering assistance)

✅ Navigation lights

✅ Alarms & video surveillance

✅ Windshield wipers

✅ **Engines** and fuel, water, and oil levels

✅ Generators and other equipment

Why the control panel is important:

- Monitors the yacht's health – Ensures all systems are functioning properly.
- Keeps you safe – Provides control over critical safety features and alerts.

⚡ **Left Side Controls**

- 💧 **Fresh Water Pump**
- ⚓ **Bilge Pump**
- 🚿 **Shower Pump**
- 💡 **Navigation Lights**
- 🛳️ **Mooring Lights**
- 🔦 **Steam Light**

⚡ **Middle Side Controls**

- 🧊 **Galley Fridge**
- 🧭 **Navigation**
- ⚓ **Auto Pilot**
- 💡 **Saloon Lights**
- 🛏️ **Cabin Lights**
- 🔊 **Audio**
-

⚡ **Right Side Controls (Bullets & Symbols)**

- 💡 **Deck Light**
- 🖥️ **Instruments**
- ⚡ **Auxiliaire**
- 🔌 **USB Cabins**
- ⚓ **Windlass**

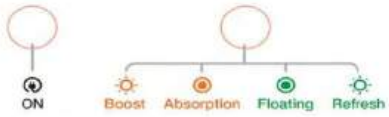
Battery Charger Location

Battery Charger (Cristec Charger) Overview

A **battery charger** (or recharger) is a device that **stores energy** in a battery by running an electric current through it.

The **Cristec Charger** ensures **maximum power supply** with **auto-ranging**, meaning it can adapt to different voltage inputs wherever you are.

Behind the Couch 🚗 ⬅️



INDICATORS		STATE	MEANING
Green LED 1 "ON"		On	Charger is ON
		Off	No or poor quality AC current Input fuse is blown Internal charger malfunction
Orange LED 2 "BOOST/ABSORPTION"		Flashing (1 sec. ON, 1 sec. OFF)	Charger in BOOST phase (switch E = '1')
		On fixed	Charger in ABSORPTION phase (switch E = '1')
Green LED 2 "FLOATING/REFRESH"		On fixed	Charger in FLOATING phase
		Flashing (1 sec. ON, 1 sec. OFF)	Charger in REFRESH phase (switch F = '1')
		Off	Internal charger malfunction or output fuse blown

Interior / Exterior Radio

How the Radio Works

Radio communication operates by transmitting and receiving electromagnetic waves.

🔷 Transmission:

✅ A **radio signal** is an electronic current that moves back and forth rapidly.

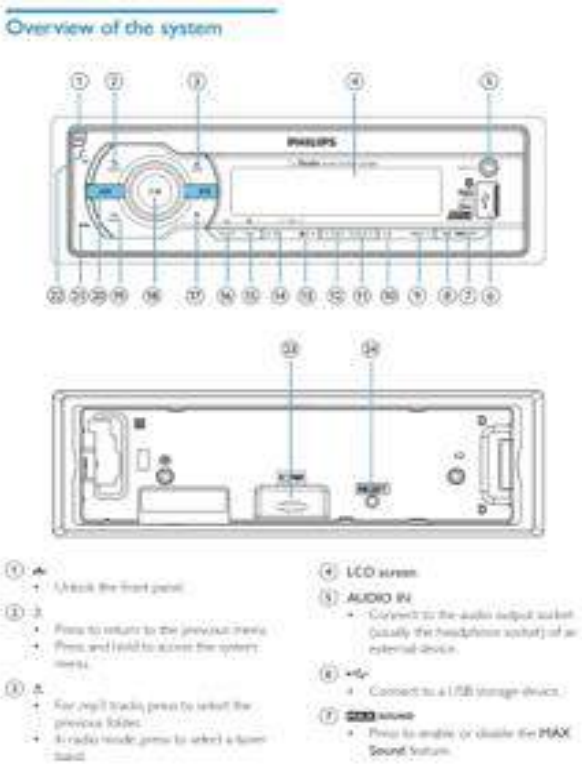
✅ A **transmitter** sends out this signal via an **antenna**.

🔷 Reception:

✅ A **receiver** picks up the transmitted waves.

✅ The signal is then converted into **sound**, which is heard through the radio speaker.

⚠️ **Tip**: Ensure the radio is properly tuned to the correct frequency for clear communication.



- **BAND:** Select tuner band (radio); folder (MP3).
- **PWR:** Power on/off/mute.
- **SEL:** Adjust bass, treble, balance, fader.
- **DBB:** Dynamic Bass Boost on/off.
- **6:** Play/pause; radio preset/store No.6; MP3: folder 6.
- **5:** Radio preset/store No.5; MP3: folder 5.
- **4:** Radio preset/store No.4; MP3: folder 4.
- **3:** Radio preset/store No.3; repeat (MP3); RPT FLD/ALL.
- **2:** Radio preset/store No.2; random (MP3); RDM FLD/ALL.
- **1:** Radio preset/store No.1; intro (MP3); INT FLD/ALL.
- **DISP:** Switch display: album/artist/track (MP3), station/frequency/RDS/clock (radio).
- **AS/SOURCE:** Change source; auto-store (radio).

VHF

VHF Transceiver Overview

A **Very High Frequency (VHF) transceiver** is a communication device that includes both a transmitter and a receiver, operating in the **30 MHz to 300 MHz** frequency range.

🔷 **Key Features:**

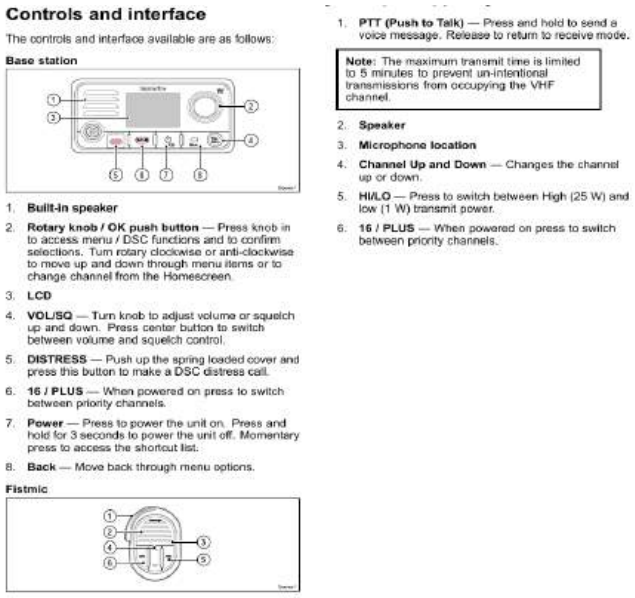
✅ **Frequency Range**: 30 MHz – 300 MHz

✅ **Wavelength**: 1 meter (39.37 inches) to 10 meters (393.70 inches), depending on the frequency used

✅ **Used for**: Marine communication, aviation, emergency services, and broadcasting

⚠️ **Tip**: Ensure the VHF radio is set to the correct **channel and frequency** for clear and effective communication.

📡 VHF Radio Controls & Interface (Bulleted & Symbol-Based)



Controls and interface

The controls and interface available are as follows:

Base station

1. **Built-in speaker**
2. **Rotary knob / OK push button** — Press knob in to access menu / DSC functions and to confirm selections. Turn rotary clockwise or anti-clockwise to move up and down through menu items or to change channel from the Homescreen.
3. **LCD**
4. **VOL/SQ** — Turn knob to adjust volume or squelch up and down. Press center button to switch between volume and squelch control.
5. **DISTRESS** — Push up the spring loaded cover and press this button to make a DSC distress call.
6. **16 / PLUS** — When powered on press to switch between priority channels.
7. **Power** — Press to power the unit on. Press and hold for 3 seconds to power the unit off. Momentary press to access the shortcut list.
8. **Back** — Move back through menu options.

Fistmic

1. **PTT (Push to Talk)** — Press and hold to send a voice message. Release to return to receive mode.

Note: The maximum transmit time is limited to 5 minutes to prevent un-intentional transmissions from occupying the VHF channel.

2. **Speaker**
3. **Microphone location**
4. **Channel Up and Down** — Changes the channel up or down.
5. **HI/LO** — Press to switch between High (25 W) and low (1 W) transmit power.
6. **16 / PLUS** — When powered on press to switch between priority channels.

📟 Base Station Buttons

- 🔊 **1. Built-in Speaker**
  - Delivers audio output directly from the device.
- 🔄 **2. Rotary Knob / OK Push Button**
  - Turn for menu navigation (clockwise/anticlockwise).
  - Press for menu/DSC entry or to confirm selections.
- 🖼️ **3. LCD**
  - Displays channel, settings, and menu items.
- 🎚️ **4. VOL/SQ**
  - Turn: adjust volume or squelch.
  - Press: switch control between volume and squelch.
- 🚨 **5. DISTRESS**
  - Lift cover and press to send a DSC distress call.
- 1️⃣6️⃣/➕ **6. 16 / PLUS**
  - Press to switch between priority channels.
- 🔌 **7. Power**
  - Press: turn unit on; press & hold (3sec): turn off.
  - Short press: access shortcut list.

- ↩️ **8. Back**
    - Move back through menu options.

🎤 **Fistmic (Hand Microphone) Buttons**

- 🗣️ **1. PTT (Push to Talk)**
    - Press and hold to transmit; release to receive.
- 🔊 **2. Speaker**
    - Audio output.
- 🎤 **3. Microphone Location**
    - Area where voice is picked up for transmission.
- 🔼🔽 **4. Channel Up/Down**
    - Press to change channel.
- 🎚️ **5. HI/LO**
    - Press to toggle power—High (25W) or Low (1W).
- 1️⃣6️⃣/➕ **6. 16 / PLUS**
    - Press to quickly switch to priority channels.

🔋 Dual Energy Power Supplies and Battery Chargers

These units are specifically designed and developed for:

⚡ Charging and maintaining voltage on lead-acid batteries.

🛠️ Providing consistent and uninterrupted power supply (main or backup).

📍 Location:

You will find it in the **chart table area**.

General Switches

Battery Master Switch Overview

The **battery master switch** serves two key functions:

✅ **Battery Isolator** – Disconnects the battery to prevent drain when not in use.

✅ **Theft Deterrent** – Can disable the electrical system to prevent unauthorized use.

🔷 Features:

- Commonly used in: Marine, transportation, and automotive applications.
- Impact-resistant housing for durability.
- Detachable key for added security and theft prevention.

General Switch 220V

⚡ **220V Switch Quick Guide**

- 🔘 **Main 220V switch**: Stern port cabin
- ⚡ **Controls**: Shore power to boat
- 1️⃣ **To turn ON**: 🔄 Flip switch to ON (shore power connected)
- 2️⃣ **To turn OFF**: 🛑 Flip switch to OFF (disconnecting or for safety)

Service / Engine

Engine & Service Switches (Compact)

- 📍 Right of stairs
- 🟫 Before stern right cabin
- 🔴 Main power shutoff

Thruster

Jet Thruster Battery Power Switch (Bullets & Symbols)

- 📍 **Location:**
  - 👉 In front of the bridge
  - ⬇️ Under the floor
- ⚡ **Function:**
  - Turns off the **Jet Thruster** battery power

Thermal Fuses

Fuses: Function & Usage

Fuses are protective mechanisms placed in an electrical circuit to interrupt power supply when excessive current flows due to short circuits or overloads. Their primary purpose is to protect wiring and electrical components from damage.

⚡ Key Characteristics:

✅ Interrupt power in case of overload or short circuit.

✅ Always installed after circuit breakers for additional safety.

✅ Never installed in-ground conductors to avoid grounding issues.

🛠️ Usage of Fuses:

1️⃣ Protect electrical wiring from overheating or damage.

2️⃣ Ensure onboard electrical safety by preventing fire hazards.

3️⃣ Automatically break the circuit when an excessive current surge occurs.

⚠️ **Tip:** Regularly check and replace blown fuses to maintain proper electrical function on the yacht.

Anchor fuse

⚡ **Jet Thruster Battery Power Switch (Compact)**

- 📍 **Location**: In front of the bridge, under the floor
- ⚡ **Action**: Flip switch ON/OFF to control Jet Thruster battery power
- 🔋 **Tip**: Keep battery close to pump for best performance
- 🛠️ **Always install main fuse in battery positive cable**

Batteries Location

🔋 What is a Battery?

A **battery** is a device that:

⚡ Stores chemical energy and converts it into electrical energy.

🔄 Uses chemical reactions to create the flow of electrons between electrodes.

🔌 Generates electric current to power various devices.

🔋 **Battery Locations (Bullets & Symbols)**

- 📍 **Location:**
  - Under the floor in front of the stairs
- 🛠️ **How to Access:**
  - Lift the wood panels to reveal the batteries
- 🔋 **Batteries Included:**
  - Service Battery
  - Engine Battery
  - Thruster Battery

Water System

💧 **Changing the Water Tanks**

- 📍 **Location:**
  - Go to the **salon coach** at the corner, under the cap.
- 🔎 **What You'll Find:**
  - Two small **black valves**.
- ⚙️ **How to Operate:**
  - **When one valve is open** ➡️ ensure the **other valve remains closed**.

Location bilge pump

Bilge Pump Details:

• Function: Removes bilge water from the yacht.

Operation Tips:

• The bilge pump is **automatic**.

• Ensure the **corresponding button is always ON** ✅.

Operation of toilet pumps

Toilet Details:

• **Importance**: One of the most used pieces of equipment on your boat.

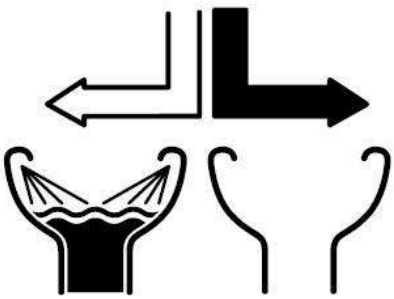
• **Operation**: Correct usage is crucial for:

  ◦ Safety of the crew

  ◦ Comfort onboard

1. Open inlet and outlet seacocks (and secondary valves if fitted).
2. Half fill the bowl with warm fresh water.
3. Keeping the Flush Control Lever in the Shut ( ) position, pump out the warm water.

Normal use



Open inlet and outlet seacocks (and secondary valves if fitted).
Before use, ensure that there is enough water in the bowl to prevent the toilet paper from becoming compacted at the bottom of the bowl. If the bowl is empty, move the Flush Control Lever to the Open ( ) position and pump the handle up and down until the flushing pump is primed and water enters the bowl. Then Shut ( ) the Flush Control. Operate the pump with long, smooth strokes for efficient and easy operation. During use, pump as necessary to keep the contents of the bowl low enough for comfort.

After use, keep the Flush Control Shut ( ) and pump until the bowl is empty.

When the bowl is empty, Open ( ) the Flush Control again, and continue to pump until all waste has either left the boat or reached the holding tank (allow 7 complete up/down strokes per meter (yard) length of discharge pipework).

NOTE: Do not put in: Sanitary Towels, Wet Strength Tissues, Cotton Wool, Cigarettes, Matches, Chewing Gum, or any solid objects, Petrol, Diesel, Oil, Solvents of any kind, or water more than hand hot.

Operation of shower pumps

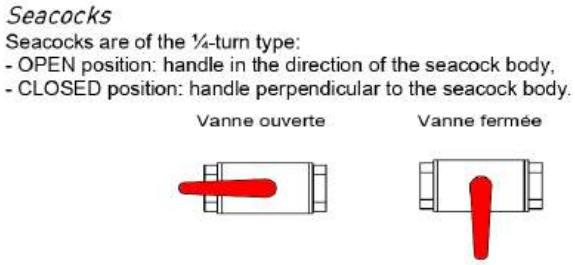
🛠️ **Shower Pump Operation**
💧 Automatic Shower Pump Operation (Bullets & Symbols)

- ⚡ Automatic Functionality:
  - 🚿 Shower pumps are fully automatic—no need to open or adjust anything manually.
- ✅ Ease of Use:
  - 🤖 Operate seamlessly, providing water without any extra steps.

Operation / Location of Waste Tanks / Valves

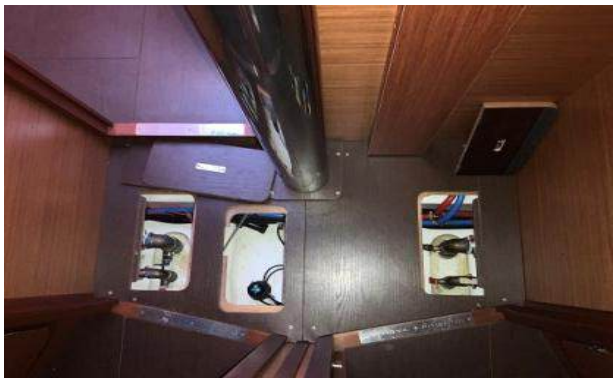
🚰 Stop-and-Waste Valve Operation

A **stop-and-waste valve** is used in irrigation systems to prevent waste from freezing and to manage wastewater. Here's how it works on the yacht:



1. Operation:

- **When the valve is vertical** to the tube, it is **closed**, and the waste goes to the waste tank.
- **When the valve is parallel** to the tube, it is **open**, and the waste is emptied into the sea.



📍 **Valve Locations**

- 1️⃣ **1st Waste Valve:**
- Stern left toilet (inside the cap) 🤚
- 2️⃣ **2nd & 3rd Waste Valves:**
- In the hall before entering the **bow cabins**
- 👀 Look down and **open the caps** to access 🏠

Oven/Stove

🔥 Turning On the Oven or Hob

To safely turn on the oven or hob, follow these steps:

1. **Press the respective switch** inwards.
2. **Turn the switch clockwise** while holding it in.
3. **Light the hob** with a lighter and **hold for 5 seconds** to ensure the flame stays on.
4. **Release the switch** after 5 seconds.
   - If the flame does not stay on, try holding the switch in for a bit longer.

Location of gas valves inside

🔒 Gas Inlet Insulation in the Kitchen

If you need to insulate the gas inlet under the oven, follow these steps:

1. **Location:** Open the cupboard under the oven to find the gas outlet valve.
2. **Operation:**
   - Parallel to the pipe: The valve is open.
   - Perpendicular to the pipe: The valve is closed.

Fridge Interior / Exterior Operation

❄️ Proper Refrigerator Use

Essential for maintaining cooling efficiency, saving energy, and extending its lifespan.

✅ Best Practices:

🔷 Pre-cool before the trip 🍷

- If possible, turn on the refrigerator while connected to 220V power before departure.

🔷 Use pre-chilled products 🧊

- Placing already frozen or chilled food and drinks reduces the fridge's workload.

🔷 Minimize door openings 📏

- Each time you open the door, warm air enters, increasing power consumption.

🔷 Fill the fridge properly 🍱

- A full fridge maintains temperature better.
- If not full, use ice packs or frozen water bottles.

🔷 Set the correct level ⚙️

- Ideally, set the temperature between 4–5.

Engine

🛥️ Marine Engine

A **marine engine** is a machine that:

🔋 Converts energy from fuel into mechanical energy.

🚤 This mechanical energy is used to create motion, powering boats, ships, or other watercraft.

🚨 Emergency Engine Shutdown

In case of **emergency** (and **only** in this case), follow these steps to turn off the engine:

1. **Location**: Go to the rear right cabin where you'll find a picture of the engine, similar to the one shown in the photo.

2. **Shutdown Process**:

- Press the red button down.
- Rotate the button to the left to turn off the engine.

Engine Oil Check

🛢️ Checking Engine Oil

To check your engine oil, follow these steps:

1. Location: Go to the **right rear cabin**, where you'll find a picture of the engine oil, similar to the one shown in the photo.

2. Check the Oil: Use the visual reference in the cabin to inspect the engine oil levels and condition.

Engine Control Panel

⚙️ Engine Control Unit (ECU)

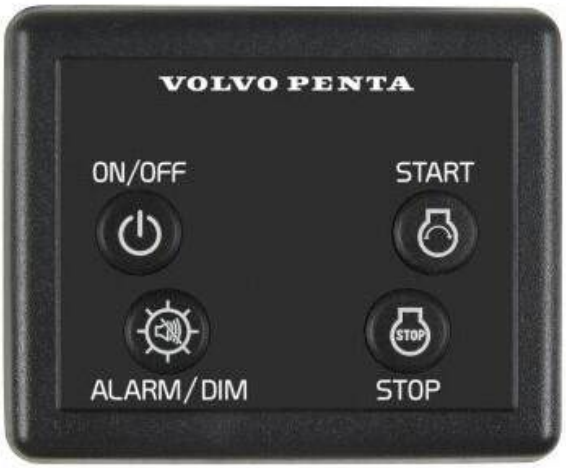
An **Engine Control Unit (ECU)**, also known as an **Engine Control Module (ECM)**, is:

💻 A type of **electronic control unit**.

🛠️ It **controls a series of actuators** on an **internal combustion engine**.

⚙️ Its primary role is to ensure **optimal engine performance** by regulating critical functions such as fuel injection, ignition timing, and air intake.

⚙️ Turning On the Engine



To start your engine:

1. **Press and hold the power button.**

2. While holding the power button, **press and hold the start button** until the engine starts.

⚙️ Turning Off the Engine

To stop your engine:

1. **Press and hold the stop button.**

2. While holding the stop button, **press and hold the power button** to turn off the engine.

Thruster Controller

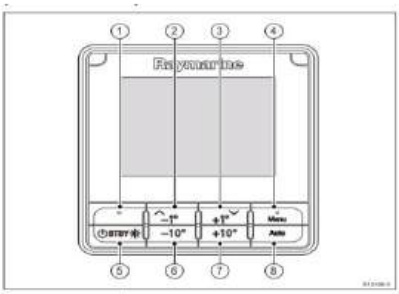
⚓ Boat Thruster Operation (Compact)

- 🛠️ Standard thruster system
- 1️⃣ **Activate:**
  - 🔲 Hold bottom left button until 💡 lights up
- 2️⃣ **Direction:**
  - ⬅️ or ➡️ to move port/starboard
  - 🚤 Boat moves in the selected direction
- 🎛️ Handle gently for smooth control

Autopilot Operation

🕹️ Raymarine Autopilot Control Panel Functions (Bullets & Symbols)

- 1️⃣ **Left Soft Button:** 🔙 Cancel, Back, Mode selection
- 2️⃣ **Up Button / -1:** 🔼 Up navigation, Increase value/angle, Adjust up
- 3️⃣ **Down Button / +1:** 🔽 Down navigation, Decrease value/angle, Adjust down
- 4️⃣ **Right Soft Button:** ✅ Menu, Select, OK, Save
- 5️⃣ **Standby Button:** ⏸️ Disengage autopilot, Manual control, Power, Brightness adjustment
- 6️⃣ **-10 Button:** ↙ Decrease angle by 10°
- 7️⃣ **+10 Button:** ↗ Increase angle by 10°
- 8️⃣ **Auto Button:** 😈 Engage autopilot



Item	Description
1.	**LEFT SOFT BUTTON** Cancel, Back, mode selection.
2.	**UP BUTTON / -1** Up navigation, Adjust Up, Decrease angle.
3.	**DOWN BUTTON / +1** Down navigation, Adjust Down, Increase angle.
4.	**RIGHT SOFT BUTTON** Menu, Select, OK, Save.
5.	**STANDBY BUTTON** Disengage pilot, Manual control, Power, Brightness.
6.	**–10 BUTTON** Decrease angle.
7.	**+10 BUTTON** Increase angle.
8.	**AUTO BUTTON** Engage Auto pilot.

Item	Description
1.	**LEFT SOFT BUTTON** Cancel, Back, mode selection.
2.	**STANDBY BUTTON** Disengage pilot, Manual control, Power, Brightness.
3.	**ROTARY CLOCKWISE** Down navigation in list, Adjust Up, Increase angle (locked heading), adjust numerical values, power steer.
4.	**ROTARY ANTI-CLOCKWISE** Up navigation in list, Adjust Down, Decrease angle (locked heading), adjust numerical values, power steer.
5.	**RIGHT SOFT BUTTON** Menu, Select, OK, Save.
6.	**AUTO BUTTON** Engage Auto pilot.
7.	**ROTARY END PUSH BUTTON** Menu, Select, OK, Save.

The pilot controller supports the following combination button presses:

Combination button press

Buttons	Action
STANDBY and **AUTO**.	Puts pilot in to Wind Vane mode.
–1 and **–10** or **+1** and **+10**.	AutoTack (in wind vane mode), AutoTurn

🔄 Rotary Knob Functions

- ⏩ **Clockwise:**
  - Down navigation in lists
  - Adjust up / Increase value (locked heading)
  - Adjust numerical values, Power steer
- ⏪ **Anti-Clockwise:**
  - Up navigation in lists
  - Adjust down / Decrease value (locked heading)
  - Adjust numerical values, Power steer
- ⭕ **Rotary End Push Button:**
  - Menu, Select, OK, Save

Operation BBQ

🔥 **How to Turn On the Hob (Bullets & Symbols)**

- 🔘 **Step 1:**
  Press the respective switch **inwards** and **turn it clockwise**.
- 🔥 **Step 2:**
  Without letting go, press the **red spark button** or **light the hob with a lighter**.
- ⏳ **Step 3:**
  Hold the switch for 5 seconds.
- ✅ **Step 4:**
  Release the switch once the flame holds.

Location of Gas Bottles

🛢️ **Gas System Safety Quick Guide (Bullets & Symbols)**

- ✅ **To close the entire gas system for safety:**
  - 1️⃣ **Go outside** (port side, next to BBQ) 🍗
  - 2️⃣ **Open the locker** (where the gas bottle is stored) 🔒
  - 3️⃣ **Turn the valve:**
    - 🔄 **Clockwise:** Opens the gas system
    - ↩️ **Counterclockwise:** Closes the gas system
- ⚠️ **Always ensure the gas is properly closed when not in use for safety!**

Outboard

Starting the Outboard Engine

Follow these steps to start the outboard:

1. **Ensure plenty of gasoline/petrol** is in the **outboard fuel tanks**.
2. **Open the fuel valve** to allow fuel flow.
3. **Open the air valve** from the top to ensure proper airflow.
4. **Set the outboard to neutral** to prepare for starting.
5. **Place the ignition key** into the ignition slot.
6. **Set the throttle to 2/3** for optimal starting performance.
7. **Pull the rope** until the outboard starts running.

Entry Water

💧 Refilling the Water Tank

💧 **First Water Tank Refill (Stern)**

- 📍 **Location:**
  Stern (left side) on the deck
- 🚶 **Go to the stern left side** of the deck
- 🔎 **Locate** the water cap labeled **"WATER"**
- 🧰 **Open the cap** and
  🫧 **Refill the tank with fresh water**
- 💧 **Second Water Tank Refill (Stern)**
- 📍 **Location:**
  Bow (under the locker)
- 🚶 **Go to the bow side** of the deck
- 🔓 **Open the locker** to find the water cap labeled **"WATER"**
- 🧰 **Open the cap** and
  🫧 **Refill the tank with fresh water**

Entries Diesel

🛢️ **Diesel Refueling Quick Guide (Bulleted & Symbol-Based)**

- 📍 **Location:**

Stern (right side) on the deck

- 🚶 **Go to the stern right side** of the deck
- 🔎 **Locate the diesel cap** labeled **"DIESEL"**
- 🧰 **Open the cap**
- 💧 **Refill the tank** using **diesel fuel only**
- 🔒 **Secure the cap tightly** after refueling to **prevent leaks**

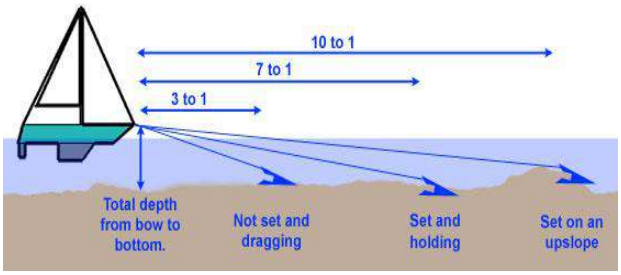
Chain marking

⚓ Chain Markings and Anchor Operation

The yacht has approximately 80 meters of chain, with markings every 10 meters as follows:

- 10 meters: ⚪ (White)
- 20 meters: 🔵 (Blue)
- 30 meters: 🟢 (Green)
- 40 meters: 🟡 (Yellow)
- 50 meters: 🔴 (Red)
- Last 10 meters: 🔴 (Full Red, secured with rope)

Important Attention Points:



1. **When dropping the anchor:**
   - Be cautious not to damage the ⚓ bow side while releasing the chain.
2. **When retrieving the anchor:**
   - When the 🔵 Blue mark appears, it means the anchor is approximately 15 meters below the surface.
   - Proceed slowly at this point to avoid damage to the ⚓ bow and 🚤 bowsprit.
3. **Windlass motor:**
   - Ensure the engine is running when using the windlass motor to operate the anchor chain.

Sails

⛵ Opening the Main Sail (Bullets & Symbols)

- **1️⃣ Set the Spigot to "OUT"**
  - 🕹️ Go to the furling mechanism and switch the spigot to **OUT**.
- **2️⃣ Release the Furling Ropes**
  - Gradually release the **furling ropes** so the sail can unfurl.
- **3️⃣ Pull the Outhaul**
  - 💪 At the same time, **pull the outhaul** to extend the sail.
- **⏩ This process must be done simultaneously to avoid sail damage!**

Genoa Sail

⛵ Self-Tacking Genoa Operation

This yacht is equipped with a self-tacking genoa. Here's how to operate it:

Opening the Genoa:

1. Release the genoa sheet.
2. Take out the genoa furling.
   These two actions must be done simultaneously.

Closing the Genoa:

1. Release the furling rope.
2. Pull the genoa sheet.

These two actions must be done simultaneously.