CXO300
diesel V8

OWNER'S MANUAL

CXO300 – the power of diesel
when you need it most
coxmarine.com

COX

TABLE OF **CONTENTS**

1.0 WELCOME INFORMATION

Welcome to your new Cox CXO300 diesel outboard.

This Owner's Manual, along with the other publications included in your literature pack, has been designed to explain the outboard's operation and control and maintenance of its systems to aid you in experiencing the pleasure of owning a CXO300.

All new owners should carefully read and comprehend the content of this manual prior to operating their outboard(s). Should any questions arise, please contact an authorized Cox Powertrain dealer.

A summary of the key operations can be found in your quick reference guide.

In this Owner's Manual, all important safety cautions, warnings and notes are distinguished in the following ways:

⚠ WARNING
Identifies procedures which must be followed precisely to help avoid the risk of personal injury or death.

⚠ CAUTION
Identifies procedures which must be followed precisely to reduce the possibility of damage to your outboard(s).

⚠ NOTE
Identifies procedures which must be followed precisely to avoid difficulties in the operation of your outboard.

Whilst every effort has been made to ensure the accuracy of the particulars contained in this Owner's Manual, neither the manufacturer nor the dealer, by whom this Owner's Manual is supplied, should in any circumstances be held responsible for any inaccuracy or the consequences thereof.

Cox Powertrain reserves the right to change specifications without notice in accordance with its policy of continuous product improvement.

1.1 CERTIFICATION OF CONFORMITY

The Cox CXO300 outboard engine is in conformity with the following requirements:

a) USA EPA – 40 CFR 1042 Tier 3
b) IMO Annex VI Reg.13 Tier II (EIAPP)
c) EU Directives:
  (i) 2013/53/EU (RCD II).
  (ii) 2006/42/EC (Machinery).
  (iii) 2014/30/EU (EMC).
  (iv) The outboard caries the CE marking on the affixed label.

1.2 CALIFORNIA WARNINGS

⚠ WARNING

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Always start and operate the engine in a well-ventilated area.

If in an enclosed area, vent the exhaust to the outside.

Do not modify or tamper with the exhaust system.

Do not idle the engine except as necessary.

For more information go to
www.P65warnings.ca.gov/diesel

1.3 ENVIRONMENTAL CONSIDERATIONS

Your CXO300 diesel outboard offers significantly improved fuel consumption over equivalent gasoline outboards operating under the same duty cycle. However, there are some steps which you, as the operator, should take to ensure your vessel runs optimally and your effect on the environment is minimized.

Consider boating at cruise rather than maximum power

Your vessel consumes an increasing amount of fuel for each additional knot of speed; reducing from maximum power to cruise results in significant reductions in fuel consumption and will increase your overall nautical mile range.

Follow the recommended maintenance schedule in order to maintain efficiency

Your CXO300 maintenance schedule is designed to keep the powerhead operating efficiently throughout its lifetime, giving you the best fuel consumption at any speed. Be sure to monitor the outboard operating hours against the maintenance chart (see section 6.1) and contact your local authorized Cox Powertrain dealer for servicing as necessary.

Ensure propeller and trim settings are matched to the vessel type and loading

Incorrectly set trim angle or an incorrectly matched propeller can lead to significant increases in fuel consumption and could damage your outboard. Consult an authorized Cox Powertrain dealer if you are unsure about managing trim through different boating conditions or choosing the best propeller for your application.

Keep the vessel hull clear of biomass to reduce drag and fuel consumption

Biological fouling below the waterline of your hull will impact your vessel's performance while increasing load and fuel consumption of your outboard(s).

Inspect for fouling regularly, clean if necessary and consider applying anti-fouling paints to keep your hull smooth and your vessel efficient. Consult your boat builder or an authorized Cox Powertrain dealer for paint recommendations.

1.3.1 DISPOSING OF USED OIL

Hydrocarbon-based oils lubricate the mechanical components of your outboard and move contaminants away from working surfaces. These oils and contaminants are hazardous to the environment and wildlife and pose a potential fire hazard if stored incorrectly.

When changing oil and associated parts including filters and seals, be sure to dispose of them correctly and avoid spillage and waste wherever possible. Contact your local environmental authority or authorized Cox Powertrain dealer to review your local options for disposal which may include waste management centers, recycling facilities, local automotive, marine businesses or collection services etc. Oil is a finite and valuable resource which many of these facilities can process for reuse.

1.0 **WELCOME INFORMATION**

1.4 IDENTIFICATION

An identification label is attached to the starboard side transom bracket. This label displays your outboard's serial number, along with worldwide compliance information including the standards and their relevant enforcement authorities.

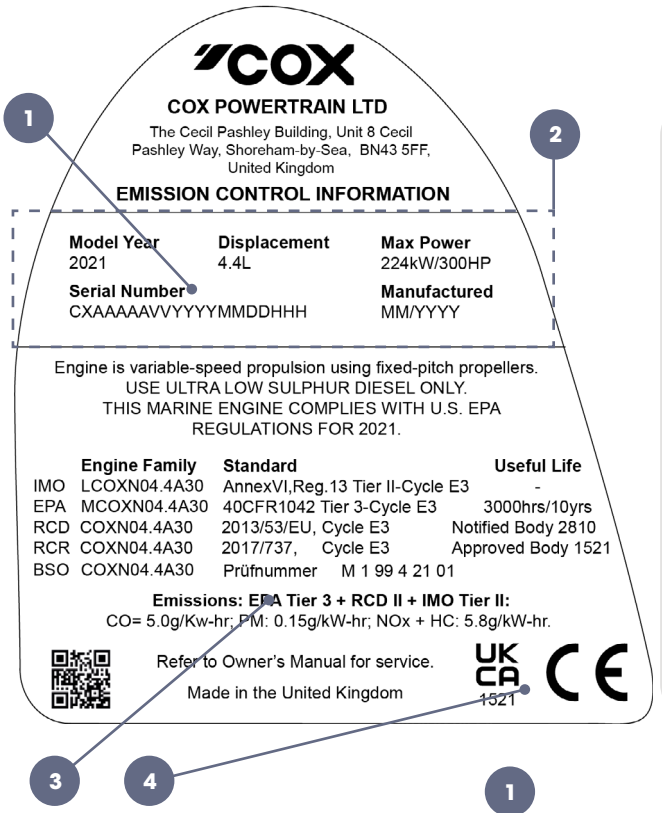


Figure: Compliance label

1 Outboard serial number

2 Outboard build and configuration information

3 Emissions standards and information

4 European and UK standards conformity mark

The serial number is replicated on a smaller label attached to the powerhead and viewable after removing the upper cowling.

Figure: Serial number label

1 Model designation

2 Build month and year

3 Outboard serial number

1.5 DATA COLLECTION AND HANDLING

Computers in your outboard are capable of recording detailed data, including but not limited to, powerhead, throttle, gearshift and other module and system status. This may include information regarding your usage of the outboard recorded during regular operation.

Collected data will be transmitted to Cox Powertrain for the purpose of gaining insight into the performance of the product in real world usage. From time to time, it may be incompatible to separate outboard data from the user's personal data. In such circumstances where personal data may be collected, Cox Powertrain have adequate safety and privacy policies, including encryption, to keep such data safe for a limited period of retention. The data will remain under the control of Cox Powertrain and third parties, of whom Cox Powertrain warrants to have in place safety and privacy policies that are equivalent to those of Cox Powertrain for data protection and safe keeping.

Collected data will strictly be for the purpose of analyzing, processing and assessing information necessary for Cox Powertrain's legitimate business interests including but not limited to, investigating outboard performance, fitness for purpose, faults diagnosis, fuel efficiency, etc. Such data will not be released to any other company and/or individual except where compelled by legal requirements or requested by others with whom you as the customer will have granted prior consent.

2.0 **OUTBOARD SAFETY**

2.1 SAFETY RECOMMENDATIONS

Cowlings must be in place

To avoid death or serious injury, make sure all cowlings are securely in place whenever the outboard is operating. Hands, feet, hair, clothing, personal accessories, floating device straps etc. may become entangled with internal moving parts.

Avoid stepping on outboard

To avoid injury or damage, do not step, stand or sit on the cowlings or any other part of the outboard.

Hot parts can cause burns

Outboard components get very hot during normal operation and can cause severe burns to skin on contact.

Avoid removing any cowlings after operation until the outboard has had time to cool down.

Electric shocks possible

Always stop your outboard(s) and isolate the battery supply and any other external power supply prior to working on electrical systems. Avoid unnecessary contact with electrical components while starting or operating your outboard(s).

Leaking fuel is a hazard

Leaking fuel may be hot and can create a fire or burn hazard. Stop your outboard if a leak is found and clear up any spills.

The propeller has sharp edges

Your propeller has sharp edges by design and can cause harm even when stationary. Do not operate your outboard out of the water with a propeller fitted, even if it is out of gear.

Never work on a propeller with the outboard running.

Passengers may fall overboard and come into contact with a moving propeller. Remain aware and vigilant to minimize the risk of injury.

Power tilt and trim includes powerful hydraulics

The power tilt-trim system consists of powerful hydraulic circuits which can easily crush body parts within the movement arc of the outboard. Do not operate the trim or tilt systems with people in the vicinity of the outboard(s). Avoid passing underneath the outboard(s) when tilted, even with a locked tilt support in place.

The power tilt-trim system must only be used for moving the outboard, and no other item or individual.

The power tilt-trim switches located at the helm and on the outboard will actuate the hydraulic circuits even when the outboard(s) ignition switch is in the OFF position. Ensure battery power is cut off when working around the outboard(s).

Always check the mounting bolts on the power tilt-trim system to ensure the outboard(s) is(are) securely fastened to the vessel's transom.

Underwater object strike can cause violent deceleration

The power tilt-trim system includes a pressure relief circuit to allow the outboard(s) to swing and absorb impact energy in the event of an underwater object strike.

The amount of impact energy increases with speed and the capacity of the outboard(s) to absorb this energy is limited; at higher speeds the likelihood of significant outboard and vessel damage is greatly elevated. Remain vigilant and aware of your local water conditions and slow down if uncertain or if there is floating debris visible.

Wireless kill switch can cause sudden deceleration

The wireless kill switch shuts the outboard(s) off immediately if the operator moves a certain distance away from the helm station, for instance if falling overboard or moving to another part of a large vessel. This prevents the vessel from running away under power and stranding the operator or becoming a danger to the surroundings.

Triggering the kill switch will result in sudden and violent deceleration as outboard drive thrust is shut off, especially if traveling at high speed. Take care to avoid false triggering and always make sure your passengers are appropriately seated.

2.0 **OUTBOARD SAFETY**

Modifications may be illegal and unsafe

The various systems of your outboard(s) are designed to work together continuously to provide a safe and reliable boating experience. Any modifications to your outboard(s) are likely to affect safety, legality and longevity and should be expressly avoided.

Shut down when refueling

Always shut down your outboard(s) prior to refueling.

2.2 BOATING SAFETY

Avoid boating under the influence of alcohol and drugs

Never operate a vessel under the influence of alcohol, drugs or any legal or illegal substance, whether prescribed or non-prescribed, that could impair your judgment or ability. Ensure you are aware of the legal requirements and limits for substance consumption in all territories in which you will operate your vessel.

Use appropriate personal flotation devices (PFDs)

Be sure to have sufficient and appropriate personal flotation devices on board for all passengers, operator included. Cox Powertrain recommends the use of personal flotation devices whenever boating and they may be a legal requirement in one or more of the territories in which you will operate your vessel. Make sure all passengers are aware of the location of emergency equipment, and that the equipment is in a serviceable state, for example within any use-by periods.

Carry sufficient emergency equipment

Always carry the appropriate safety and emergency equipment. This may include, but not be limited to, an appropriate fire extinguisher, visual distress signaling flares and equipment, throwable buoyant cushion, a first aid kit, locating beacons (EPIRB, PLB) and others. Please consult local authorities for a complete safety and emergency equipment requirement list for your planned journey.

Load and power your vessel appropriately

Always ensure your vessel is appropriately loaded and powered prior to leaving port. Consult the build plate for maximum capacity and weight, including passengers. The weight must be appropriately distributed in accordance with the vessel manufacturer's instructions. Overloading or incorrect weight distribution can increase the risk of accidents, capsizing or swamping.

Be aware of navigation laws

Ensure you are aware of all marine laws and regulations in the territories in which you will operate. Learn and obey all applicable navigation rules and familiarize yourself with the shapes, colors and flashing patterns of all buoys on your planned journey.

Know your own and your vessel's limits

Operate the vessel at safe speeds and within your limits. In order to keep a safe distance from other vessels, people and objects, avoid sharp or aggressive maneuvers which could increase the risk of collision, ejection from the vessel or loss of control. If uncertain, slow down.

Be aware of your surroundings

Watch carefully for people in the water. Ensure your outboard(s) is(are) switched off when people are in close proximity to your vessel.

Do not let anyone out on a stern swimming platform while the outboard(s) is(are) running. Be especially careful when water-skiing, and around other boaters who are towing water-skiers.

Remain vigilant for diving flags and steer clear of areas where there are divers.

⚠ WARNING

Even when idling in neutral, drag torque will turn the propeller and create a physical hazard.

Ensure your passengers are aware of the basics of safe outboard operation on your vessel in case of emergency, for example, to recover you in a man overboard situation.

Always check weather forecasts and tidal charts prior to leaving port. Do not set out in adverse weather or tides.

2.0 **OUTBOARD SAFETY**

2.3 MAN OVERBOARD PROCEDURES

Your outboard(s) is(are) designed to work with wireless fob keys for man overboard (MOB) protection, among other functions.

If the operator or a passenger falls overboard with a master fob attached, all installed outboards will be shut down and the control panel will emit a beep for 12 seconds. The control panel LED will flash red to indicate MOB protection is active.

> ⚠ NOTE
> **Unlike a physical lanyard, the wireless fob will not stop the outboard(s) in case of a fall onboard the vessel within signal range. In this case, the center button on the Master fob should be pressed and held to shut down the outboard(s).**

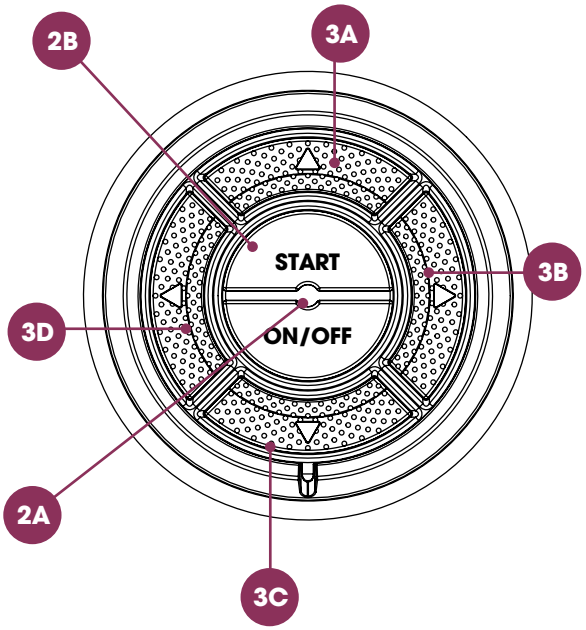


Figure: MOB restart steps

Restarting the outboard(s) after a MOB event

1 Return the outboard control lever(s) to the neutral position.

2 Once the LED on the control panel stops flashing red **(2a)**, the start button will light orange to indicate that the ignition has switched back on **(2b)**.

3 Press and hold each arrow button on the control panel for 2 seconds at a time to send the start signal to the corresponding outboard **(3a-3d)**.

> ⚠ NOTE
> **If the master fob is not present once the outboard(s) have been restarted at the control panel after a MOB event, the outboard(s) will remain operable for 1 hour before the PIN-code or master fob must be used to restart the system. Restart the outboard(s) using the master fob as soon as possible to reactivate fob functionality. In the event the master fob is misplaced, a new master can be paired using the procedure in section 4.4.2.**

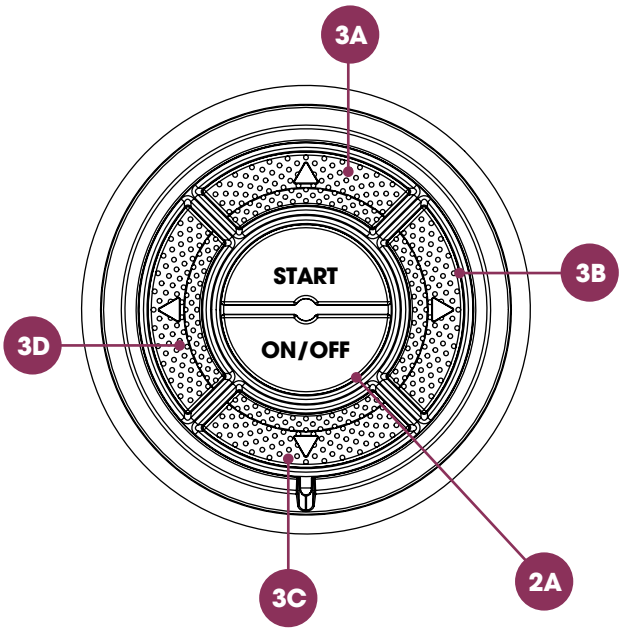


Figure: False MOB Recovery steps

Taking control in a false MOB event

1 In the event of a false triggering of the MOB protection, firstly return the outboard control lever(s) to the neutral position.

2 Press and release the ON/OFF button on the control panel to cycle the ignition on **(2a)**.

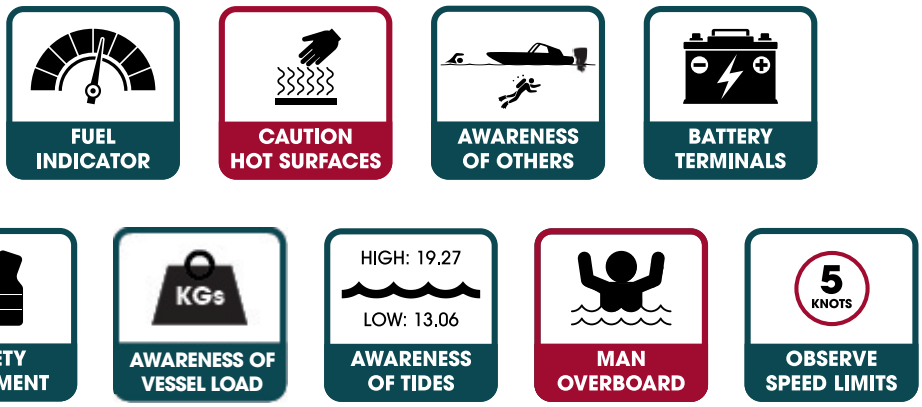
3 Press and hold each arrow button on the control panel for 2 seconds at a time to send the start signal to the corresponding outboard **(3a-3d)**

⚠ WARNING

Always keep the master fob on your person

2.4 WARNING LABELS

Please note the following safety labels placed on your outboard.



3.0 **TECHNICAL SPECIFICATION**

Overview	
Maximum power operating range	3700-4000 rpm
Warm idle speed in neutral	750 rpm
Rated propeller shaft power	224 kW (300 bhp)
Peak powerhead torque	650 Nm (479 lb-ft)
Outboard dry weight	380 kg (838 lb)
Rigging	
Mounting pitch	762 mm (30")
Mounting bolts	6x M12 A4-80
Steering angle	+/- 30°
Tilt and Trim	Hydraulic power tilt-trim
Trim cylinder range, relative to vertical	-5° to +16° on a 14° transom
Tilt cylinder range, relative to vertical	+16° to +69° on a 14° transom
Battery type	12 V, AGM
Minimum battery capacity	1150 CCA, 230 Ah
Powerhead	
Design	4-stroke DOHC 32-valve V8
Bore x stroke	84.0 x 98.5 mm (3.3 x 3.9”)
Total displacement	4367 cm^3 (266 in^3)
Compression ratio	16.0:1
Aspiration	Twin turbochargers
Cooling	Raw water, anode protected
Temperature control	Thermostats, oil cooler (optional)
Fuelling system	High-pressure common rail
Fuel type	Ultra-low sulphur diesel
Fuel specification	EN 590, ASTM D975 No.2-D
Powerhead oil	Min standard - Fully Synthetic API CI-4 / SAE 10W40 or 5W40’
Powerhead oil capacity	11 L (11.6 US qt)
Transmission	
Design	Spiral bevel gear drive
Gear ratio options	1.227 (27/22) / 1.46 (19/13)
Maximum propeller shaft speed	3259 rpm (1.23 ratio) 2737 rpm (1.46 ratio)
Propeller shaft output	31.75 mm (1.25”) shaft, 19 tooth spline
Maximum propeller diameter	406.4 mm (16”)
Gear oil	SAE 80W90, API GL-5 or 75W90, API GL-5 Marine Gear Oil for colder climates
Gear oil capacity	2.5 L (2.6 US qt)

3.2 DESIGN OVERVIEW

Main sub-systems

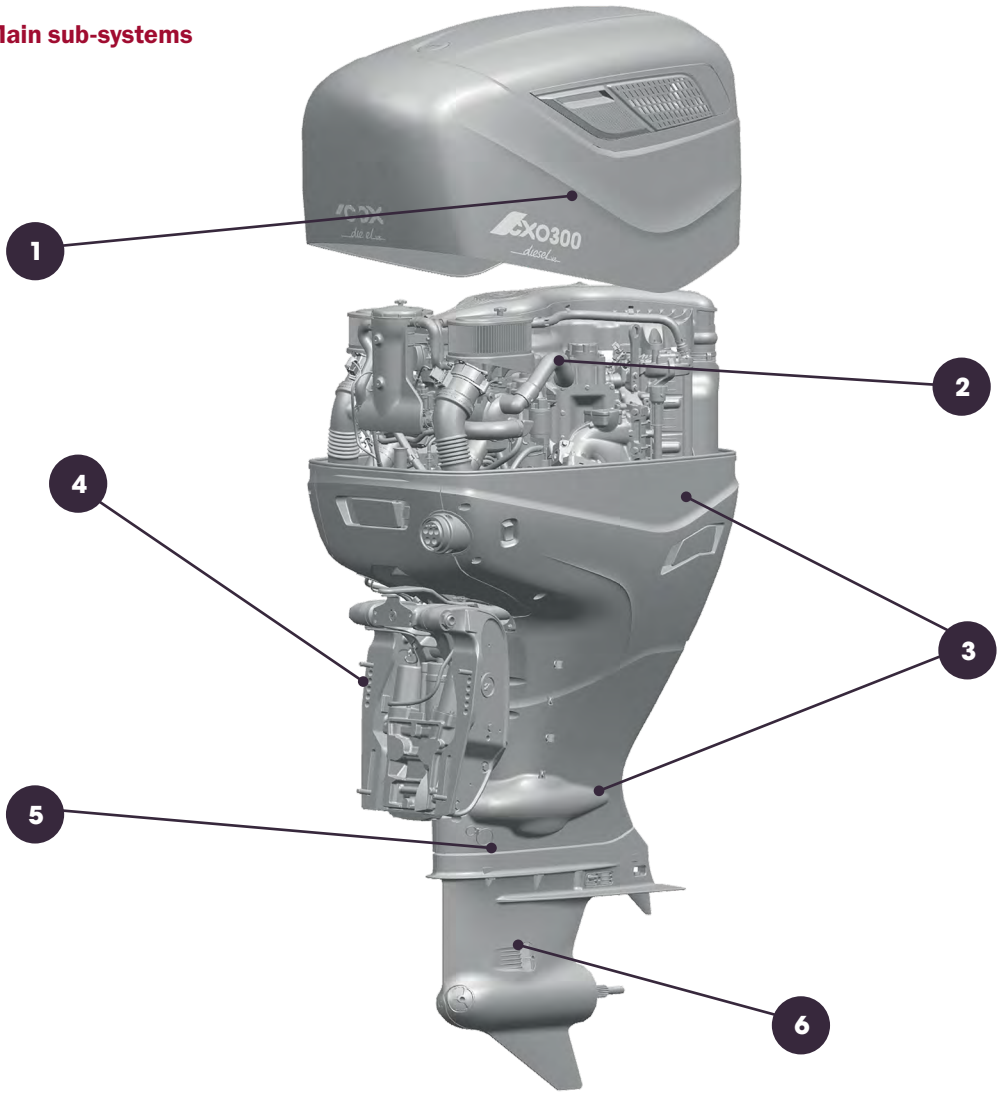


Figure: Main sub-systems

1	Upper cowling	**4**	Power tilt-trim and bracket unit
2	Powerhead	**5**	Spacer (if fitted)
3	Mid-section	**6**	Transmission

3.0 **TECHNICAL SPECIFICATION**

3.3 DESIGN FEATURES

Outboard interfaces - port side

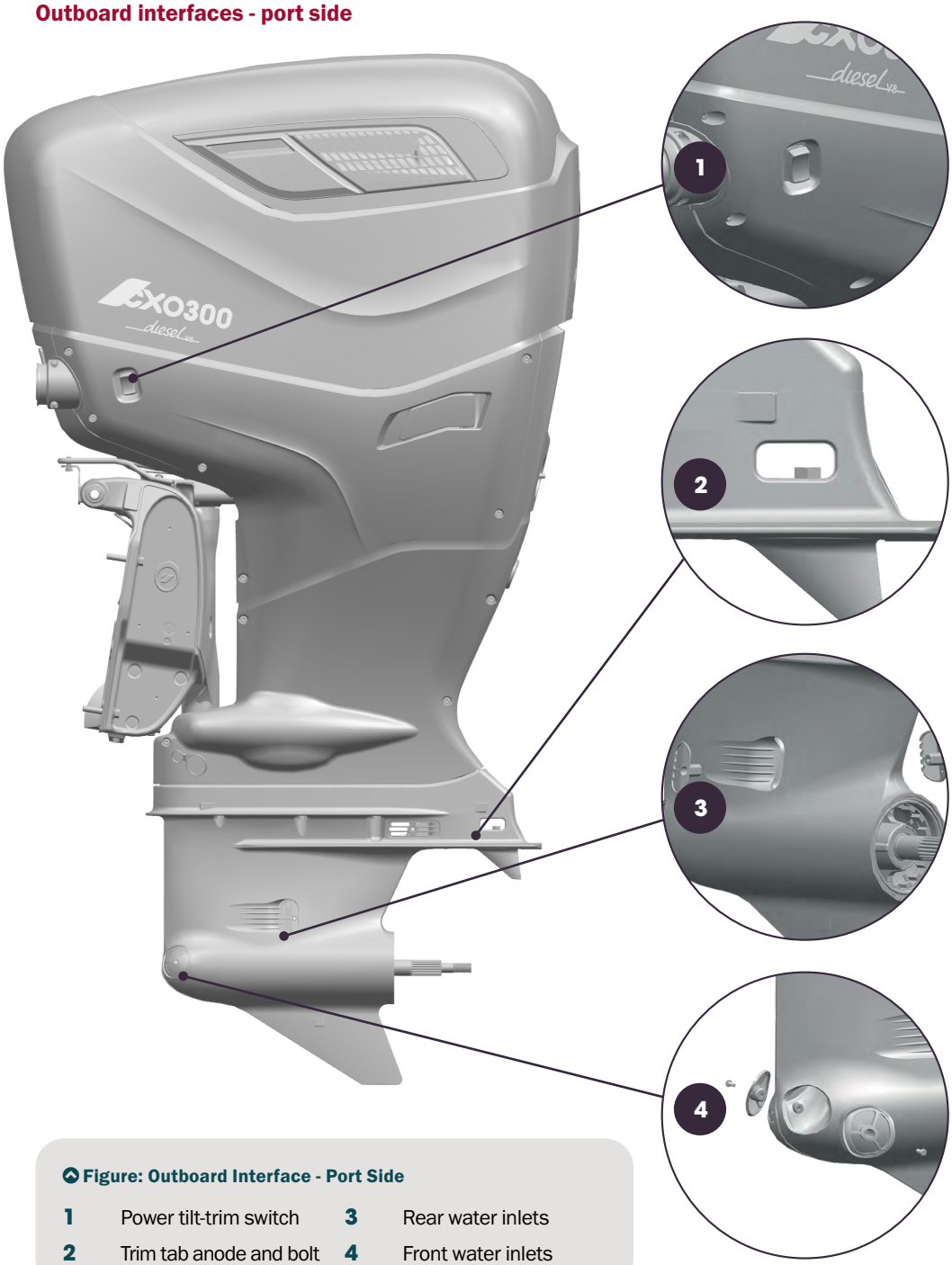


Figure: Outboard Interface - Port Side

1	Power tilt-trim switch	**3**	Rear water inlets
2	Trim tab anode and bolt	**4**	Front water inlets

Outboard interfaces

Figure: Outboard Interface

5 Rear flush connector **6** Idle relief (bottom) **7** Anti-ventilation plate

3.3 DESIGN FEATURES

Outboard interfaces - starboard side

Figure: Outboard Interface

8 Front flush connector (top) and tell-tale stream (bottom)

Inside upper cowling

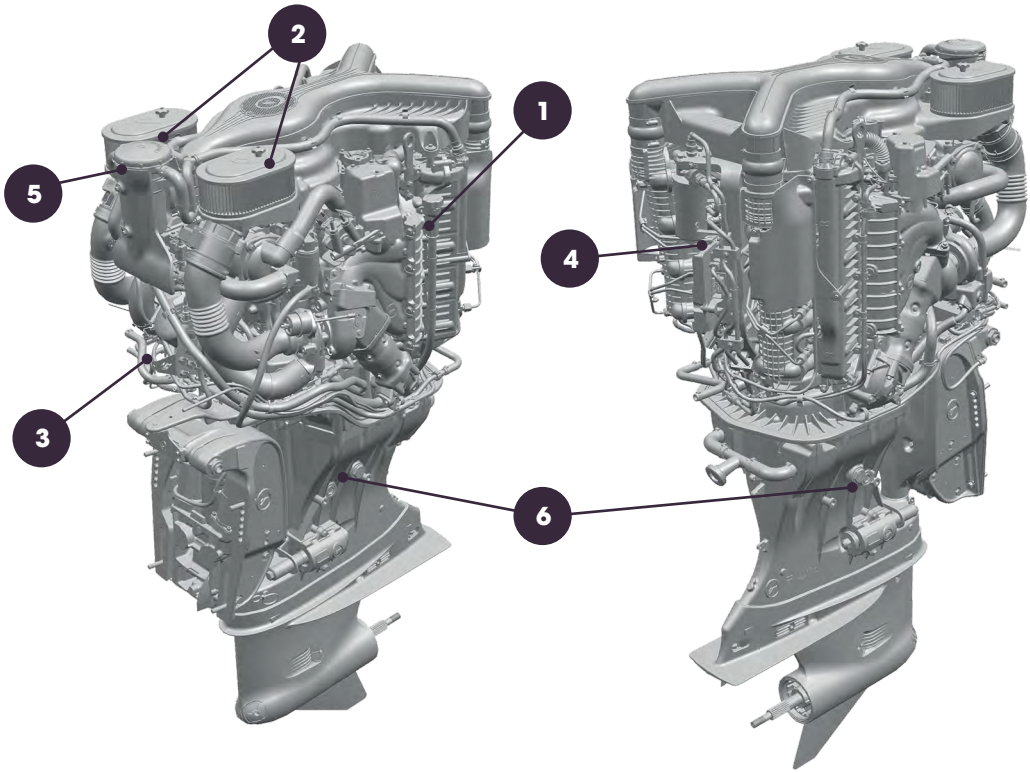


Figure: Important under-cowl components

1	Oil dipstick / Oil extraction point	**4**	Fuel filter
2	Air filters	**5**	CCV canister / Oil fill point
3	Oil filter	**6**	Powerhead oil drain plugs / Oil drain point

3.0 **TECHNICAL SPECIFICATION**

3.3 DESIGN FEATURES

PTT Bracket Unit

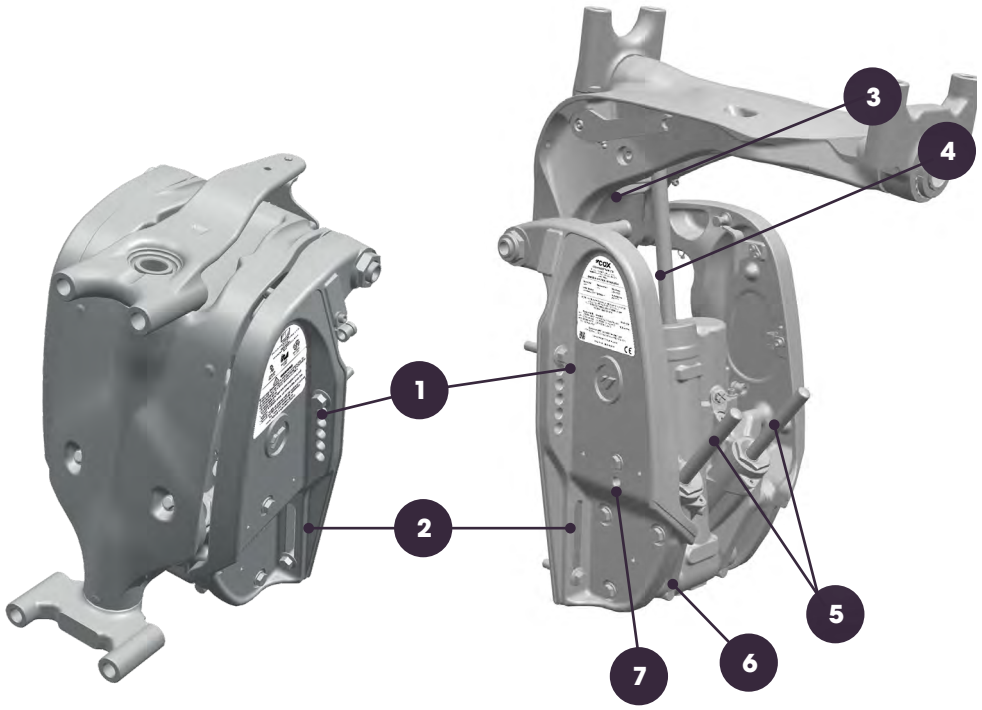


Figure: Bracket and power tilt-trim components

1	Upper mounting bolts	**5**	Trim rams
2	Lower mounting bolt	**6**	PTT anode (at underside)
3	Tilt lock	**7**	Manual pressure relief valve
4	Tilt ram		

Helm control head (single outboard)

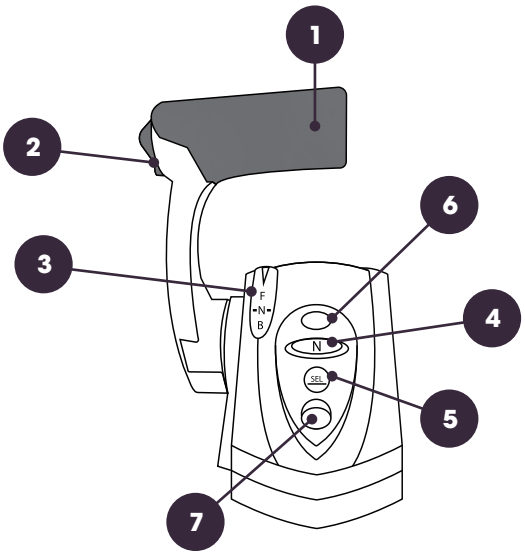


Figure: Single outboard control head

1	Control lever
2	Tilt-trim switch
3	Gear position indicator
4	Neutral warm-up or troll mode
5	Activate control head
6	Station active indicator lamp
7	Indicator lamp

Helm control head (two or more outboards)

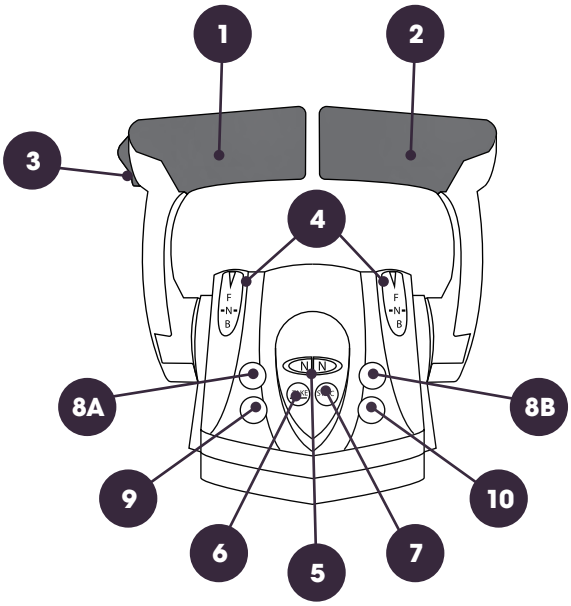


Figure: Twin (or more) outboard control head

1	Port side control lever
2	Starboard side control lever
3	Simultaneous trim-tilt switch
4	Gear position indicators
5	Cycle neutral warm-up or trolling mode
6	Take command from another helm
7	Single lever control for multiple outboards
8a	Indicator lamps
8b	Indicator lamps
9	Take command indicator lamp
10	Single lever control indicator lamp

3.0 TECHNICAL SPECIFICATION

3.3 DESIGN FEATURES

Trim Panel

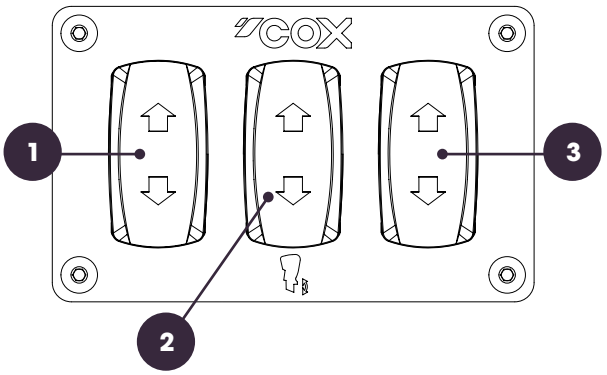


Figure: Trim control panel for a triple outboard install

1. Port outboard trim-tilt switch
2. Center outboard trim-tilt switch
3. Starboard outboard trim-tilt switch

Wireless Fob

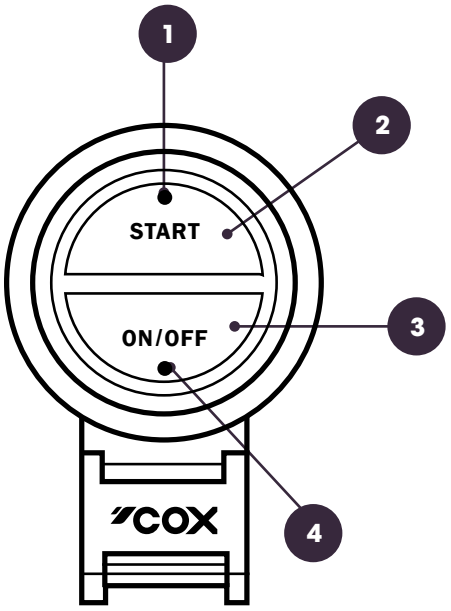


Figure: Wireless Fob

1. Green LED
2. Start button
3. ON/OFF Button
4. Red LED

Control Panel

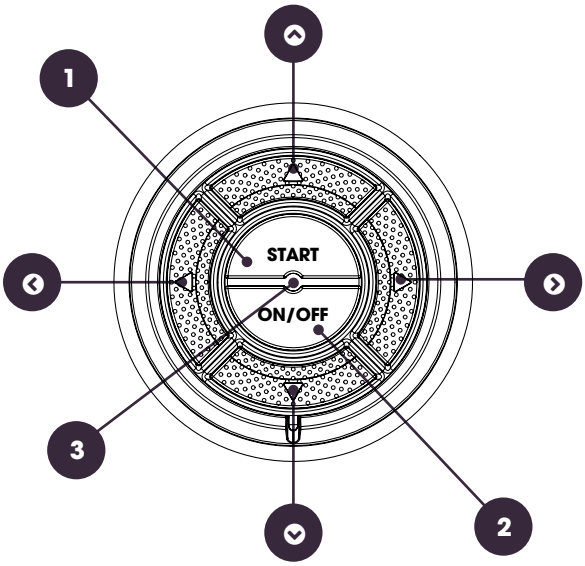


Figure: Wireless Fob control panel

1. Start Button
2. ON/OFF Button
3. LED Indicator

1 Outboard installation

- Engine control

2–4 Outboard installations

- Engine 1 control
- Engine 2 control
- Engine 3 control
- Engine 4 control

5+ Outboard installations

- Engines 1 & 2 control
- Engines 3 & 4 control
- Engines 5 & 6 control

3.0 TECHNICAL SPECIFICATION

3.3 DESIGN FEATURES

Helm display screens
7” screen

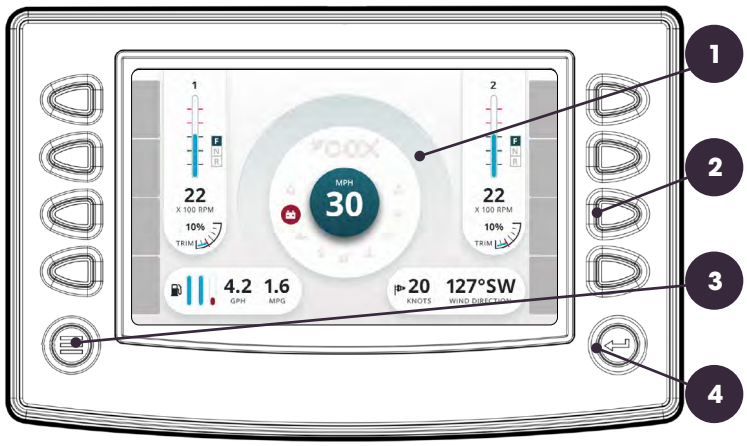


Figure: Helm display screen (7”)

1. Main display screen
2. Function buttons (x8)
3. Menu button
4. Return button

Helm display screens 12" screen

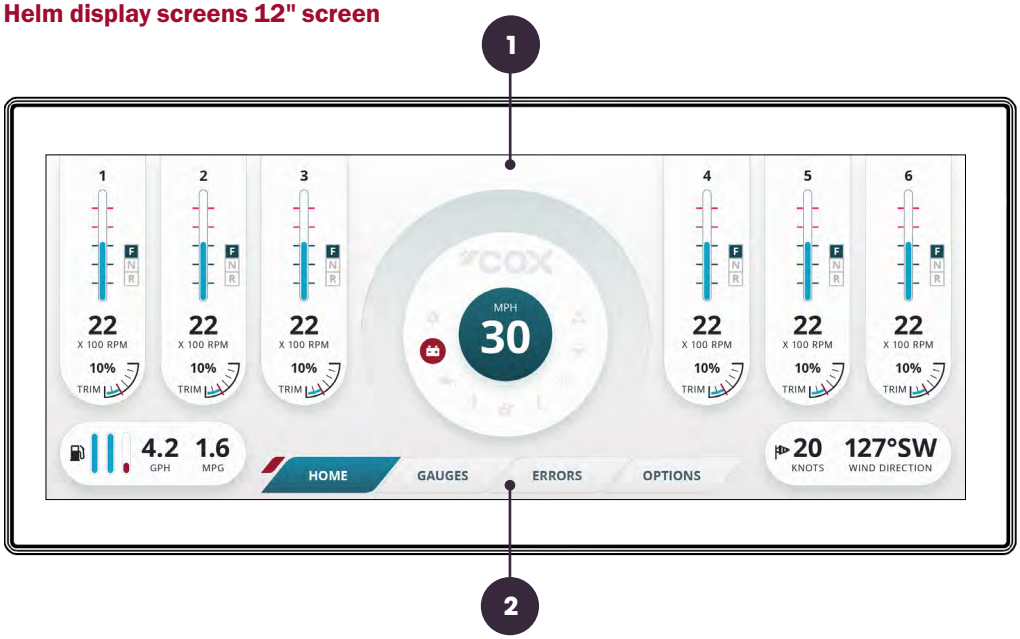


Figure: Helm display screen (12”)

1. Main display screen
2. Touch function button

Display home screen

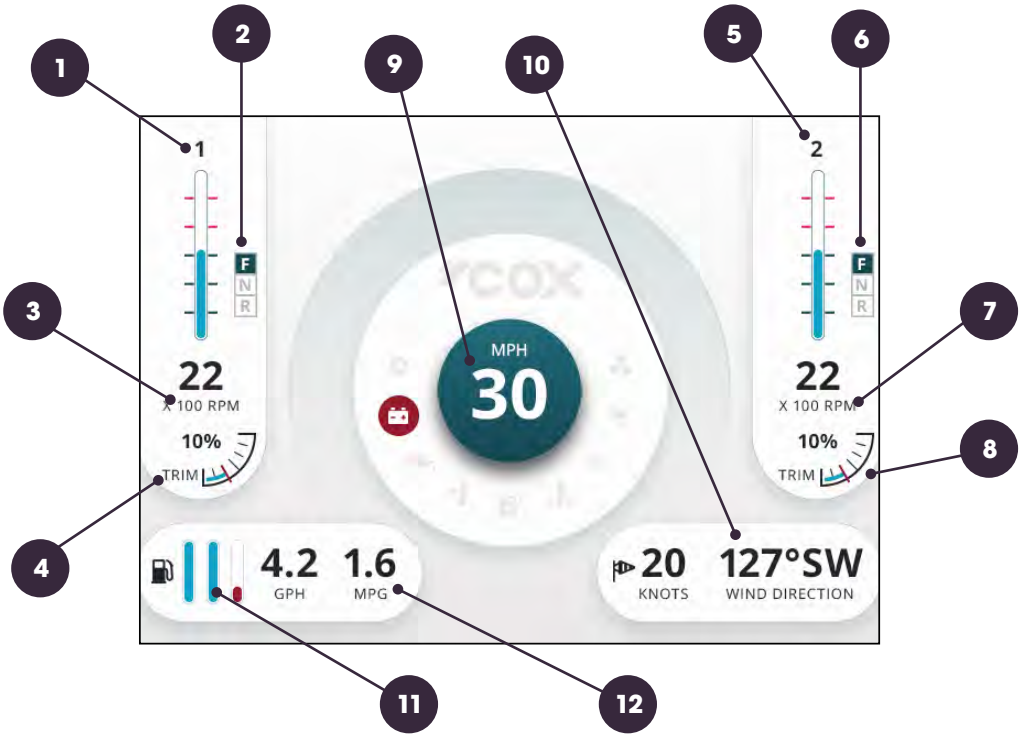


Figure: Display home screen

1	Port outboard ID
2	Port outboard gear position
3	Port outboard RPM
4	Port outboard trim position
5	Starboard outboard ID
6	Starboard outboard gear position
7	Starboard outboard RPM
8	Starboard outboard trim position
9	Vessel speed
10	Wind direction
11	Fuel tank levels
12	Vessel fuel consumption

4.0 OUTBOARD INSTALLATION

4.1 ENGINE INSTALLATION

The process of installing and calibrating your CXO300 diesel outboard(s) is complex and highly dependent on the vessel-outboard combination.
Cox Powertrain strongly recommends the outboard(s), controls and rigging be installed and calibrated by an authorized Cox Powertrain dealer. Failure to use an authorized Cox Powertrain dealer can invalidate your warranty.

Refer to the CXO300 installation manual or contact an authorized Cox Powertrain dealer for more detail.

⚠ CAUTION

CXO300 outboards are shipped without powerhead and transmission oil. Make sure the powerhead and transmission oils are at the recommended fill level prior to operating your outboard(s). Failure to follow this procedure could result in severe damage to your outboard(s).

4.2 FUEL AND OIL

Diesel fuel

The CXO300 has been validated and certified using diesel fuels complying with fuel standards EN 590 and ASTM D975 No.2-D. Operating on fuels with properties outside of these standards may lead to unacceptable emissions levels, increased fuel consumption, accelerated outboard wear and outboard damage which may invalidate your warranty.

It is the responsibility of the operator to ensure the outboard(s) are only operated on Ultra Low Sulfur Diesel (ULSD) fuel in compliance with the above standards.

⚠ CAUTION

Do not install any fuel line components onto your vessel or outboard(s) made from copper or brass materials or which are zinc-plated. Use of such components could lead to premature wear and failure of your outboard's fuel system and may invalidate your warranty. Thermoplastic components, rated for use with diesel fuels, should be used.

⚠ CAUTION

Water or other contamination in the fuel supply can clog the fuel system and damage your outboard(s). Take care to avoid water or contaminant ingress into your fuel tank and familiarize yourself with the maintenance schedule (see section 6.1) for the fuel system.

Powerhead oil

Cox Powertrain recommends the use of Shell Rotella T6 5W40 engine oil and Shell Rimula.
The powerhead oil must be fully synthetic and comply to minimum API service classification of CI-4

⚠ CAUTION

The use of powerhead oil failing to meet the above specifications can affect your outboard's performance and longevity and may invalidate your warranty.

Transmission oil

Cox Powertrain recommends the use of Shell Spirax S3 AX gear oil. The transmission oil must comply with the SAE 80W90 viscosity standard and API service classification GL-5. Alternatively, Cox Powertrain recommends using API GL-5, 75W-90 Marine Gear Oil for use in colder climates.

⚠ CAUTION

The use of transmission oil failing to meet the above specifications can affect your outboard's performance and longevity and invalidate your warranty.

Please consult an authorized Cox Powertrain dealer for oil product recommendations.

4.0 **OUTBOARD INSTALLATION**

4.3 PROPELLER SELECTION

⚠ WARNING

This outboard must be correctly configured for right or left-handed propeller rotation in accordance with the installed propeller. Prior to working near a propeller, ensure the outboard(s) is(are) stopped and the battery cut-off switch is in the isolated position.

⚠ WARNING

The propeller's sharp edges can cause severe injury or death. Use the appropriate personal safety equipment whenever handling the propeller.

Propeller selection plays a key role in overall vessel performance and fuel consumption. Always consult an authorized Cox Powertrain dealer for propeller recommendations for a new or re-power installation, or if your outboard(s) operate outside the propping speed range at maximum power. The propping speed range should be met with a representative vessel loading.

If experiencing powerhead over-speed and over-heating at the maximum power, please contact an authorized Cox Powertrain dealer for assistance.

⚠ NOTE

The control system will display a warning alarm and reduce performance as a protection measure if the outboard(s) repeatedly reaches its RPM limit, for instance as a result of incorrect propeller matching.

If your outboard(s) does(do) not attain the propping speed range at full control lever travel, please contact an authorized Cox Powertrain dealer for assistance.

⚠ CAUTION

Running an incorrectly matched propeller for extended periods of time will affect your outboard's performance and longevity and will increase fuel consumption.

⚠ WARNING

This outboard is designed to be used exclusively with a damped rubber hub. Never use a solid propeller hub as this will lead to the failure of the drive system of your outboard(s).

⚠ NOTE

Whenever the propeller is changed, the powerhead speed at maximum power with minimum vessel loading must be confirmed to be within the propping speed range.

Please ensure, when fitting propellers to the CX0300, that the defined propeller hub is used, as per the below specification. Ensure that the hub manufacturer's fitting instructions are followed correctly.

Manufacturer	Quicksilver
Model	Flo-Torq SSR HD
Part Number	8M0101603

⚠ CAUTION

Cox only recommend the use of the Quicksilver FLO-TORQ SSR HD (8M0101603) hub. Failure to comply with this may lead to adverse gear shifting and increased vibrations which may be damaging to the transmission and engine.

The hub should be fitted in line with the installation instructions and shimmed if required to ensure the propeller nut acts on the hub not the propeller.

Should the gear shift quality deteriorate, first assess the free play of the propeller and if excessive replace the hub.

4.4 WIRELESS FOB

Your outboard(s) is(are) designed to work with wireless fob keys for security, man overboard protection and outboard start and stop. You will be supplied with two master fobs. Keep the spare in a safe place and do not leave either fob in your vessel unattended.

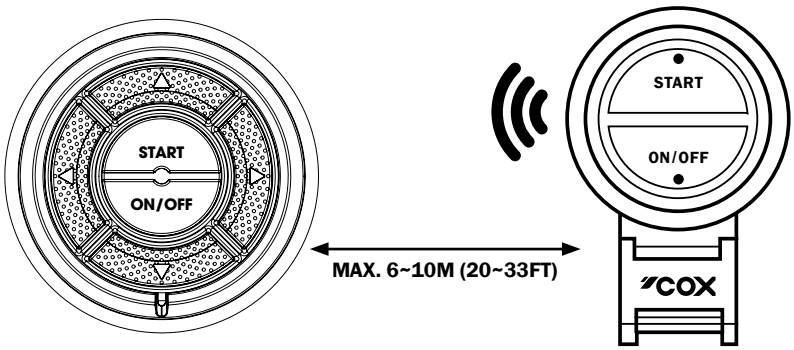


Figure: Wireless fob maximum communication range

The wireless fobs communicate with a control panel mounted on your helm and must always be in communication for fob functionality to be active. The fobs have a nominal range up to 6-10 m (20-33 ft) from the control panel, highly dependent on the panel's surroundings. Familiarize yourself with the system's range on your vessel prior to going boating.

The control panel, wireless fob and their features are outlined in section 3.3.

⚠ NOTE

If a fob is lost, please contact an authorized Cox Powertrain dealer for a replacement.

⚠ NOTE

If a fob's battery is running low, the fob's LED will flash red quickly. Switch to another fob to avoid false MOB triggering on battery expiry. Fit a new CR2032 battery when possible.

4.0 OUTBOARD INSTALLATION

4.4.1 CHANGING PIN

The factory default PIN for the fob system is 2431. Cox Powertrain recommends a personalized PIN is created. Follow the process below to change the PIN on your control panel.

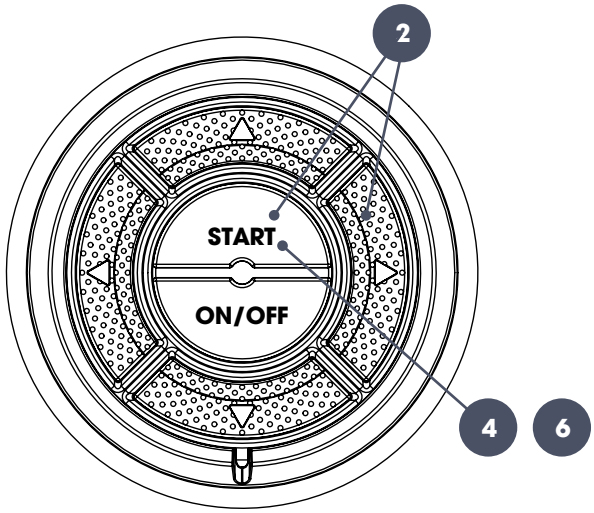


Figure: Figure: PIN change steps

1 Enter the factory PIN (2413) or current PIN into the control panel. The control panel LED will flash green when the PIN is entered correctly, or otherwise will flash red if the entered PIN is incorrect.

2 Press and hold the ON/OFF button on the Start Panel, for approximately 5 seconds. The control panel LED will flash blue, quickly. Press number 2 to change the PIN code. The LED will quickly blink orange.

3 Enter your desired new PIN by pressing and releasing the corresponding number buttons. The PIN can be composed of 4 to 6 digits.

4 Press and release the Start button **(4).** The LED on the control panel will start flashing green quickly.

5 Enter your new PIN one more time.

6 Press and release the Start button one more time **(6)**. The LED will light up green to confirm that the new PIN has been saved.

⚠ NOTE
After changing the PIN, all master fobs must be re-paired by following the procedure in section 4.4.2.

⚠ NOTE
To cancel the PIN change procedure, press and release the ON/OFF button.

4.4.2 PAIRING FOBS

Follow the procedure below to pair a fob with your control panel.

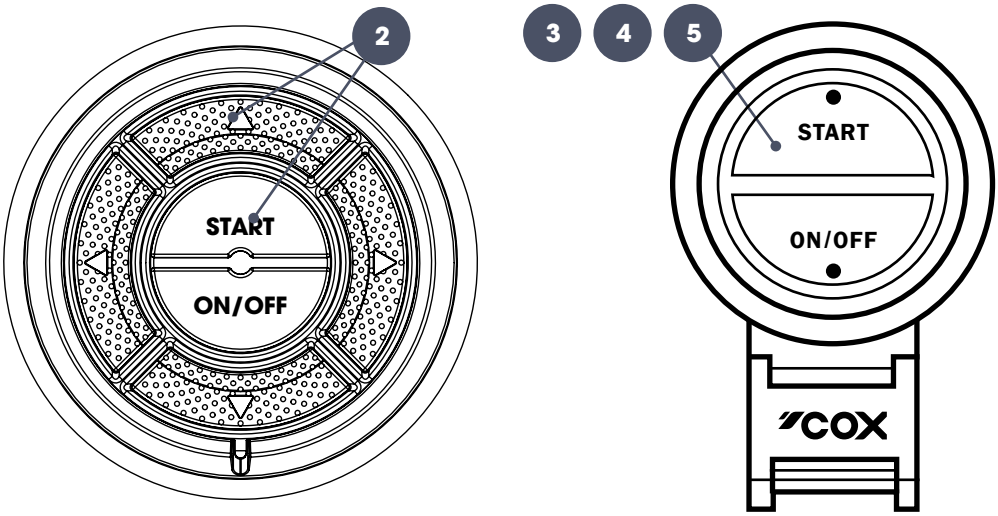


Figure: Fob pairing steps

1 Enter the PIN on the control panel. The LED will flash green when the PIN has been entered correctly.

2 Press and hold the ON/OFF button for appoximately 5 seconds. The LED will quickly blink blue. Press number 1 to pair the fob. The LED will quickly blink orange.

3 Press and hold the central ON/OFF button on the fob to be paired **(3)**.

4 Release the central ON/OFF button on the fob once the LED on the start panel turns from orange, to green **(4)**.

5 Test the system by pressing the central Start button on the fob. The control panel will unlock in response **(5)**.

⚠ NOTE
Repeat this process to pair all master fobs.
The control panel can be paired with up to 10 master fobs.

5.0 **OPERATION**

5.1 USAGE CYCLE

Outboards are provided for commercial operation on the basis that their usage profile is up to two hours at maximum power in every twelve hours. Outboards will typically have a load factor of up to 50% and are expected to run up to 1500 hours per year.

Outboards are provided for recreational applications on the basis that their usage profile is up to one hour at maximum power in every twelve hours. Outboards will typically have a load factor of up to 30% and are expected to run up to 400 hours per year.

5.2 PRE-START CHECKS

Before you start the outboard(s), it is important you run all the pre-start checks referred to from 5.2.1. onto 5.2.5. If any of these checks indicate a fault or that an outboard is not working properly, please contact your authorized Cox Powertrain dealer for inspection and repair. Do not operate any outboard which fails the initial checks.

Prior to operating your outboard(s), inspect your boat and outboard(s), rigging and helm components visually for damage or abnormalities. Refer to this Owner's Manual as necessary for instructions and to identify what is normal for your outboard(s).

When powering on, always check the helm display for any active malfunctions and action appropriately. Do not operate the outboard(s) if any visible damage or abnormality is identified, or if there is an active malfunction shown. Consult this manual or contact your Cox Powertrain official dealer for further support.

⚠ WARNING
Operating your outboard(s) with visible damage or an active malfunction warning can be hazardous.

5.2.1 OUTBOARD INSPECTION

Inspection of transom mounting bolts

Visually inspect the outboard(s) mounting bolts at the transom for tightness, corrosion and damage. Each bolt head, nut and washer should be intact and visibly flush against the transom and side brackets. Both side brackets should be seated visibly flush against the transom.

⚠ WARNING

Do not operate any outboard which has any loose or corroded mounting bolts or nuts. If in doubt seek assistance, do not leave port without confirming the mounting arrangement is robust.

Inspection of propeller

With the outboard(s) shut down, tilt the outboard(s) fully up and visually inspect the propeller(s) for any dents, cracks or wear. Check the propeller retaining nut(s) are tight and any locking tab(s) in place.

⚠ CAUTION

Operating with a significantly damaged or worn propeller will result in reduced performance, increased vibration and over time could lead to complete propeller or transmission failure.

⚠ WARNING

A slack propeller retaining nut or missing locking tabs can lead to loosening during operation, in turn leading to sudden loss of drive and vessel maneuverability.

Inspection of battery cables

Inspect the battery cables for loose or corroded terminals.

After powering on and prior to starting your outboard(s), check the battery voltage readout on the helm display is at or above 12V.

⚠ WARNING

Operating with a defective/low voltage battery can cause unpredictable anomalies or failures in the electronic controls and systems, potentially leading to serious injuries or death.

5.0 **OPERATION**

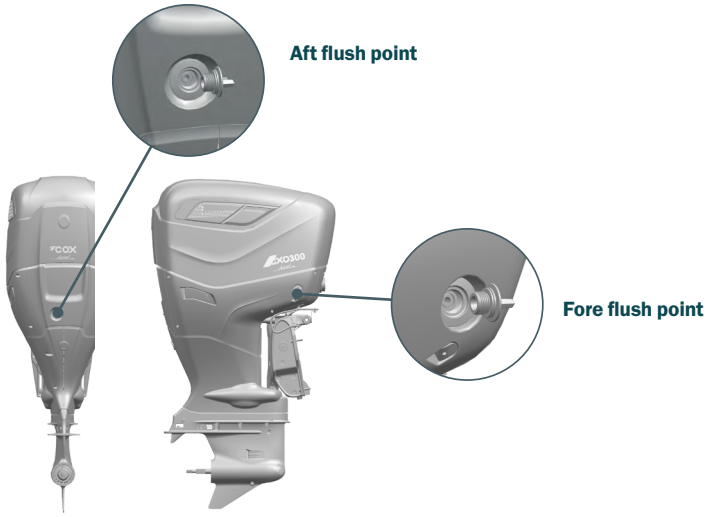


Figure: Locating the flush points

Flush Points

Ensure both flush caps are in place and tightened prior to operation.

5.2.2 CHECKING CONTROLS

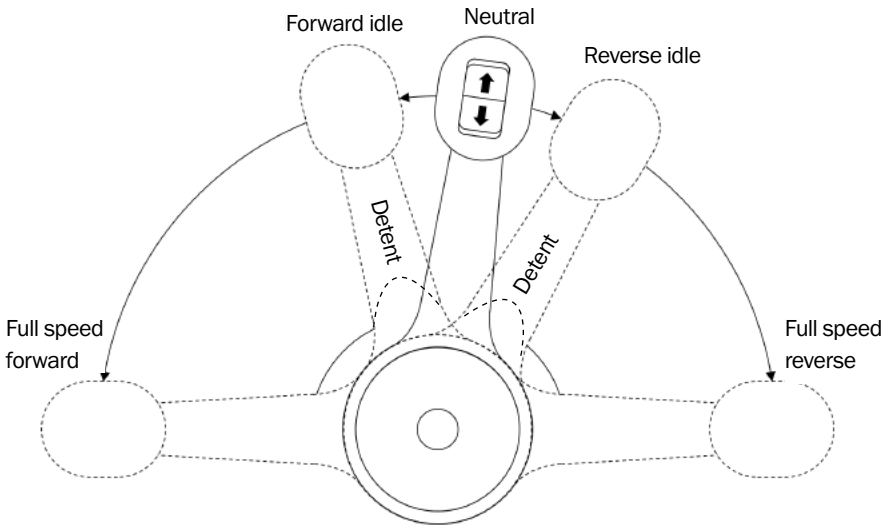


Figure: Control head lever neutral range

Check inside your helm station for any loose or damaged wiring connections and correct as necessary. When in doubt, contact an authorized Cox Powertrain dealer for assistance.

Check that your throttle lever is in the neutral position prior to attempting to start your outboard(s). Note that by law, all Cox diesel outboards feature start-in-gear protection, which will prevent the outboard(s) from cranking if the control lever is not in the neutral position.

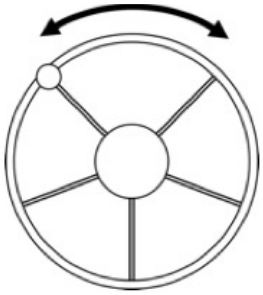


Figure: Check steering for resistance

Rotate the steering wheel lock-to-lock and check for abnormal resistance or any rough spots. Do not leave port unless the steering system feels smooth and consistent.

> **WARNING**
> **Operating your outboard(s) without robust helm controls in good working condition is a danger to life.**

5.2.3 CHECKING EMERGENCY SWITCHES

Always wear the wireless man overboard fob clipped to your personal flotation device (PFD). If a wireless fob is not installed, make sure the kill switch clip is in place and the cord securely attached to the operator.

> **WARNING**
> **Operating your outboard(s) without the wireless man overboard fob or the optional wired man overboard fob attached to your PFD may result in serious injury or death to you the operator, your passengers or others nearby.**

5.2.4 CHECKING FUEL

Check your diesel fuel tank level prior to starting your outboard(s) and ensure it is sufficient for the planned route, considering tidal and weather conditions and the intended speed. Check for fuel leaks and ensure fuel hoses are securely attached and clamped. Check that the vessel fuel tank vent line is not blocked.

When re-fuelling note that that fuel level on the Cox display updates every 30s so there may be a delay between re-fuelling beginning and the display registering a change in fuel level.

> ⚠ **NOTE**
> **Make sure you do not overfill the vessel fuel tank**

Check your fuel filter for water level and the fuel in the filter housing for any contamination. Drain the filter if the water level is above the drain line.

> ⚠ **NOTE**
> **Depending on initial fuel quality, level of contamination and environmental factors, diesel fuel has a typical storage life of 6-12 months. Consider draining and replacing the fuel if it has been in your tank for a long time.**

> ⚠ **WARNING**
> **Leaving the port without enough fuel for a safe return is dangerous and may incur significant recovery costs.**
>
> **Degraded diesel fuel, by contamination or long storage time, can lead to decreased performance, misfiring or other poor running and can cause damage to your outboard(s).**

5.2.5 CHECKING OIL

Your powerhead and transmission require the correct quantity and grade of oil to function reliably. The oil quantities can reduce over time through normal consumption at a rate of up to 2.0L/250 hrs. Continued reduction in oil levels could be indicative of an underlying issue with the outboard(s) and should be investigated by an authorized Cox Powertrain service center.

Monitoring oil levels is important in identifying any issues before a significant failure arises. Carry out a check of powerhead oil level regularly by following the steps section 6.4.2.

5.3 STARTING THE OUTBOARD(S)

Carry out all pre-start checks, then place the throttle lever(s) into the neutral position. Turn the ignition switch to the ON position and check for any alerts or errors on the helm screen. Check the surroundings for any hazards, clear any personnel in the vicinity of your outboard(s), then tilt your outboard(s) into the water until nominally at zero trim.

Refer to “Control Panel” for Start/Stop instructions.

⚠ WARNING
Do not attempt to start multiple outboards simultaneously. Doing so risks overloading the battery circuits and damaging your outboard(s) or vessel

5.3.1 START PROCEDURE

You may use either the control panel or a master fob to start your outboard.

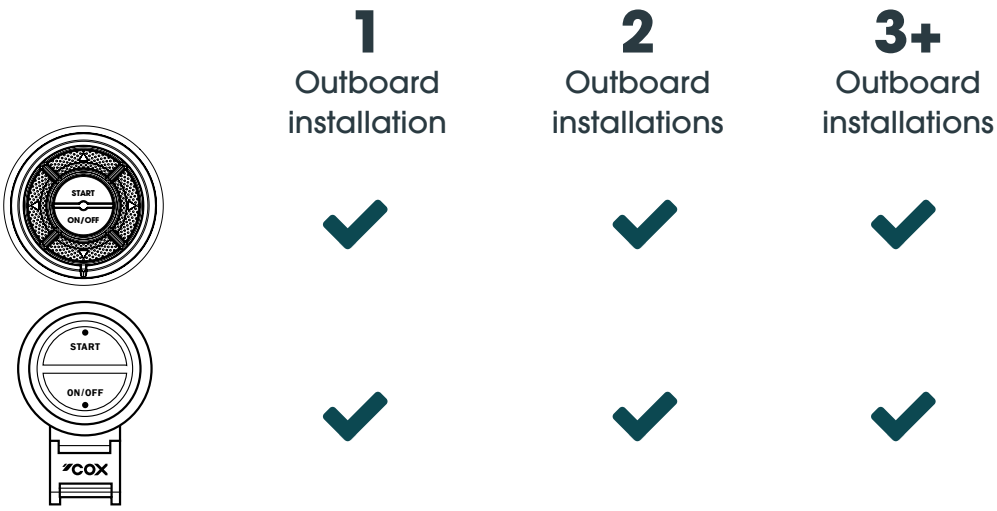


Figure: Starting outboards with the control panel or master fob.

5.0 **OPERATION**

To start your multiple outboards sequnetially using the control panel:

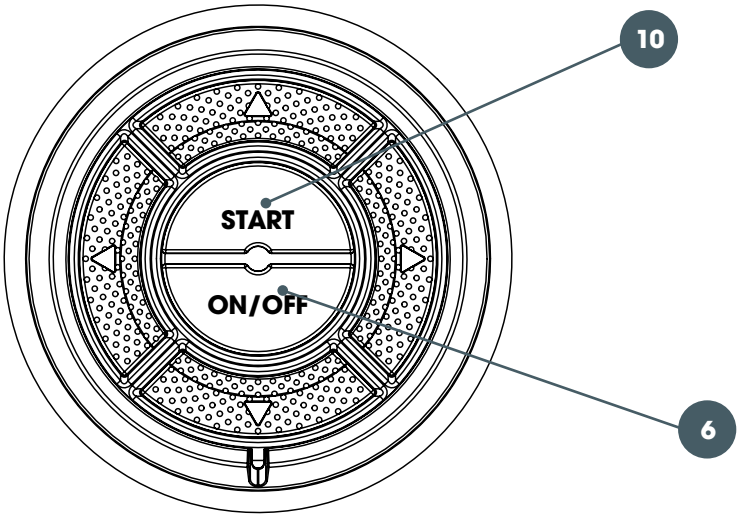


Figure: Starting multiple outboards sequentially using the control panel

1. Carry out all pre-start checks in section 5.2.
2. Turn your battery switch to the ON position.
3. Place the throttle lever(s) into the netrual position.
4. Check your vessel and surroundings for any hazards, clear any personnel in the vicinity of your outboard, then tilt your outboard(s) into the water until nominally at zero trim.
5. Enter your PIN into the control panel. The LED will flash green to indicate the correct PIN has been entered.
6. Within 60 seconds, press and release the ON/OFF button **(6)** to turn on the ignition on all installed outboards. The LED will light yellow to indicate the ignition is on.
7. Press the START button **(10)** to sequentially start the outboards.
8. If your fob is not detected, the LED will blink orange and a beeping noise is emitted.
9. Press any button on the fob to start communication.
10. The LED on the control panel will turn green and the beeping will stop.
11. If you do not have your fob with you, the beeping will stop after approximately two mintues and the LED will contine to blink orange.

⚠ WARNING

Do not attempt to start multiple outboards simultaneously. In an installation of 5 or more outboards, do not attempt to start more than one pair of outboards simultaneously.

To start your multiple outboards individually using the control panel:

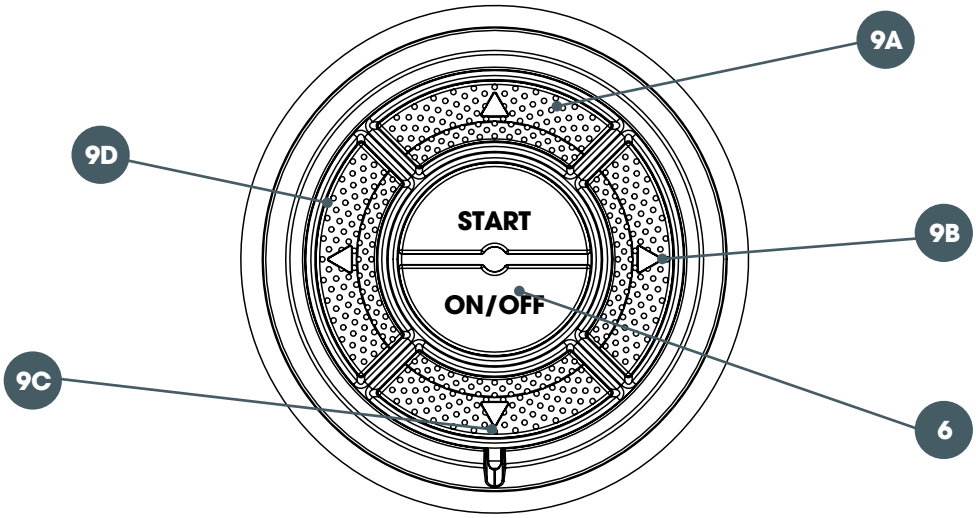


Figure: Starting multiple outboards individually using the control panel

1. Carry out all pre-start checks in section 5.2.
2. Turn your battery switch to the ON position.
3. Place the throttle lever(s) into the neutral position.
4. Check your vessel and surroundings for any hazards, clear any personnel in the vicinity of your outboard, then tilt your outboard(s) into the water until nominally at zero trim.
5. Enter your PIN into the control panel. The LED will flash green to indicate the correct PIN has been entered.
6. Within 60 seconds, press and release the ON/OFF button **(6)** to turn on the ignition on all installed outboards. The LED will light yellow to indicate the ignition is on.
7. Check for any warning alarms or notifications on the helm screen and action accordingly.
8. Ensure the fuel system is primed by running the fuel lift pump(s) for at least 10 seconds prior to starting your outboard, or longer if one or more fuel filters or lines have been changed or connected since the last start.
9. Press and hold each arrow key **(9a-9d)** on the control panel for 2 seconds in turn to send a start signal to the corresponding outboard. Release when the corresponding outboard starts.

5.0 **OPERATION**

⚠ WARNING

MOB protection will not be active after starting the outboard(s) using the control panel. The control panel LED may flash yellow and the panel may beep to indicate MOB protection is inactive. Press and release the Stop/Start button on a master fob to activate MOB protection after starting. The LED on the control panel will light green to indicate that MOB protection is active.

⚠ NOTE

To restart an individual outboard when ignition is already on, return the throttle lever(s) to the neutral position then press and hold the corresponding arrow key on the control panel.

To start your single outboard using a master fob:

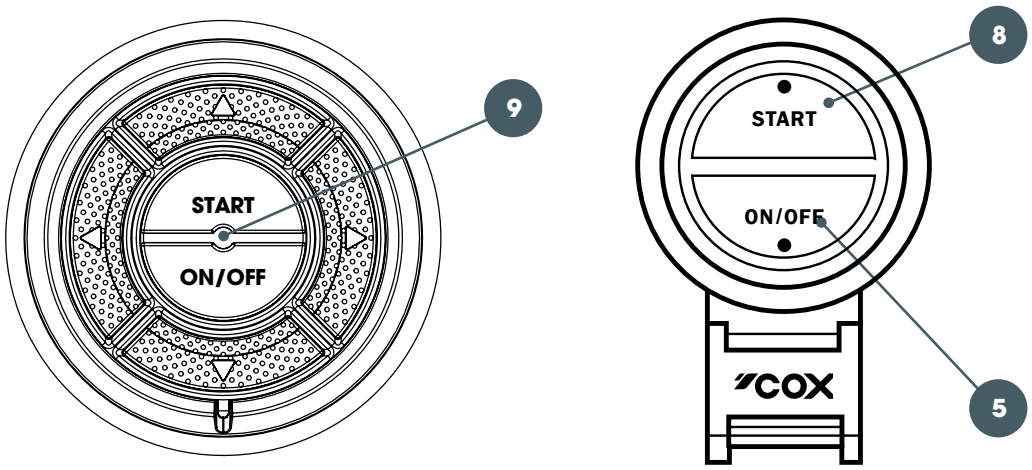


Figure: Starting a single outboard using a master fob

1. Carry out all pre-start checks in section 5.2.
2. Turn your battery switch to the ON position.
3. Place the throttle lever into the neutral position.
4. Check your vessel and surroundings for any hazards, clear any personnel in the vicinity of your outboard, then tilt your outboard into the water until nominally at zero trim.
5. Press and release the ON/OFF button **(5)** on a paired master fob. The LED on the fob will flash green 5 times quickly to indicate ignition is on. The control panel's LED will also light orange to indicate ignition is on.
6. Check for any warning alarms or notifications on the helm screen and action accordingly.
7. Ensure the fuel system is primed by running the fuel lift pump for at least 10 seconds prior to starting your outboard, or longer if one or more fuel filters or lines have been changed or connected since the last start.
8. Press and hold the Start button **(8)** to send a start signal to the outboard.
9. After starting the outboard, check that the control panel LED **(9)** is solid green, indicating that MOB protection functionality is active.

5.3.2 KEYLESS IDENTIFICATION

Your wireless fob provides identification so that PIN entry into the control panel is not required. Pressing any button on the fob will activate identification for 15 minutes and arriving at your boat during this time will automatically unlock the control panel.

When ignition is turned off, the control panel will remain unlocked for 2 hours as long as a paired wireless fob is within range. If you move out of range during this time, the control panel will lock but fob identification will remain active for 15 minutes, unlocking the panel automatically if you move within range again.

5.3.3 POST START CHECKS

After starting your outboard(s) and prior to heading out, check for any fuel leaks between tank and outboard(s) and check that all fuel hoses are intact, securely attached and clamped.

Check the helm display for warning alarms and visually inspect the outboard(s) and rigging for normal operation. Check that the control panel LED is lit green to indicate MOB protection is active and your master fob is linked. Refer to section 5.2.1 for instructions on activating MOB protection if it is inactive.

Cooling water tell-tale streams must be visible from the front of each outboard. If tell-tale streams are not visible within 30 seconds of starting your outboard(s), there may be a blockage or other cooling system issue. Operating in this state could cause the outboard(s) to overheat and the control system to take protective measures, including limiting performance or shutting down.

⚠ CAUTION

Do not operate your outboard(s) or leave port if tell-tale streams are not clearly visible.

5.4 SHUTTING DOWN THE OUTBOARD(S)

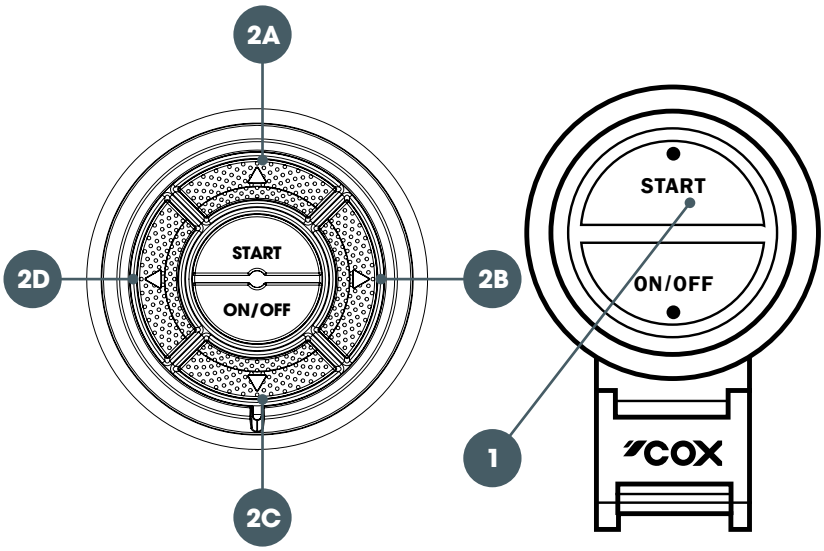


Figure: Shutting down one or more outboards

Ensure your outboard(s) run for 2-5 minutes at idle to cool down prior to shutting off, especially after hard running. This keeps water moving through the cooling passages while the internals cool down and helps to prevent localized build-up of salt and other contaminants, which can lead to performance degradation and damage or failure over time. Bringing your powerhead and turbochargers back to low temperature slowly is critical to their durability.

To shut down all outboard(s) using a master fob, press and hold the Start button **(1)** for 2 seconds. The ignition signal will be turned off, stopping all installed outboards. The green LED on the control panel will extinguish indicating that MOB protection has been deactivated.

To stop one or more outboards individually, press and hold the corresponding arrow key **(2a to 2d)** on the control panel for 2 seconds. The corresponding outboard, or outboard group, will be stopped.

Once shut down, follow the post-use flushing procedure in section 5.10 prior to tilting your outboard(s) out of water.

⚠ WARNING
Shutting down soon after hard running can cause significant damage to your outboard(s).

5.5 EARLY USE BREAK-IN

Each CXO300 diesel outboard follows a run-in process prior to being shipped from the factory. Nevertheless, Cox Powertrain recommends to limit load during a break-in period of 10 hours of operation, as well as limiting or avoiding periods of extended idle where possible.

Following this process will ensure full performance and longevity is realized.

During the break-in period, adhere to the following guidelines:

1. For the first hour of operation, safe boating conditions permitting, do not exceed half control lever travel.
2. For the second hour of operation, safe boating conditions permitting, do not exceed ¾ control lever travel.
3. For the remaining of the first 10 hours, avoid running the outboard(s) at maximum power for longer than 5 minutes at a time or idling the outboard(s) for more than 5 minutes at a time.

⚠ NOTE

The above break-in guidelines may be ignored in the event of emergency or risk to safety.

Overly aggressive outboard operation during the first 10 hours can affect the longevity and performance potential of your outboard(s) and may cause damage which could invalidate your warranty.

5.6 WARM UP

Your powerhead is most efficient when within the warm operating temperature range.

When cold, both fuel consumption and mechanical wear are increased significantly and it is important to follow the correct warm-up procedure by limiting powerhead speed and load until the correct temperatures are achieved.

The helm display will show a cold indicator whenever outboard temperature is below warm. Avoid exceeding 50% demand or 2,000rpm while the cold indicator is active.

⚠ CAUTION

Do not exceed 2,000rpm or idle excessively before the cold indicator has extinguished.

⚠ CAUTION

Severe damage to the engine can result by not complying with the engine break-in procedure.

5.7 CONTROLLING TRIM

Figure: Simultaneous outboard trim control

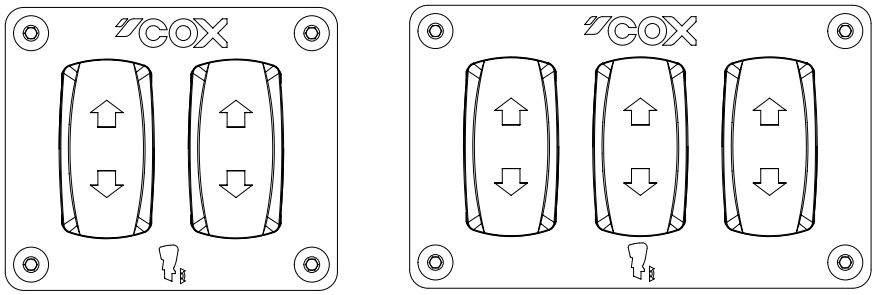


Figure: Individual trim control panels for multiple installs

Trim refers to the angle between your transom and the outboard(s), and by extension the angle of propeller thrust. Trim adjustment is provided to allow safe and efficient boating across varying speeds, vessel loads and water conditions. As the operator, understanding the effects of trim and when and how to make adjustments is key in maintaining vessel stability while optimizing performance and fuel consumption.

Trimming out or UP raises the bow of your vessel. A bow-up attitude improves stability and results in less drag, however if excessive, can result in propeller ventilation or porpoising (hopping through the water), both of which are potentially dangerous.

Trimming in or DOWN lowers the bow of your vessel. A bow-down attitude makes it easier to accelerate onto plane from standstill, but at increased speed can result in the bow ploughing through water, reducing performance and increasing fuel consumption. This can also induce unpredictable bow steering.

To trim all outboards together, use the switch provided on the port-side control lever.

To trim outboards individually in a multiple installation, use the trim panel switch corresponding to the desired outboard.

Take care not to trim any outboard too far out and into the tilt range while running at speed. In this case the control system will limit performance to protect the outboard.

Operating in shallow water

When operating the outboard(s) in shallow water, trim out to reduce risk of grounding. Avoid high speed and load operation under these conditions, always ensure the water inlets are submerged and pay special attention to coolant temperature and any overheating warnings. If the coolant temperature exceeds safe limits, engine protection devices will be activated, which will reduce the engine power and in extreme cases may cause the engine to stop.

⚠ NOTE

Depending on the characteristics of your vessel, particularly length and displacement, trimming the outboards may have little or no effect on the hull attitude.

⚠ CAUTION

Excessive trim can cause your propeller(s) to pierce the water surface and ventilate, causing a sudden loss of thrust and rapid increase in outboard speed. If sustained, this can cause significant damage or lead to failure of your outboard(s).

⚠ WARNING

Excessive trim in or out can lead to vessel instability, difficult or unpredictable steering and increased risk of accident. Slow down and reduce trim if you experience any of these effects.

5.8 MANEUVERING THE VESSEL

5.8.1 GEAR SHIFTING

When shifting gear, the following care points should be adhered to. Failure to adhere to these care points could result in delayed gear shifting, incomplete gear shifting, engine stalling or in extreme cases damage to the outboard.

- When shifting from forwards to reverse, or vice versa, always pause in the neutral position and allow the engine speed to return to idle before shifting into the next required gear.
- Do not shift the outboard in or out of gear unless the engine speed is at idle.
- Do not shift the outboard into reverse gear if the vessel speed is high enough to generate a wake.
- After shifting from neutral into gear, always allow the shift to successfully complete before moving the lever beyond the forward/reverse idle position.

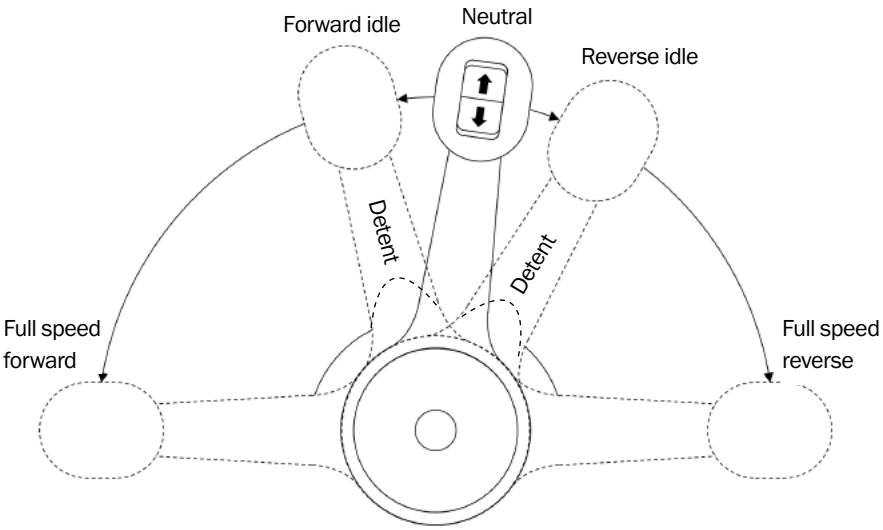


Figure: Control head lever travel and key positions

The control levers move through a range of motion prior to engaging either forward or reverse, which defines neutral, with minimal drive to the propellers. In this neutral range, the outboard(s) speed will not change. Note that drag torque in the transmission will often cause the propellers to turn slowly, even in neutral.

The initial click of the levers into forward or reverse will engage the propeller in the corresponding direction, indicated as Forward idle and Reverse idle in the figure, respectively. The outboard(s) may respond with a slight drop in speed as the load of the propeller is taken up. This is the minimum powered speed available. Engine speed should be allowed to stabilise in this lever position before moving the lever further through its travel, either towards requesting more speed or towards selecting neutral.

Moving the lever further through its travel after engaging forward or reverse will increase outboard speed and the vessel's speed of travel in the corresponding direction, until full speed forward or reverse is reached.

Note that aggressive movement of the control levers can result in significant changes in acceleration or deceleration which pose a risk to any unsecured or unaware occupants. Stay aware of your vessel's passengers and their movements, and always move the control levers smoothly. If it becomes necessary to aggressively accelerate or decelerate your vessel, give prior warning to your passengers onboard.

⚠ WARNING

Operate the vessel defensively at safe speeds, within your limits. In order to keep a safe distance from other vessels, people and objects, avoid sharp or aggressive maneuvers, this might increase the risk of collisions, falling overboard or even loss of vessel control.

⚠ CAUTION

Should the gear shift quality deteriorate, first assess the free play of the propeller and if excessive replace the hub.

5.8.2 TROLL MODE

The control levers feature a troll mode which allows finer control of powerhead speed, intended for low speed Manoeuvring.

Engaging this mode will map the movement of the control lever to a limited range of powerhead speed, so that full lever demand ahead will only command 2000 rpm.

Engaging troll mode will not affect the powerhead speed response to lever movement in reverse.

⚠ NOTE

All control levers must be in the neutral position to activate or deactivate troll mode.

5.9 MANEUVERING THE VESSEL WITH SINGLE AND DUAL INSTALLATIONS

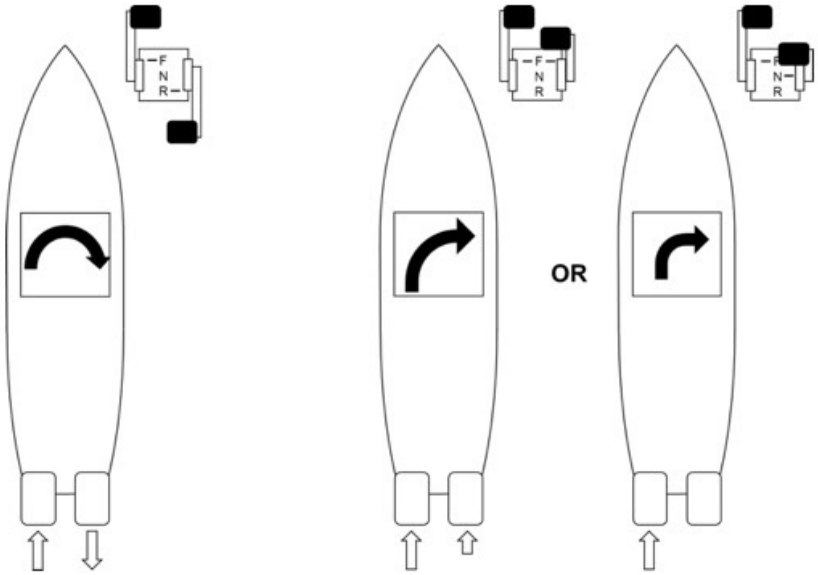


Figure: Using multiple outboards to steer the vessel without turning the wheel

While stationary, you may vary the control lever positions of the outboards in a multiple install to more effectively maneuver your vessel through narrow corridors or in marinas.

Shifting one outboard into forward and the other into reverse can be used to turn the vessel in a tight space.

Shifting both outboards into forward or reverse and then using different speed demands on the levers can be used to steer the vessel without turning the outboards.

5.10 FLUSHING POST-USE

CXO300 collects and pumps raw water through the powerhead and associated systems to keep them cool during operation. Although the water intakes include mesh screens to deflect large foreign objects, flushing thoroughly with clean and fresh water is necessary at the end of each day of operation to wash out any salt or other contamination. Build-up of salt or other contaminants over time can lead to corrosion or clogging of cooling passages and reduced performance.

The exterior surfaces of the outboard(s) should also be rinsed regularly to wash away contaminants and protect against corrosion.

Flushing via flush points

1 Shut down the outboard(s) and identify the preferred flushing point (fore or aft).

2 Remove the corresponding flush plug by turning it counterclockwise and fit a flushing attachment to the flush point.

3 Connect one end of your flush hose securely to the flushing attachment and the other end to the fresh water supply.

4 With the outboard(s) off, turn on the water supply and allow the fresh water to run for 10-15 minutes. Check that water is flowing out from the tell-tales; if the water streams are not visible, check that the flush connectors are correctly attached and the supply hoses are not kinked or leaking. If the issue persists, there may be an internal blockage within the cooling circuit. Contact your Cox Powertrain official dealer for further support.

5 Turn off the water supply and disconnect the flush hose from the flushing attachment.

6 Remove the flushing attachment, then check that the flush plug seal is in place and intact.

7 Reinstall the flush plug by turning it clockwise and hand tighten until secure.

5.0 **OPERATION**

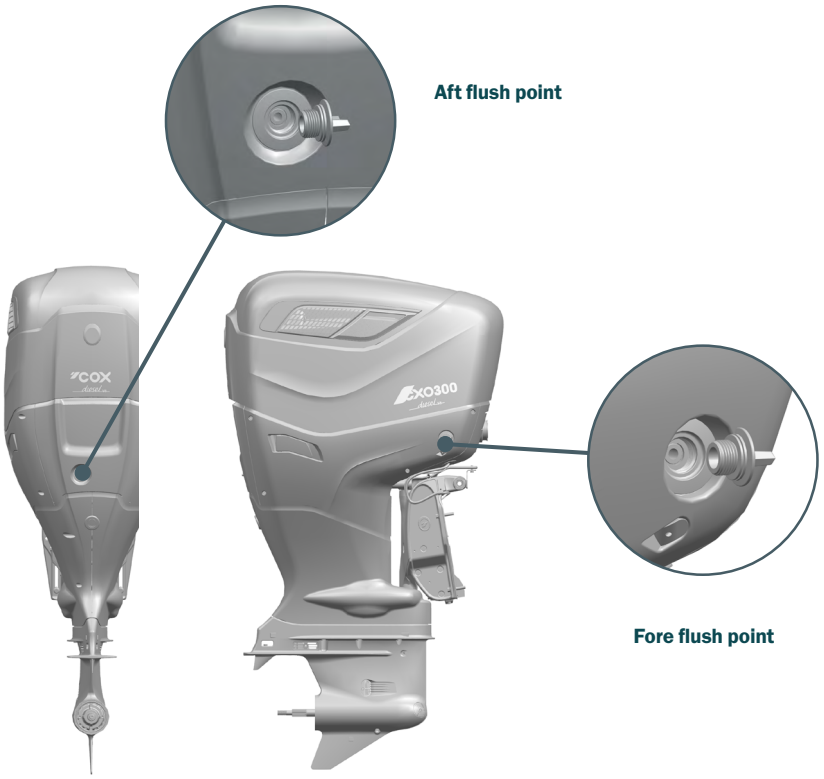


Figure: Locating the flush points

CAUTION

Do not run the powerhead while flushing. Water pump failure and severe outboard damage can result.

CAUTION

Ensure all flush plugs are re-installed and tightened with seals in place prior to operating your outboard(s).

A missing or loose flush plug will result in overheating, limited performance and possible outboard damage or failure.

CAUTION

Your outboard's warranty may be invalidated if damage is caused by the use of flushing additives. Flush with fresh water only.

5.11 TILTING

To tilt the outboard(s) out/up, make sure the ignition switch is in the ON position, then press the top button on the throttle lever to tilt all outboards simultaneously. Alternatively, to tilt each outboard in a multiple install individually, press the arrow UP button on the Trim panel for the corresponding outboard, or outboard groups, or use the outboard's individual tilt-trim switch located on the port-side of the outboard.

To tilt the outboard in/down, make sure the ignition switch is in the ON position, then press DOWN on the throttle lever to tilt all outboards simultaneously. Alternatively, to tilt each outboard in a multiple install individually, press DOWN on the TRIM panel for the corresponding outboard, or using each outboard's port-side tilt-trim switch.

⚠ WARNING

Whenever tilting your outboard(s), ensure the outboard(s) are shut down and the areas ahead of and behind the outboard(s) are well clear, including the stern of the vessel. Keep well away from an outboard if tilting using the outboard-mounted switch and ensure no others are in the vicinity.

5.12 WARNING ALARMS

In the unlikely event of a malfunction, the helm display will issue an audible and visual on-screen alarm. The on-screen alarm includes detail of the malfunction and depending on severity, the outboard may enter into a "Safe Mode", with restrictions on available speed and power.

Alarm Message	Explanation
Engine start request not completed	The control system has received a start request but could not complete it. This may be as a result of the control head not positioned in neutral or the outboard trim is too high.
Engine failed to start - Max start time exceeded	The maximum cranking duration without engine start has been reached and the ECU has stopped the cranking process.
Engine start abort - trim angle too high	The control system has detected that the outboard is beyond the allowable trim range and denied engine start.
Engine shutdown	The control system has detected a serious issue. Shut the outboard down.
Engine start abort - helm lever not in neutral	The control system has detected that the helm control lever is not in the neutral position and denied engine start.
Engine start abort - Transmission not in neutral	The control system has detected that the transmission gear position is not in neutral and denied engine start.
CAN communications error	The ECU has detected a communications error on one of the vessel CAN networks. Depending on severity the ECU may allow normal operation, enter limp-home or shut down the outboard

Alarm Message	Explanation
Limp-home override active	The control system has recorded a limp-home override request an accepted it. Full performance is available at risk of further damage.
Intake throttle error	The control system has detected an issue with the intake throttle and has entered limp-home mode.
RPM limit reached	The crank speed sensor has reported that the RPM limit has been reached. On repeat instances, the ECU may limit performance.
Oil pressure low	An oil pressure temperature sensor is reporting a value below the acceptable range. The ECU is likely to limit performance or enter limp-home mode.
Oil temperature high	The oil temperature sensor is reporting a value above the acceptable range. Depending on severity, the ECU may limit performance or enter limp-home mode.
Powerhead temperature high	One or both of the powerhead temperature sensors are reporting a value above the acceptable range. Depending on severity, the ECU may limit performance or enter limp-home mode.
Coolant temperature high	The coolant temperature sensor is reporting a value above the acceptable range. Depending on severity, the ECU may limit performance or enter limp-home mode.
Battery voltage low	The control system has detected a low battery voltage.
Manifold overpressure	The manifold pressure sensor is reporting a value over target. The ECU is likely to limit performance or enter limp-home mode.
Abnormal fuel pressure	The fuel pressure sensor has reported a value outside the acceptable range. The ECU is likely to limit performance or enter limp-home mode.
Water in fuel	The water-in-fuel sensor has reported a high water level in the water separator. The ECU is likely to limit performance, enter limp-home mode or deny engine start.
Check engine	The control system has detected an error which does not fit into the categories above and further diagnosis is required. The ECU may limit performance, enter limp-home mode or shut the outboard down. Contact an authorized Cox Powertrain dealer for further support.

6.0 **MAINTENANCE**

6.1 MAINTENANCE CHART

	CXO maintenance schedule	Initial	Every		
		50H	**250H**	**500H**	**1000H**
	Item	Or 3 months (whichever comes sooner)	Or once a year (whichever comes sooner)	Or every 2 years (whichever comes sooner)	Or every 4 years (whichever comes sooner)
Powerhead	Powerhead oil and filter E	R	R	–	–
	CCV oil separator E	I	CL	–	–
	Air filter E	I	CL	–	–
	Thermostat E	–	R	–	–
	Timing belt	–	I	–	R
	Valvetrain lash check	–	–	–	I
	Powerhead fuel filter E	–	–	–	R
	Fuel lines low pressure E	I	I	–	–
	Fuel lines high pressure E	I	I	–	R
	Anodes powerhead	–	–	–	R
	Rodding of fuel cooler tubes	CL	CL		
	Turbocharger E		Fit for full 3000 hour life		
	Charge air cooler E	CL	CL		
	Fuel injectors E		Fit for full 3000 hour life		
	Fuel injection pump E		Fit for full 3000 hour life		
Mid	Anode midsection	–	–	R	–
Gearbox	Anode transmission	I	I	R	–
	Waterpump impeller E	–	–	–	I
	Transmission oil	R	R	–	–
	Transmission oil separator	–	–	–	R
	Propeller nut / propeller	I	I	–	–
PTT	Greasing point	G	G	–	–
	PTT operation	I	I	–	–
Cowl	Cowling seals / latches	I	I	–	–
Vessel	Powersteering hydraulic oil	–	–	I	–
	Control cables	I	I	–	–
	Mount bushing	I	I	–	–
	Vessel fuel filter E	–	R	–	–
	Battery terminals	I	I	–	–

I = Inspect* **R**= Replace* **G**= Grease* **CL**=Clean and Inspect* **E** =Emissions related part *As per the service manual

6.0 **MAINTENANCE**

6.2 MAINTENANCE SCHEDULE

To ensure safe and reliable boating for the life of your outboard(s), it is your responsibility to arrange for the proper maintenance at the required intervals for normal operation, and more frequently if your outboard(s) is(are) subject to heavy use or regularly operated in adverse or extreme conditions.

Emissions-related maintenance

Emissions-related maintenance refers to maintenance of those components of the outboard(s) which affect emissions output. These items are identified by a circled E in the maintenance table.

An authorized Cox Powertrain dealer may maintain, replace or repair emissions control devices and systems on your outboard(s). Such replacement component(s) are not limited to those identifiable under any specific brand, trade or corporate name, however should be Cox approved components.

> ⚠ **NOTE**
>
> **Your choice of service or repair shop or person does not in itself affect your product warranty, although Cox Powertrain recommends an authorized Cox Powertrain dealer is chosen. Should you choose not to use an authorized Cox Powertrain dealer, the service or repair shop used must work in line with Cox standards.**
>
> **Maintenance of non-critical emission-related components is not necessary to keep your emission-related warranty valid.**

Non emissions-related maintenance

All maintenance items not indicated as emissions-related are categorized as non emissions-related.

Cox Powertrain provides specific service training to its official dealers along with the most up-to-date product-related information and for this reason recommends that your Cox Powertrain official dealer perform any scheduled maintenance or unscheduled repairs.

Replacement non emissions-related parts must be either Cox genuine spare parts or parts which can be demonstrated by independent test results to match or better the performance of Cox genuine spare parts.

If you are unsure of any of the instructions provided in this manual or which parts to buy, consult your Cox Powertrain official dealer.

⚠ WARNING

Dispose of used oil thoughtfully (see section 1.3.1).

Attempting the maintenance procedures without the required mechanical skills and correct tools will expose you to risk of injury. If you do not have the relevant experience or training or if in doubt, contact an authorized Cox Powertrain dealer to carry out this work.

Heavy use

The intervals listed in the maintenance chart are based on commercial usage and on following the warm-up and shut-down procedures in this manual, including flushing. Commercial usage is defined under the following general guidelines:

- **Maximum 2 hours at full power in any 12 hour period**
- **Maximum 7 hours at 75+% power in any 12 hour period**

For regular usage heavier than the above or in severe conditions, contact an authorized Cox Powertrain dealer for further maintenance advice.

6.3 GREASE POINTS

Certain areas of your outboard(s) require regular application of grease for best performance and longevity. Refer to the maintenance schedule for greasing intervals. Always use a water-resistant marine grade grease. Contact an authorized Cox Powertrain dealer for product recommendations.

Adding grease:

1. Prepare a hand-operated grease gun fitted with an extension hose to suit a standard grease nipple.
2. Tilt the outboard(s) out fully.
3. Engage the tilt locks and tilt the outboard(s) in slightly to bring it to rest on the tilt locks.
4. Fit the extension hose over the grease nipple and inject grease until grease starts to flow out of the bleed hole next to the grease nipple.
5. Remove the extension hose and wipe clean.
6. Tilt the outboard(s) fully up, disengage the tilt locks then tilt the outboard(s) back down

6.0 **MAINTENANCE**

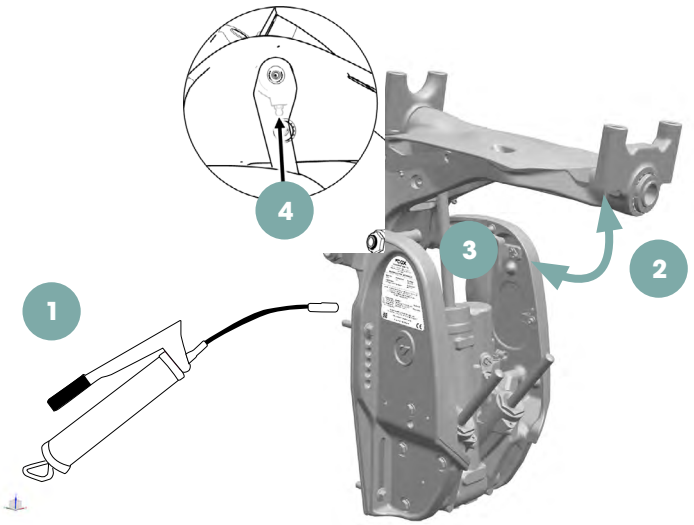


Figure: Grease point on PTT unit

WARNING

Avoid passing underneath the outboard(s) when tilted, even with a locked tilt support in place.

6.4 MAINTENANCE PROCEDURES

6.4.1 COWLINGS

Your outboard(s) is(are) equipped with three upper cowling latches, one on each side and one at the fore panel facing the stern of the vessel. To open the latches, rotate each handle through a 90° sweep to the open position, where the handles face out from the outboard. Lift upward away from the latches to remove the upper cowling.

Make sure all latches are at the open position prior to removing or installing the upper cowling. To close the latches, rotate the handle through a 90° sweep back to the closed position, where the handles are flush with the outboard.

WARNING

Do not operate the outboard(s) if one or more handles are not in the closed position.

Operating the outboard on water without the upper cowling in place could result in death or serious injury.

The upper cowling is heavy (~20 kg/~44lbs) and appropriate lifting precautions must be taken. Plan your lift prior to actioning.

6.4.2 CHECKING THE POWERHEAD OIL LEVEL

To check powerhead oil level, position your outboard trimmed to zero degrees. If cold, allow 5 minutes for the oil level to stabilize. If the outboard has been operated recently and is warm, allow 20 minutes for the oil level to stabilize.

Once the level is stable, extract the oil dipstick and wipe clean using a lint-free cloth.

Re-insert the oil dipstick fully and then extract again.

Inspect the oil level on the dipstick.

- Above upper mark: Partial extraction required. Running with too much oil can degrade performance and emissions and cause damage.
- Between marks: Oil level acceptable.
- Below lower mark: Top-up required. Running with too little oil can cause rapid and severe engine failure.

Re-insert the dipstick and secure.

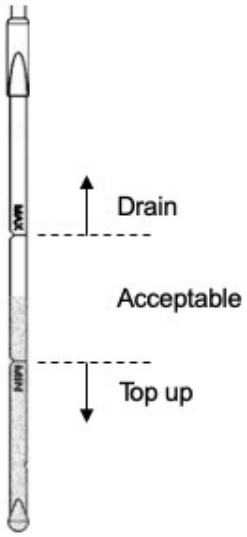


Figure: Reading the powerhead oil dipstick

⚠ NOTE

When topping up or extracting oil, always allow 5 minutes for the level to stabilize before checking again.

Avoid mixing oil grades and types when topping up.

⚠ CAUTION

If your outboard is not vertical, the dipstick indication will be incorrect and you may over or under-fill.

⚠ WARNING

Running the outboard without replacing and securing the dipstick can cause serious damage.

Engine oil or related components may be hot and can cause severe burns.

Running the outboard with oil level below the lower mark or above the upper mark can cause serious damage.

Avoid direct skin contact with oil. Brief contact may cause irritation while prolonged or repeated exposure may lead to skin problems.

6.4.3 CHANGING POWERHEAD OIL

The powerhead oil can be changed either by vacuum extraction with the vessel on-water, or by draining from the leg with the vessel out of water.

⚠ NOTE

The powerhead oil filter should also be changed whenever changing powerhead oil. Dispose of used oil thoughtfully (see section 1.3.1).

⚠ WARNING

Engine oil and related components may be hot and can cause severe burns.

Avoid direct skin contact with oil. Brief contact may cause irritation while prolonged or repeated exposure may lead to skin problems.

6.4.4 CHANGING POWERHEAD OIL BY EXTRACTION ON WATER

1 Position the outboard vertically. If your outboard has been tilted for storage or recently operated, allow 20 minutes for oil to drain into the sump prior to commencing oil change.

2 Remove the upper cowling by opening the latches and lifting upwards.

3 Prepare a reversible extraction pump and one empty reservoir of at least 12L (12.7 US qt) capacity to accept the used oil.

4 Remove the oil dipstick and wipe down with a lint-free cloth, then set aside.

5 Insert the extraction hose fully down the dipstick tube.

6 Activate the extraction pump.

> ⚠ **NOTE**
> **It may take some time for the extraction pump to start visibly moving oil through the hose, especially when the oil is cold and viscous.**

7 Continue running the extraction pump until oil stops moving through the extraction hose and the tone of the pump changes. If the pump has extracted less than 10L (10.6 US qt), check that the extraction hose is fully pushed into the dipstick tube. If necessary, remove the hose, re-insert the dipstick fully then remove again and examine for any residual oil, then wipe clean with a lint-free cloth.

> ⚠ **NOTE**
> **Your outboard(s) may have consumed some of its oil as part of normal operation and the extraction method will always leave a small quantity of oil behind in the sump.**

8 Disconnect and set aside the extracted oil in the used oil reservoir. Dispose of this oil thoughtfully (see section 1.3.1).

9 Remove and replace the oil filter following the procedure in section 6.3.6.

10 Fill a clean container with fresh oil in the same quantity as extracted from your outboard, or 10.5L (11.1 US qt), whichever is higher.

11 Connect the fresh oil container to your extraction pump and ensure the extraction hose is seated through the dipstick tube.

12 Switch the direction of pumping on the extraction pump, so that oil flows into the outboard.

13 Activate the pump and run until all of the oil in the fresh oil container is moved into the outboard.

14 Check the oil level in line with section 6.3.2

15 Once satisfied that the oil level is acceptable per the above criteria, fully insert and secure the dipstick, wipe clean any oil residue in the work area then refit the upper cowling and close the latches.

> ⚠ **WARNING**
> **Running with too little oil can cause rapid and severe powerhead failure.**

6.4.5 CHANGING POWERHEAD OIL BY DRAINING OUT OF WATER

To change the powerhead oil by draining:

1 Position the outboard vertically. If your outboard has been tilted for storage or recently operated, allow 20 minutes for oil to drain into the sump prior to commencing oil change.

> ⚠ **NOTE**
> **Changing powerhead oil by draining can only be done with your vessel out of water or the outboard (s) is not attached to the vessel.**

2 Remove the upper cowling by opening the latches and lifting upwards.

3 Remove the lower cowling by loosening and removing the joining fasteners and then each panel.

4 Prepare an empty reservoir of at least 12L (12.7 US qt) capacity and position to receive used oil drained from the preferred (port or starboard) oil drain plug.

5 Remove the oil dipstick, wipe clean with a lint-free cloth and set aside.

6 Remove the oil drain plug and allow used oil to drain into the empty reservoir.

7 While the used oil is draining, wipe the oil drain plug magnet clean of any metal shavings and replace the seal.

> ⚠ **WARNING**
> **Engine oil and related components may be hot and can cause severe burns.**
>
> **Avoid direct skin contact with oil. Brief contact may cause irritation while prolonged or repeated exposure may lead to skin problems.**

> ⚠ **NOTE**
> **If there is a significant build-up of shavings, or the used gear oil is milky or contains water, take a photo and contact an authorized Cox Powertrain dealer for advice.**

8 Once the used oil has completed draining, remove the second oil drain plug on the opposing side of the outboard, wipe the magnet clean of any metal savings and replace the plug. Have a rag ready for any oil seepage.

9 Refit and tighten both oil drain plugs, ensuring both seals are in place.

10 Remove and replace the oil filter following the procedure in section 6.4.6.

> ⚠ NOTE
> **The oil drain plugs seals must be replaced and the plugs tightened according to specification. Not doing so can lead to oil leaks to the environment and significant damage or failure of your powerhead.**

> ⚠ NOTE
> **Tighten the powerhead oil drain plug to 20 Nm (14.8 lb-ft).**

11 Remove the CCV oil separator lid by depressing the yellow retaining tab and unscrewing the lid counterclockwise by hand.

12 Fit a funnel or oil transfer pump hose securely to the mouth of the dipstick tube.

13 Fill the powerhead through the dipstick tube with a volume of fresh oil equal to the volume removed, or 10.5 L, whichever is less. Confirm there are no leaks from the oil drain plugs while filling.

> ⚠ NOTE
> **Using oil outside of the recommended specification can lead to increased wear and reduced durability and may void your warranty.**

14 Allow 5 minutes for the oil to settle, then remove the funnel or transfer pump hose and use the dipstick to check the oil level as described in section 6.4.2. Top up through the CCV oil separator as necessary until the oil level is acceptable.

15 Once satisfied that the oil level is acceptable per section 6.4.2, fully insert and secure the dipstick and refit the CCV separator lid clockwise by hand. Wipe clean any oil residue in the work area then refit the two lower cowlings and tighten the joining fasteners.

6.4.6 CHANGING THE POWERHEAD OIL FILTER

To change the powerhead oil filter

1. Position the outboard vertically. If your outboard has been tilted for storage or recently operated, allow 5 minutes for oil to drain from the oil filter.
2. Remove the upper cowling by opening the latches and lifting upwards.
3. By hand, or using a removal tool if tight, turn the oil filter cartridge counterclockwise to loosen.

> ⚠ **NOTE**
> **Some oil may leak from the underside of the filter while loosening and removing. Have a lint-free cloth ready and turn the filter cartridge-down as soon as possible.**

4. Prepare a new oil filter and check that a seal is present on the sealing side of the filter.
5. Using the lint-free cloth, wipe a light layer of fresh oil over the seal's face.
6. Start the oil filter on the threaded spigot, then turn until the seal contacts the base. Tighten the filter a further 3/4 to one turn by hand.
7. Wipe clean any oil residue in the work area and refit the upper cowling and close the latches unless performing other work

> ⚠ **NOTE**
> **Cox Powertrain recommends that only Cox approved oil filters are used on the outboard.**

6.4.7 CHANGING TRANSMISSION OIL

The CXO300 transmission contains gear oil which lubricates the internal gears, bearings and shift parts. A full transmission service should be carried out by an authorized Cox Powertrain dealer in accordance with the maintenance schedule. However, it may occasionally be necessary to replace the transmission oil yourself, for instance when preparing for storage.

> ⚠ **NOTE**
> **The transmission oil is drained and filled through the lower oil drain plug. The upper vent plug is designed to indicate the correct fill level only.**

⚠ NOTE

The transmission oil can only be changed with your boat and outboard out of water.

To replace your transmission oil

1. Make sure your outboard is off and the transmission is shifted into neutral, then position your outboard vertically.
2. Prepare an empty reservoir of at least 2.5 L (2.6 US qt) capacity and position it to receive used oil from the drain plug.
3. Remove the vent plug and set aside.
4. Remove the drain plug and set aside. Allow the used oil to drain.

⚠ WARNING

Gear oil and related components may be hot and can cause severe burns.

Avoid direct skin contact with oil. Brief contact may cause irritation while prolonged or repeated exposure may lead to skin problems.

5. While the used oil is draining, clean both vent and drain plug magnets of any metal particles.

⚠ NOTE

If there is a significant build-up of shavings, or the used gear oil is milky or contains water, take a photo and contact an authorized Cox Powertrain dealer for advice.

6. Replace the O-ring seals on both plugs with new items.
7. Once the used oil has finished draining, wipe the transmission casing clean with a lint-free cloth and prepare the container with fresh oil for pumping.

⚠ NOTE

The transmission oil capacity is 2.5L (2.6 US qt).

8. Inject the fresh oil into the drain plug hole while applying upward pressure on the container, until it starts to weep from the vent plug.
9. While continuing to apply upward pressure on the container, fit the vent plug and tighten.

10 Quickly remove the container, reinstall the drain plug and tighten.

> ⚠ **NOTE**
> **Tighten the transmission oil vent plug and drain plug to 15Nm (11 lb-ft).**

11 Wipe the transmission clean using a liquid spray solvent such as brake cleaner and a lint-free cloth.

> ⚠ **WARNING**
> **It is essential to fit new transmission plug o-rings after replacing your transmission oil. Failure to do so can result in water ingress or oil leakage which can quickly lead to failure of the internal parts.**

6.4.8 INSPECTING FUEL SYSTEM

Your installation includes 2 fuel filters per outboard, one filter on the outboard itself and one filter-water separator unit on your vessel. It is important to regularly inspect and drain any water collected in the separator. Inspect the filter housing for leaks. Do not disturb the fuel filters themselves.

> ⚠ **NOTE**
> **The outboard-mounted filter is included as protection from contaminants entering the common-rail system when the outboard and vessel fuel supply are disconnected. The vessel-side filter is primary during normal operation.**

To inspect the fuel system

1 Check all visible sections of fuel hose for cracking or evidence of fuel leakage, especially at their ends and under clamps.

2 Check all fuel line clamps for tightness and correct seating; clamps should sit perpendicular to the direction of hose run and should be located over a section of hose seated on a spigot (hose barb), so that the hose is effectively clamped to the spigot.

3 Check that the bolts securing the filter heads on the outboard and on your vessel are tight and held against the respective mounting brackets.

4 Check that the vessel filter is screwed tightly into the filter head and that there is no evidence of fuel leakage around the threads underneath the filter head.

5 Visually inspect the outboard filter for any leaks around the canister or filter head. Do not physically disturb this filter.

6 Check that the hose fittings (hose barbs) are tight inside the filter heads.

7 Check that all filter drain ports are closed tight.

6.4.9 PURGING FUEL FILTER WATER SEPARATOR

To drain the water separator

1 Ensure your outboard(s) are off and battery power is isolated at the helm.

2 Clear the area around the fuel filter-water separator unit of any ignition sources such as matches, lighters etc.

3 To prevent fuel spillage, place a cloth under the fuel filter-water separator unit and a container of at least 250 ml (8.0 fl oz) capacity on the cloth under the drain port.

4 Open the drain port by twisting it counterclockwise to drain.

5 Water will flow first, then fuel; shut off the drain port by twisting clockwise as soon as you see the flow turn into fuel.

> ⚠ **NOTE**
> **The maximum capacity of the water bowl is 120 ml (4.0 fl oz).**

6 Clean up the work area. Dispose of the container contents and cloth thoughtfully and in accordance with your local laws and regulations. Contact an authorized Cox Powertrain dealer if in doubt.

> ⚠ **NOTE**
> **The above procedure should be repeated for each installed outboard and fuel filter-water separator unit.**

6.4.10 INSPECTING POWER TILT-TRIM AND BRACKETS

The power tilt-trim bracket unit secures the outboard(s) to your vessel and controls the attitude of the outboard(s) while underway. The unit should be inspected regularly for leaks and ensure the mechanisms work correctly.

To inspect the power tilt-trim system

1 Tilt your outboard(s) fully up and engage the tilt locks, then tilt the outboard(s) back down until they are resting on the tilt locks.

2 Standing beside the outboard, visually inspect the central power tilt-trim assembly for leaks, cracks or corrosion. Do not stand or pass underneath the outboard whilst tilted.

3 Standing beside the outboard(s), visually inspect the side brackets for corrosion, especially around the mounting fasteners and washers.

4 Inspect the mounting bolts for tightness and check that the mounting fasteners and washers are seated flat against the brackets. Check also that the brackets sit flush against the vessel transom.

5 Tilt up, disengage the tilt locks, then from the helm, fully tilt-trim your outboard(s) in both directions and check for smooth, continuous movement from the pump motor.

6 Moving beside your outboard(s) and using the outboard-mounted tilt-trim switch, tilt-trim the outboard(s) fully in and listen for smooth pump operation and movement. The motor's pitch will change when moving from tilt to trim. Once fully trimmed in and without moving under the outboard(s), visually inspect the tips of the trim rams for cracking or excessive wear. Tilt-trim your outboard(s) fully out and listen for smooth pump operation and movement.

⚠ WARNING
Do not place any body parts between an outboard(s) and tilt-trim unit and do not pass or stand under an outboard while it is tilted.

6.4.11 INSPECTING BONDING WIRES

Bonding wires are used to electrically connect the metal components, creating a common circuit protected from galvanic corrosion by sacrificial anodes. Electrical continuity through the bond wires is critical for effective protection of all metal components on your outboard(s).

Inspect the bonding wires by checking that each end is securely held by the retaining bolts and is in contact with the metal component, and that the wire's insulation is fully intact.

⚠ NOTE
Removing the PTT sacrificial anode is necessary for visual access to the inner bonding wire bolts.

Contact an authorized Cox Powertrain dealer if you identify any issues.

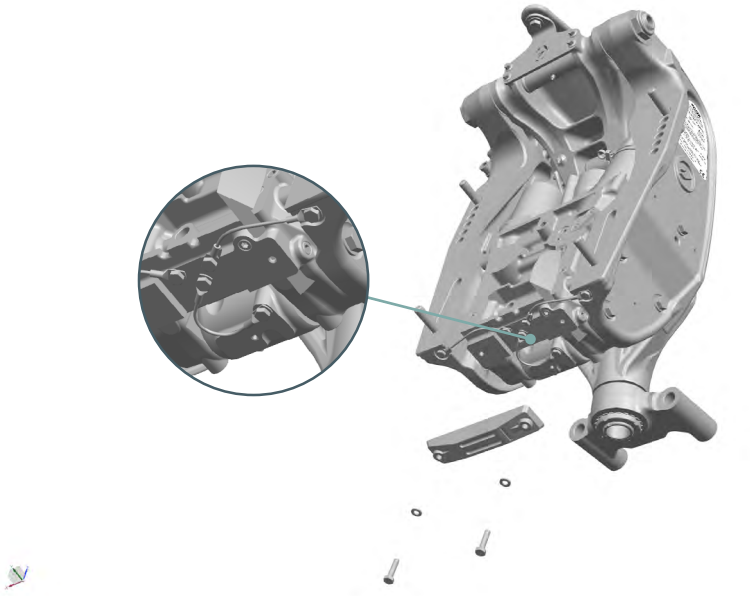


Figure: Accessing bonding wires for inspection

6.4.12 INSPECTING ELECTRICAL WIRING

Your outboard(s) system includes various electronic control systems which rely on robust electrical signals to operate correctly. Issues such as damaged wires, split insulation, corrosion, loose connectors and other damage can cause the outboard(s) to behave erratically with difficulty in correct diagnosis.

Remove the upper cowling and visually inspect the electrical harnesses and wiring regularly for any damage or loose fasteners. If in any doubt contact an authorized Cox Powertrain dealer for further advice.

> ⚠ **NOTE**
>
> **Do not physically push or pull any harnesses or connectors during inspection.**

6.4.13 INSPECTING A BATTERY

Your outboard(s) requires stable battery power to function properly and regular checks and maintenance are important in ensuring the ongoing good condition of your battery. Poor maintenance will accelerate battery deterioration. Refer to the battery manufacturer for detailed maintenance instructions.

Regular checks include the following:

1. Visual inspection for tightness of the battery terminal connectors onto the battery posts. Tighten as necessary with the appropriate tools for the installed connectors.
2. Visual inspection for corrosion on or around the battery terminals for battery terminal grease.
3. Visual inspection for any fluid leaks from the battery. Confirm that any leaks are from the battery itself and not another nearby source. Replace the battery as appropriate.
4. Voltage check on your helm screen with ignition on but your outboard(s) off. This voltage must read at least 12V.
5. Voltage check with your outboard(s) running at idle. This voltage must read between 14 and 15 V.

Contact an authorized Cox Powertrain dealer if in doubt about the results of any of the regular checks.

⚠ WARNING

Battery posts, terminals and related accessories contain lead and lead compounds. Wash hands after handling.

Do not allow flames, sparks or lighted substances near the battery. When working with batteries, make sure there is sufficient ventilation and that appropriate personal protective equipment is worn.

Keep batteries out of reach of children.

Batteries contain Sulphuric acid. Avoid contact with skin, eyes or clothing. If exposed or concerned, flush immediately with water for a minimum of 15 min and get medical advice/attention.

It is illegal to pollute drains, water courses, the sea or soils. Dispose of any used battery in authorized waste facilities.

⚠ CAUTION

Do not reverse the battery cables. This may damage all electrical parts connected to the circuit.

6.4.14 CONNECTING AND DISCONNECTING THE BATTERY

Whenever working with the battery terminals, ensure your outboard(s) is(are) shut down and the helm ignition and battery cut-off switches are in the off position.

The consequences of not following the process to isolate the batteries correctly could cause risk of injury and damage to the vessel's electrical systems.

Single battery install.

When disconnecting battery terminals, always disconnect the positive (+) or red cable first, then disconnect the negative (-) or black cable. Ensure the battery remains isolated whist any maintenance takes place on the outboard.

When reconnecting battery terminals, always connect the positive (+) or red cable first, then connect the negative (-) or black cable. Ensure both connectors are tightened to prevent loosening during operation and that any battery caps are tightly screwed and secure. Check that the battery support is secure to your vessel, including any brackets.

Multiple battery installations

Ensure vessel 'Battery Parallel switch(s)' are switched so the batteries are NOT in parallel.

Ensure for ALL batteries supplying power to the out boards:

When disconnecting battery terminals, always disconnect the positive (+) or red cable first, then disconnect the negative (-) or black cable. Ensure all of the batteries remains isolated whist any maintenance takes place on the outboard(s)

When reconnecting battery terminals, always connect the positive (+) or red cable first, then connect the negative (-) or black cable. Ensure both connectors are tightened to prevent loosening during operation and that any battery caps are tightly screwed and secure. Check that the battery support is secure to your vessel, including any brackets.

6.4.15 FUSES

There are no replaceable fuses in your outboard(s). In the event of any issues not covered by the troubleshooting section of this manual, contact your Cox Powertrain official dealer for advice.

6.4.16 ANODES

Sacrificial anodes are designed in the outboard to protect the metal surfaces from galvanic corrosion. These anodes will deplete during normal operation and must be maintained and replaced in line with the maintenance chart to ensure the outboard is fully protected.

When replacing anodes, consult an authorized Cox Powertrain dealer for the correct type and material.

6.0 **MAINTENANCE**

NOTE
Only use zinc anodes on your outboard(s).

CAUTION
Failing to maintain your anodes can lead to significant damage to outboard components.

CAUTION
Depending on the nature of your local waters and marinas, further anti-corrosion measures may be necessary. Consult your marina manager or an authorized Cox Powertrain dealer for further advice.

6.4.17 REMOVING AND INSTALLING PROPELLERS

WARNING
Propellers have sharp edges by design. Always wear protective gloves when handling a propeller.

WARNING
Never work on a propeller with the outboard running.

Propeller removal

1. Ensure your outboard is shifted into neutral and shut down with battery power isolated.
2. Straighten any bent tabs on the propeller nut retaining ring, if fitted.
3. Hold a block of wood between the underside of the anti-ventilation plate and propeller to stop the propeller from turning counterclockwise. Loosen the propeller retaining nut, then remove the wood block.
4. Remove the retaining nut, propeller and all washers.

Propeller installation

1. Ensure your outboard is shifted into neutral.
2. Inspect the propeller spline for excessive wear or damage. If in doubt or if any wear or damage is found, contact your Cox Powertrain official dealer for assistance.
3. Check that the specified rubber hub is fitted to your propeller and that the hub and spline is free of cracks or other damage. Replace as necessary.

CAUTION
Cox only recommend the use of the Quicksilver FLO-TORQ SSR HD (8M0101603) hub. Failure to comply with this may lead to adverse gear shifting and increased vibrations which may be damaging to the transmission and engine.

The hub should be fitted in line with the installation instructions and shimmed if required to ensure the propeller nut acts on the hub not the propeller.

4 Apply a light coat of marine grease to the propeller shaft spline.

5 Fit the forward thrust washer, if used. Ensure the orientation is correct in accordance with the hub supplier's guidelines.

6 Fit the propeller. Check that the forward bore of the propeller is inside the transmission and that the radial gap is minimal. A gap may result in exhaust gases ventilating the propeller leading to a significant loss of thrust. If in doubt, contact your Cox Powertrain official dealer for assistance.

7 Fit any washers and the propeller nut retaining ring, if used. Ensure the order and orientation of fitment is correct in accordance with the hub supplier's guidelines.

8 Hand start the propeller nut on the propeller shaft thread and turn by hand until seated against the retaining ring.

> **⚠ CAUTION**
> **Tightness in the movement of the retaining nut over the propeller shaft thread may indicate thread damage and increased risk of loosening during operation. Contact your Cox Powertrain official dealer if in doubt.**

9 Hold a block of wood between the underside of the anti-ventilation plate and propeller to stop the propeller from turning clockwise. Tighten the propeller retaining nut, then remove the wood block.

> **⚠ NOTE**
> **Tighten the propeller nut to 75 Nm (55.3 lb-ft).**

10 Visually inspect the propeller and hub parts for correct seating. With protective gloves on, turn the propeller over and check for smooth movement.

7.0 **STORAGE**

7.1 PREPARING FOR STORAGE

The main purpose for hibernating your outboard(s) is to protect it from the elements whilst not in use.

When intending to store your outboard(s) for one month or longer, it is important to prepare correctly in order to avoid potential degradation and damage during the period of storage. Cox Powertrain recommends that an authorized Cox Powertrain dealer prepares your outboard(s) for storage. If choosing to prepare for storage yourself, the following precautions should be taken to minimize the risks.

1. Visually inspect the outboard(s) for paint damage, such as scratches and chips. The outboard(s) should be out of water and you must check the transmission casing, mounting brackets, the cowlings and any other external surfaces. Any areas with reduced paint protection can corrode quickly during storage and should be treated. Contact an authorized Cox Powertrain dealer for advice and product suggestions if you find areas of concern.

2. Wash the exterior of your outboard(s) using a marine cleaning product and sponge, in order to clear away any salt deposits. Do not use a high-pressure jet washer. Once clean, rinse with fresh water and wipe dry with a chamois.

3. Flush your outboard(s) with fresh water and allow to drain completely by positioning vertically for at least 10-15 minutes. It is important to wash all corrosive salt water and deposits out of the internal passages and also to avoid any water, salt or fresh, remaining in the outboard(s) for the period of storage, which can freeze-thaw and cause significant internal damage.

4. Drain accumulated water from the vessel-side fuel-water separator following the procedure in this manual. Freeze-thaw of the water can cause damage to the fuel filter-water separator unit over the period of storage.

5. Change your powerhead and transmission oils by following the procedures in this manual. Accumulated moisture inside your used oils can cause damaging internal corrosion over the period of storage.

6. If storing in tilt, fit a support bracket and retract your trim rams by using the controls to trim fully in. This minimizes the exposure of the rams to the environment.

7. Disconnect your battery and follow the battery manufacturer's instructions for storage.

8. Remove your propeller and store separately. Coat the exposed propeller shaft with a marine rust preventative product. Contact an authorized Cox Powertrain dealer for advice and recommendations.

9. Identify and follow any storage instructions for other components in your installation such as your steering and controls gear, other electronic components, any bilge pumps etc.

⚠ NOTE

Your outboard should be stored in an environment with good ventilation, preferably away from salty air.

If storing with the vessel on-water, the outboard(s) should be tilted as far as possible so that the transmission clears the waterline.

If storing out of water, the preferred orientation for storage is vertical, so that any water or moisture build-up can drain naturally.

7.2 BRINGING OUT OF STORAGE

When intending to bring your outboard(s) out of storage after a period of one month or longer, the following precautions will return it to operating condition.

1. Inspect the exterior of your outboard(s) for any obvious damage or degradation, including corrosion. Contact an authorized Cox Powertrain dealer if any areas of concern are identified.
2. Inspect the fuel system lines and correct any issues prior to attempting to operate your outboard(s). Confirm that the water separator drains are closed and tight.
3. Lubricate all lubrication points with marine grease.
4. Check the levels of powerhead and transmission oils and top-up as necessary. Visually inspect the powerhead while the top cowling is removed.
5. Note the age of any diesel fuel stored in your vessel. Diesel fuel has a typical storage life of 6-12 months, which includes any time prior to storage of your outboard(s), and it may be necessary to drain and fill with fresh diesel following a long period of storage.
6. Check the state of charge on your battery, then if acceptable, connect the positive terminal first, then the negative terminal.
7. If using a tilt support bracket, remove it and bring your outboard(s) to the vertical position.
8. Apply marine grease to the propeller shaft splines, then reinstall the propeller.
9. Identify and follow any instructions for other components in your installation such as your steering and controls gear, other electronic components, any bilge pumps etc.

7.3 TRAILERING

When transporting your outboard(s) by trailer, be conscious of any bumps or shocks in the road which can disturb various components in your outboard(s). Your outboard(s) should always be positioned to eliminate the risk of impact with the road surface while considering speed humps, ramps, driveways, the trailer's suspension movement and so on. The tilt-trim system and lock is not designed for unassisted transport unless the outboard is in a vertical position. Should the outboard(s) need to be transported in any other position, further support brackets will be required to minimize the risk of damage.

If a propeller is attached to the outboard(s) Cox Powertrain recommends a high vis propeller cover is placed over the prop to ensure it is visible to other road users and minimizes risk of injury.

1. If positioned nominally upright (vertical), your outboard(s) can be transported without further support brackets. This is only possible if the trailer has sufficient ground clearance to prevent impact with the road surface.

2. If positioned in tilt, your outboard(s) requires a separate tilt support bracket. The tilt support designed into the tilt-trim unit is not suitable for sole support during trailering. Contact an authorized Cox Powertrain dealer for further advice.

7.4 OTHER TRANSPORT

For advice on transporting your outboard(s) by methods other than trailering, contact an authorized Cox Powertrain dealer.

8.0 **TROUBLESHOOTING**

8.1 TROUBLESHOOTING

In the event you experience issues with your outboard(s), consult the troubleshooting table (pages 52-53) for suggested solutions.

For any issues not covered by the possible causes or if the suggested solutions do not correct the issue, contact an authorized Cox Powertrain dealer.

8.2 IMMEDIATE ACTION IN AN EMERGENCY

In the event of a boating emergency such as an object strike which affects your outboard(s), follow the steps below:

1. Shut down the affected outboard(s) immediately.
2. Assess the situation and contact your local authorities for help if necessary.
3. When ready, inspect the helm controls, the affected outboard(s) and your vessel for any damage.
4. Return to port slowly and be mindful of potentially reduced maneuverability or changed vessel dynamics.

8.0 **TROUBLESHOOTING**

Problem	Possible cause	Possible solution
Powerhead doesn't crank	Kill switch active	Install kill switch clip
	Electronic key fob not in range	Bring fob into range, replace fob battery if low
	Control levers not in neutral position	Move levers to neutral position
	Transmission gear not in neutral position	Manual shift back to neutral required
	Outboard(s) outside trim range	Trim in until outboard(s) is(are) vertical
	Communications error	Visually inspect helm equipment wiring, check outboard(s) umbilical is intact
	Low battery voltage	Check voltage and replace if necessary, check battery cables and terminals
	Poor battery terminal connections	Tighten battery cables and clean battery terminals
Powerhead cranks but doesn't start	Poor quality or degraded fuel	Drain fuel tank then fill with fresh fuel to specification
	Fuel tank nearing empty	Fill tank with fresh fuel to specification
	Fuel system low pressure or flow	Inspect fuel lines and clamps, check operation of lift pump, inspect fuel filters
	Fuel line not primed	Prime the fuel lines by running the in-tank pump
	Air inlet blockage	Inspect air filters, inspect upper cowling air passages
	Low battery voltage	Check voltage and replace if necessary, check battery cables and terminals
	Water separator full	Drain the water separator
Powerhead starts but will not shift	Throttle only mode engaged	Exit the throttle only mode on the helm lever
	Low battery voltage	Check voltage and replace if necessary, check battery cables and terminals
Powerhead stalls or idles roughly	Fuel system low pressure or flow	Inspect fuel lines and clamps, check operation of lift pump, inspect fuel filters
	Poor quality or degraded fuel	Drain fuel tank then fill with fresh fuel to specification
	Air inlet blockage	Inspect air filters, inspect upper cowling air passages
	Water separator full	Drain the water separator
Powerhead operates erratically	Fuel system low pressure or flow	Inspect fuel lines and clamps, check operation of lift pump, inspect fuel filters
	Fuel tank nearing empty	Fill tank with fresh fuel to specification
	Fuel tank vent partially obstructed	Check fuel tank vent for any obstructions and clear

Problem	Possible cause	Possible solution
Powerhead operates erratically	Water separator full	Drain the water separator
	Poor quality or degraded fuel	Drain fuel tank then fill with fresh fuel to specification
	Poor electrical connections	Check outboard(s) umbilical is intact, inspect outboard(s) and vessel wiring
	Low battery voltage	Check voltage and replace if necessary, check battery cables and terminals
Low or degraded performance	Poorly matched propeller	Contact your Cox Powertrain official dealer for propeller matching advice
	Damaged propeller	Inspect for blade wear and replace the propeller if necessary
	Biofouling	Inspect transmission, propeller and hull for biological build-up and clean as necessary
	Powerhead overheating	Inspect the water inlets for blockages, check the mounting height of the outboard(s) keeps the inlets underwater at speed
	Air inlet blockage	Inspect air filters, inspect upper cowling air passages
	Low battery voltage	Check voltage and replace if necessary, check battery cables and terminals
	Fuel system low pressure or flow	Inspect fuel lines and clamps, check operation of lift pump, inspect fuel filters
	Poor quality or degraded fuel	Drain fuel tank then fill with fresh fuel to specification
Outboard vibrates excessively in neutral	Air inlet blockage	Inspect air filters, inspect upper cowling air passages
	Fuel system low pressure or flow	Inspect fuel lines and clamps, check operation of lift pump, inspect fuel filters
	Fuel tank nearing empty	Fill tank with fresh fuel to specification
	Fuel tank vent partially obstructed	Check fuel tank vent for any obstructions and clear
	Water separator full	Drain the water separator
Outboard vibrates excessively in forward or reverse	Air inlet blockage	Inspect air filters, inspect upper cowling air passages
	Damaged propeller	Inspect propeller for damage or tangled foreign material, replace the propeller if necessary
	Loose mounting bolts	Inspect the mounting bolts at the transom and tighten if necessary
Alarm is displayed	Electronic control system has detected an abnormal condition	Consult the table of warning alarms in this manual

8.0 **TROUBLESHOOTING**

8.3 FURTHER SUPPORT

In the event of a failure not covered by this manual or one with which you need further support, contact an authorized Cox Powertrain dealer, which can be found in your warranty documentation, on www.coxmarine.com, or on the Cox online customer portal. This includes any instances where you wish to make a warranty claim.

Please note that the following details will be needed for best assistance:

1. Your name and contact details
2. Your vessel name and identification
3. Your outboard(s) identification number(s)
4. The running hours on your outboard(s)
5. All possible detail regarding the nature of your problems and any troubleshooting carried out to date

9.0 **WARRANTY**

9.1 WARRANTY FOR USA AND CANADA

9.2 IF YOU ARE A RESIDENT LOCATED OUTSIDE THE USA AND CANADA MAINLAND

Please note that outside the USA and Canada mainland some charges may apply, based on local practices which may include taxes, freight, insurance, import duties, etc. which are not covered by Cox Powertrain. Please speak to your local Cox Powertrain distributor or dealer or Cox Powertrain authorized technician for more details.

9.3 IF YOU ARE RESIDENT IN THE USA OR CANADA

Your Cox product is designed to operate on the grades of diesel fuel specified in this manual only. Use of any other fuel may result in your Cox Powertrain product no longer operating in compliance with the Environmental Protection Agency's (EPAs) or California's emissions requirements.

9.3.1 EMISSION CONTROL WARRANTY/CALIFORNIA EMISSION WARRANTY COVERAGE

For full details of the emissions control warranty coverage and for a complete list of the components covered by the Emissions Warranty, please refer to your warranty document. This can be accessed through the online Cox Powertrain customer portal (coxmarine.force.com) or contact an authorized Cox Powertrain dealer for further assistance.

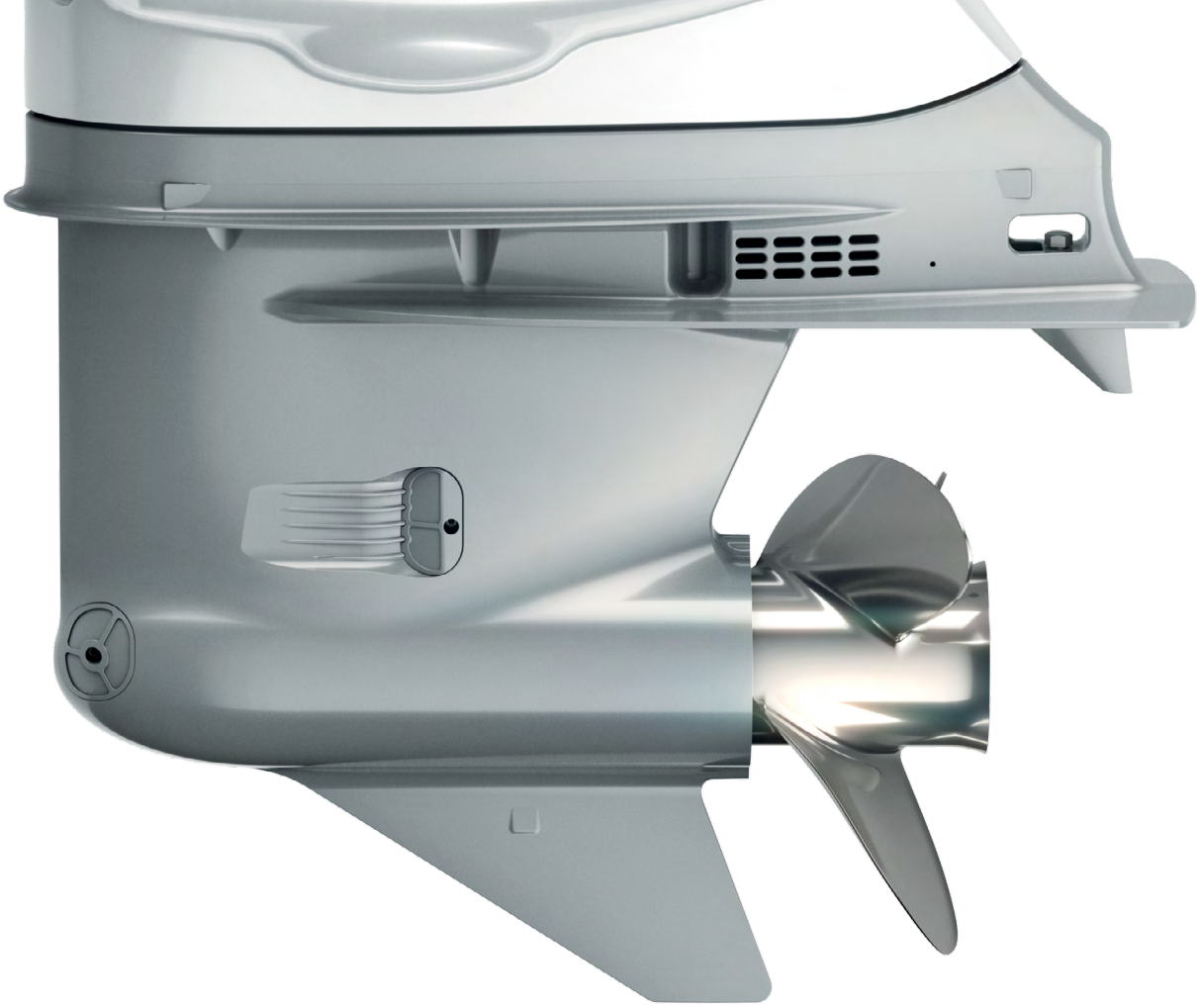
9.4 YOUR RESPONSIBILITIES AND WHAT IS NOT COVERED

In addition to your responsibilities (set out in Section 5 of the warranty document) and exclusions (set out in Section 6 of the warranty document) the Emission Warranty does not cover:

- Any outboard motor(s) which is(are) not originally distributed by Cox in the USA and sold by a Cox distributor or dealer located in the USA and commissioned in the USA.
- Any machine or vessel not operated in the USA.

10.0 **APPENDIX**

10.0 **APPENDIX**



COX POWERTRAIN LIMITED

The Cecil Pashley Building
Unit 8, Cecil Pashley Way
Brighton City Airport
Lancing, West Sussex
BN43 5FF
United Kingdom

+44 (0) 1273 454 424
info@coxpowertrain.com
www.coxmarine.com

V2.14 SEP _2021