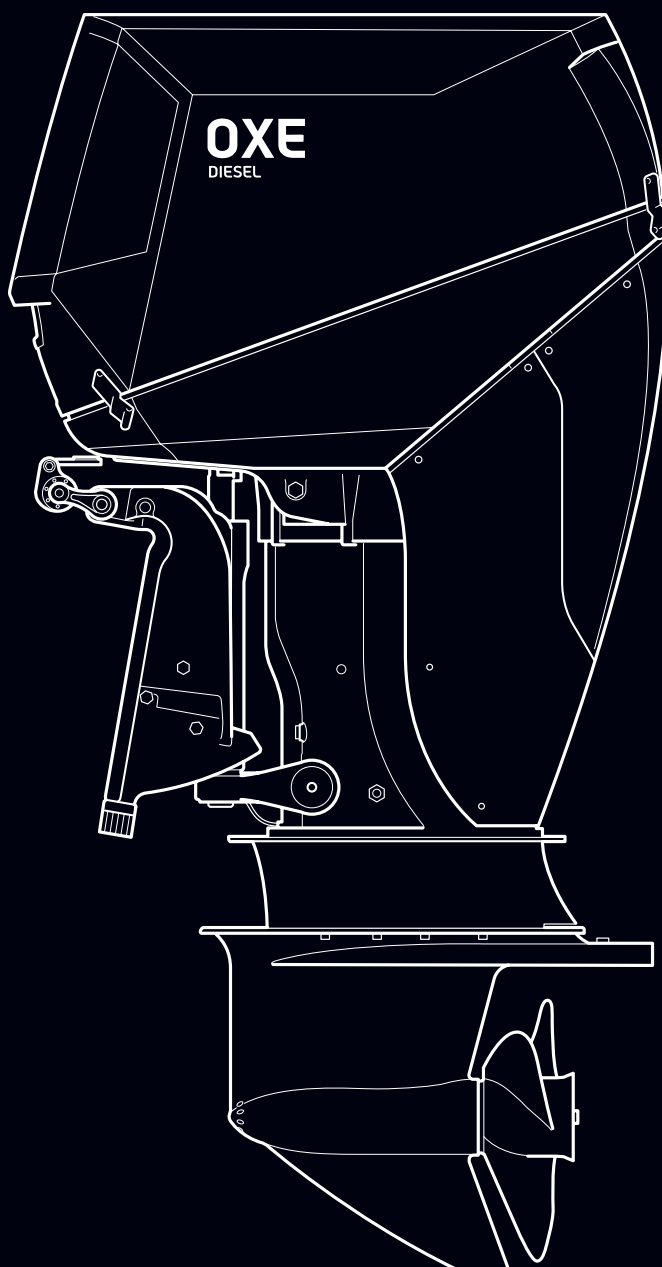


DIESEL ENGINE

TWIN CONTROL HEAD MANUAL



Publication No: ODM1015

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OVERVIEW

ABOUT THIS MANUAL

This manual provides you with the information you need to know about safely operate and maintain your OXE Diesel Control Head. It must remain on the boat.

Specifications and descriptions are subject to change without notice.

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SAFETY INFORMATION

NOTICE TO THE OPERATOR

Throughout this publication, Dangers, Warnings and Cautions (accompanied by the International Hazard Symbol) are used to alert the user to special instructions concerning a particular service or operation that may be hazardous if ignored or performed incorrectly or carelessly. Observe them carefully!

These safety alerts alone cannot eliminate the hazards that they signal. Strict compliance with these special instructions during installation, operation, and maintenance, plus common sense operation, are important measures to prevent accidents.

Failure to adhere to these notices may result in the loss of steering and shift/throttle control, leading to possible ejection from the boat, causing property damage, injury and/or death.

Symbols and signs



DANGER

This indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

This indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

This indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTE! Important information.

SAFETY REGULATIONS



WARNING

The safety information provided below is intended to inform you of the dangers that may be present before, during and after use. It is critical that you read and understand all the points noted.



WARNING

The control head system must only be installed by an authorized dealer or OEM.

Safe operation of the OXE Diesel Control Head depends upon proper installation and maintenance of the system, and the common sense, safe judgment, knowledge, and expertise of the operator. Every installer and operator of the OXE Diesel Control Head should know the following requirements before installing or operating the OXE Diesel Control Head.

If you have any questions regarding any of these warnings, contact your **OXE Diesel retailer**.

To reduce the risk of severe injury or death:

1. Always wear a Coast Guard-approved personal flotation device (PFD) and use an engine shut-off cord (lanyard).
2. Read and understand this User's manual and the Quick Reference Card provided with your vessel control components.
3. **OXE Diesel** components are highly engineered and safety tested to ensure system integrity. DO NOT substitute any component. Substitution with **non-OXE** components may compromise system safety, performance, and reliability.

PRIOR TO EVERY USE

Perform a system inspection as outlined below. See section **Operation** for further details.

1. Check your boat's steering system.
2. Inspect all electrical cables for wear, kinks, or leaks.
3. Check for binding, loose or worn shift/throttle control components.
4. Verify proper shift and throttle response for all control levers.



WARNING

Do not operate boat if any components is not in proper working condition.

DURING USE

1. Wear a Coast Guard-approved personal flotation device (PFD).
2. Attach engine shut-off cord (lanyard) to your PFD.
3. Never allow anyone not familiar with the operation of the boat control system to operate the boat at ANY time.
4. Know and adhere to all applicable federal, state, and municipal laws and regulations that govern boating in your area.



WARNING

Do not operate boat if any components is not in proper working condition.

AFTER USE

No special care is required after using the control head system. Periodically clean the control head with a damp cloth and a mild detergent, if necessary.

MAINTENANCE

Maintain your OXE Diesel Control Head as directed in section **Maintenance** of this manual.

SAFETY LABELS



WARNING

The labels below should call attention to the possible hazards associated with the equipment shown later in this manual.

COMPONENTS LABELS



Figure 1-1. Start-In-Gear Advisory Decal, PID#682050.

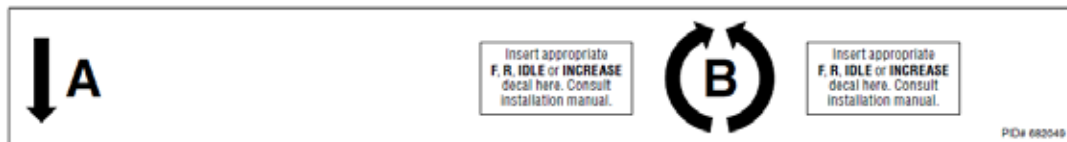


Figure 1-2. A and B Locator Decal, PID# 682049.

OTHER LABELS

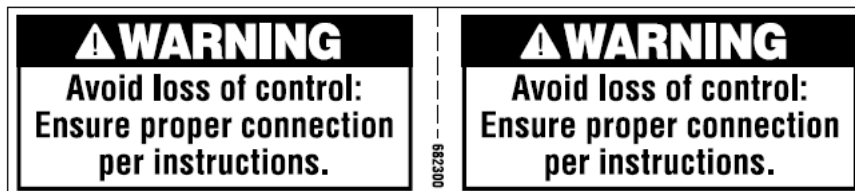


Figure 1-4. Ignition warning decal, PID# 682300.

DESCRIPTION

GENERAL

The OXE Diesel Control Head replaces a traditional cable-operated engine remote control with an electronic control.

The elimination of mechanical cables to the control head simplifies multi-station installations, especially when a station is installed onto a flybridge or tower that is removed for shipping. The system supports the installation of up to two control heads.

NMEA 2000® NETWORK

The NMEA 2000® is a CAN based serial network protocol widely used in marine control systems.

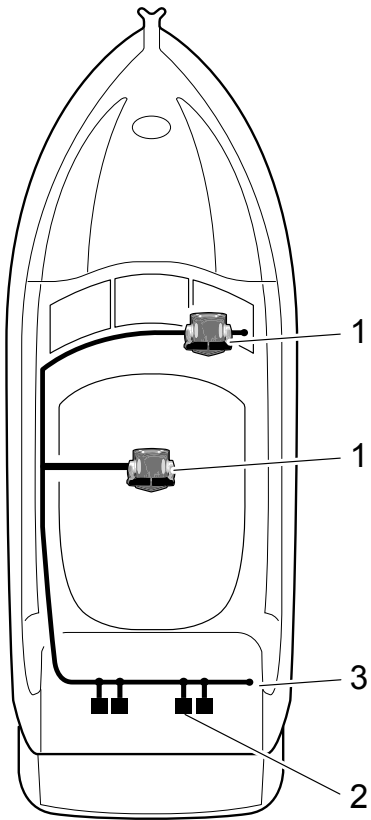
The NMEA 2000® bus contains a backbone connecting all devices, two terminators (at each end of the backbone) that reduces interference, and dropouts to each device.

CONTROL HEAD

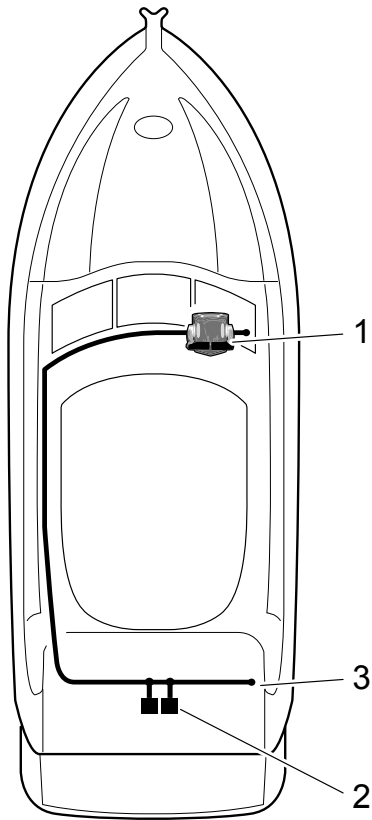
The OXE Diesel Control Head communicates via the NMEA 2000® bus to the engine and features status lights, a synchronous trim switch (optional), and control buttons for additional functions.

CONTROL HEAD OVERVIEW

DUAL STATION/DUAL ENGINE



SINGLE STATION/SINGLE ENGINE



- 1. *Control Head*
- 2. *NMEA 2000® helm connectors*
- 3. *NMEA 2000® Bus*

OPERATION

BEFORE EACH USE



WARNING

Failure to adhere to these warnings may result in loss of boat control, leading to possible ejection from boat; causing property damage, personal injury and/or death.

1. Inspect all electrical harnesses for wear, kinks, or damage.

- Check all electrical harnesses for abrasion, wear, rubbing or chafing. Check that all connections are tight and free of corrosion.

2. Check for binding, loose or worn shift/throttle control components.

- Check all shift and throttle cables and harnesses for signs of wear, damage or chafing. Check that all cables move freely and are not binding or corroded.

3. Verify proper shift and throttle response for all control levers.

- Check that all shift and throttle levers operate freely and cause the engines to shift accordingly. Put the engines in neutral idle mode and confirm that the throttle responds correctly and returns to idle.

4. Verify that no faults or warnings are indicated on the OXE Diesel Control Head.

- Rapidly flashing LEDs on the control head indicate that there is a Warning or Danger fault. See section **Faults and Hazards** for more information.



WARNING

Do not operate boat if any components is not in proper working condition.



WARNING

It is recommended the full system inspection be reviewed on a regular basis to retain familiarity.

FIRST TIME USE

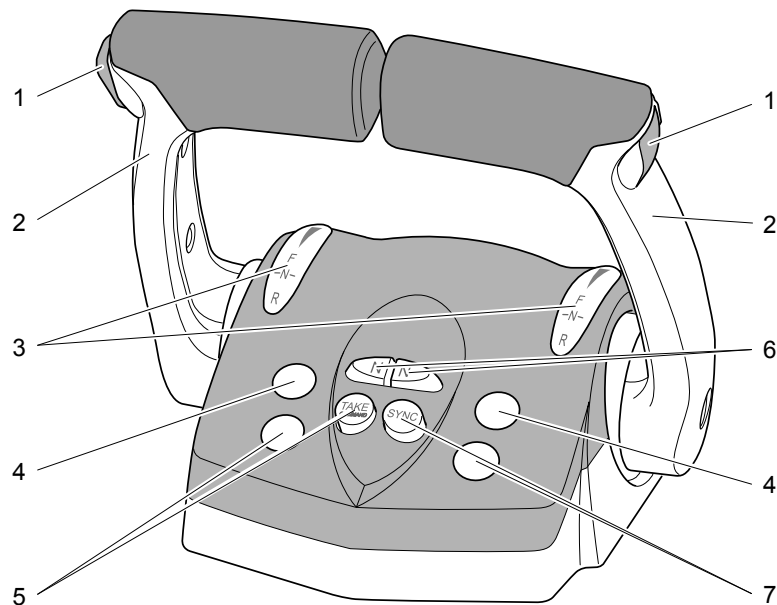
Before starting the outboard(s) for the first time, familiarize yourself with the shift and throttle controls and the features described in this manual. With the outboard(s) and control system off, move the control levers over the full range until you are familiar with the feel.

The lever feel can be adjusted if desired. See section **Lever adjustment**.

DUAL LEVER CONTROL HEAD

The OXE Diesel Control Head engages both gear shifting and acceleration. Depending on single installation or multi installation of outboards, the boat is equipped with a single or twin shift control head. This description comprises a twin shift OXE Diesel Control Head only.

NOTE! If the outboard is started with the lever in either Forward position or Reverse position the gearbox will remain inactive. To activate the gearbox the lever must first be placed in Neutral position.



- 1.** Engine trim controls
- 2.** Control levers
- 3.** Lever position indicators
- 4.** Neutral indicator lamps
- 5.** Take Command button and lamp
- 6.** Neutral buttons
- 7.** Sync button and lamp

CONTROL HEAD OPERATION



WARNING

Be very cautious when first engaging the gears to establish that FORWARD is truly forward and REVERSE is truly reverse. A quick in-and-out of gear test is recommended. Ensure that the boat is clear of all obstacles around the boat before conducting this test.



WARNING

A fast flashing light indicates a non-critical fault which may cause the boat speed to be reduced. The system will continue to operate.

INDICATOR DIMMING FEATURE

When the control head is active, pressing the **Take Command** button (5) repeatedly will cycle through five available indicator brightness levels.

NEUTRAL INDICATOR LAMP

The neutral indicator lamp (4) has four states:

1. Fast flashing - A danger fault is active.



WARNING

Call for assistance, use another controlling device, or use manual override in an emergency.

2. Steady - engine is in neutral.
3. Slow flashing (0.5 s on, 0.5 s off) - **Neutral Throttle Warmup** is engaged.
4. Very slow flashing (1 s on, 2 s off) - **Trolling Mode** is engaged.

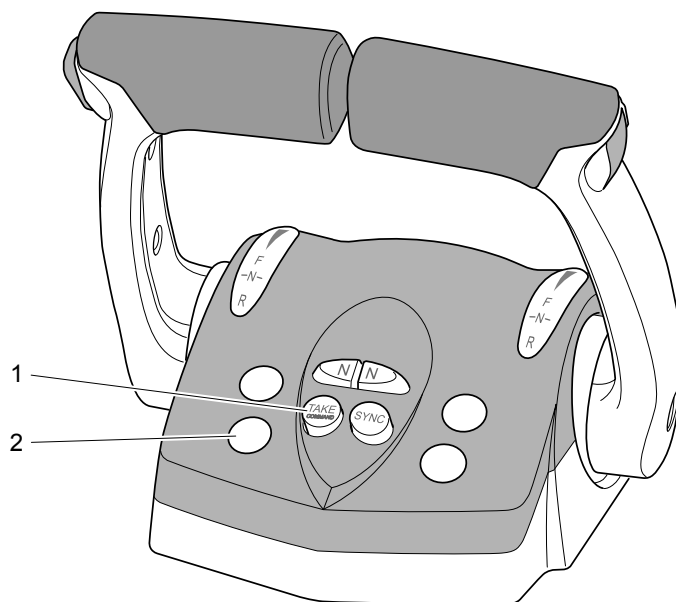
TAKE COMMAND BUTTON AND LAMP

Take command button and lamp is used to activate a control head.

To take command with a control head

- Put control levers in neutral and press **Take Command (1)**.
- The adjacent lamp **(2)** signals the transfer status as follows:
 - Steady - station is active and in control of shift and throttle.
 - Flashing - station transfer from one station to another is underway. You have five seconds to match the control lever positions with those of the active station to complete the transfer.
 - Fast flashing - A warning fault is active. See section **Faults and Hazards**.
 - Lamp off - station is inactive.

NOTE! If the lamp does not come on when you press Take Command, Station Protection may be enabled. See section **Station Selection and Station Select Protection**.



NEUTRAL THROTTLE WARMUP

Neutral Throttle Warmup (NTW) allows you to control engine throttle without gear engagement, so that you can warm up your engine at a higher rpm.

NOTE! Maximum rpm is limited to 2400 rpm.

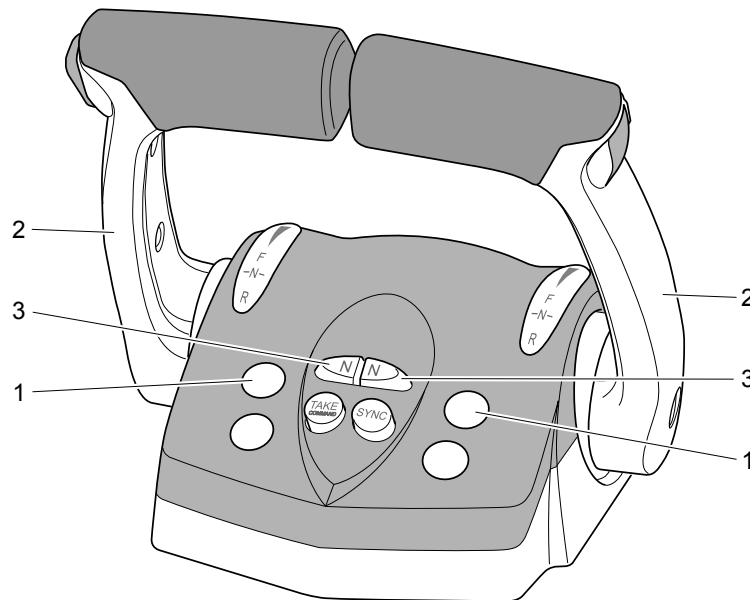
A slow flashing neutral indicator lamp **(1)** tells you that NTW is engaged.

To engage Neutral Throttle Warmup

- Move the control lever **(2)** to the Neutral position. The neutral indicator lamp **(1)** will light steady.
- Press the corresponding **N** button **(3)**. The neutral indicator lamp **(1)** will flash to indicate that NTW is engaged.
- You can now increase throttle and the engine will stay in neutral.

To disengage Neutral Throttle Warmup

- Return the lever **(2)** to the Neutral position.
- Press the corresponding **N** button **(3)**. The lamp **(1)** will light steady. The engine and transmission will now respond normally to lever commands.



LOW SPEED CONTROL

Low Speed Control (LSC) enables unprecedented control while mooring and low speed maneuvering.

LSC incorporates an electro-hydraulically operated clutch that ensures smooth shifting between neutral, forward and reverse.

The sensor controlled propeller speed allows for seamless control from zero to maximum rpm. The boat is fully operable even below 3-4 knots.

TROLLING MODE

Trolling mode (TM) provides greater throttle sensitivity: moving an control lever to full forward will only produce a percentage of wide open throttle. When engaging trolling mode the full throttle range represents 20% of normal throttle range. This enables a higher resolution of the throttle maneuvering thus giving the operator a more precise control in demanding situations.

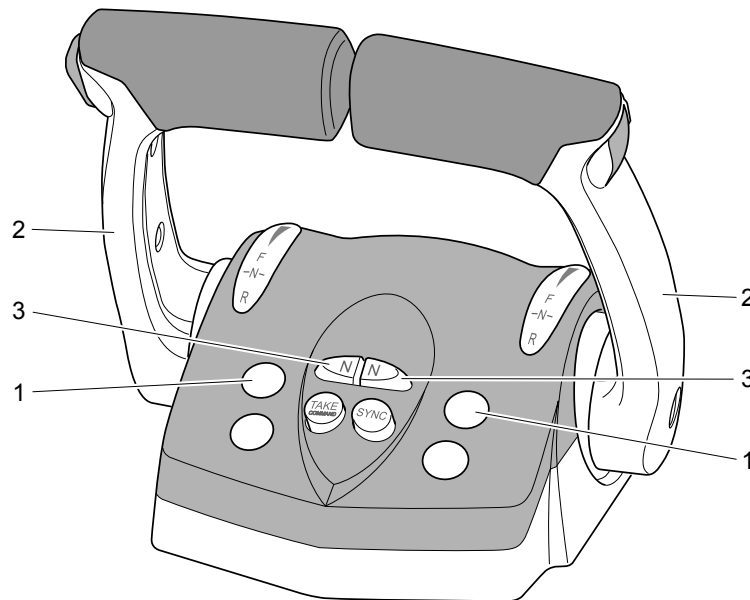
- A very slow flashing (1 s on, 2 s off) neutral indicator lamp **(1)** indicates that TM is engaged.

To engage Trolling Mode

- Move one or both control levers **(2)** to the forward idle or reverse idle positions. The other lever must be in the same position or in neutral.
- Press either **N** button **(3)**. Both lamps **(1)** will flash slowly to indicate that TM is engaged.

To disengage Trolling Mode

- Move both control levers **(2)** to forward idle, reverse idle, or neutral position.
- Press either **N** button **(3)**. The flashing lamps **(1)** will go out to indicate that TM is disengaged.



POWER TRAIN SYNC

Power train sync (PTS) synchronizes engines and transmissions so that the port lever controls shift and throttle of all engines.

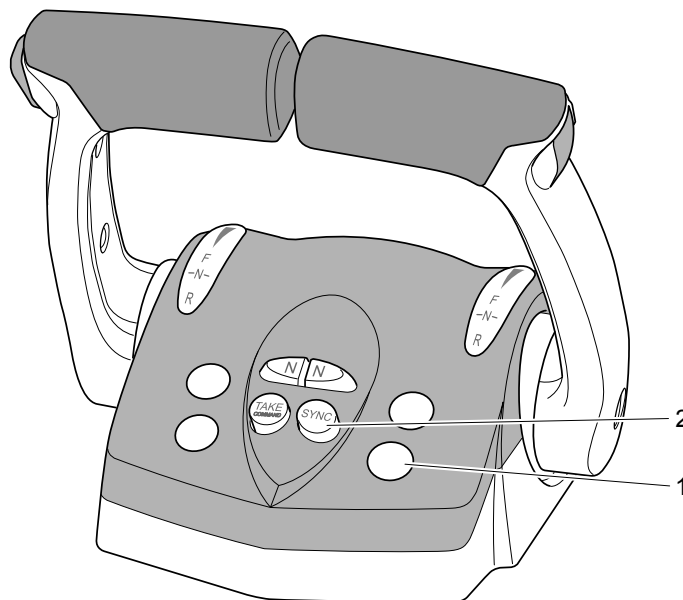
The lamp **(1)** adjacent to the Sync button **(2)** indicates PTS status. A steady lamp means PTS is engaged.

To engage Power Train Sync

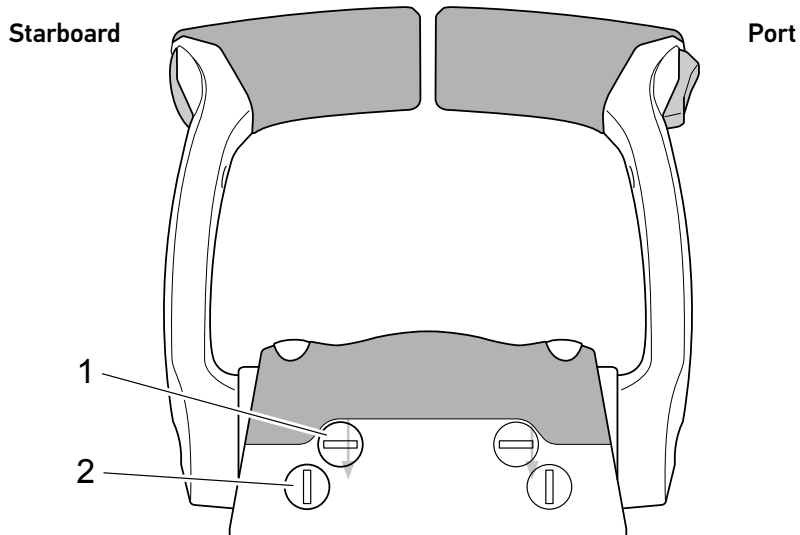
- Press Sync **(2)**. The lamp **(1)** will flash.
- Match control lever positions within 5% of each other. The lamp **(1)** will go steady to indicate that power power trains are in sync.

To disengage Power Train Sync

- Press Sync **(2)**. The lamp **(1)** will flash.
- Match control lever positions within 5% of each other. The lamp **(1)** will go off - PTS is now disengaged.

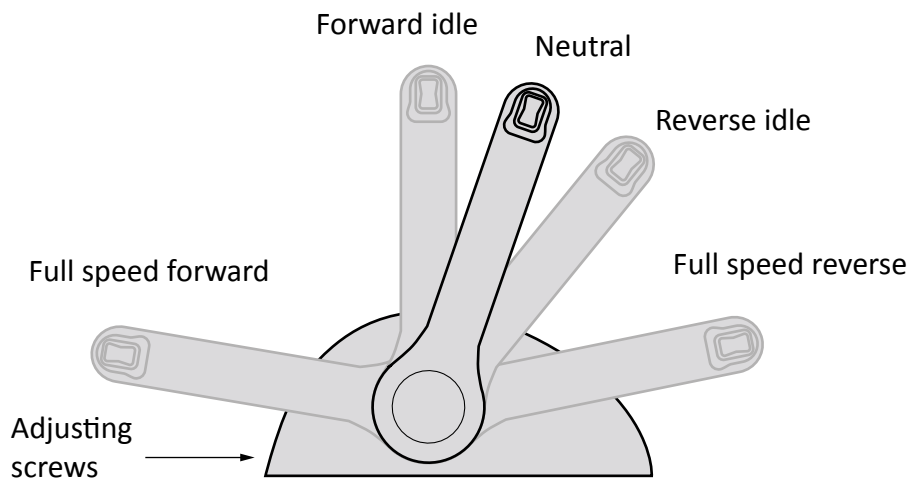


LEVER ADJUSTMENT



The control levers feel can be adjusted by means of adjusting screws on the forward face of the control head.

- The friction drag on the lever is adjusted with the Throttle friction adjuster screws **(2)**.
Turn the screw clockwise to increase the friction on the lever, counter-clockwise to reduce the friction.
- The force required to move in and out of the shift detents is adjusted with the Shift Detent adjuster screws **(1)**. The detents are meant to prevent accidental gear engagement, so bear that in mind as you make adjustments. Clockwise increases force, counter-clockwise decreases.



STATION SELECTION AND STATION SELECT PROTECTION

The way in which you activate a control station depends on whether the Station Select Protection (SSP) feature has been enabled. SSP prevents unauthorized or inadvertent activation of a control head and can only be enabled by an authorized dealer. By default, SSP is not enabled.

SSP Not Enabled (Default)

On single station boats the control head is always active when the ignition is on, but on multi-station boats the control head must be activated. This can be done in two ways:

- The Smart Select feature will automatically activate a control head if the levers are moved out of the neutral position. This feature only works when the ignition is first turned on.
- The OXE Diesel Control Head can be manually activated using the **Take Command** button with the levers in neutral.

An active OXE Diesel Control Head is indicated by an LED lamp: solid.

SSP Enabled

When SSP is enabled there is no automatic activation of control heads. A specific sequence of button presses is always required to activate a OXE Diesel Control Head.

Dual lever control head:

1. Press **Take Command** twice.
 2. Press **N** once.
 3. Press **Take Command** again.
- If the light turns on solid the station is active.
 - If the light flashes, match the lever position with the originally active station and the light will go solid to indicate that the transfer has been completed.



WARNING

Until the blue light is on solid, the original active station retains control of the shift and throttle.

TWO-LEVER SYNC

When enabled on a dual lever control, this feature will synchronize engine speeds on multiple engines when both levers are in forward gear and within 5% throttle of each other.

The feature requires engine rpm feedback (not all boats will be so equipped) and can only be enabled or disabled by an authorized retailer. Contact your retailer to determine if your boat has this feature enabled.

FAULTS AND HAZARDS

Should a fault occur, it will be communicated to the user through the OXE Diesel Control Head LEDs. Texts below define the types of hazards you may experience with the system and how the system will handle each.

NOTE! When a serious fault occurs, consider your options. While the system has many features to allow the boat to return to port in a slow and safe manner, local conditions or operator skills may dictate that calling for assistance is the prudent thing to do.

Hazard definitions



DANGER

A danger fault is a critical system fault which will result in limited or no shift and throttle performance and requires immediate action. Depending on the nature of the fault a variety of conditions might occur all designed to provide the safest situation for returning to port. Some examples are:

- Shift and throttle control may be unavailable for all engines.

Indication

Dual lever control: both neutral indicator lamps will flash quickly (5 times per second) until the levers are moved to neutral. When the levers are in neutral the lamp will flash on the faulted side only.



WARNING

A warning is a non-critical system fault which may cause the boat speed to be reduced.

Although a warning fault may not always adversely affect shift and throttle performance, it is an indication of a problem in the system and should be remedied. In some cases the fault can be reset by cycling the system power, but it may require attention from a certified technician.

Indication

Dual lever control: the Take Command lamp will flash quickly (5 times per second).

MAINTENANCE



WARNING

Following the routine maintenance scheduled outlined below will ensure years of service from your OXE Diesel Control Head. As well as keep you and your passengers safe from the dangers that are present on and off the water.

USER'S RESPONSIBILITY

Prior to every use, refer to section **OPERATION, Before each use**

1. Inspect all electrical cables for wear, kinks, or damage.
2. Check for binding, loose, or worn or shift/throttle control components.
3. Verify proper shift and throttle response at all control levers.
4. Verify that no faults or warnings are shown on the OXE Diesel Control Head.



WARNING

Do not operate boat if any component is not in proper working condition.

QUALIFIED OXE DIESEL MECHANIC

After the first 20 hours, then every 100 hours or 6 months thereafter (whichever comes first).

1. All points noted above.
2. Check tightness of **all** fasteners/fittings throughout the boat control system. Tighten to correct torque specifications as required.
3. Check for mechanical play or slop throughout vessel control system, correct as required.
4. Check for signs of corrosion. If corrosion is present contact your retailer or Cimco Marine AB.
5. Check all electrical harnesses for chafing and wear.

MOUNTING TEMPLATE

NOTE! If you intend to photocopy the following mounting template for use, check ALL measurements using a measuring device prior to using as a template.

