OXE
DIESEL

INSTALLATION MANUAL

DIESEL ENGINE

Publication No: ODM6003B

PREFACE

ABOUT THIS MANUAL

This manual provides you with the information you need to install your OXE300 Series diesel outboard.

When installing the OXE diesel outboard, it is recommended to have access to

- OXE diesel outboard Service Book ODM6006
- OXE diesel outboard User's Manual ODM6005
- Applicable accessory manuals, such as a Control Head and Display Manual.

NOTE

Specifications and descriptions are subject to change without notice.

NOTE

To activate the warranty for your OXE Outboard -you must complete the commissioning documentation at the rear of this manual. Engine that have not been registered with these documents or via the OXE Customer Portal, will not be consider under warranty.

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CONTENT

ACCESSORY BOX

Part numbers	Description	QTY
Box1	**Fuel related components**	
30-0114-444	Pump, External Fuel pump	1
30-0114-458	Fuel pump bracket	1
30-0122-254	Connector for fuel hose	2
30-0122-052	Hose clamp (For the external pump)	6
30-0121-052	Copper washer (Use with 30-0122-254)	2
30-0130-270	Nut M6, Nylock (Use with 30-0114-458.)	1
30-0130-191	Washer M6 (Use with 30-0114-458.)	1
30-0130-292	Bolt M6 x 40 (Use with 30-0114-458)	1
30-0190-011	Loctite 542 (Use to seal and secure fitting when installing to the external pre-filter, external fuel pump.)	1
30-0122-049	Hose clamp	2
Box 2	**Misc**	
30-0140-032	Man overboard switch, kill cord	1
30-0122-246	Cable tie (Use these for installation on Fuel hose)	1
30-0190-909	Water- In- Fuel sensor (WIF) (Use with 30-0190-006)	1
Box 3	**Pre filter Fuel Assembly**	
30-0190-006	Pre filter Fuel Assembly	1
30-0114-523	Pre filter	(1)
30-0114-487	¼" Plug	(1)
30-0114-497	¼" UF to 10mm hose connector	(2)
30-0122-052	Hose clamp	(4)
Box 4	**General Packing**	
30-0140-100	Riggning sleeve (hose) incl. flange	1
30-0190-304	Fuel feed hose 5M	1
30-0190-303	Fuel return hose 5M	1
30-0190-305	Fuel hose, Tank to pre filter 1M	1
30-0116-132	Harness for External Fuel Pump	1
30-0111-170	Upper water intake STB	1
30-0111-162	Upper water intake PORT	1
30-0130-301	Screw	1
30-0130-261	Nut	1
30-0190-042	Flush valve water connector	1
Box 4	**Documentation kit**	
ODM6006	Service Book	1
ODM6005	User Manual	1
30-0160-132	Drill Template	1
30-0300-030	ID Label (Applid into the servicebook)	1
ODM6019	Declaration of conformity	1

Fig. 1 *Accessory box*

RIGGING COMPONANTS AND BLACK BOX CONCEPT

To finalize the installation, the following components must be procured and added to the installation,— A few examples are shown below, but the list is not complete.

OXE offers these accessories both as complete kits mentioned as black box and as individual items. They can be combined with steering systems, jack plates, and various other rigging components.

NOTE The accessories shown are examples of optional components available for purchase. For detailed and up-to-date information on available accessories, please contact OXE sales representative.

Fig. 2 *Rigging components*

Item	Part number	Description
1	30-0116-702	Dual control head
2	30-0116-701	Single control head
3	30-0116-703	Engine display 7 button
	30-0140-801	Engine 3,5 display
	40-0116-001	Engine display 5 touch
	40-0116-003	Engine display 7 touch
4	30-0116-705	Ignitions switch
5	30-0190-933	Battery cable, 5 meters
6	30-0140-080	Micro T- contact
7	30-0116-628	Helm terminator

Harnesses, cables and accessories		
-	30-0116-101	Display connector sealing plug
-	30-01116-625	G4 Helm harness, 5 m
	30-0116-626	G4 Helm harness, 10 m
	30-0116-627	G4 Helm harness, 15 m
-	30-0116-629	Common I/O harness
-	30-0116-630	Display connector
	30-0140-081	Micro terminator female
	30-0160-122	Diagnostic tool interface
	30-0116-006	Usb cable 7" button display

NOTE

Above is a selection of avalible accessories, for a complete selection please see the OXE rigginig catalog or reach out to your sales rep.

WARNING SIGNS AND REGULATIONS

LEVELS OF WARNINGS

Important instructions which concern technical safety and protection of persons are emphasised as shown below.

WARNING

This symbol indicates a potential hazard that could result in minor or moderate injury if not avoided. Always follow the safety instructions associated with this symbol.

DANGER

This symbol indicates an immediate hazard that will result in serious injury or death if not avoided. Extreme caution is required. Always follow all safety measures precisely.

CAUTION

This symbol alerts you to situations that may cause minor injury or equipment damage. Exercise care and follow all instructions to prevent accidents.

NOTE

Important information.

Regulations designed to prevent accidents

Prevent accidents with personal injury and damage to engine

- Prior to installation work, switch off the battery master switch.
- When carrying out maintenance and repair work, ensure that the engine cannot be accidentally started from the bridge by unauthorized personnel
- Installation work may only be performed by authorized and skilled personnel.
- Do not touch hot engine with bare hands. Risk of burns!
- Only work with tools in good condition. Worn spanners/wrenches slip cause danger of injury.
- Do not tighten or undo pipes and hoses under pressure (lubricating oil circuit, coolant circuit and any downstream hydraulic oil circuits). Undoing pressurized hoses can inflict serious injury to the body.
- When working on the electrical system, disconnect the negative cable from the battery first. When reconnecting the battery power cables, reconnect the negative cable last to reduce the risk of electrical damage to personnel and engine.
- Follow the manufacturer's instructions for handling batteries. Battery acid is toxic, caustic and battery gases are explosive.
- Keep area surrounding the outboard, ladders and stairways free from oil and grease. Accidents caused by slipping can have serious consequences.
- Persons must not stand under an engine suspended on a crane hook. Use certified lifting equipment and check for any damage.
- Wear close-fitting working clothes.

- Wear safety work clothes and footwear.
- During installation work, switch off the battery master switch.
- The engine may only be started and operated by authorized personnel.

Prevent accidents with damage to the environment

Engine oil and filter elements/cartridges, fuel/fuel filter

- Dispose of used oil according to local environmental legislation.
- Take strict precautions to ensure that no oil or diesel fuel contaminate soil or drainages.

CAUTION

Risk of contamination of drinking water.

- Filter elements are classed as dangerous waste and must be treated as such.

Coolant

- Treat undiluted anti-corrosion agents and/or antifreeze as hazardous waste.
- When disposing of used coolant, the environmental legislation issued by the relevant local authorities must be adhered to.

Notes on safety in handling used engine oil

Prolonged or repeated contact between the skin and any kind of engine oil dries out and increases the risk of skin-related illnesses such as eczema. Common effects to the exposed skin are dry sensations, irritation and inflammation. Drying, irritation or inflammation of the skin may therefore occur. Used engine oil also contains hazardous substances that have caused skin cancer in tests on animals. If the basic principles of work safety and hygiene are followed, handling used engine oil does not represent a health hazard.

Precautionary measures to protect your health

- Avoid prolonged or repeated skin contact with used engine oil.
- Protect your skin by means of suitable agents (creams etc.) or wear protective gloves.
- Clean skin which has been in contact with engine oil.
  - Wash thoroughly with soap and water. A nail brush provides effective assistance here.
  - Special hand cleaning agents make it easier to clean dirty hands.
  - Do not use gasoline (petrol), diesel fuel, gas oil or solvents as washing agents.
- After washing, apply a rich moisturiser to the skin.
- Change clothing and shoes that are soaked in oil.
- Do no put oily cloths in your pockets.

Ensure that used engine oil is disposed of in appropriate manner. Engine oil is a substance that endangers the water supply.

For this reason do not let engine oil get into the ground, waterways, the drains or the sewers. Violations of local environmental legislation are punishable by law.

Carefully collect and dispose of used engine oil. Information on collection points can be obtained from retailers, the supplier or the local authorities.

TECHNICAL DATA-OXE300

Application	Specification	
	Metric	US units
Engine type	In-line 6-cylinder, Diesel	
Displacement	2993 cc	182.6 cu in
Intake	Bi VGT turbocharged, intercooled	
Max. Power at engine speed 4200 Rpm at propeller	224 kW	300 HP
Max. Engine torque at engine speed at 1750 Rpm, power at crank and at propeller	680 Nm 945 Nm	502 lb ft 670 lb ft
Fuel	Diesel	
Dry weight	430 kg XL 435 kg XXL	947 lbs 959 lbs
Alternator output	180A (During operation 60amp is reserved for the engine operation)	
Rig length	25" (XL) or 33"(XXL)	
Cooling	Closed cooling circuit, heat exchanger/seawater	
Starting	Electric	
Steering	Customisable, hydraulic power steering. For latest validated products contact OXE sales representative	
Shift	CAN-bus, Electronic	
Clutch	Hydraulic multi-friction disc.	
Gear ratio	1.39:1	
Dimensions, L x H x W 25" leg 33" leg	1050×2090×703 mm 1150x 2293x 703 mm	42 ×82×28 in 45,3x90,3x27,7 in
Bore	84 mm	3.3 in
Stroke	90 mm	3.5 in
Compression Ratio	16.5:1	
Idle Speed	720 ±50 rpm	
Firing Order	1-5-3-6-2-4	
Engine height – oil pan to air intake assembly	821 mm	32.2 in
Engine length – seawater filter to heat exchanger	1003 mm	39.4 in

Fig. 3 *Technical data table*

NOTE Above technical spec is valid for OXE300 series only, for other power levels please see individual publications.

FLUIDS AND GREASE

The OXE Diesel outboard is delivered without any fluids and has to be filled up before start-up. Use fluids of quality and volume, listed in the table below.

NOTE

The fuel must meet national and international standards.

NOTE

Only use fuel, lubricants, etc., in accordance with OXE Marine AB regulations. Otherwise, the manufacturer's liability for defects will not apply!

		Quantity	
Fluid	Quality	Metric	US units
Fuel	EN 590 (with national environmental and cold weather standards) ASTM D 975 No. 1 and No. 2 JIS KK 2204 NATO Code F54 and F75	-	-
Engine oil	OXE Engine Oil (300 series) or according to BMW LL - 98(1), LL- 01(1), LL- 04/API SL; API SM (1)	8 litres	8.5 quarts
Gear box and primary transmission oil (2)	OXE Gearbox Oil or Fully Synthetic Dual Clutch Transmission Fluid - DSG/DCT	2.5 litres [1)]	2.6 quarts
Coolant	OXE Coolant 70/30 mixture distilled water. or Frostox - HT12 (**NOTE** Coolant is not brand-specific; however, only HT12-approved coolant must be used. Validated brands include Valvoline, BMW, and Frostox)	10.0 litres	10.6 quarts
Grease	OXE Grease or DIN 51502:KP2.5K-20 ISO 6743: ISO-L-XBCEB2.5	-	-
Power trim and tilt unit, PTT	OXE PTT Oil or FORD WSS- M2C204 -A or according to spec Pentosin or Fuch titan CHF 11s	0.5-0.7 litres	0.52-0.73 quarts
Lower belt oil	OXE Belt Transmission Oil or Fully Synthetic Transmission Fluid - ATF / Dexron HP	2 litres	2.1 quarts

(1) For cold climate, select viscosity according to Section "Engine oil viscosity", page 16, When using the BMW longlife specification it range between LL-98 to LL -04 and any of the three specification may be used.

(2) The lubrication system is combined for the gearbox and the primary transmission.

Fig. 4 *Fluids and grease*

DIESEL FUELS

The composition of the fuel is vital for the operation of the OXE outboard, its service life, and emissions. To meet the performance specified and to run the boat cleanly and quietly, it is important that fuel, as recommended "Fluids and grease".
If national emission regulations permit, OXE Diesel engines can be operated on commercially available diesel fuels with less than 0.05% sulfur content.

Fuel sulfur content	≤0.05% (≤500 ppm)	>0.05%–0.5% (>500–5000 ppm [2])
Engine oil change intervals	200 h or one year	100 h or one year [1]

1) If the sulphur content is higher than 0.05%, the intervals between engine oil changes should be halved or determined by frequent oil sampling.

2) If the sulphur content is higher than 0.1%, an engine lubrication oil with suitable TBN (Total Base Number) shall be used.

WARNING

Do not use fuel with more than 0.5% sulphur content! Using fuel with high sulphur content will increase the outboard´s emission levels and cause excessive wear and a shorter lifetime.

Large differences in composition occur in local fuel specification. This can result in higher fuel consumption, higher emissions, and less power output.

ENGINE OIL VISCOSITY

Choose the appropriate viscosity based on the chart below.
The temperature values indicate consistent ambient temperatures.
As a general recommendation suitable for most markets and applications, OXE suggests using 5W-30 or 10W-40 oil.

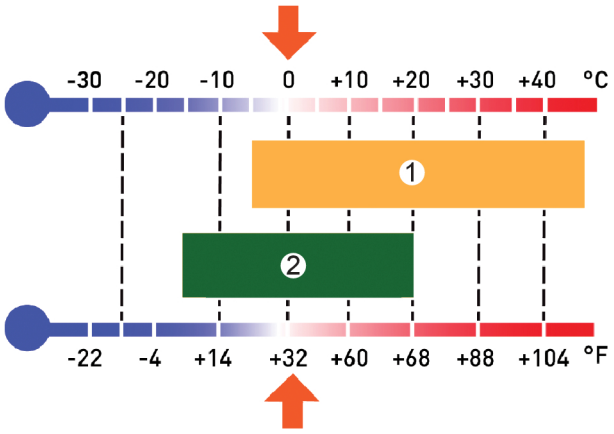


Fig. 5 *Engine oil viscosity*

UNPACKING

Follow the steps below for proper unpacking:

CAUTION

This is a two-person operation. Failure to comply may increase risk of injuries.

1. Carefully transport the box of OXE outboard motors using a pallet jack or forklift. Ensure that the forks are positioned correctly to avoid any damage to the outboard motor.
2. Remove the lid (A) and side parts (B, C) from the crate.

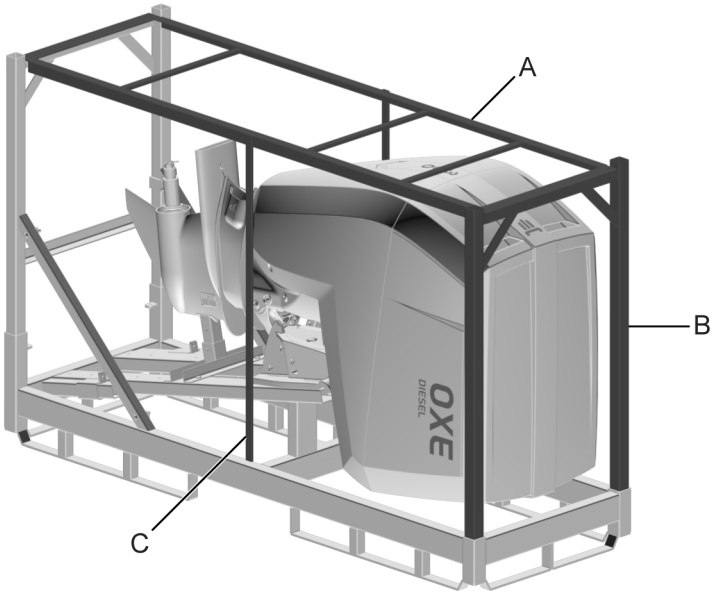


Fig. 6 *Unpacking*

3. Take out and securely store the box containing the installation accessories.
4. Remove and safely store the document folder located on the right side of the engine. These documents are delivered with the OXE outboard and must always be passed on to the next owner!
5. Remove the OXE outboard top cowling and carefully place the cowling on a pallet to prevent scratches or damage ,see inset image Fig 8.

NOTE

Before carefully removing the cowling, make sure the AWMSS feed hose has been disconnected. See inset images Fig 8.

Removing the cowling

WARNING

The AWMSS warning label placed on the cowling, read and disconnect AWMSS hose before remove Cowling, see Figure 6 instructions below.

WARNING

Operating the engine without the AWMSS feed hose connected can lead to severe engine damage and water intrusion to the engine. Failing to connect the hose will void warranty.

Fig. 7 *AWMSS warning label on the cowling*

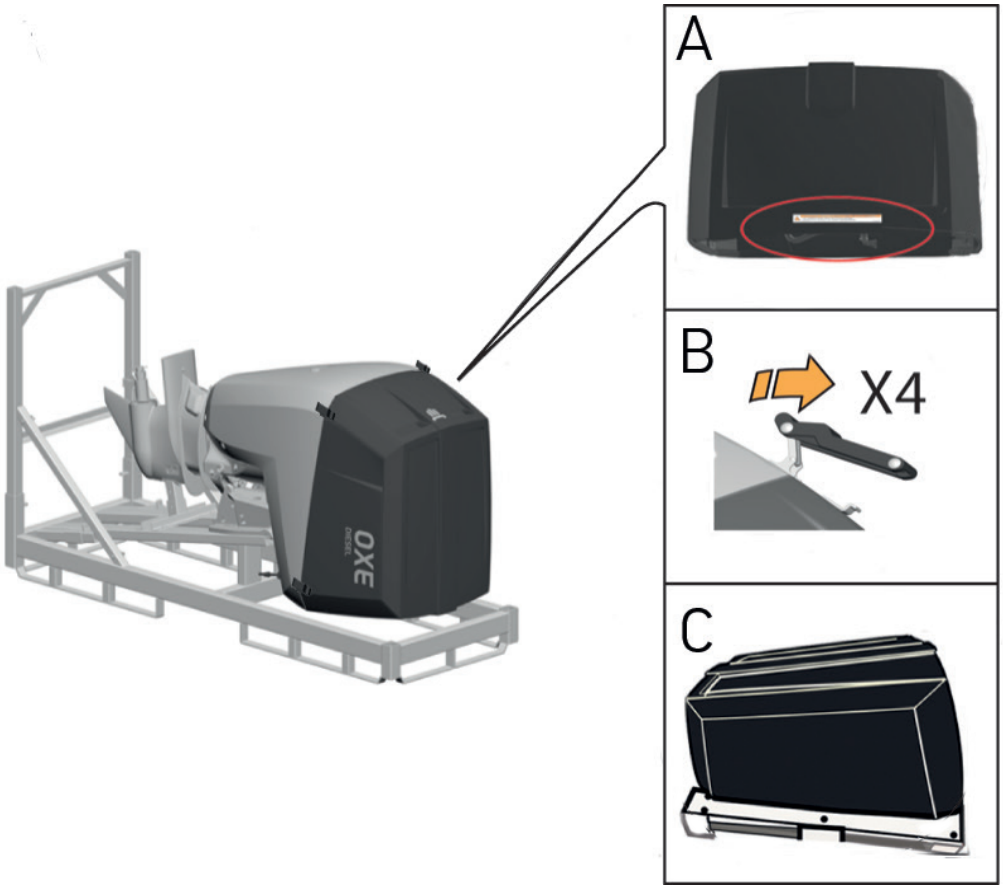


Fig. 8 *Removing the cowling*

Item	Description
A	Disconnect the AWMSS feed hose
B	Loosen the cowling latches on the sides x4
C	Place the cowling on the pallet

Fig. 9 *Table removing cowling*

The lifting instructions

1. Attach certified shackles and lifting straps, rated for the appropriate weight, to the crate's lifting lugs as illustrated in the following graphic.

CAUTION

Do not unbolt or remove the OXE outboard from the crate before the lifting operation.

NOTE

Strap length 2 x 1500 mm (Or 2x 39,4 Inches) below or use a suitable lifting bar to avoid damage.

2. Slowly lift the OXE outboard and the crate into an upright position.

CAUTION

Use extreme caution when lifting the crate, as it may move or swing when detaching from the foundation.

NOTE

- Ensure the foundation beneath the crate is stable before removing any lifting lug.

- Verify that the crate is well-balanced during the lift. If it is not, stop the lift immediately and adjust the straps to achieve proper balance.

3. Mount certified shackles and lifting straps to the engine lifting eyes, ensuring the straps are long enough to avoid interference with the air filter box and charge air pipe. See Fig 10.

CAUTION

Avoid any damage to the transom paint as it may create corrosion if surface is damage.

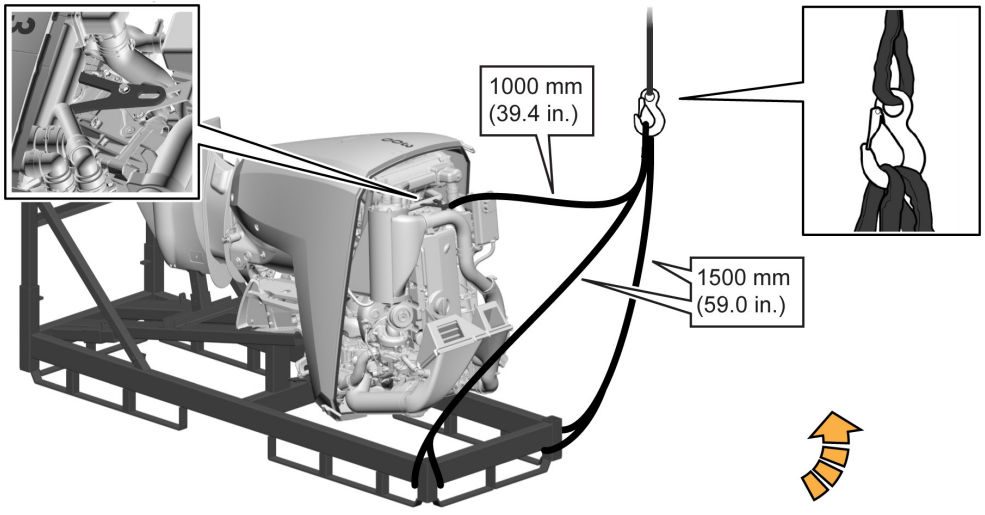


Fig. 10 *Lifting*

4. Tighten the strap until the motor and box are almost lifted off the foundation, making sure that the straps are free and do not damage any surrounding parts.
5. Remove screws, spacers and nut carefully.
6. Raise or lower the lifting hook when deemed necessary for proper removal of bolts, spacers and nuts.
7. Remove the outboard from the crate carefully. Hold the outboard in order to keep it from swinging. Now the outboard is ready for assembly on the transom of the boat.

NOTE

See recommended strap length 2 x 1000 mm (2x 39,4 Inches) as below or use a suitable lifting bar to avoid damage.

Protect the cowling from hitting the frame during crate removal to minimize the risk of scratches.

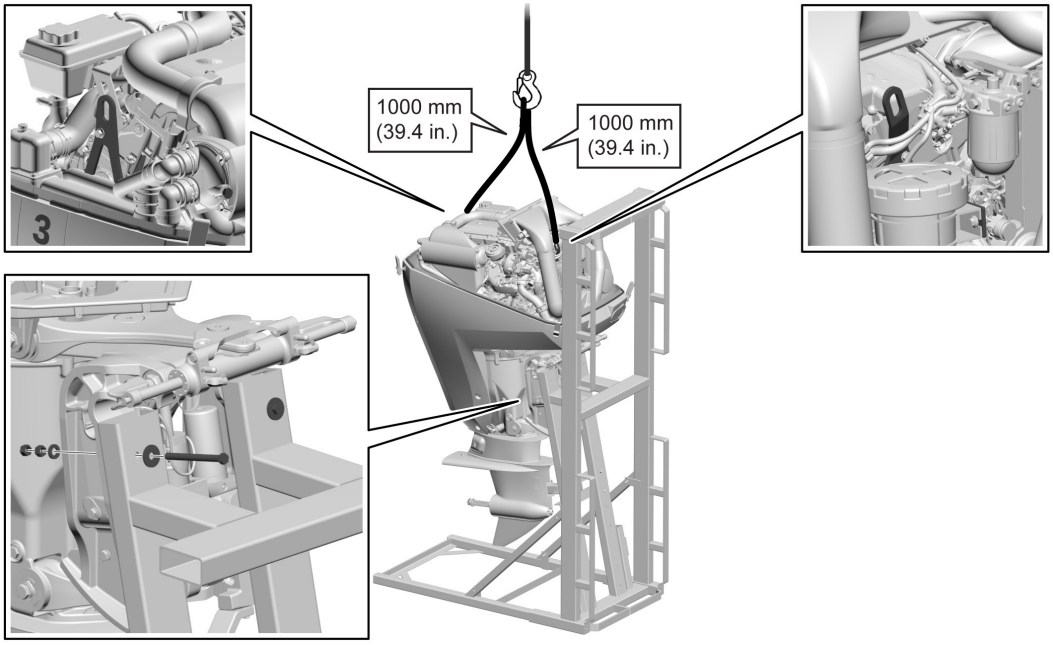


Fig. 11 *Lifting*

INSTALLATION OVERVIEW

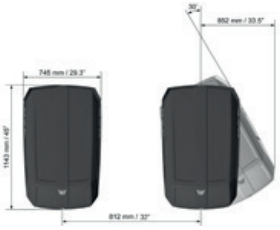
This manual is divided into several key sections, including spacing, insulation, setback requirements, and more. It is essential that each section relevant to your specific installation is reviewed carefully and followed according to the provided guidance.

For this reason, we strongly recommend reading the entire manual thoroughly before beginning the installation process. Doing so will ensure that all necessary considerations are taken into account and that the installation is completed safely, efficiently, and in compliance with all technical requirements.

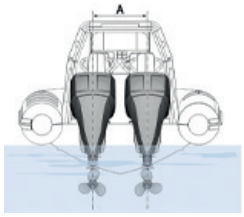
WARNING

Overpowering a boat may cause severe instability. Never install an outboard that exceeds the maximum boat horsepower rating or weight capacity. Always check with your dealer!

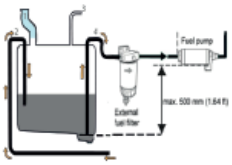
Improper mounting of the OXE outboard could result in hazardous conditions, such as poor handling, loss of control or fire hazards. Only authorized personnel should mount the OXE outboard.



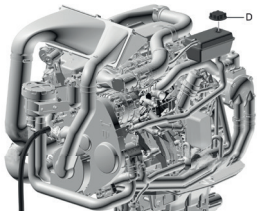
Measure, page 23.



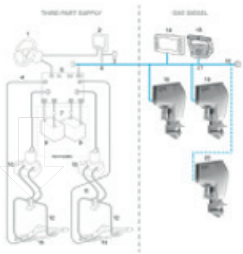
Mounting engines, page 29.



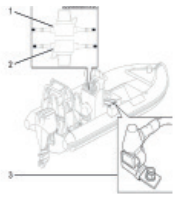
Invessel installation, page 47.



Filling fluids, page 51.



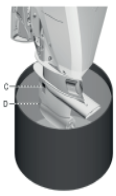
Steering, page 58.



Wiring, page 82.

Propeller installation, page 88.

Engine setup, page 95.



Test, page 103.

Delivery and warranty, SAT, page 105.

DISCLAIMERS

These instructions are intended as a general guide and do not encompass all design variations or potential scenarios that may occur during installation, operation, or maintenance of the equipment. For clarification on specific technical issues or if additional information is required beyond the scope of this document, please consult OXE Marine.

Oxe Marine disclaimers:

- **CAUTION** Welding on the boat while the engine is connected as it can cause electrical damage and safety hazards.
- Hull designs or specifications that fall outside the standard parameters, contact technical support for further advice and guidance.
- Ensure that the fuel system on the side of the boat is correctly installed and complies with safety regulations to avoid any problems during operation for new installations and re powers.
- Failure to install the power unit above the waterline at the specified cavitation plate height may result in operational malfunctions and possible engine damage. Incorrect installation can also cause flooding of the starter motor and gearbox valve block.

INSTALLATION

Measure

Ensure adequa+te clearance is provided when installing the OXE outboard to allow full range of motion for steering from port to starboard, as well as for trim and tilt operations.

Clearance moving from port to starboard.

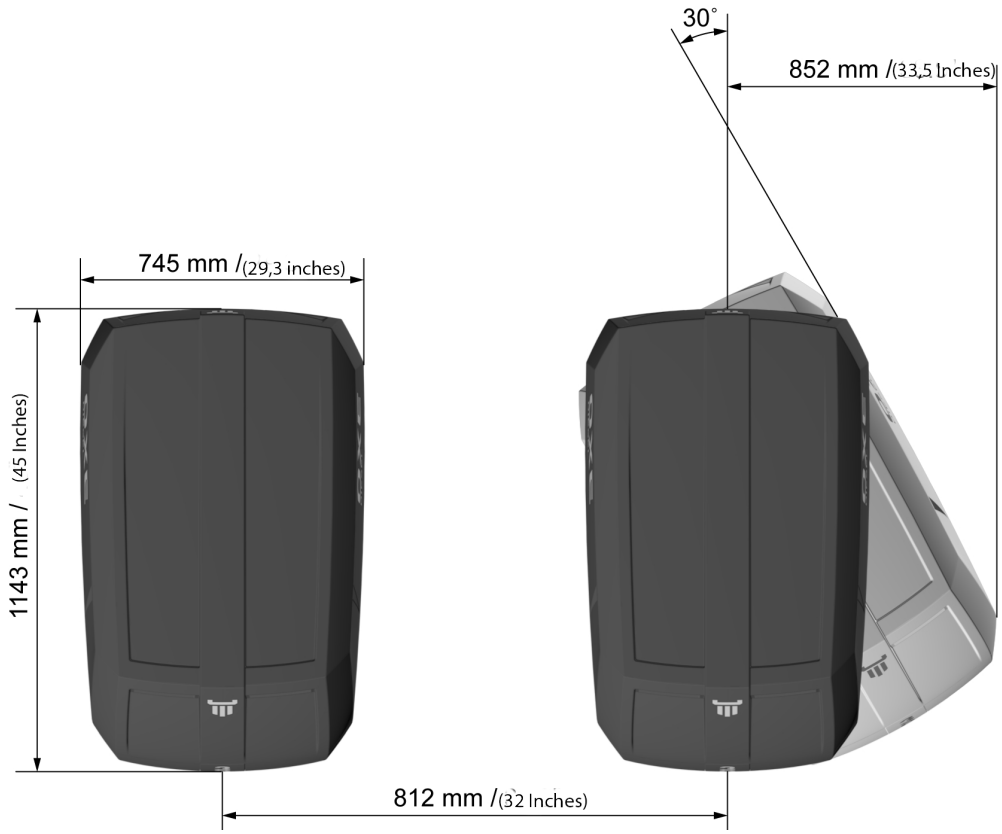


Fig. 12 *Dimensions*

NOTE

Quad installation with joystick control: centre engines are spaced at 36.5 inches centre-to-centre, and outer engines at 32 inches centre-to-centre. This configuration allows for 30 degrees of steering without interference. See Figure 28 on page 34.

Clearance trim and tilt operation - rig 25”

IMPORTANT

OXE outboards are designed for a 14 degree transom angle. The clamp brackets are designed so that the lower unit is positioned somewhere near the best normal angle of propulsion at 10 degrees as shown below.
The transom angle is recommended to be between 13-17 degrees to allow outboards to have trim adjustment both positive and negative as needed.
This in turn mean that the transom angle is not a major factor in most cases as long as designed within 13-17 degrees. If the transom angle is less then 13 degrees a limitation in negative trim is the result and may impact the performance and handling of the vessel.

NOTE

Measurements given in millimetres. Use conversion table for correct measurements in inches. See page 42.

NOTE

The 63 tilt angle can be electronically limited by the engine parameters settings. See page 31, Setting trim angle limitation.

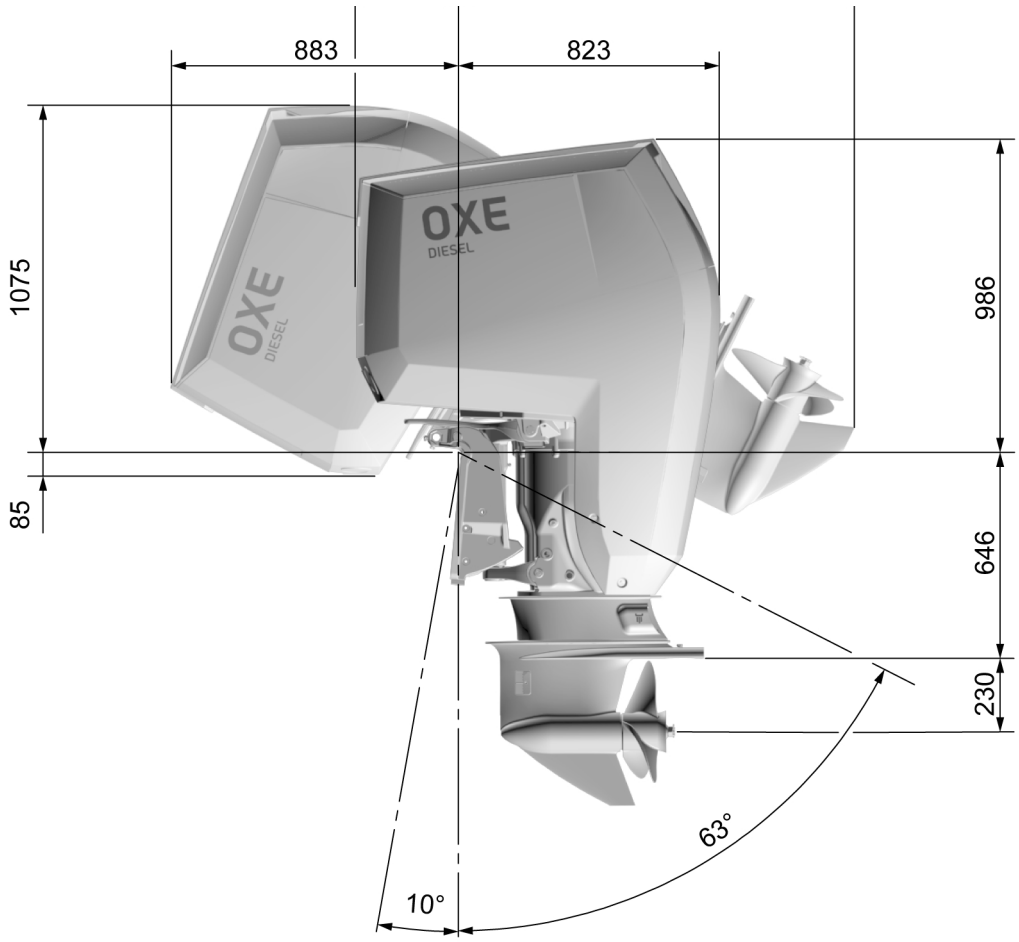


Fig. 13 *Clearance*

Clearance trim and tilt operation - rig 33”

IMPORTANT

OXE outboards are designed for a 14 degree transom angle. The clamp brackets are designed so that the lower unit is positioned somewhere near the best normal angle of propulsion at 10 degrees as shown below. The transom angle is recommended to be between 13-17 degrees to allow outboards to have trim adjustment both positive and negative as needed. This in turn mean that the transom angle is not a major factor in most cases as long as designed within 13-17 degrees. If the transom angle is less then 13 degrees a limitation in negative trim is the result and may impact the performance and handling of the vessel.

NOTE

Measurements given in millimetres. Use conversion table for correct measurements in inches, see converter page 42.

NOTE

The 63 tilt angle can be electronically limited by the engine parameters settings. See page 32 Setting trim angle limitation.

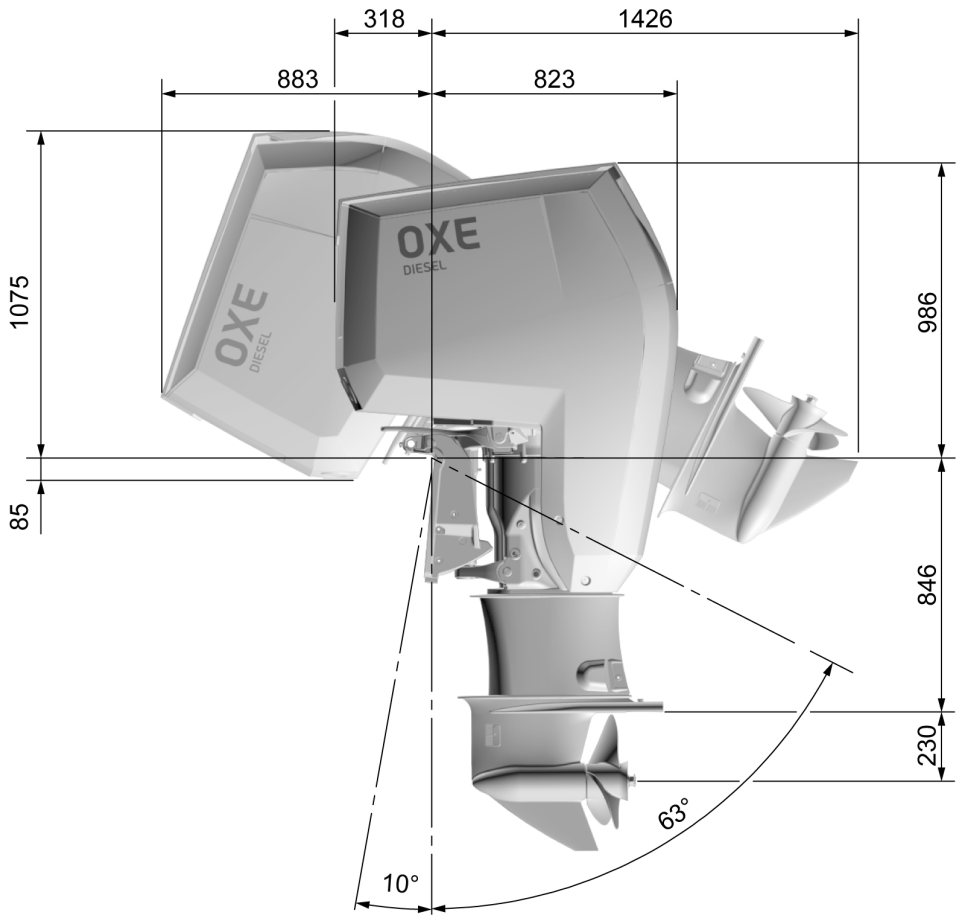


Fig. 14 *Clearance*

Drilling template

IThe Oxe outboard drilling template (Figure 15) is included in the Accessory box with the purchase of OXE outboard engines.

1. Use the transom mount template to drill the holes for the engines. See Figure 15.
2. Position the transom template on the mounting surface and secure it with tape. Use a pencil to accurately mark the locations where the holes need to be drilled.

NOTE

Figure 16, heavy duty fixtures are for professional boat builders, doing serial production and multiple installations, part number and pricing available upon request through OXE spare parts .

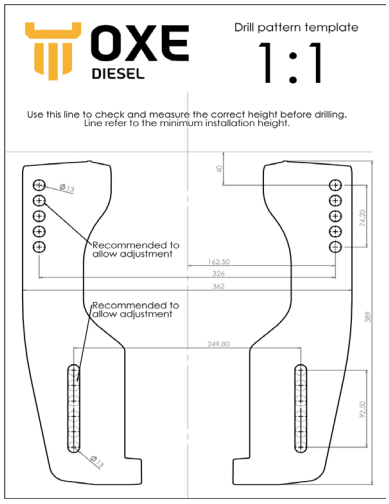


Fig. 15 *Oxe outboard drilling template*

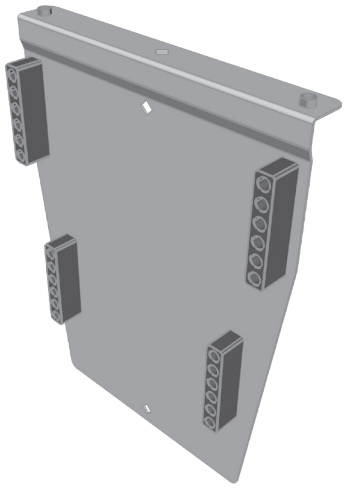


Fig. 16 *Heavy- duty fixture*

The transom mount

The transom mount is used to mount the outboard on the transom of your boat (the rear, vertical wall of the boat.)

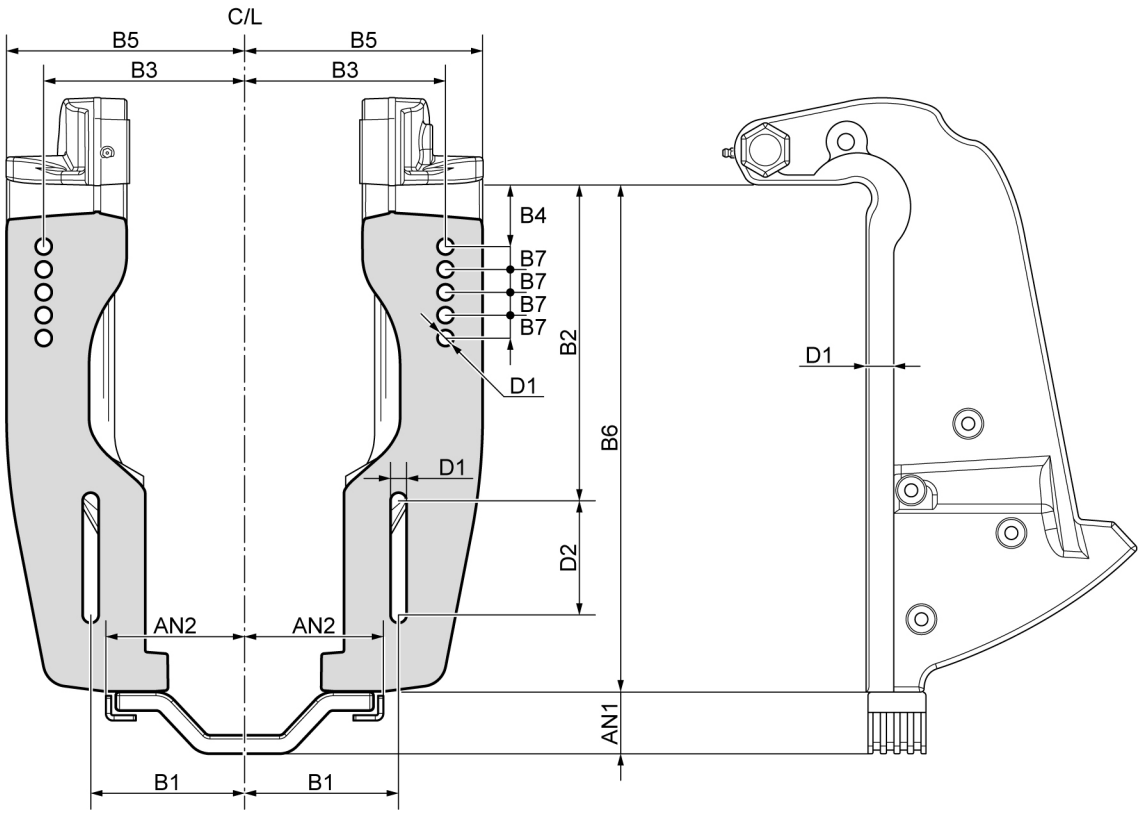


Fig. 17 *Transom mount, measurements and bolt pattern.* **NOTE!** *Do not use as a template!*

Symbol	mm (in.)	Symbol	mm (in.)	Symbol	mm (in.)	Symbol	mm (in.)
B1	125.4 (4.9)	B5	180 (7.1)	D1	20 (0.79)	AN1	52 (2.0)
B2	254 (10.0)	B6	411 (16.2)	D2	55.5 (2.2)	AN2	102 (4.0)
B3	163.5 (6.4)	B7	18.5 (0.7)				
B4	50.8 (2.0)						

Fig. 18 *Transom mount table*

INSULATION

For conductive hull, aluminium, fibre, carbon or steel.

IMPORTANT

Installing the outboard on a conductive hull, proper isolation is essential. Failure to isolate the outboard from the hull and other onboard equipment will void any warranty claims related to resulting faults. Incorrect installation may also void the warranty for your OXE accessories.
If you require assistance, please contact OXE Technical Support.
Recommended isolation material: PVC.

Follow these instructions:

1. Drill 16 mm holes through transom for insulations tubes.
2. Clamp bracket insulation to be fitted between clamp brackets and transom.
3. Insulation washers are fitted to the inside of transom under nuts.
4. After completed installation a measurement is to be conducted to verify isolation, for guidance on how to preform please contact technical support.

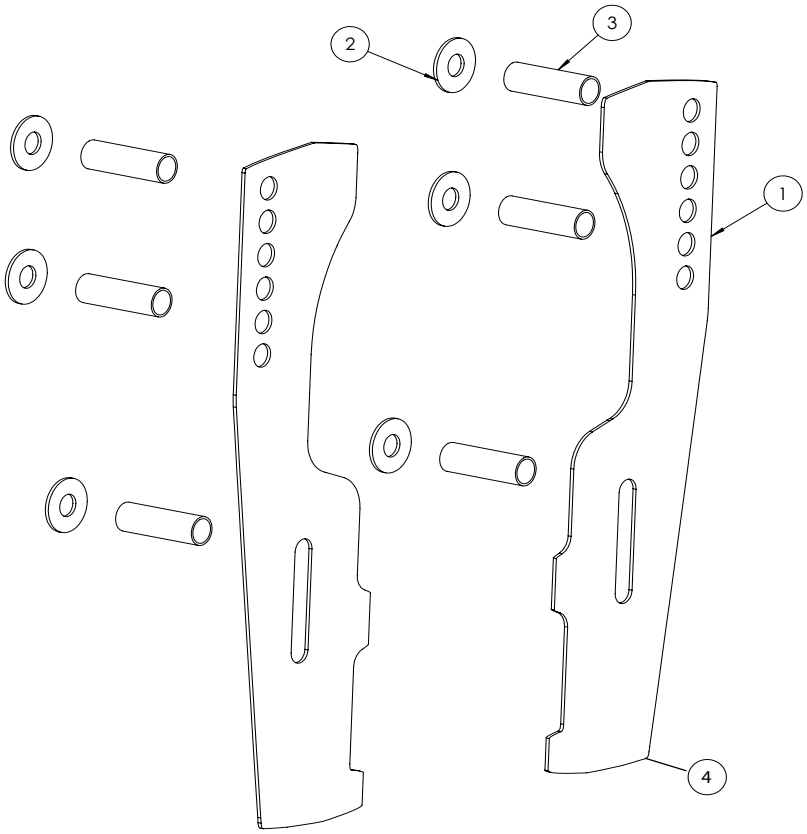


Fig. 19 *Insulation kit*

Item	Description	QTY
1	Clamp bracket insulation	2
2	Insulation Washer	6
3	Insulation tube	6
4	Insulation kit 30-3190-860	1

TRANSOM VERTICAL CENTRELINE

Single installation

The transom vertical centreline It is a vertical reference line located precisely at the midpoint of the boat's transom. To assemble properly follow the instructions below:

1. Check that the vertical centreline of the transom is straight.

Take the measurements **a, b, c** and **d.** Measurements **a** and **b** should be equal and so should measurements **c** and **d**. See Figure 20.

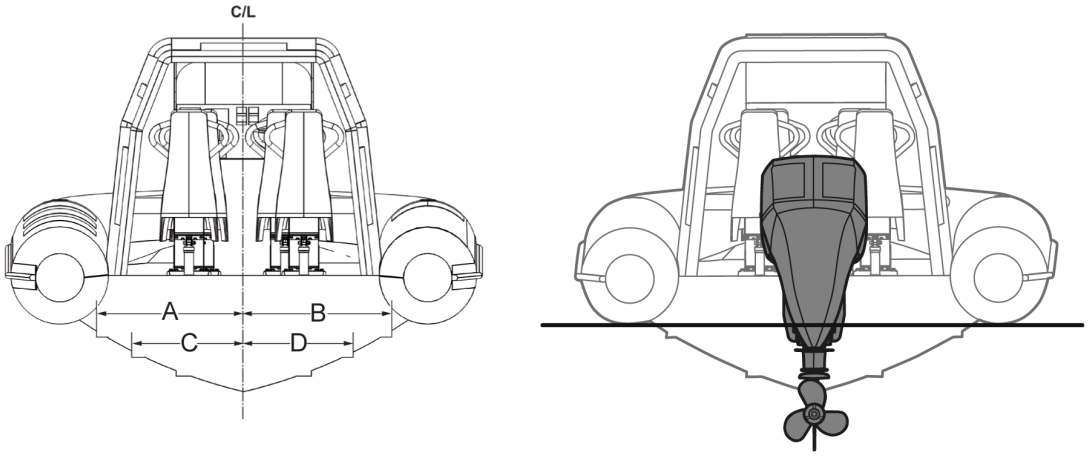


Fig. 20 *Transom vertical centreline*

Twin installation

Before proceeding with the installation, please review the instructions for mounting twin or multiple engines.

1. Mount both OXE outboards so that the distance of each outboard centreline to the transom centreline are equal on both sides, i.e. measurements **e** and **f** should be the equal. See Figure 21.
2. Ensure to maintain a minimum distance **a** between both vertical centrelines of the OXE outboards.

CAUTION

Make sure that distances **e** and **f** are identical.
T1 should be the sum of **e** and **f**, and it must not be less than the minimum distance **a** (812 mm / 32 Inches). Unless joystick application.
Refer to the **Installation Specifications** and verify all dimensions.

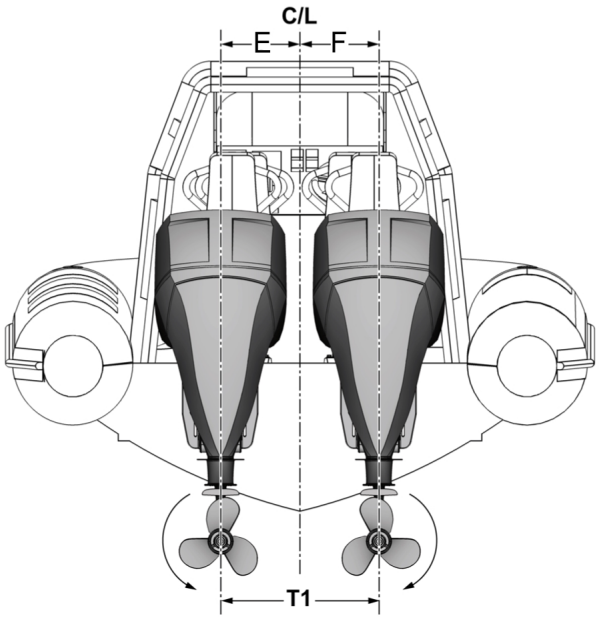


Fig. 21 *Transom centreline - twin installation*

Triple installation

Set outboards as shown in figure below. The centre outboard should be equipped with a longer rig than the outer OXE outboards.

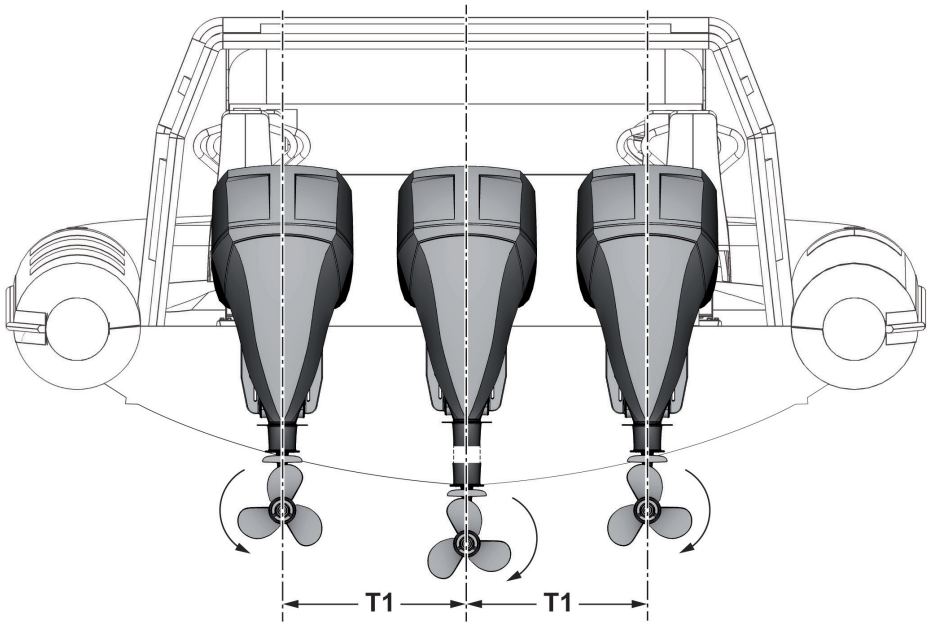


Fig. 22 *Transom centreline - triple installation*

Quad installation

Set outboards as shown in figure below. The centre outboards should be equipped with a longer rig than the outer OXE outboards.

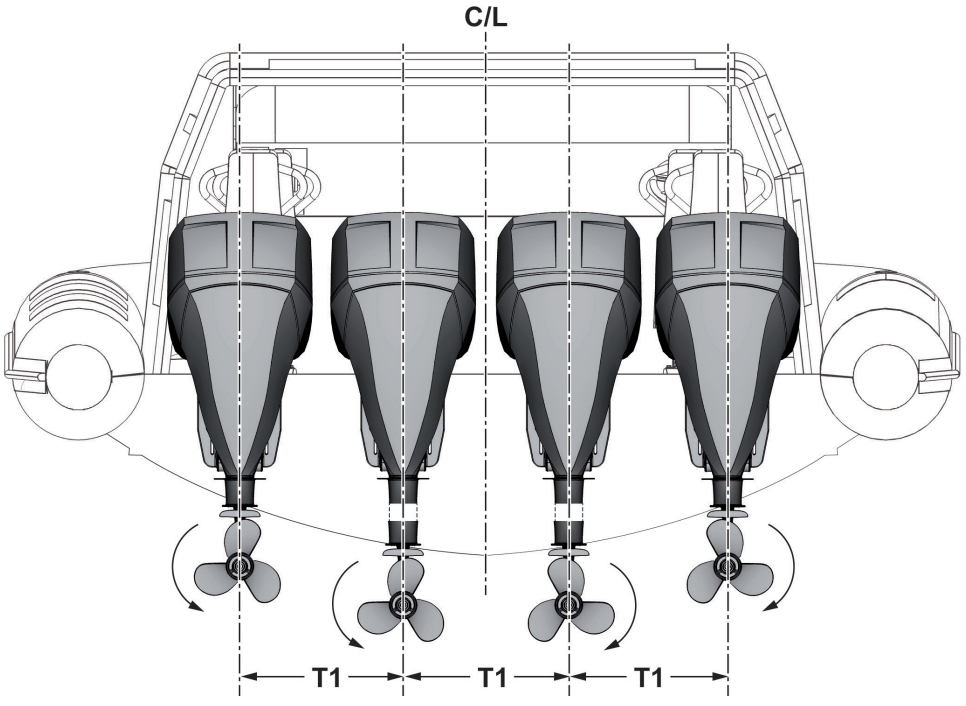


Fig. 23 *Transom centreline - quad installation*

Installation without joystick

After determining the centre line of the hull, use the centre of each engine as a reference point to measure the correct spacing between the engines, as well as the distance from the engines to the stern edge. These measurements may vary depending on the hull design.

When installing more than a single engine, the specified dimensions (see below) must be followed to ensure proper functionality.

Twin/Triple/Quad	Mm	Inch
A	812	32

Fig. 25 *Clearance table*

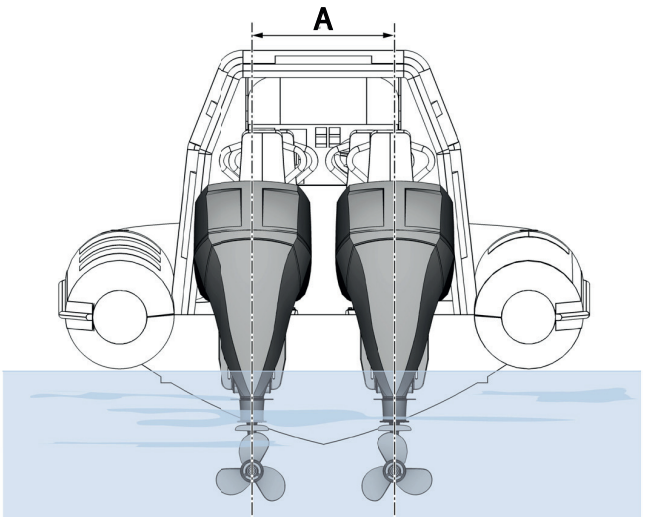


Fig. 24 *Twin installation*

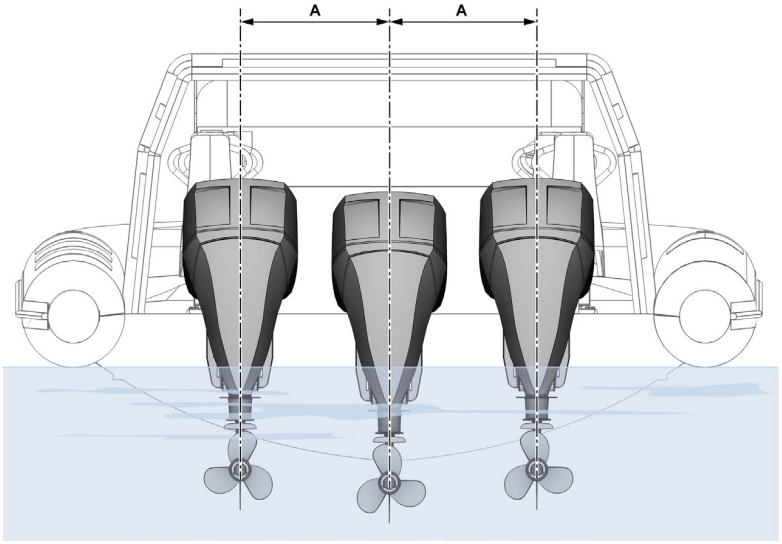


Fig. 26 *Triple installation*

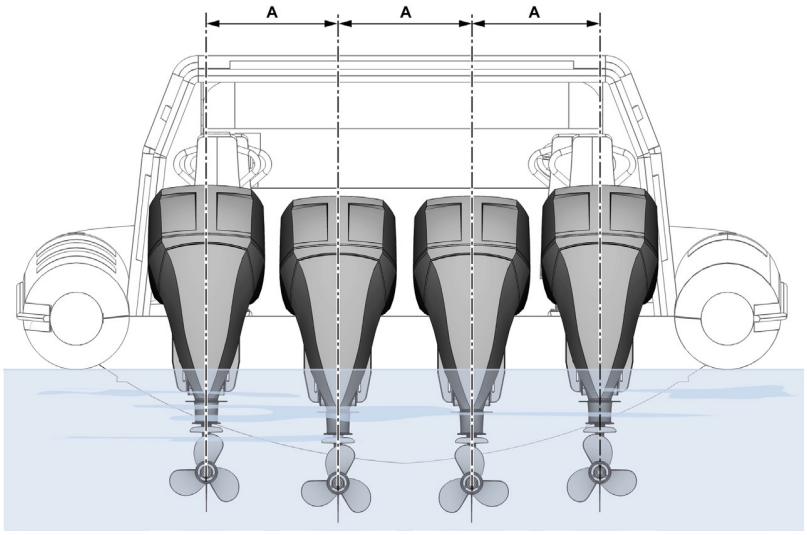


Fig. 27 *Quad installation*

Installation with joystick

- Determine the center line of the hull,
- Use the center of each engine as a reference point to measure the correct spacing between the engines.
- Measure the distance from the engines to the stern edge. These measurements may vary depending on the hull design.

When installing more than a single engine:

- Follow the specified dimensions, see table Figure 28 below to ensure proper functionality.

To allow 30 degrees of steering without interference:

- The center motors must have a center-to-center distance of 36.5 inches.
- The outer motors have a center-to-center distance of 32 inches.

With triple engines, see Figure 29:

- All three engines are engaged when operating the joystick forward or backward.
- The center engine switches to throttle-only-mode once port engine is set to forward and starboard engine reverse.

Installation	Mm	Inch
Twin/Triple	927	36.5
Quad	927	36,5

Fig. 28 *Table Joystick installation*

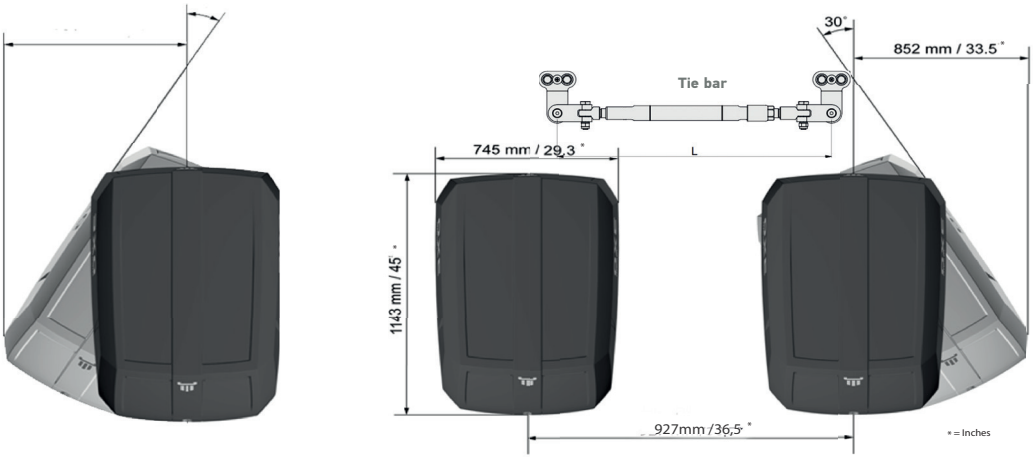


Fig. 29 *Triple installation*

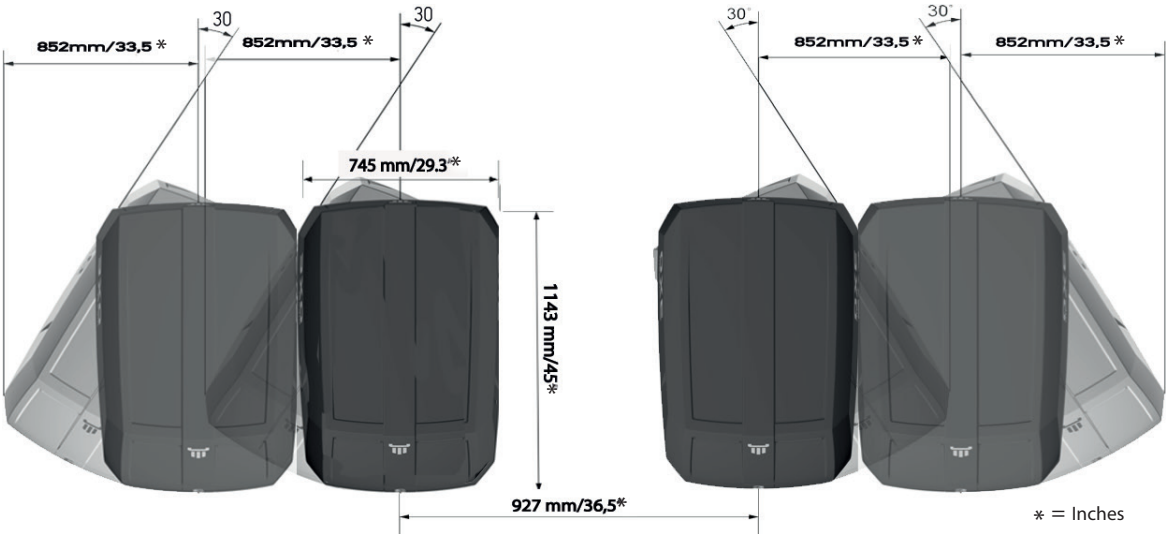


Fig. 30 *Quad installation*

Tie-bar

Mechanical linkage used to connect two outboard motors so that they steer in synchronization. Options from Seastar and Uflex avalible.

Steering Synchronization

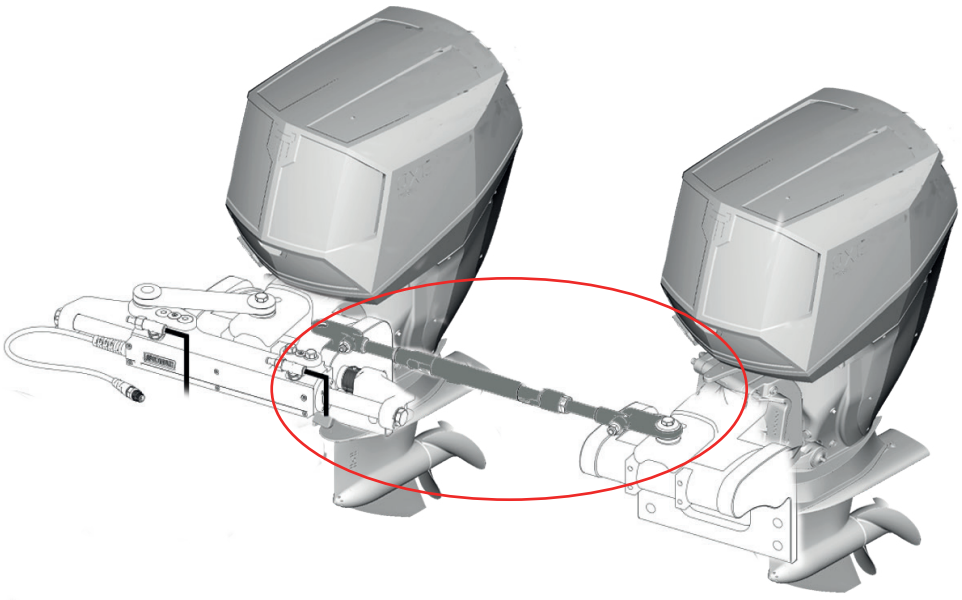
- Ensures that both engines move exactly at the same time when steering.

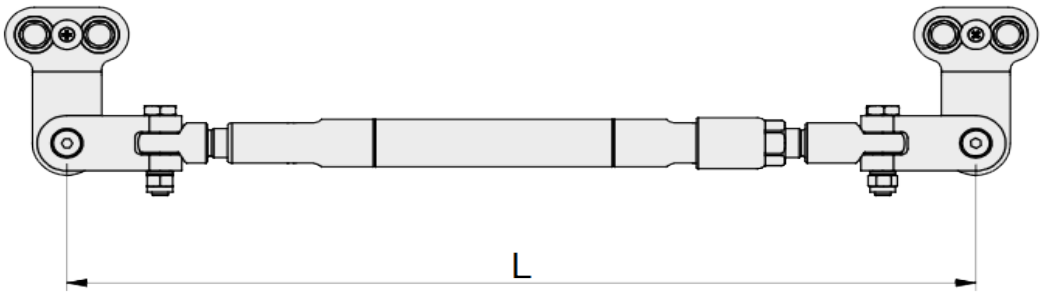
Stability

- Improves control at high speeds, especially when planing boats.

Safety

- Prevents the engines from steering in different directions or vibrating apart.
- Used with Dual outboard motors or drives - can be mechanical or hydraulic.





Engine center distance			
813 mm	32 inches	L= 608 mm	24 inches
927 mm	36.5 inches	L= 747 mm	29,5 inches

ENGINE HEIGHTS

WATERLINE

Maintain the specified minimum height (H), as illustrated, between the waterline and the clamp bracket seating surface under full-load, static conditions. Reverify and adjust this height if any modifications are made to the vessel's centre of gravity (CG) or if the maximum payload is increased. See Figure 31.

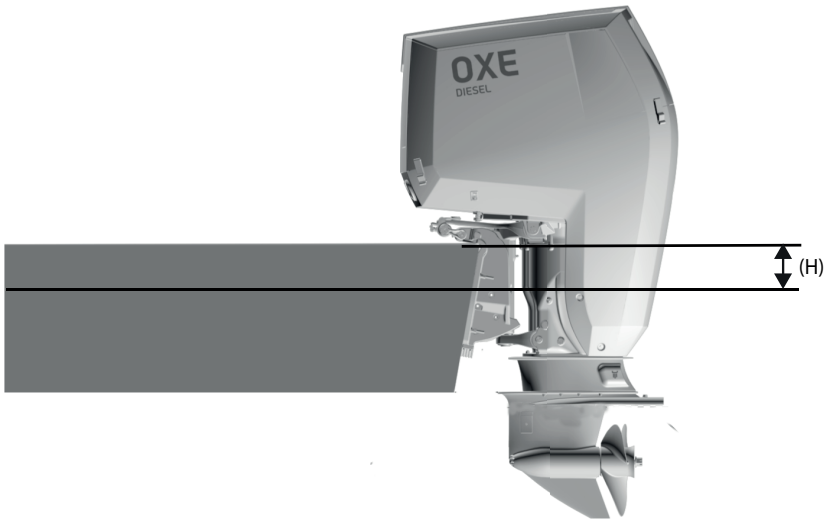


Fig. 31 *The minimum allowable height*

Minimum height between water surface and transom bracket seating point

Model	Min. Height (H)	
OXE225,250,300	150 mm	5,9 inch

NOTE

The minimum measurement must be 150 mm. OXE recommends a resting point between 150 mm and 250 mm, which provides a balance between transom height and the keel. This range also supports optimal performance and running height.

Summary

Make sure you calculate the lift correctly based on the specific configuration of your installation. By following these guidelines, you can optimize the motor setting for best performance.

RUNNING HEIGHT

Engine running height, also known as outboard motor height, refers to the vertical position of the engine's lower unit relative to the boat's hull, specifically the anti-ventilation plate. Optimizing engine height is crucial for performance and efficiency, as it affects how the propeller interacts with the water.

Install as follows:

General application

1. Adjust the OXE outboard height so that the anti-cavitation plate (A) -25(-1 in) to + 25 mm (1 in.) Below the bottom of the boat's transom. See Figure 32.

High speed application

1. Mount the engine approximately 50 mm and upwards depending on hull design, setback etc. Higher than the bottom of the boat transom. See Figure 33.

NOTE

Compared to equivalent outboard engines from other manufacturers, the OXE features an additional 1-inch distance between the propeller shaft and the cavitation plate. This design allows for the use of a larger diameter propeller.

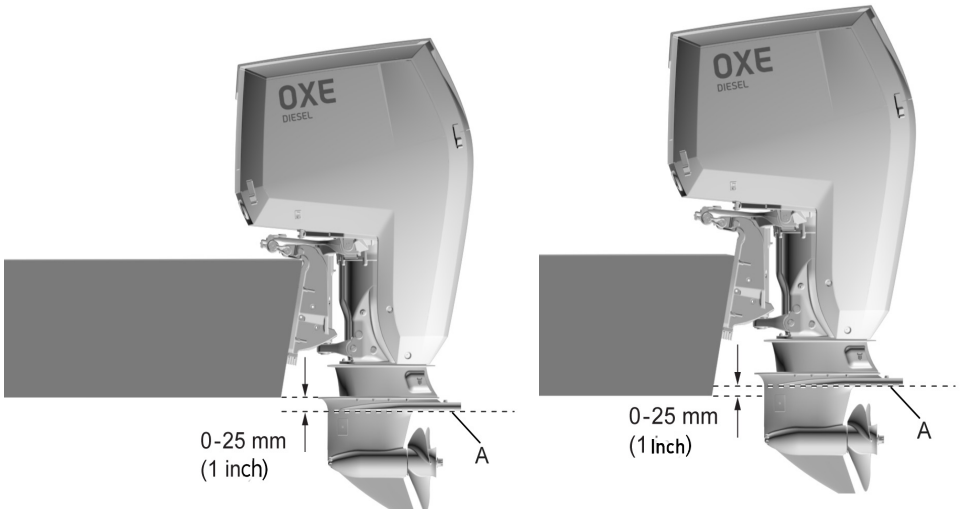


Fig. 32 *General application*

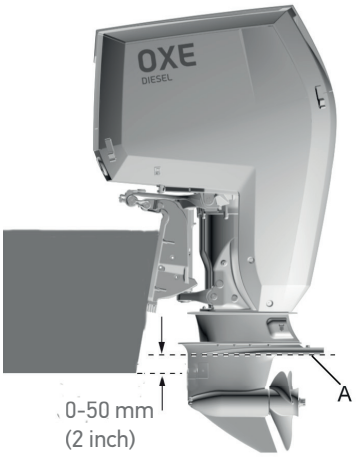


Fig. 33 *High speed application*

SETBACK

General Guidelines on Requirements

NOTE

In this section, inches are used as the unit of measurement since jack plates are ordered in inches. The rest of the manual uses millimetres.

The general guideline for outboard engines: for each 12 inch of setback, the engine height should be increased by 1 to 3 inches. The precise adjustment will vary based on factors like the hull design, water conditions, and desired performance.

When the engine is moved 12 inches farther from the transom—whether through the use of brackets, jack plates, or setback to the transom—the engine height should be raised by 1 inch or more. Refer to Figures 34 and 36, as well as Table Figure 35, for visual guidance. Note the starting pointy to adjust engine height is having the engine installed in right position directly the transom.

See figure 34:

- 0 setback, general height -25 till +25 mm (1 inch).

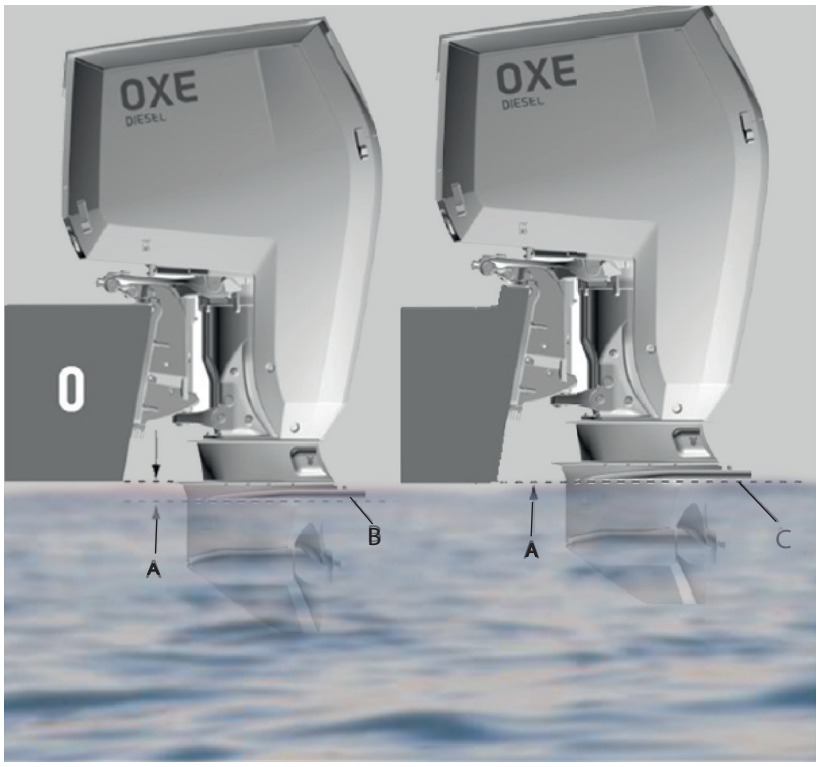


Fig. 34 *Setback rule*

Item	Description
A	0 -1 Inch
B	A -1 Inch
C	A = 0 Inch
D	A+ 1Inch - 2 Inch
E	A + 2 Inch - 3 Inch

Fig. 35 *Table Setback rule*

Starting point for the increase

Traditional V-boat with the engine on the transom:

- Our design allows for a standard engine mounting height of 1 inch lift.
- If a bracket or jack plate is installed, then the engine is set back from the transom. In this case, raise the engine 1 inch above the bottom of the boat plus 1-3 inch for every 12 inches of setback.
- The lowest point of the extension is considered the bottom of the boat.

Extension of the transom

- The extension moves the engine away from the transom, which means it must be designed to provide sufficient height: 1 inch (standard lift) + 1-3 inch for every 12 inches of setback.
- If the extension provides a setback of 24 inches, the height increases by another 2-6 inches.

See figure 36 for different setback applications:

1. 0 inch setback at +25mm left.
2. 4 inch setback at +50-75mm right.

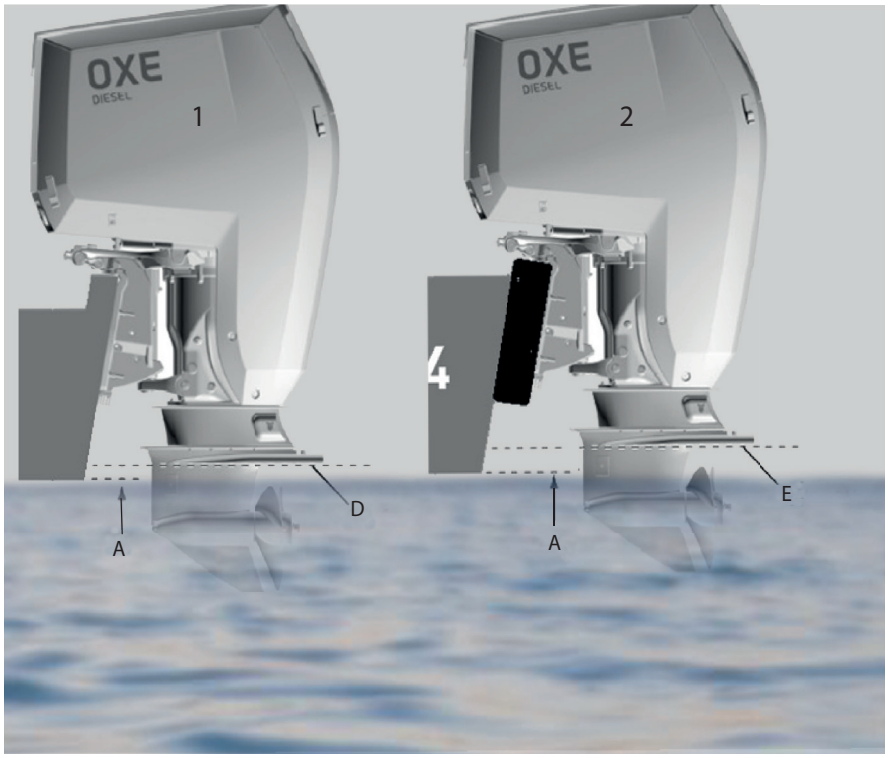


Fig. 36 *Setback rule*

Item	Description
A	0 -1 Inch
B	A -1 Inch
C	A = 0 Inch
D	A+ 1Inch - 2 Inch
E	A + 2 Inch - 3 Inch

Fig. 37 *Table Setback rule*

Different hull levels

NOTE

These are general descriptions of possible scenarios and hulls; for specific recommendations, consult OXE.

Fig. 38 *Transom raked*

Fig. 39 *Transom angled upwards*

Fig. 40 *Transom with step*

STEPPED HULL- BASIC LEVEL

Transom with step

- If there is a relief step on the transom, the bottom of the boat is counted as the lowest point of the step, not the actual boat bottom.
- The 1 inch lift is based on the lowest point of the transom step.

NOTE

The information provided is intended as general guidance only. It is strongly recommended to:

- Consult your boat manufacturer and OXE technical support before installing engines on a stepped hull or using a setback bracket.
- **Disclaimer**: Hull construction, materials, and design may vary between different OEMs. As a result, the information and guidance provided above may not fully apply to your specific vessel. If any uncertainty arises, it is recommended to consult your OEM or contact OXE Marine Technical Support for further assistance.

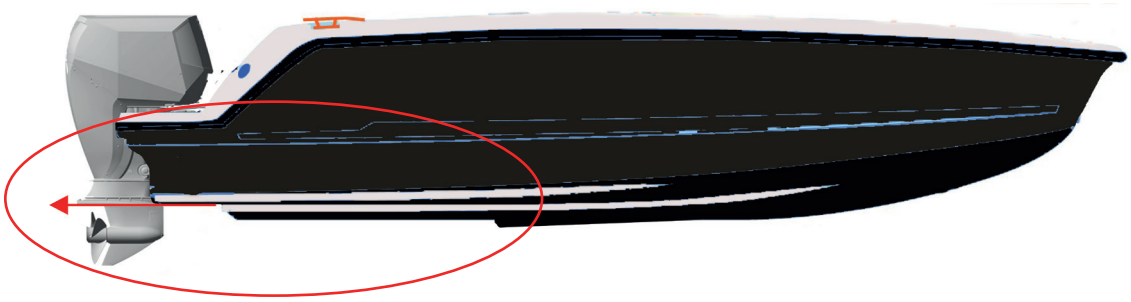


Fig. 41 *Transom with step*

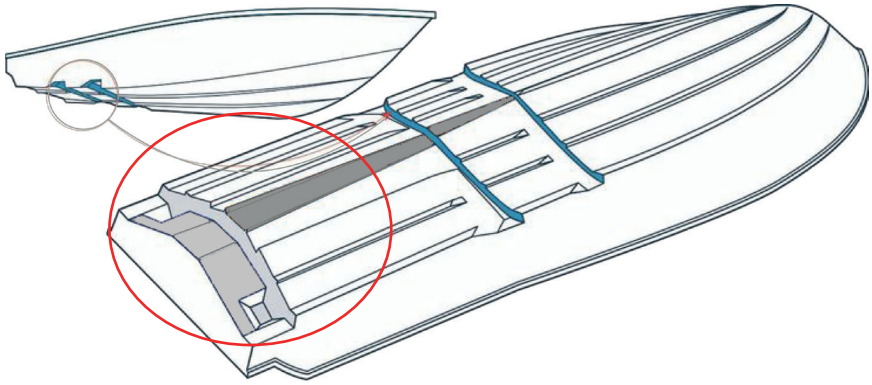


Fig. 42 *Step*

Inches to mm converter

Inch	Mm
1	25
2	50
3	76
4	102
6	152
8	203
12	305

Fig. 43 *Table converter*

MOUNTING

After determining the transom mount position do as follows:

1. Mark the preferred mounting hole locations on the boat transom.
2. Drill 13 mm (0.5 inches) mounting holes perpendicular to the transom. See Figure 44.

NOTE

When use the insulation kit (30-3190-860) the drill size should be 16 mm. For further details, see page 45.

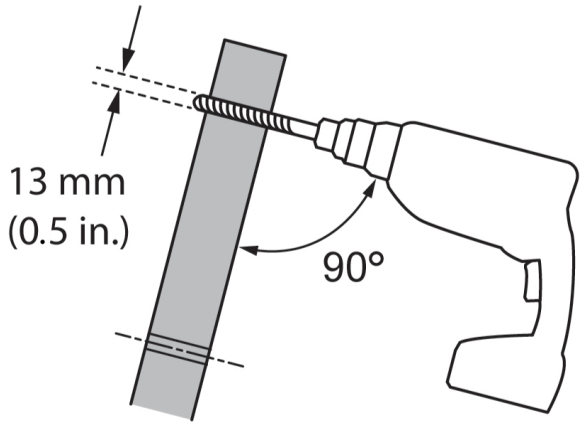


Fig. 44 *Installing Transom mount*

NOTE

- Avoid the use of Nyloc nuts due to its characteristics.
- Use OXE installation bolts or equivalent, 10.9 grade.
- If SS bolts are used, use caution to avoid thread seizing.

During sea trials:

3. Install 4 bolts (2 on each side). To allow for adjustment after seatrail if needed.

Fixing the transom

See Figure 45 and Table 46 on page 44 for proper installation. Do as follows:

1. Secure the outboard with a total of 6 bolts—2 upper and 1 lower on each side.
2. Apply marine sealer to the shanks of the bolts, avoiding the threads.
3. Apply marine sealer to the mounting holes and under the washers.
4. Tighten mounting bolts at a suitable torque suited for the transom material. First tighten the inner nut, followed by the outer nut. The outer nut will act as a lock. See Figure 45.

WARNING

No free play is allowed between transom surface and clamp bracket. The clamp bracket or transom could break.

NOTE

- Install the engine in a manner that allows the engine emission control information label to be readable during engine maintenance.
- If it is not readable place a duplicate label on the vessel, as described in 40 CFR 1068.105. Contact your local OXE Marine dealer for a duplicate label

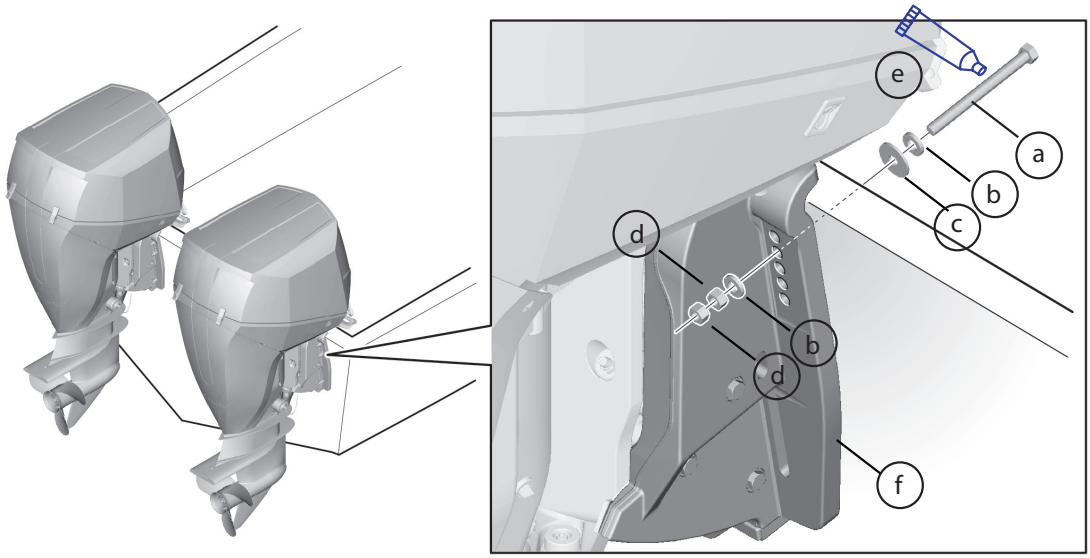


Fig. 45 *Mounting the transom*

Item	Description	QTY
a	Bolts	6
b	Small washer	12
c	Big washer	6
d	Nut	12
e	Marine Sealer	1
f	Transom mount	1

Fig. 46 *Table Mounting the transom*

Mounting with the insulation kit

See instructions on page 28.

IMPORTANT

- Use insulation tubes (a) to prevent galvanic corrosion and electrical conductivity problems, when mounting equipment on aluminium, carbon fiber or steel hulls.
- The insulation tubes act as a barrier between the mounting hardware and the metal hull, ensuring long-term durability and system safety.
- Select insulation material, see table below.
- Place them securely around bolts or fasteners and check that no direct metal-to-metal contact occurs.

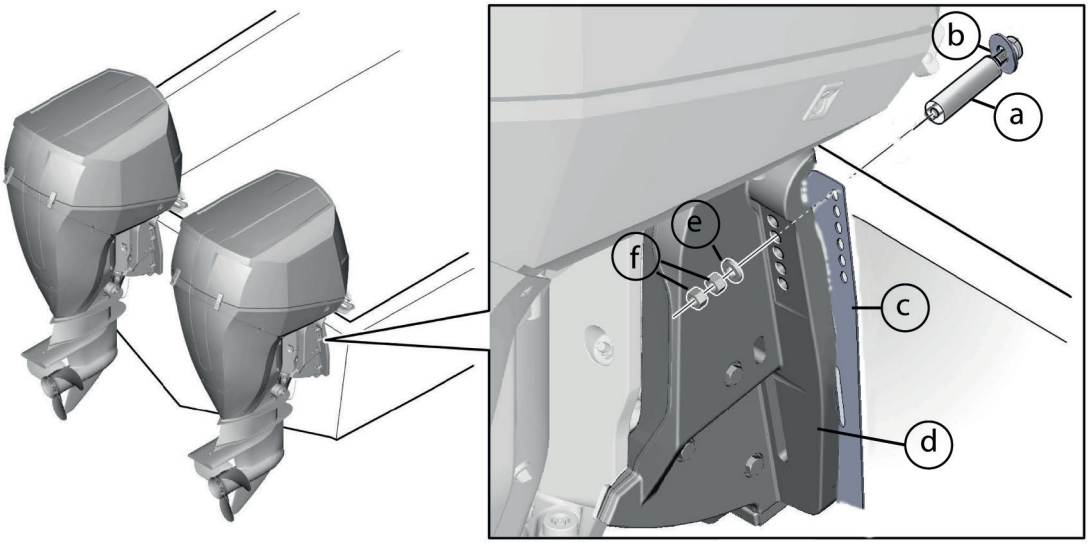


Fig. 47 *Mounting Insulation kit (30-3190-860)*

NOTE (a) insulation tube is supplied in 100mm tubes and needs to be trimed to the specific transom thickness.

Item	Part number	Description	QTY
a	30-3190-860-3	Insulation tube	6
b	30-3190-860-2	Insulation Washer	6
c	30-3190-860-1	Clamp bracket insulation	2
d	30-0113-162	Clamp brackets assembly	1
e	-	Washer	6
f	-	Nut	8

Fig. 48 *Table Mounting Insulation kit*

Alignment

A parallel installation of two, or more, outboards,

- The distance A between the propeller shafts and the distance B between centrelines of the water inlet or steering arm bolt holes have to be the same.

Outboard toe-in position is required,

- The distance A should be somewhat longer than B.

Outboard toe-out position is required,

- The distance A should be shorter than B.

NOTE

The difference between toe-in and toe-out position is normally just about an inch.

NOTE

We recommend as a general settings parallel mount of the engines for interaction between engine and boat. For further information, please contact your propeller and/or boat supplier.

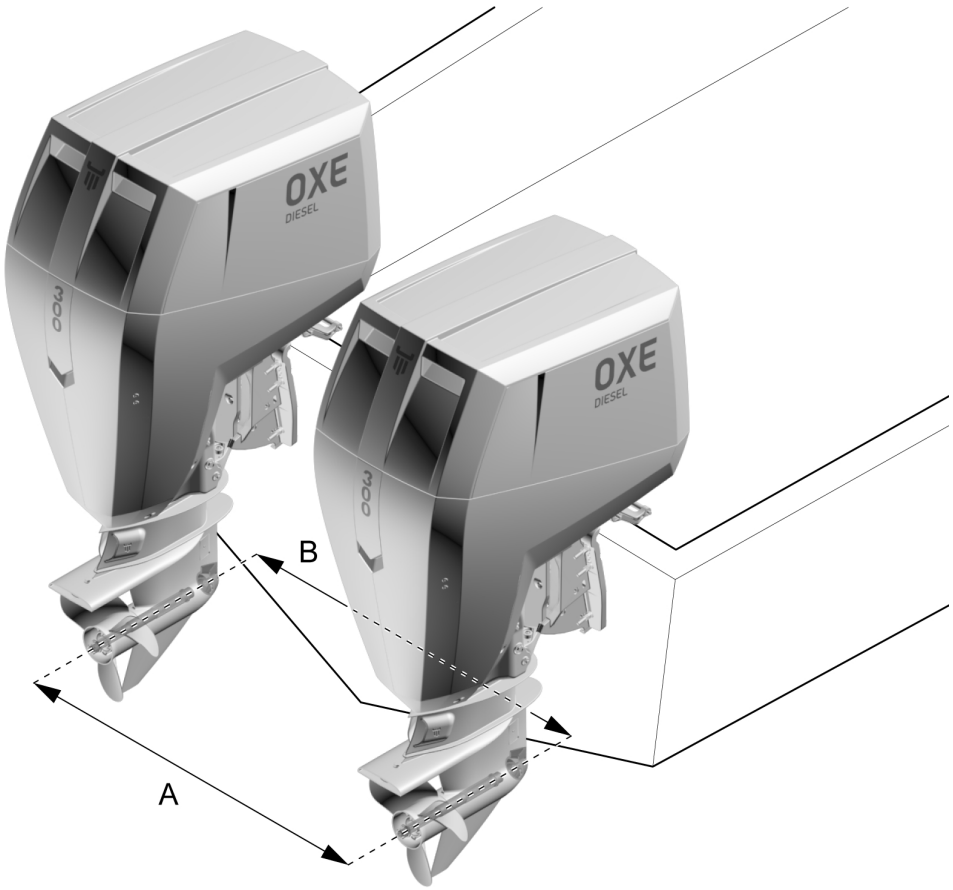


Fig. 49 *Oxe outboard alignment, toe-in and toe-out position*

INVESSEL INSTALLATIONS

FUEL SYSTEM

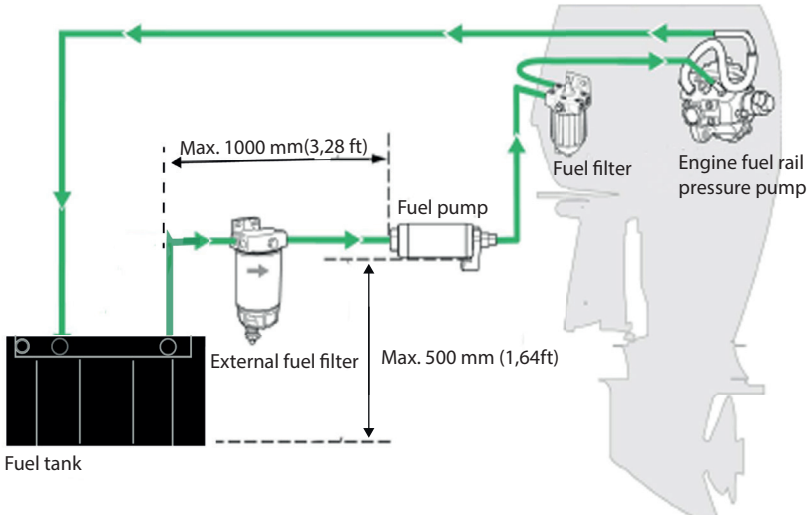


Fig. 50 *Fuel system*

Fuel system dimensions		Metric	US units
Fuel line	Quality	Certified diesel resistant	
	Inner diameter	10 mm	0.39 in
	Inner diameter fuel return	12 mm	0,47 in
	Length between tank and pump	Max. 1000 mm	39.37 in
	Feed hose, length	5 meter	16 ft 4.85 in
	Return hose, length	5 meter	16 ft 4.85 in
Fuel pump	Mounting height above tank	500 mm	19.68 in
Fuel tank	Volume	Min. 100 l	26.42 gallon

Fig. 51 *Fuel system table*

The fuel enters the engine via the pre-fuel filter and external fuel pump.

The mechanical fuel injection pump output is controlled by the Engine Control Unit (ECU), and provides fuel at the pressure required by the fuel injectors. The fuel injectors supply fuel directly to the combustion chambers of the engine.

The mechanical fuel injection pump, fuel rail pressure, fuel injection timing, and injection duration are all controlled by the ECU.

FUEL PRE-FILTER

The 10-micron fuel filter is equipped with a water separator and installed after the fuel tank, on the suction side of the fuel system, between the fuel tank and the electrical fuel feed pump. An optional water-in-fuel sensor is available and can be ordered separately.

EXTERNAL FUEL FEED PUMP

The electrical fuel feed pump is mounted outside the fuel tank and is operated by the engine's ECU. The

electrical pump motor pushes fuel from fuel tank to the engine through fuel lines.

NOTE Use only OXE supplied electrical harness and electrical fuel feed pump.

ENGINE FUEL FILTER

The fuel filter is a dual function fuel filter water separator with a cartridge-type filter suited for diesel engines equipped with high-pressure injection systems. An optional water-in-fuel sensor is available and can be ordered separately. The filter cartridge is a two micron-like size type.

FUEL RAIL HIGH-PRESSURE PUMP

The fuel rail pressure pump is a mechanical high-pressure pump. Fuel is pumped to the fuel rail at a specific pressure. Fuel pressure is regulated by the fuel pressure regulator, which is controlled by the Engine Control Unit (ECU) and returned through the return fuel line.

FUEL RAIL ASSEMBLY

The fuel rail assembly attaches to the cylinder head. The fuel rail distributes pressurized fuel to the fuel injectors through the fuel lines.

FUEL TANK

There are no requirements on fuel tank volume to prevent heating of fuel since the OXE 300 is equipped with a return fuel cooler system. OXE Marine AB recommends a minimum size of 100 L. The fuel tank must be equipped with a 10mm supply fitting and a 12mm return fitting for the fuel lines. These fittings should be installed with sufficient spacing between them to minimize the introduction of excess air and heat into the fuel system.

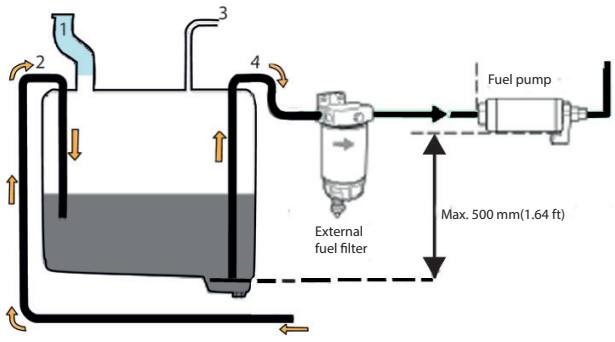


Fig. 52 *Fuel tank*

Item	Description
1	Fuel in
2	Fuel feed
3	Breather pipe
4	Fuel return

Fig. 53 *Fuel tank table*

FUEL RAIL SENSOR

The fuel rail pressure sensor gives the ECU an indication of fuel pressure. The ECU uses this information to regulate fuel pressure, by commanding the fuel pressure regulator open or closed on the inlet of the fuel injection pump.

FUEL INJECTORS

A fuel injector is a piezoelectric device controlled by the ECU that injects pressurized fuel into each engine cylinder. Fuel from the injector tip is sprayed directly into the combustion chamber in the compression stroke of the engine.

The control functions for the fuel injection system are integrated in the ECU.

QUICK- CONNECT FITTING

Quick-connect fittings provide a simplified means of installing and connecting fuel system components. The fittings consist of a unique female connector and a compatible male pipe end. O-rings, located inside the female connector, provide the seal. Integral locking tabs, inside the female connector, hold the fittings together.

FUEL PIPE O-RINGS

O-rings seal the connections in the fuel system. Fuel system O-ring seals are made of a special material. Service the O-rings seals with the correct service parts.

INSTALLING FUEL LINES

1. Fit the fuel RETURN line with the quick connector and hose clamp supplied, and connect to the BLACK female connector on the engine (A).
2. Fit the fuel SUPPLY line with the quick connector and hose clamp supplied, and connect to the BLUE female connector on the engine (B).
3. Lead the fuel lines through the right middle cowling outlet into the boat.

WARNING Keep the fuel lines clear from moving parts!

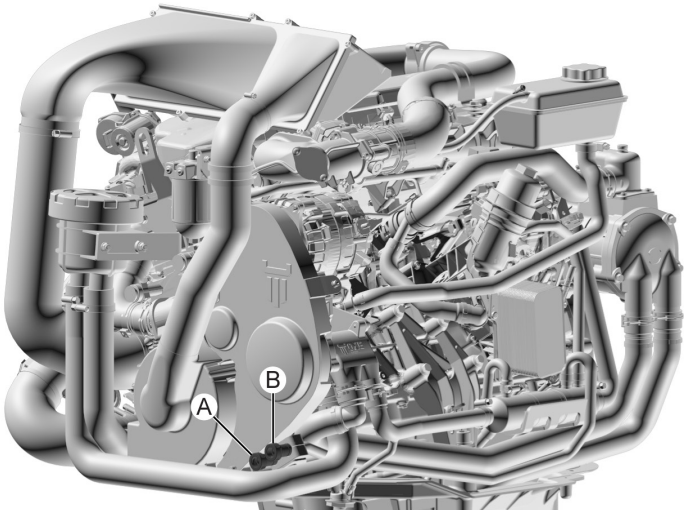


Fig. 54 *Installing fuel lines*

OXE300 MY2026- DL6

When installing the MY2926 DL6, be aware that the fuel lines are now fitted a little further in on the engine, as shown in the illustration below Figure 55.

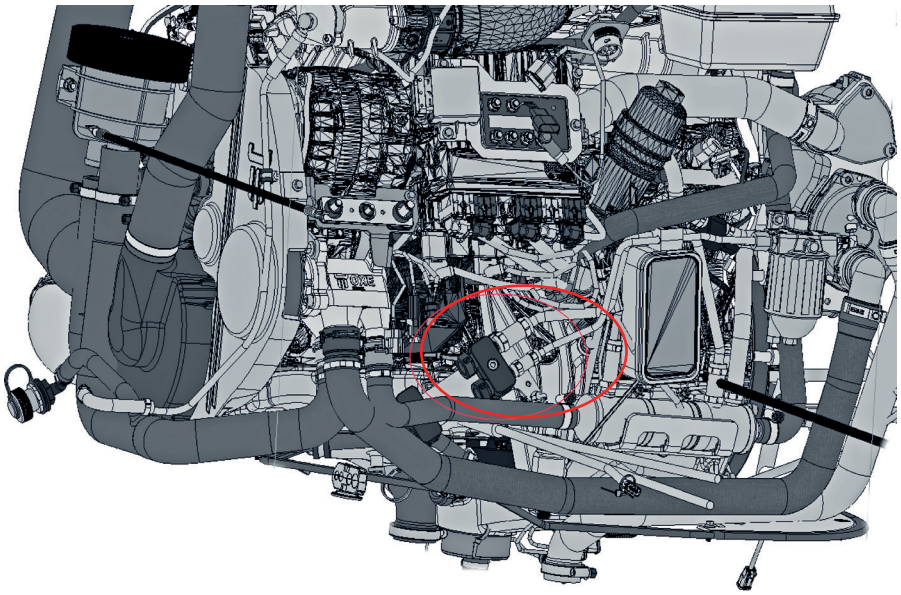


Fig. 55 *Installing fuel lines DL6*

FILLING FLUIDS

FILLING COOLANT

1. Remove the cap (D) of the expansion tank.

NOTE
To drain the approximately 10 liters of coolant the engine must be tilted!

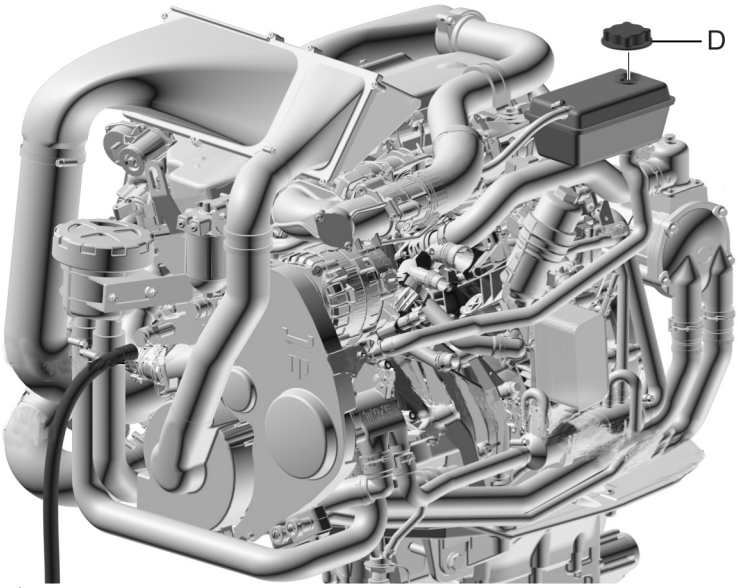


Fig. 56 *Filling coolant*

2. Fill up the expansion tank with coolant at to approximately 4 cm below the filling neck, see Recommended fluids and grease page 15.

The cooling system of the engine is to be filled with a mixture of approximately 30% distilled water and 70% antifreeze based on ethylene glycol and/or anticorrosion additive (see diagram below).

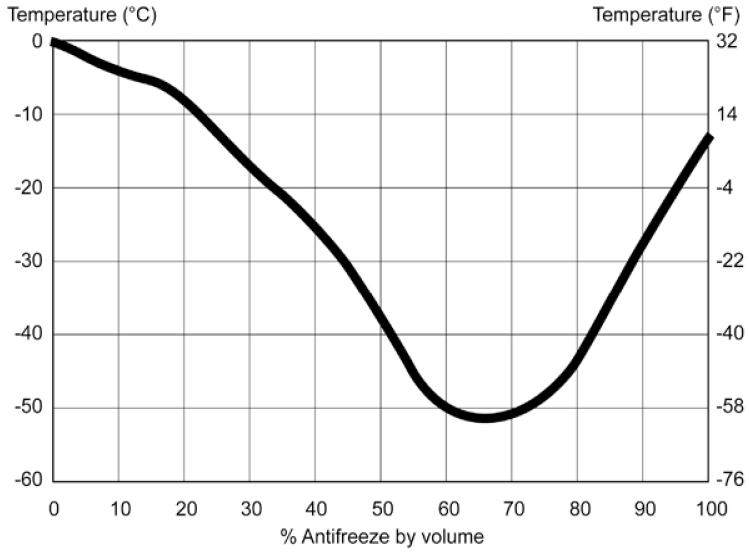


Fig. 57 *Diagram Filling coolant*

FILLING GEARBOX OIL

There is a common lubricating system for the gearbox and the primary transmission.

1. Unscrew the magnetic gearbox oil-filling plug (A) on the primary transmission and fill up gearbox oil through the

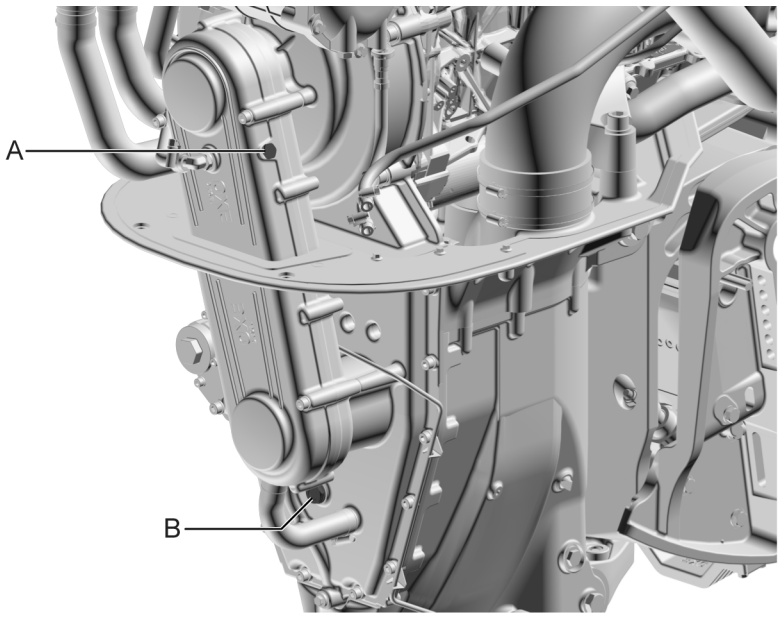
inlet. Refer to Section "Recommended fluids and grease", page 15.

2. Wipe clean.

3. Check the gearbox oil level through the sight glass (B) and fill up gearbox oil if necessary.

NOTE

An accurate gearbox oil level can be checked when the engine has stopped and the cooler has drained completely. Allow approximately seven (7) minutes between engine stop and gearbox oil level check.



4. Clean the magnetic oil plug (A) and install a new washer.

5. Tighten the magnetic oil plug (A) to a tightening torque of 9 Nm (6.6 lb-ft).

WARNING

Use only approved fluids, lubricants etc. (see the "Recommended fluids and grease" page 15). Otherwise, the manufacturer's Global Warranty Policy will become null and void.

Coolant must be added at the filler cap only.

WARNING

- Do not add cold coolant to a warm engine.
- Ensure that the mixing ratio "water-antifreeze" is preserved.
- Slowly fill up with coolant at the filler neck on the expansion tank. The cooling level should be between the max and min indications on the expansion tank. Refit the cap (D) to the expansion tank.

  Let the engine run at a speed of 2000 rpm for approximately 5–15 minutes, until the liquid level is stable. Switch off the engine and carefully turn the expansion tank cap to relieve pressure.

DANGER

- Do not open the cap until pressure is released. Risk of scalding and burning injuries!
- Top up coolant to between the max and min indications on the expansion tank if necessary. Before the next engine cold start, check the coolant level and top up if necessary.
- Repeat this procedure until no more coolant needs to be added and all air has been removed from the system.

DANGER

If, in an exceptional case, the coolant level has to be checked in an engine that has reached operating temperature, first carefully turn the expansion tank cap with the safety valve to the first stop. Then let off pressure and finally open carefully!

NOTE

Do not open the cooling system when the engine is at operating temperature. This causes a pressure loss in the cooling system.

If the cooling system has been opened while the engine was at operating temperature, and the engine is put into operation, this may lead to a "pressure in the expansion tank" alarm being indicated and to a reduction in the engine output. The cooling system must therefore only be filled up or checked when the engine is cold.

FILLING THE LOWER UNIT OIL

1. Remove the M20 sight glass (C)./belt tensioner
2. Fill with belt oil through the sight glass inlet (D/ tensioner until oil begins to come out at the upper oil plug (A).Figure 59
   The upper plug (A) marks the correct oil level. See “Recommended Fluids and Lubricants,” page 15 for the correct oil type.

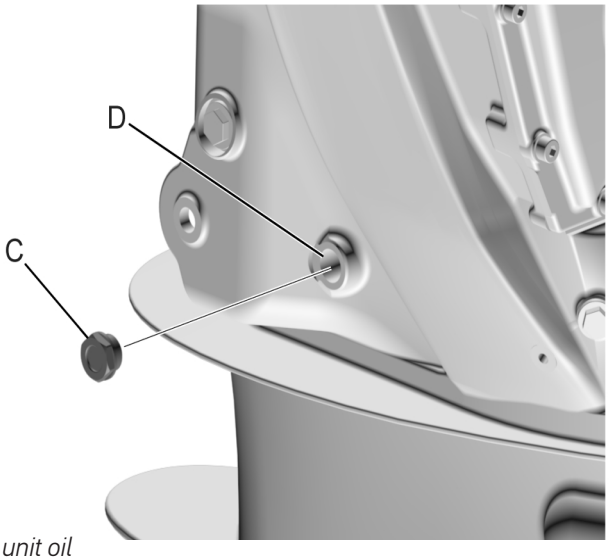


Fig. 58 *Filling the lower unit oil*

3. Reinstall and tighten oil plug (A) to 9 Nm (6.6 lb-ft).
4. Clean the sight glass (on models with sight glass) Install a new seal. Tighten the M20 sight glass (C) /belt tensioner to 12 Nm (8.9 lb-ft).

Alternative method to fill lower unit oil

1. Use a marine industry standard oil filling device to fill up the lower unit oil through the lower oil drain plug (B) hole until oil comes out through the upper oil plug (A) hole.

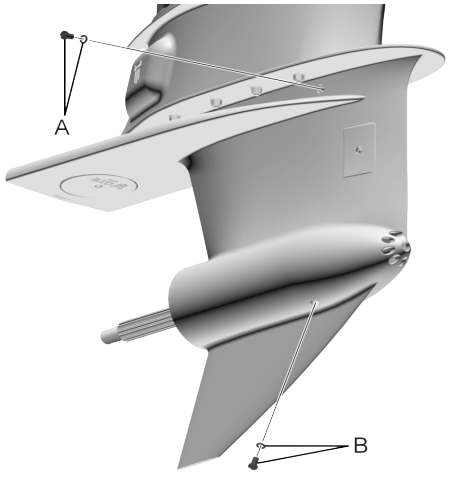


Fig. 59 *Filling the lower unit oil*

NOTE

Clean the magnetic oil plugs and install seals.

2. Place the upper oil plug (A) back into the upper oil plug hole when oil starts to come out through the hole and install seal.
3. Remove the oil filling devise and reinstall the lower oil drain plug (B)
4. Tighten both oil plugs (A) and (B) to 9 Nm (6.6 lb-ft).

FILLING ENGINE OIL

CAUTION

Ensure the outboard is trimmed down in a vertical position.

1. Open the oil filler cap and fill with fresh engine oil through the oil filler neck. Refer to"Recommended fluids and grease", page 15.

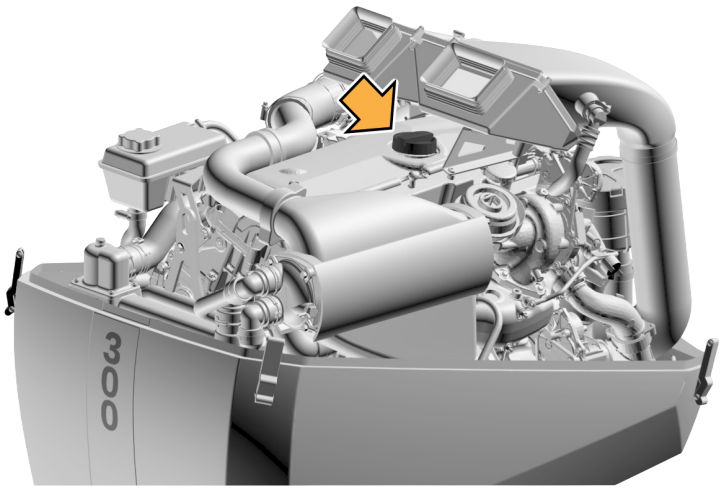


Fig. 60 *Filling engine oil*

2. Check the engine oil level

WARNING

Do not fill engine oil beyond the maximum notch on the dipstick. Overfilling oil may cause damage to the engine.

3. Close the filling cap and wipe clean.

4. Start the engine and let it run for a few minutes at low speed.

CAUTION

If no oil pressure builds up after approx. 10 seconds switch off the engine immediately.

5. Check oil pressure and leaks.
6. Shut down the engine.
7. Wait 20 minutes
8. check the oil level again.

The oil level should be between the two notches in the dipstick and must never fall below the lower notch.

Top up oil as necessary. Do not overfill.

BLEEDING THE FUEL SYSTEM

NOTE

In order for the diesel fuel system to work properly, the fuel lines must be full of fuel and free from air. It is necessary to bleed/evacuate the air from the system before operating the outboard.

Air could enter the fuel system in any of the following ways:

- The outboard has just been installed.
- The engine ran out of fuel.
- The fuel lines have been damaged and or leaking joints.
- The fuel filter was removed for service or replacement.
- The fuel lines were removed or disconnected for servicing.
- The fuel lines are poorly connected.
- The fuel pump was removed for servicing.
- The fuel pre-filter water drain cock was opened while the engine was running.

If one or more of the above occurs, and air has entered the fuel system, you have to evacuate the air from the system prior to operating the OXE outboard!

Bleeding procedure

1. Turn the ignition key ON.

The fuel pump will run for 20 seconds.

NOTE

Do not turn the ignition key to START. This could damage the injection pump.

2. Switch off the ignition key and wait for 25 seconds.
3. Turn the ignition key ON.
   The fuel pump will run for 20 seconds.
4. Turn the ignition key to START, run for 15 seconds.

NOTE

If the outboard does not start, switch off the ignition key and wait for 25 seconds.

Repeat steps 1-4 three times until the pump is filled with fuel and no more air is left.

If the outboard does not start after three attempts, go through the list of reasons for air entering the system above before making any further attempts to start the outboard! Failure to observe this recommendation may lead to damage to the injector pump!

STEERING

The following diagrams illustrate Dometic (Seastar) steering. Consult technical support or engine/boat supplier.

When selecting steering appliance for best engine/boat performance.

DOMETIC

Hydraulic/Electric steering without joystick

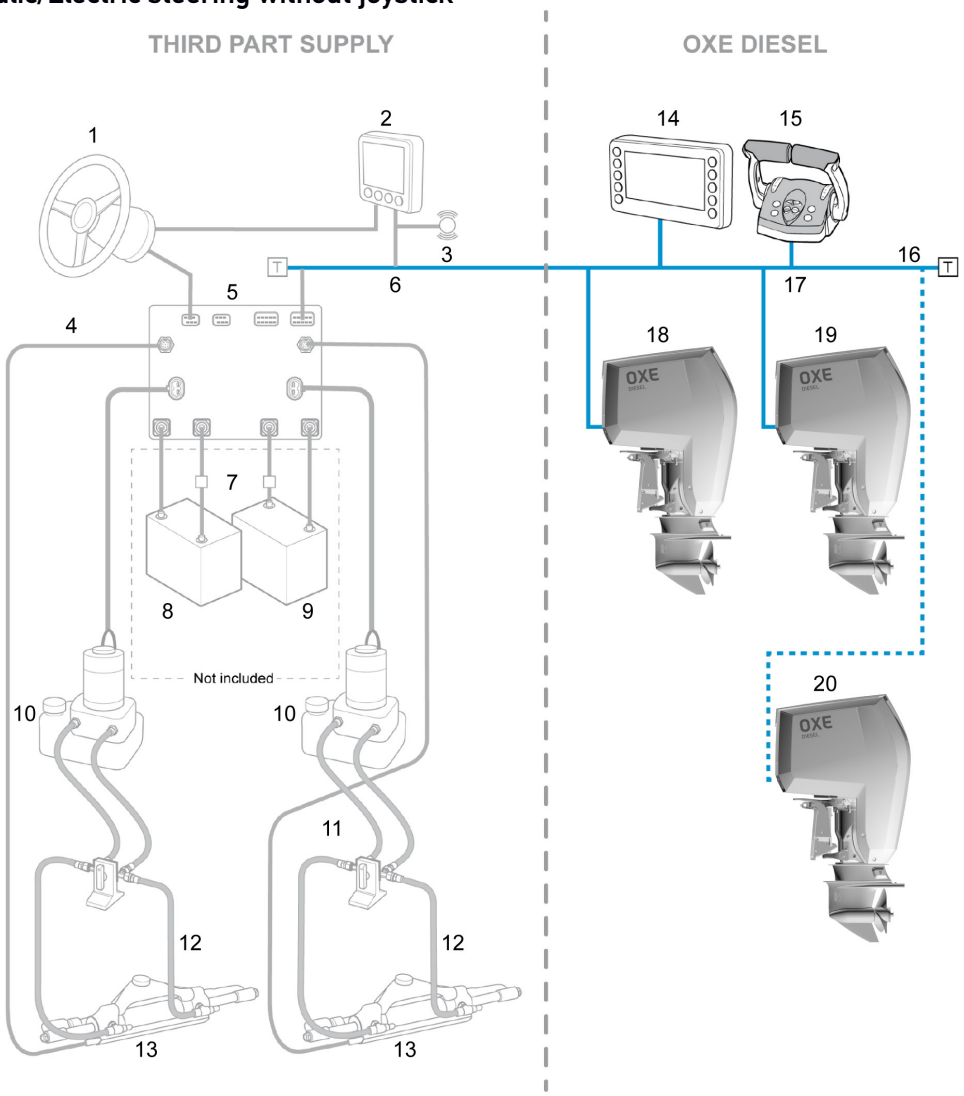


Fig. 61 *Electro steering without joystick*

1 Helm
2 Steering display
3 Buzzer
4 CAN 1 Network
5 PCM
6 CAN 2 Network
7 Breakers
8 Port power source
9 Starboard power source
10 Hydraulic pump
11 Service valve
12 Hydraulic hose
13 Smart cylinder
14 Engine display
15 Control head
16 Network terminator × 2
17 OXE-E-CAN Network
18 OXE Diesel #1
19 OXE Diesel #2
20 OXE Diesel #3, 4 ...

Electric steering with joystick

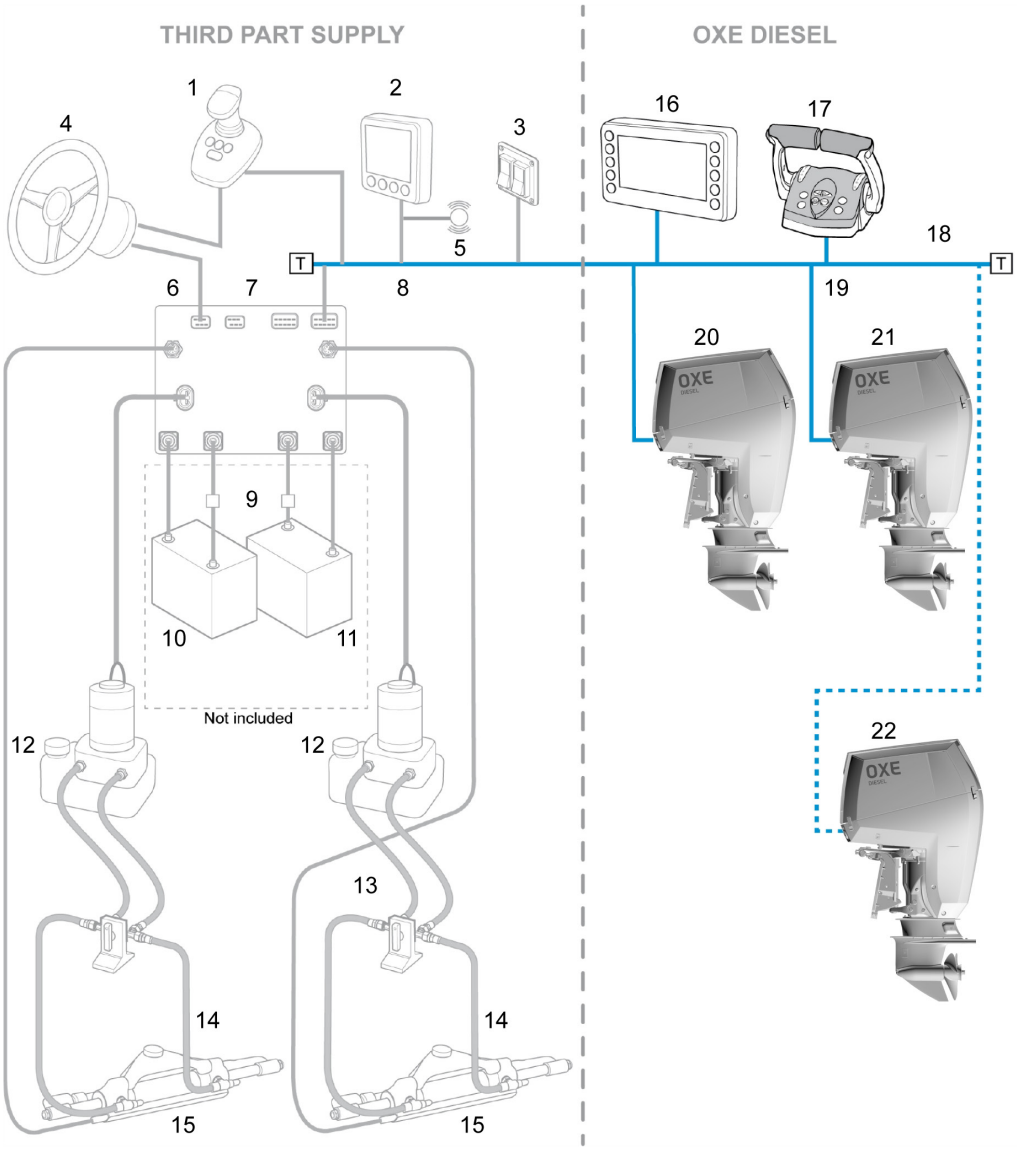


Fig. 62 *Electro steering with joystick*

1 Joystick
2 Engine display
3 Independent trim/tilt switch
4 Helm
5 Buzzer
6 CAN 1 Network
7 PCM
8 CAN 2 Network
9 Breakers
10 Port power source
11 Starboard power source
12 Hydraulic pump
13 Service valve
14 Hydraulic hose
15 Smart cylinder
16 Engine display
17 Control head
18 Network terminator × 2
19 OXE-E-CAN Network
20 OXE Diesel #1
21 OXE Diesel #2
22 OXE Diesel #3, 4 ...

Power steering

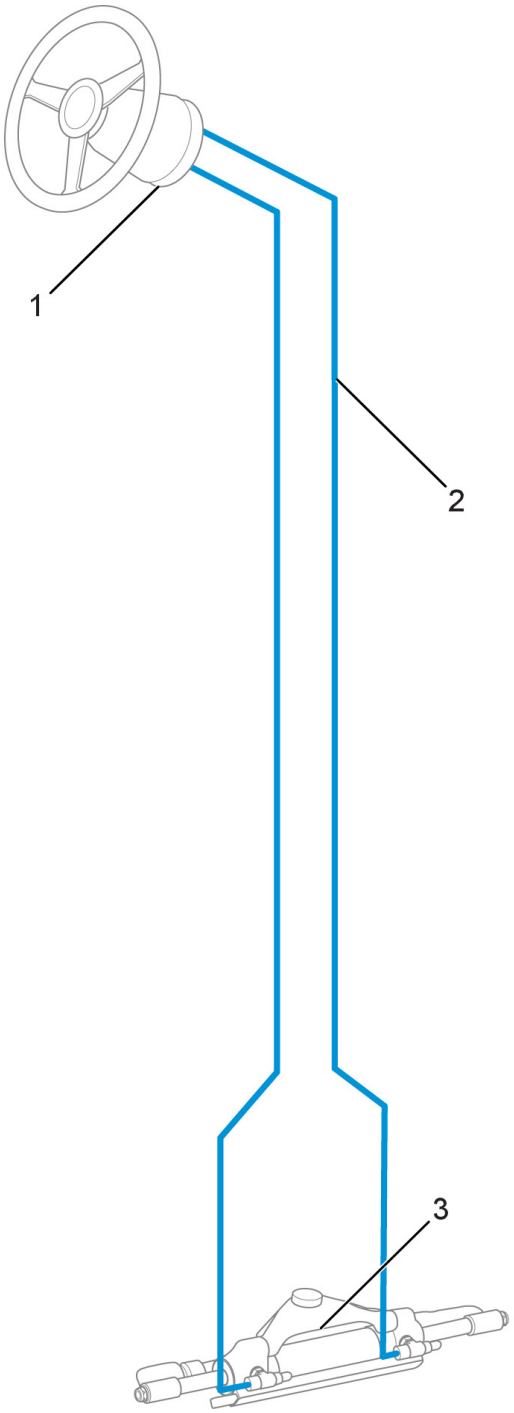


Fig. 63 *Power steering*

Item	Description
1	Helm
2	Hydraulic hose
3	Steering cylinder

Fig. 64 *Power steering table*

Power steering servo assisted

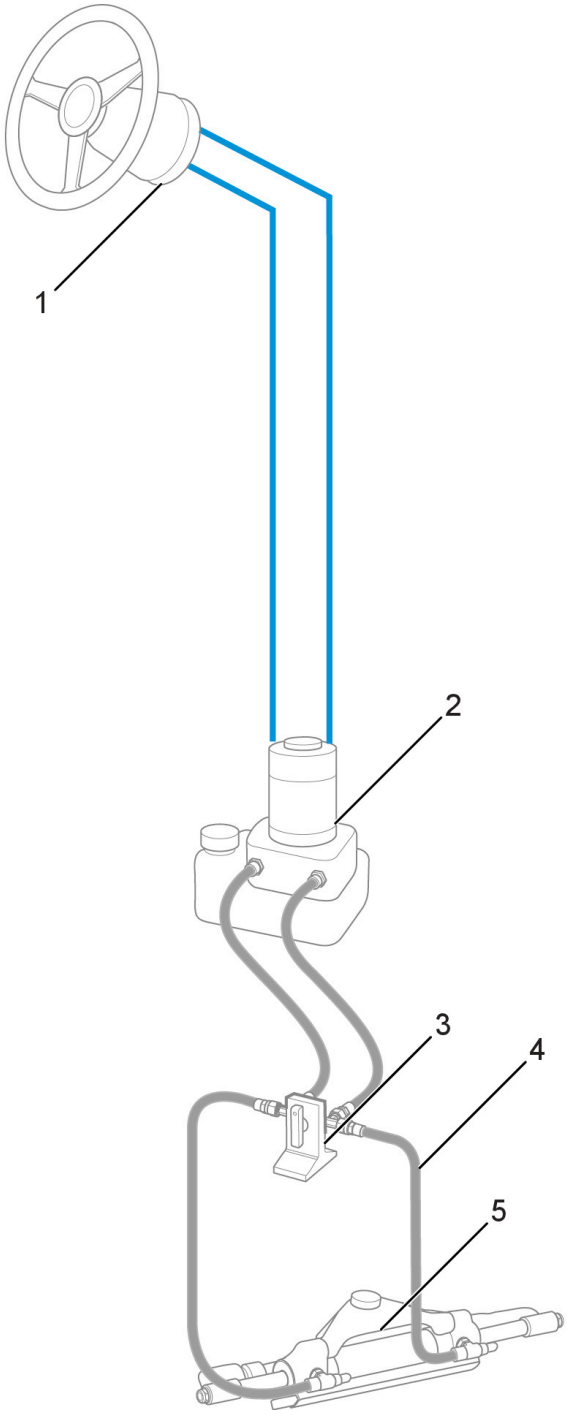


Fig. 65 *Power steering servo assisted*

Item	Description
1	Helm
2	Hydraulic pump
3	Service valve
4	Hydraulic hose
5	Steering cylinder

Fig. 66 *Power steering servo assisted table*

Steering cylinder in single engine application

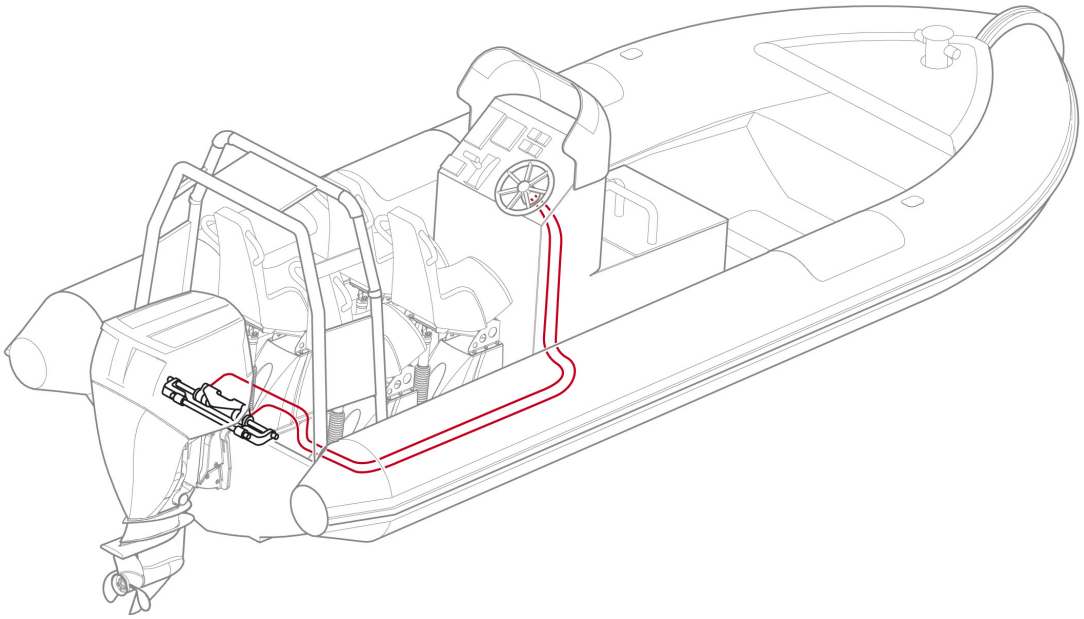


Fig. 67 *Steering cylinder in single engine application*

Steering cylinder and tie bar in twin engine application

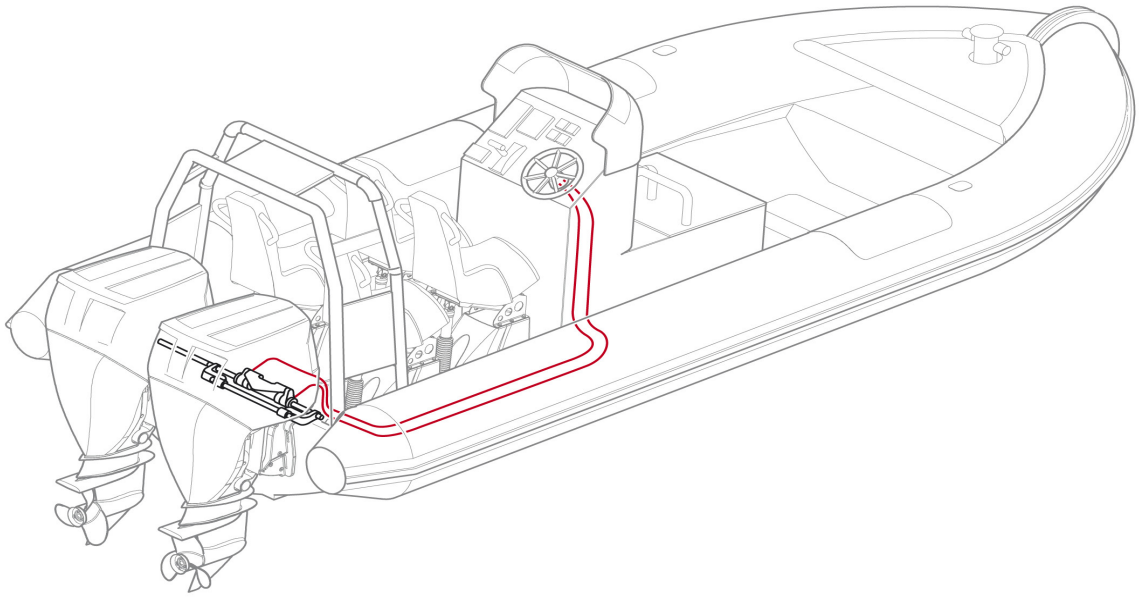


Fig. 68 *Steering cylinder and tie bar in twin engine application*

Two steering cylinders and one tie bar in triple engine application

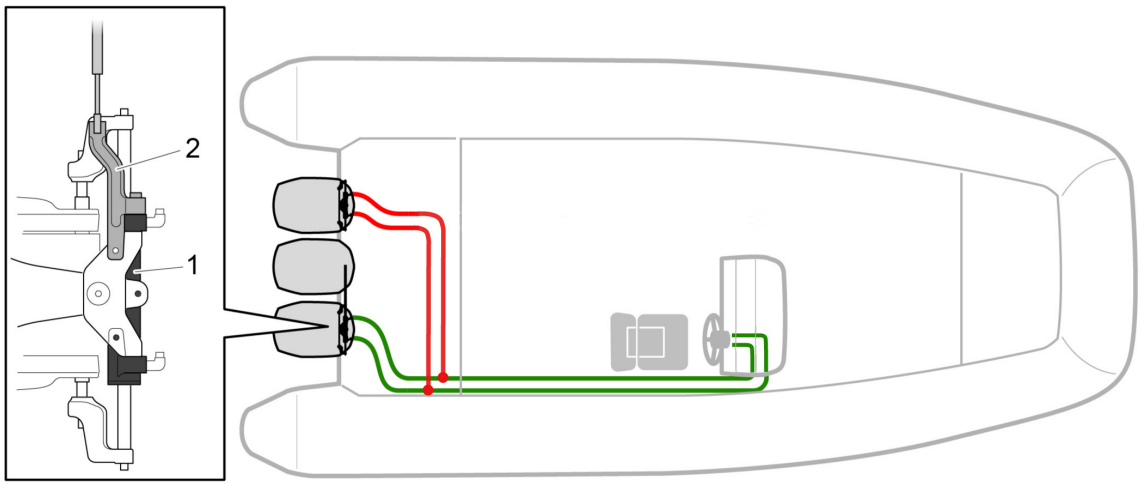


Fig. 69 *Two steering cylinders and one tie bar in triple engine application*

1. Steering cylinder
2. Tie bar

Two steering cylinders and two tie bars in quad engine application

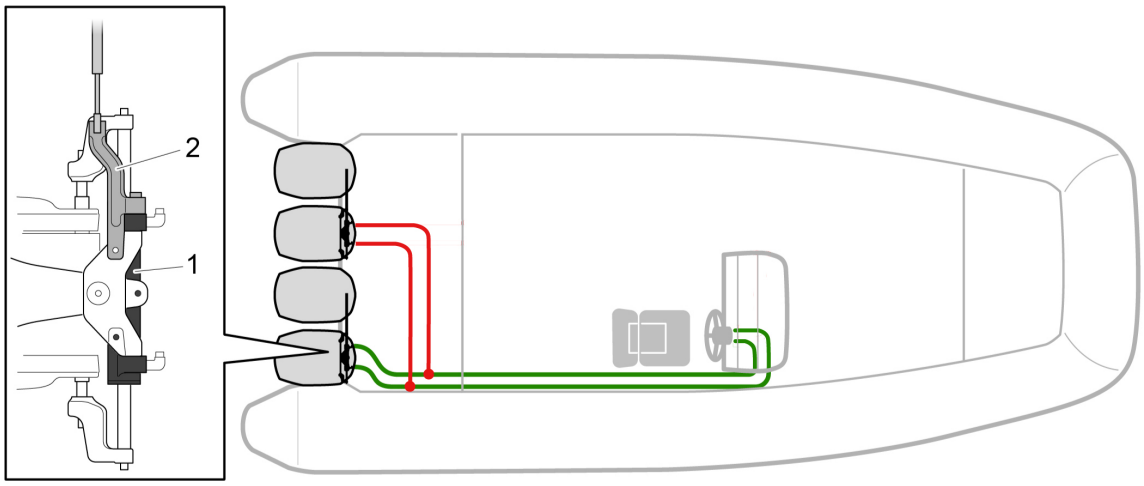


Fig. 70 *Two steering cylinders and two tie bars in quad engine application*

1. Steering cylinder
2. Tie bar

UFLEX

Electronic steering connection

Single station

Connect the two output:

- CAN bus cables (1) and (2) on the back of the electronic steering system to the
- PORT (3) and STARBOARD (4) Tee connections respectively.

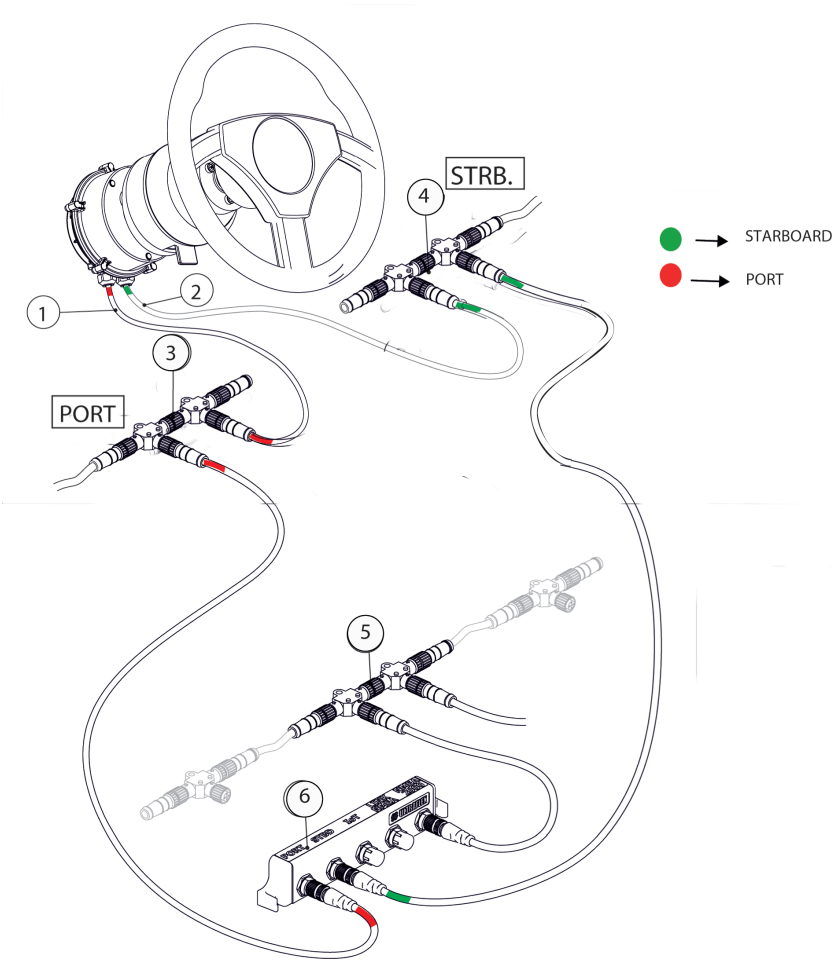


Fig. 71 *Uflex single connection*

BCM connection

The signals coming from:

- The PORT (3) and STARBOARD (4) Tee connections and from
- The NMEA 2000 network (5) must reach.
- The BCM module (6). The connection is made using CAN bus cables.

Dual station

In case of dual station, it is necessary to add a:

- CAN bus union tee (5) to both connections, as shown in the picture and to connect
- The CAN bus output cables (6) and (7) from the second station.
- Reposition the termination plug (8) which was previously removed on the last union tee.

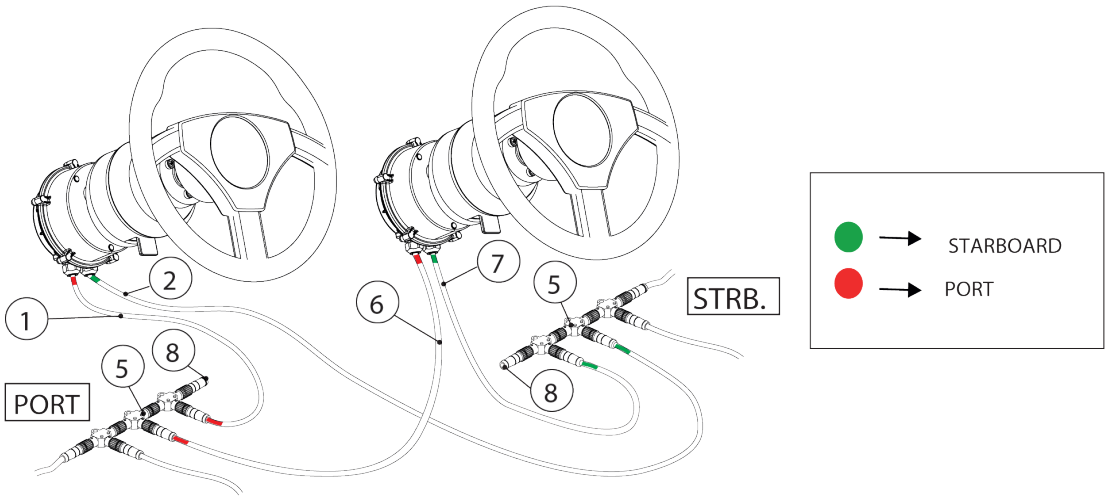


Fig. 72 *Uflex dual station*

UC120E hydraulic cylinder connection

The UC120E cylinder can be use in both STARBOARD and PORT position according to the type of system configuration. The cylinder connection in EPS and CEPS configurations is described below.
The UC120E hydraulic cylinder is supplied with a 4.5 metre long cable already wired and with a specific terminal.

Eps version

In the EPS configuration, the UC120E cylinder is installed on the STARBOARD side (STARBOARD), so it is necessary to connect:

- The cylinder (5) to
- The STARBOARD (4) Tee connection, as shown in the picture below.

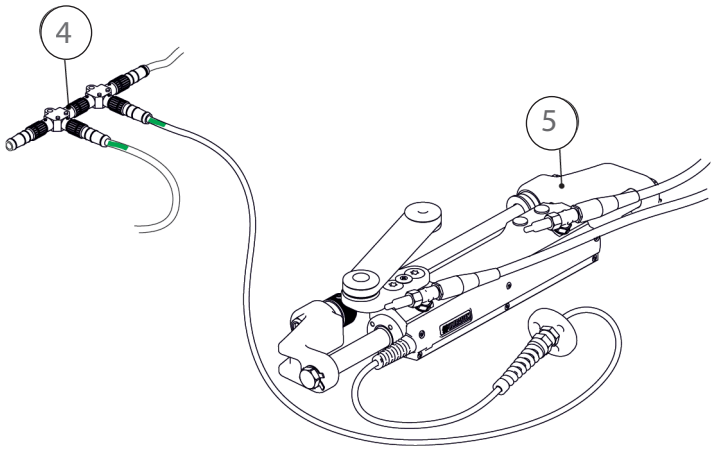


Fig. 73 *Uflex eps version*

Ceps version

This configuration is based on the use of two UC120E cylinders to install one

- (1) on the STARBOARD side and the other one
- (2) on the PORT side interchangeably.

NOTE

Once the installation side of each cylinder has been determined, correctly identifying the corresponding CAN connections requires marking the STARBOARD side with GREEN adhesive tape and the PORT side with RED adhesive tape.

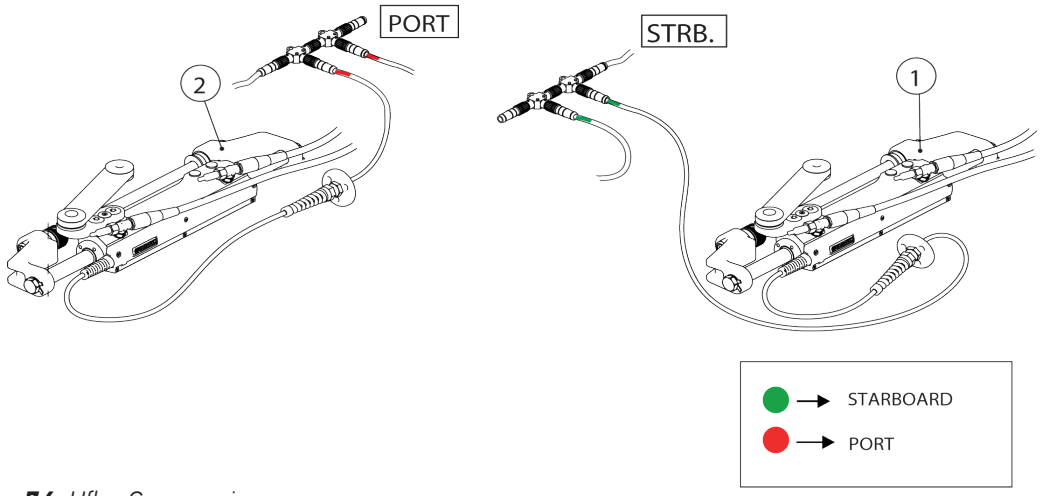


Fig. 74 *Uflex Ceps version*

NOTE

In case the electric cable of the cylinder sensor is not long enough to reach the connection point, it is possible to use a CAN extension.

If necessary, use a 3 metre extension cable, available on request.

CONFIGURATION TYPES

Electronic power steering system

- Hydraulic connections.
- Electric connection of electro-hydraulic power unit and any extensions.
- Control panel connection.
- Electronic steering system connection.
- BCM connection.
- UC120E hydraulic cylinder electric connection.

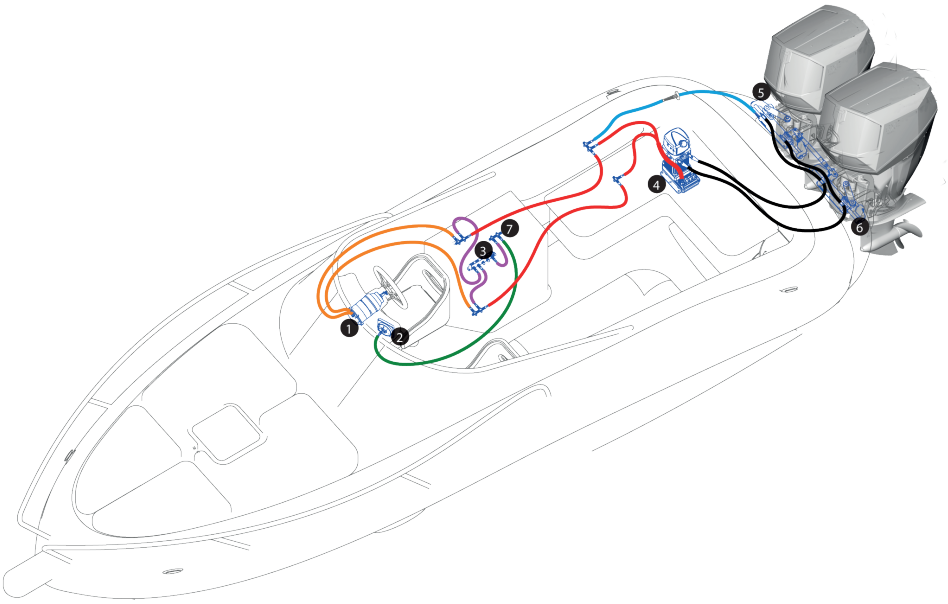


Fig. 75 *Uflex Electronic power steering*

Item	Description
1	Steering system
2	Control panel VDO
3	BCM
4	Electro-hydraulic power unit
5	UC120E hydraulic cylinder
6	UC120E - OBF hydraulic cylinder
7	NMEA 2000 network

Fig. 76 *Table*

NOTE It is recommended to install BCM module and CAN connections near the steering system in order to use shorter CAN cab

Eps integra wiring diagram

NOTE Length of cable is given as suggestion.

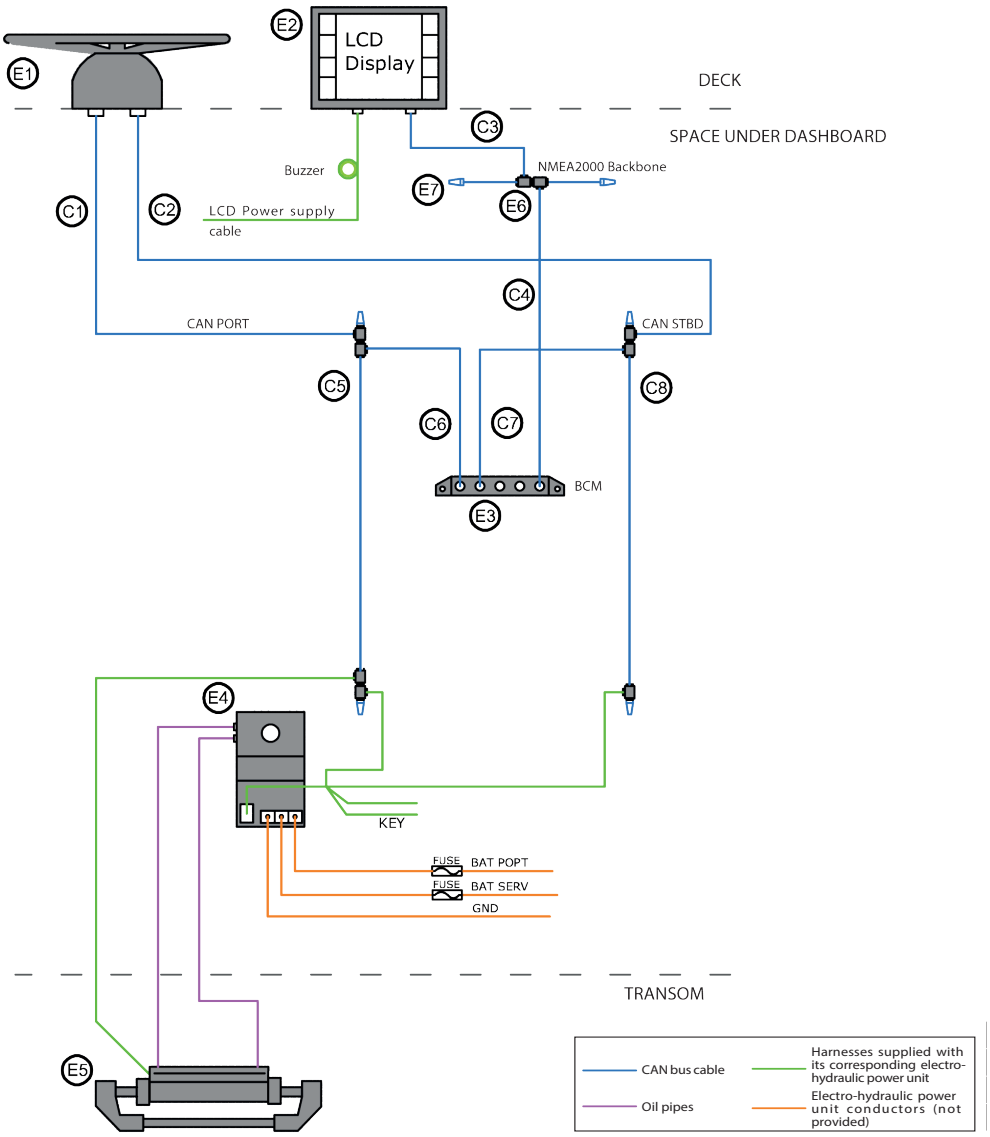


Fig. 77 *Eps integra wiring diagram*

Electronic components

Item	Description	QTY
E1	Electronic steering system	1
E2	VDO Display	1
E3	BCM	1
E4	Electro-hydraulic power unit	
E5	UC120-E cylinder	
E6	CAN bus - Tee connection	
E7	CAN bus - Pair of terminals	

Fig. 78 *Eps integra wiring diagram table 1*

Cables

Item	Description	QTY
C1	CAN bus	3
C2	CAN bus	3
C3	CAN bus	3
C4	CAN bus	1
C5	CAN bus	7
C6	CAN bus	1
C7	CAN bus	1
C8	CAN bus	7

Fig. 79 *Eps integra wiring diagram table 2*

Ceps integra system

- Hydraulic connections.
- Electric connection of electro-hydraulic power unit and any extensions.
- Control panel connection.
- Electronic steering system connection.
- BCM connection.
- UC120E hydraulic cylinder electric connection.

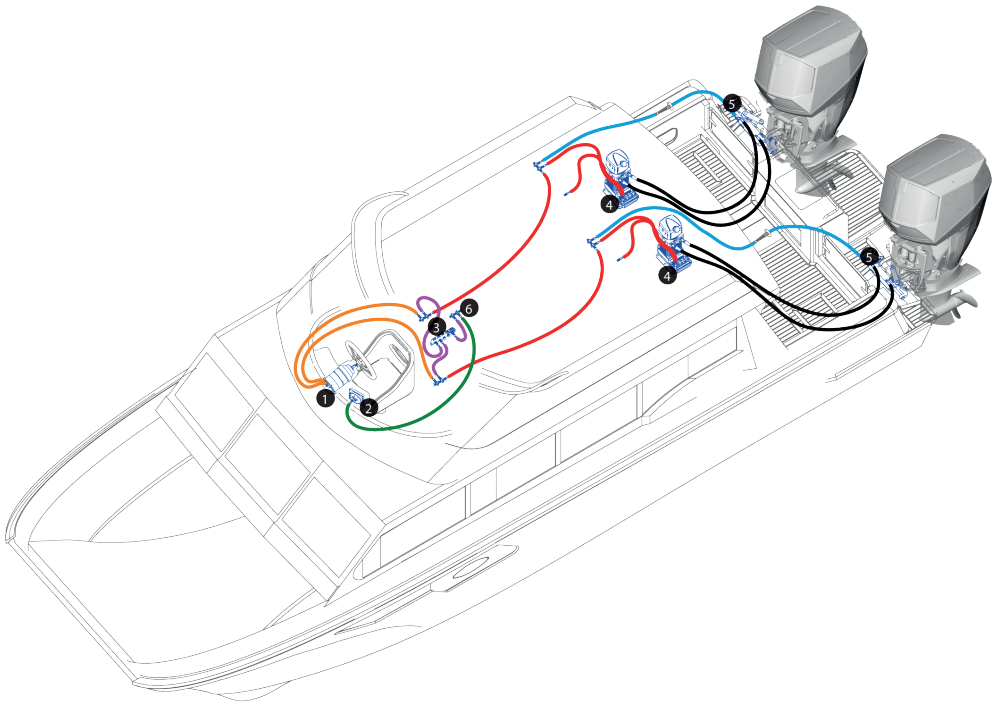


Fig. 80 *Ceps integra system*

Item	Description
1	Steering system
2	Control panel VDO
3	BCM
4	Electro-hydraulic power unit
5	UC120E hydraulic cylinder
6	NMEA 2000 network

Fig. 81 *Ceps integra system table*

NOTE

It is recommended to install BCM module and CAN connections near the steering system in order to use shorter CAN cables.

Ceps integra wiring diagram

NOTE Length of cable is given as suggestion

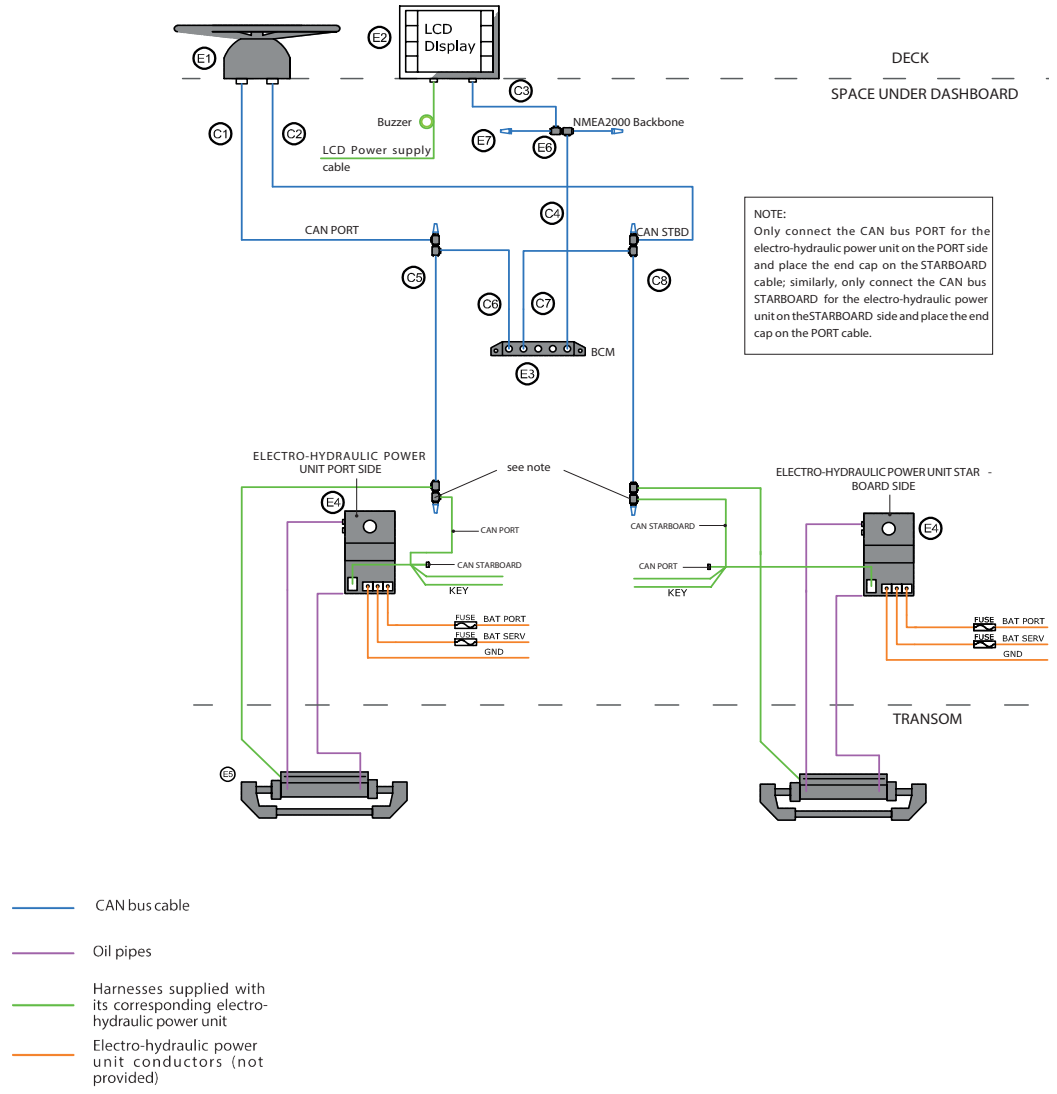


Fig. 82 *Ceps integra wiring system*

Electronic components

Item	Description	QTY
E1	Electronic steering system	1
E2	VDO Display	1
E3	BCM	1
E4	Electro-hydraulic power unit	2
E5	UC120-E cylinder	2
E6	CAN bus - Tee connection	10
E7	CAN bus - Pair of terminals	3

Fig. 83 *Ceps integra wiring system table 1*

Cables

Item	Description	QTY
C1	CAN bus	3
C2	CAN bus	3
C3	CAN bus	3
C4	CAN bus	1
C5	CAN bus	7
C6	CAN bus	1
C7	CAN bus	1
C8	CAN bus	7

Fig. 84 *Ceps integra wiring system table 2*

Second station add-on

The connection of the second station consisting of electronic steering system and LCD display is the same for both configurations. Connect the CAN PORT and STARBOARD cables to the system by means of a Tee connector. The display must be connected to the power supply and to the NMEA2000 backbone by means of a Tee connector.

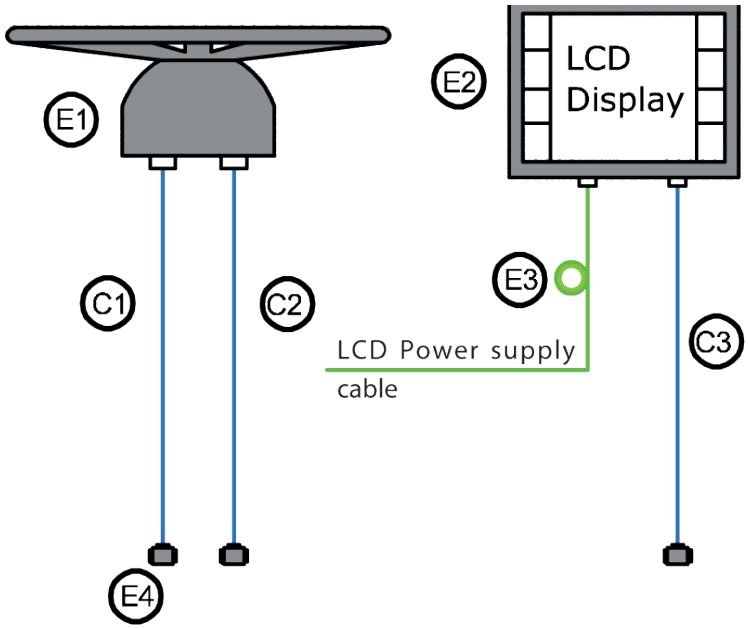


Fig. 85 *Second station add-on*

Electronic components

Item	Description	QTY
E1	Steering system Second station	1
E2	VDO display - Second station	1
E3	Buzzer	1
E4	CAN bus - Tee connection	3

Fig. 86 *Second station add-on table 1*

Cables

Item	Description	LGTH (m)*
C1	CAN bus	7
C2	CAN bus	7
C3	CAN bus	7

Fig. 87 *Second station add-on table 2*

Hydraulic connections

As described in the hydraulic cylinder installation and maintenance manual for INTEGRA UC120 outboard enginws, the system makes use of a UC120E electronic cylinder combined, in the case of several engines, with a UC120P-OBF hydraulic cylinder and with dedicated tie bars depending on the configuration.
The possible configurations are:

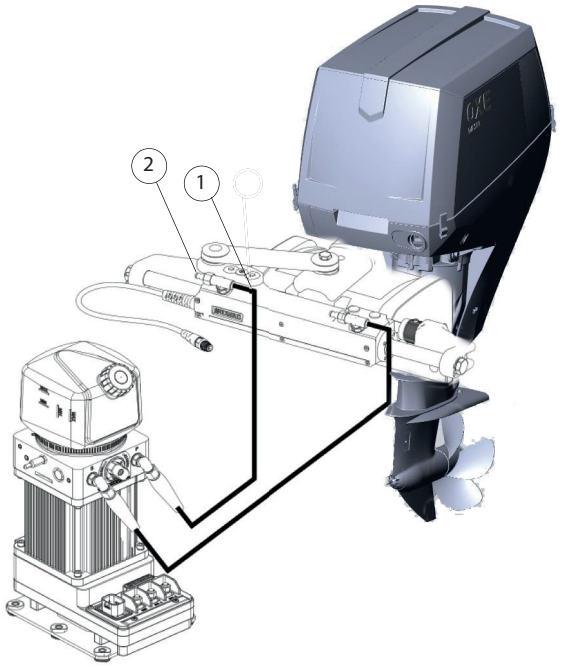


Fig. 88 *Hydraulic connections 1 engine*

Item	Description	Qty
1	Kit OB-R5 SVS (1740 psi)	1
2	UC120E cylinder	1

Fig. 89 *Hydraulic connections 1 engine table*

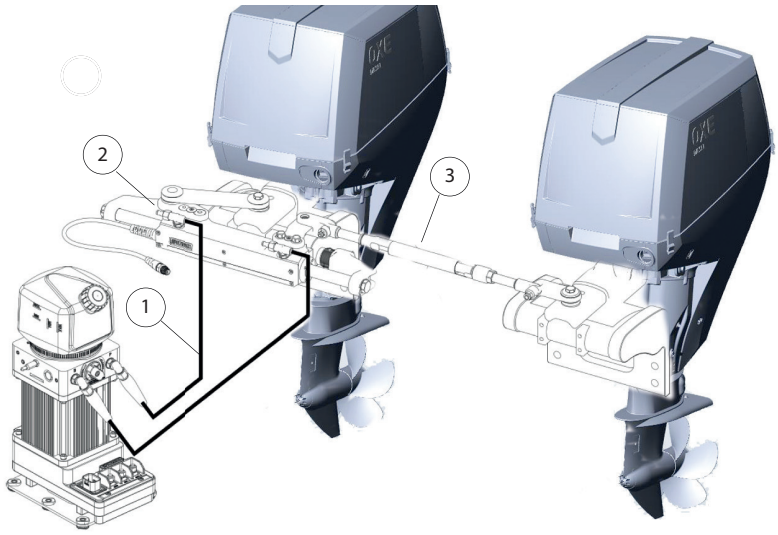


Fig. 90 *Hydraulic connections 2 engines*

Item	Description	Qty
1	Kit OB-R5 SVS (1740 psi)	1
2	UC120E cylinder	1
3	A96-120 bar	1

Fig. 91 *Hydraulic connections 2 engines table*

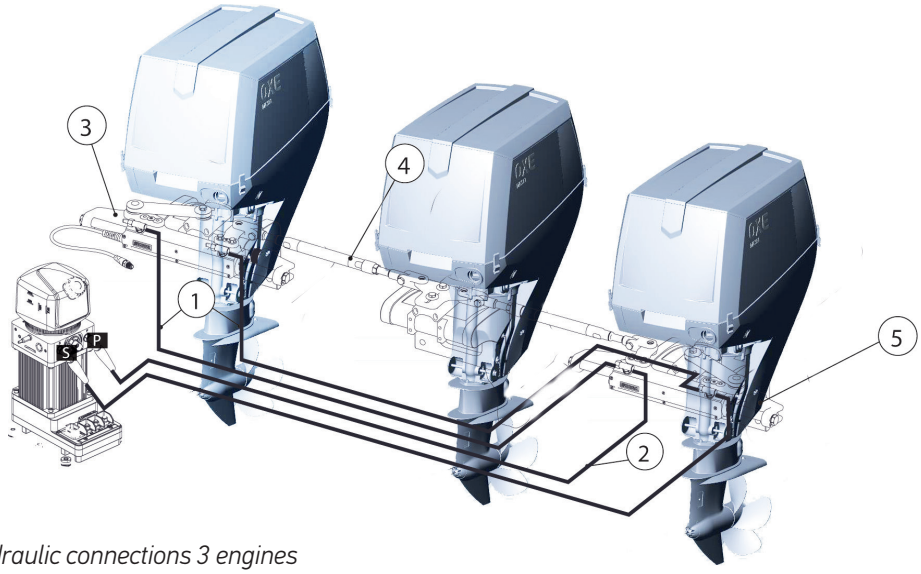


Fig. 92 *Hydraulic connections 3 engines*

Item	Description	Qty
1	Kit OB-2C SVS (1740 psi	1
2	Kit OB-R5 SVS (1740 psi)	1
3	UC120E cylinder	1
4	A97-120 bar	1
5	UC120P-OBF cylinder	1

Fig. 93 *Hydraulic connections 3 engines table*

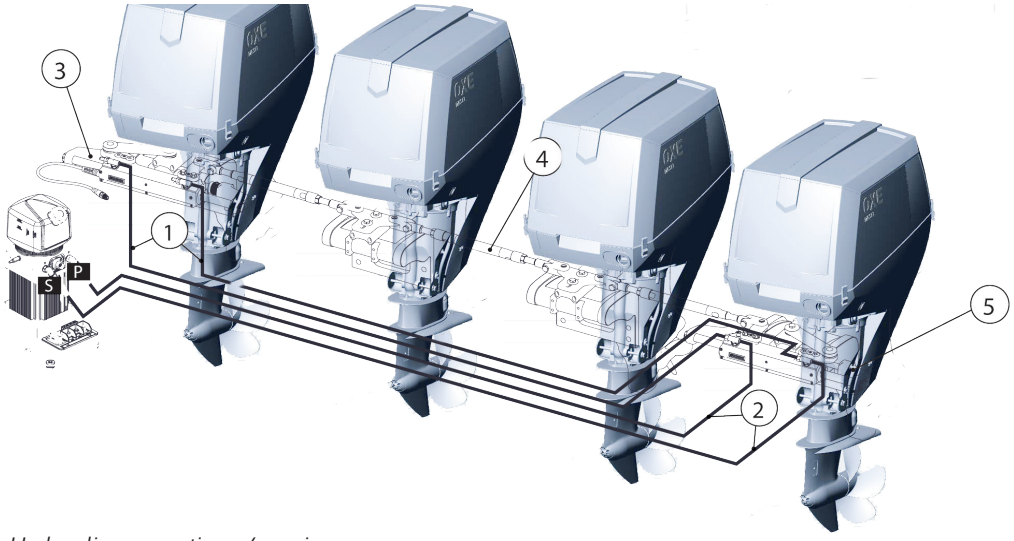


Fig. 94 *Hydraulic connections 4 engines*

Item	Description	Qty
1	Kit OB-2C SVS (1740 psi	1
2	Kit OB-R5 SVS (1740 psi)	1
3	UC120E cylinder	1
4	A98-120 bar	1
5	UC120P-OBF cylinder	1

Fig. 95 *Hydraulic connections 4 engines table*

Electrical connections

The system must be wired according to the instructions given in this chapter.
To connect cables following the correct order, it is advisable to divide them into different groups. The first group includes all the power connections:

1. Connection of the system power cables to their power sources with all the safety devices (fuses).
2. Key signal connection.

The cables listed above can share the same path (if possible) without causing any interference or failure in the system.

The second group includes the communication wirings (CAN bus). In this case too, the cables of this group can share the same path. These last cables should never be installed in places with strong electromagnetic interferences to avoid damaging the integrity of the signal.
Therefore, the communication cables should follow paths different from the power cables.

INSTALLATION WIRING G4

Single engine application

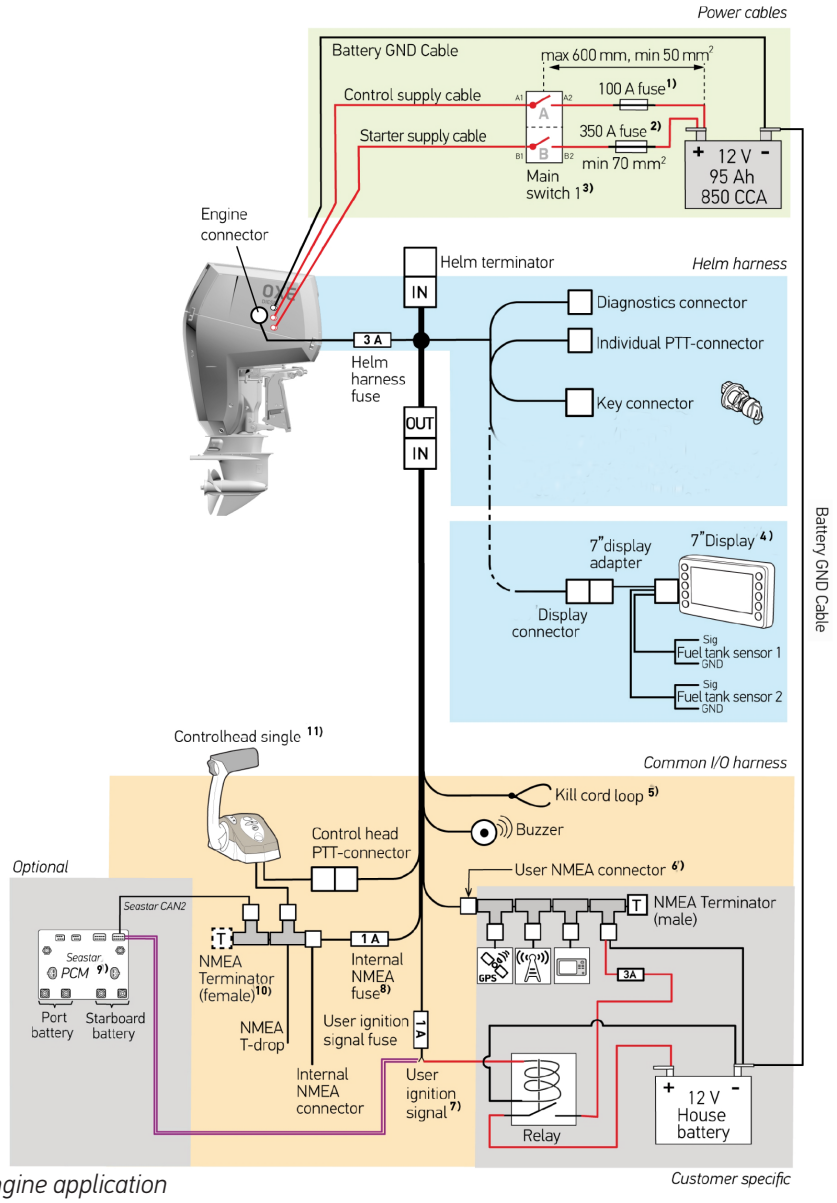


Fig. 96 *Single engine application*

Color codes and cable harness

Item	Description
	Helm harness
	Common I/O harness
	Power cables
	Customer specific

Fig. 97 *Colour codes, cable harness*

Twin engine application

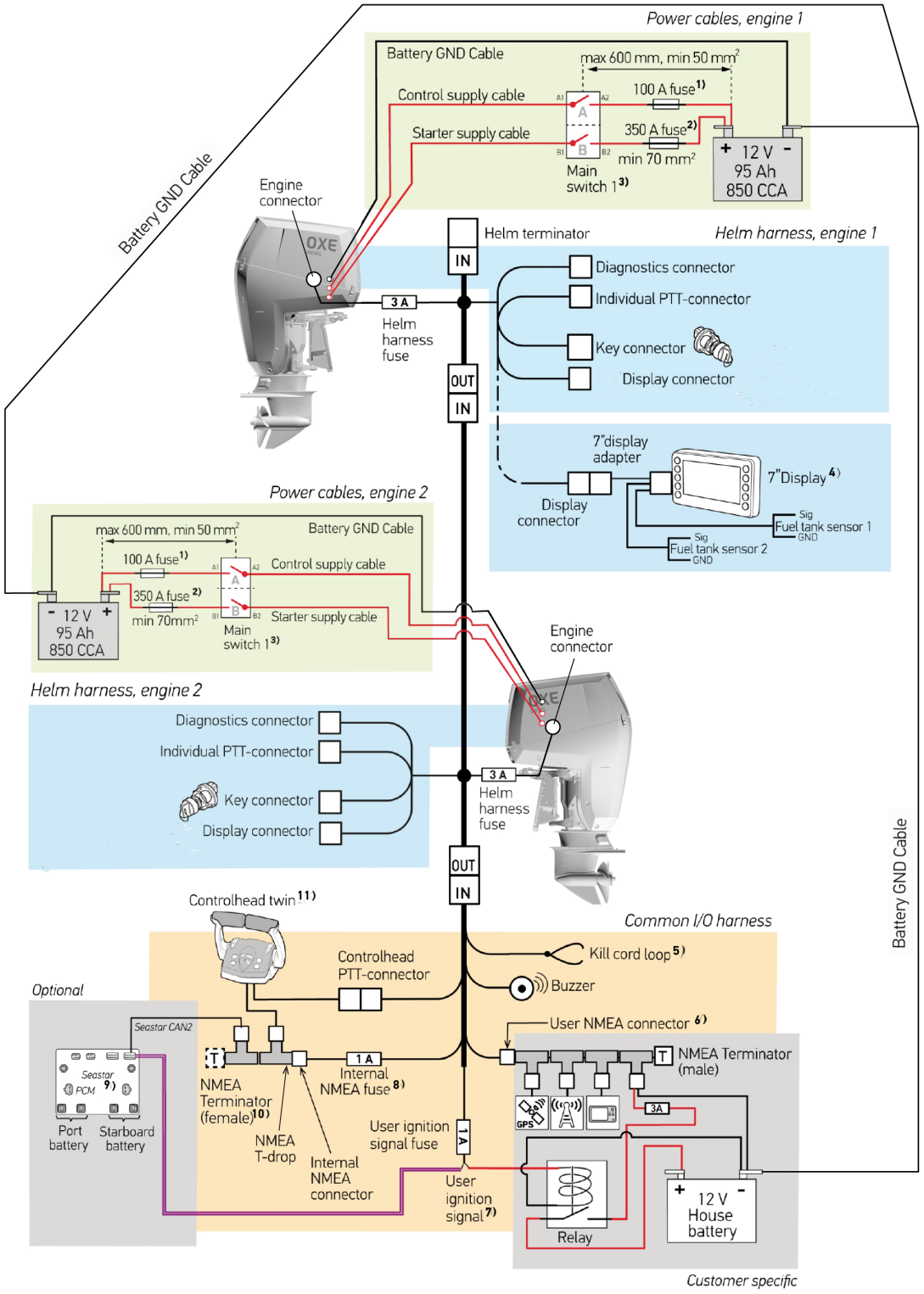


Fig. 98 *Twin engine application*

Triple engine application

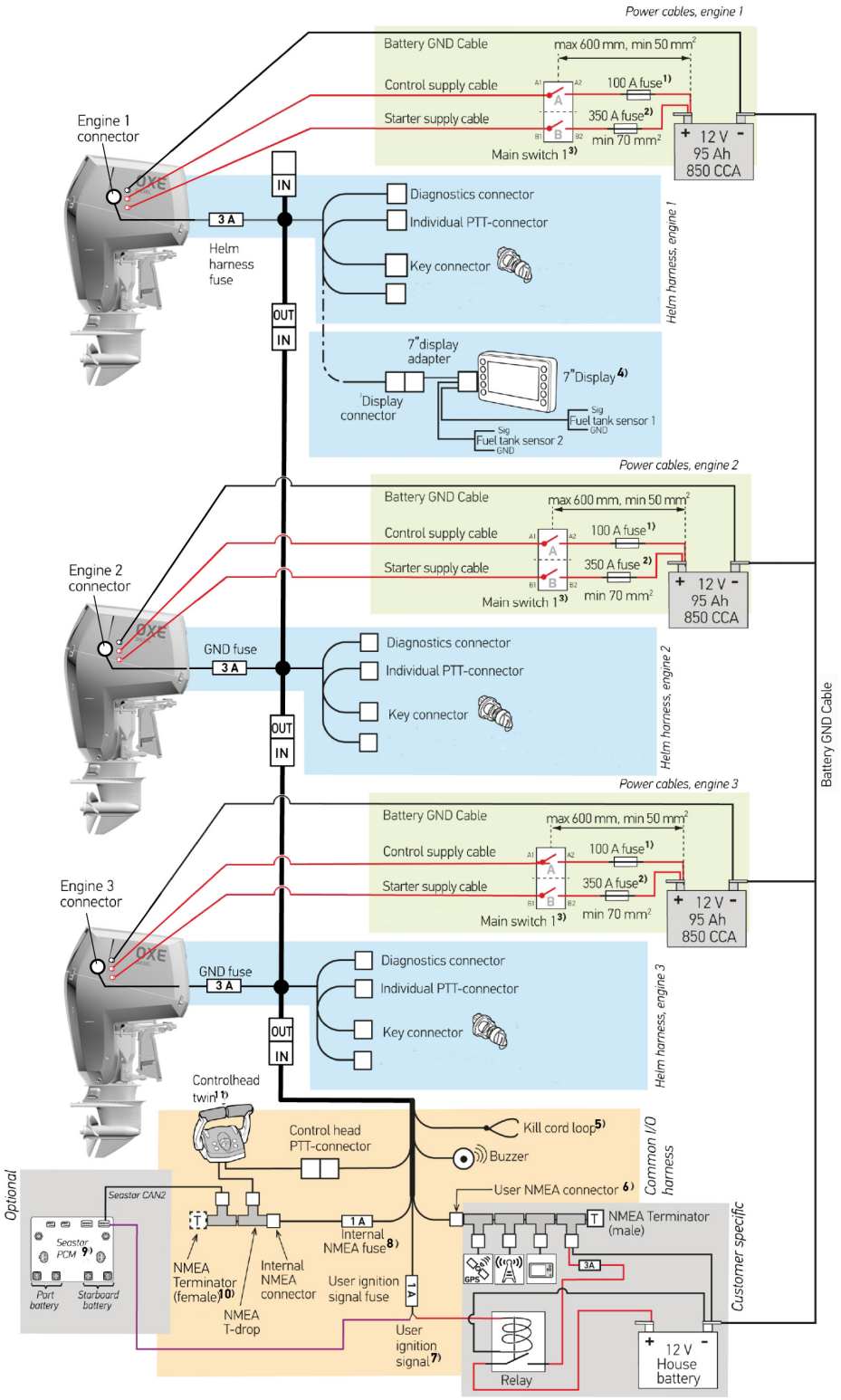


Fig. 99 *Triple engine application*

Quad engine application

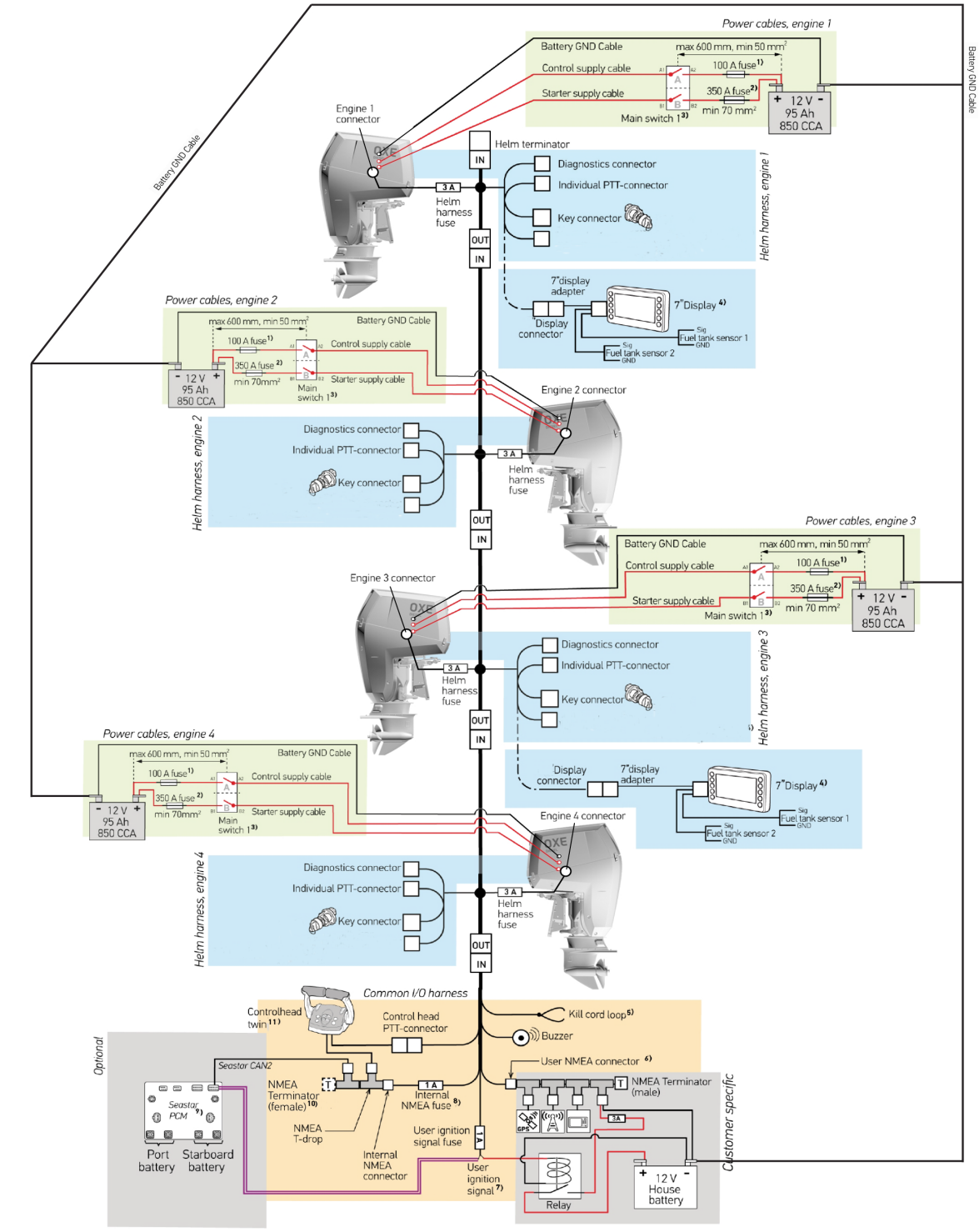


Fig. 100 *Quad engine application*

Wiring installation

NOTE
Only OXE Diesel approved components are permitted to be connected to the internal CAN-Bus.

Do as follows:

1. Use a 100 A fuse on the control supply cable.
2. Use a 350 A fuse on the starter supply cable.
3. Install two individual single-channel switches.

NOTE Do not use a dual switch. The OXE system requires two independent single cables connected directly to the battery. This configuration ensures that voltage spikes are absorbed by the battery, preventing them from transferring between circuits during starter motor engagement.

4. Verify that all switches are securely mounted and properly connected according to the wiring diagram.

Engine displays

OXE offers a variety of displays. Depending on your selection, the illustration and harness shown may not be accurate.

1. Use the 7-inch push-button display (4) and the optional 5-inch and 7-inch touch screens.

- **For single, dual, or triple engine configurations**: Single 7"inch buttom or 5/7" touch display.
- **For quad engine configurations**: Two 7" buttom displays are requiered or a single 5/7" touch display.

NOTE
The 3.5-inch display has been discontinued and is only available as a spare part.

2. Open wiring loop at delivery. The kill cord loop (5) at the helm harness must be closed to enable fuel injection/engine start.

- Open loop = fuel injection disabled.
- Closed loop = fuel injection enabled.

NOTE

The **USER (Public) NMEA2000** connector (6) is used to interface external equipment such as GPS, VHF, or plotter.

WARNING

The user ignition signal must never directly power user applications. It should only be used to control a relay that supplies power to applications such as User NMEA, lights, etc.
To activate the user ignition signal, a maximum 1 A fuse must be installed in the user ignition signal fuse 1 A socket.

3. Do not install the internal NMEA fuse (8) -when the CAN-bus is powered from an external source, such as a Seastar PCM. Refer to the Seastar Manual for further information.

4. Connection point for dual station application (11). Refer to Section Dual station, page 75 for different OXE. outboard applications.

5. Refer to Section "Control head throttle and shift behaviour", page 75.

6. Use controlhead single on single engine and controlhead twin for 2 or moore engines.

CONTROLLHEAD INSTALLATION, DISPLAY INSTALLATION AND TEMPLETES

Dual station

In dual station application, the backbone can be extended maximum 10 meters. Only the second station control head from Dometic (single 30-0116-712, twin 30-0116-713) and touch displays are supported without alternative power supply.

Controllhead thottle and shift behaviour

In single and twin outboard applications, the corresponding control head lever controls the outboard.

Triple outboard application

The centre outboard receives control commands from both port and Starboard engines including gear selection and throttle request as follows:

- Neutral gear unless both port and starboard are requesting the same gear, then that gear is also requested for centre outboard.
- The centre engine follows the lowest throttle request of the port or starboard engine.

The centre outboard is reporting control faults to the port outboard.

Quad outboard application

The port and port centre outboards are paired together and controlled by the port control head lever. The same applies to the starboard outboard pair. The centre outboards are reporting any control fault to their corresponding outer outboard.

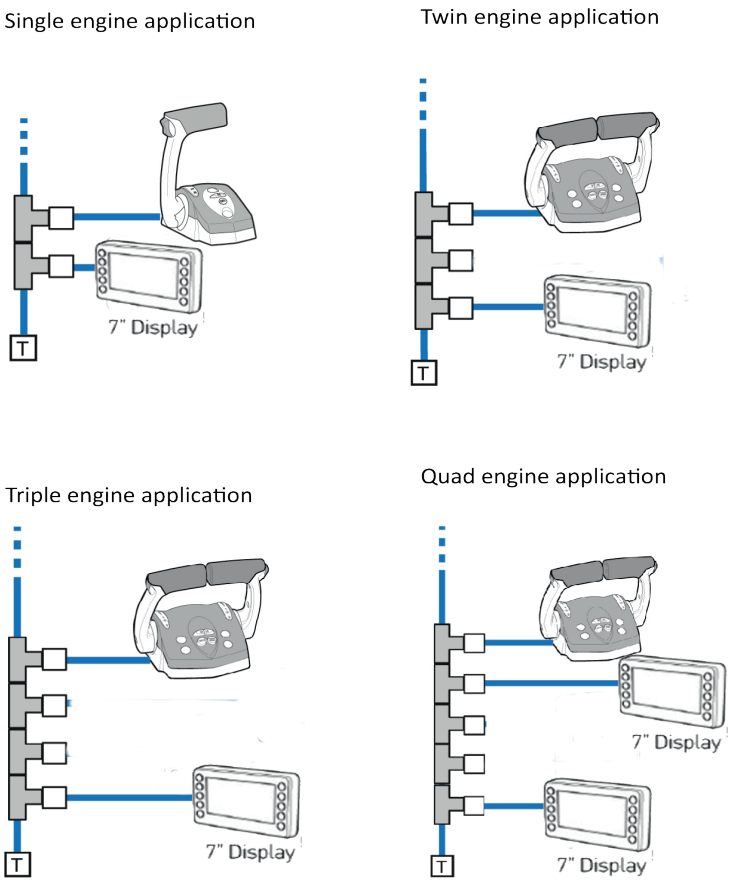


Fig. 101 *Dual station*

WIRING

When installing the OXE Diesel helm harness, do not connect peripheral devices to the INTERNAL CAN system. Use the separate CAN system (user NMEA system) instead.

NOTE

Connecting peripherals to the INTERNAL CAN system voids the Global Warranty Policy.

Any peripheral equipment should be connected to the separate CAN system (user (public) NMEA system).

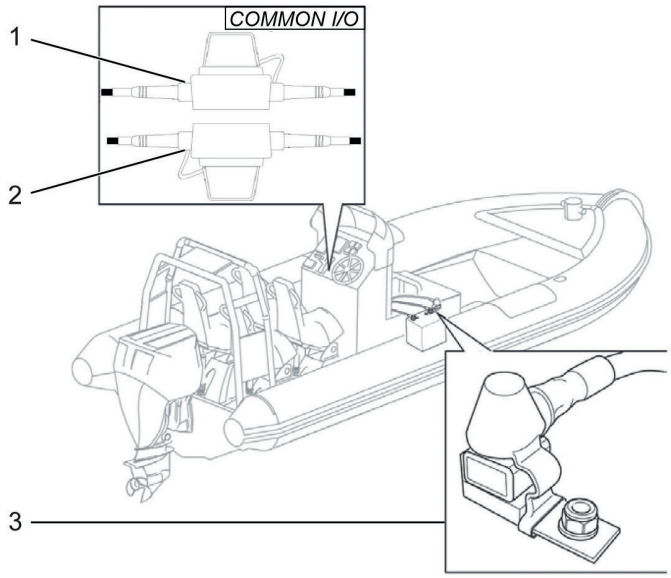


Fig. 102 *Installation wiring*

Item	Description
1	**Internal NMEA2000, ATO 1 A fuse** This fuse is not pre-installed but included with the COMMON I/O harness. The NMEA2000 1A fuse powers the INTERNAL NMEA2000 network. Do not install it if the CAN-bus is powered by another source, such as Seastar PCM.
2	**User ignition signal, ATO 1 A fuse** The pre-mounted 1A **User Ignition Signal** fuse comes with the COMMON I/O harness. It is for low-power applications like relays (not as a power source). For currents over 0.75A, use a separate fused relay, ensuring its ground and power supply connect directly to the battery.
3	**100 A fuse** Use a 100A fuse for the control supply cable (thin red cable) and a 350A fuse for the starter supply cable (thick red cable).

Fig. 103 *Installation wiring table*

ENGINE - HELM HARNESS ENGINE CONNECTOR

1. Connect all applicable helm related devices to the helm harness (items applicable):

– Ignition key (s)

– Emergency stop (s)

– Throttle handle (s)

– Display (s)

– Diagnostic adapter harness (es) (preferred in order to perform a pre-start-up control)

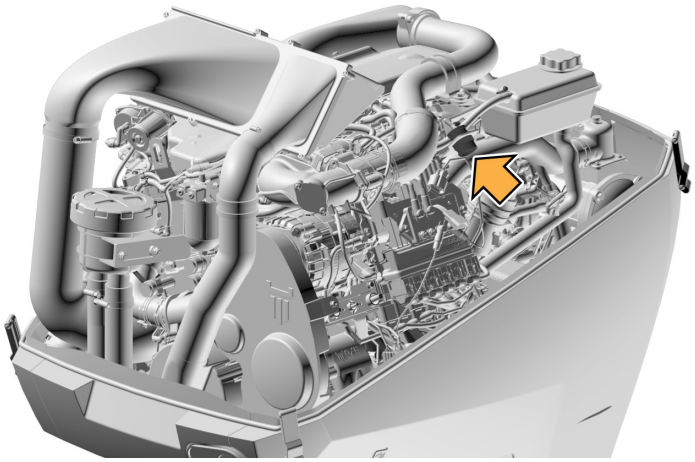


Fig. 104 *Engine connector*

2. Connect the helm harness to the engine connector.

3. Complete a final inspection of all connections.

WARNING

Turn off the battery main switch before using or connecting a battery charger to the 12V system. Failure to disconnect the main switches will permanently damage the engine's sensitive electronic circuits.

12 V ELECTRICAL POWER CONNECTION

1. Install a main electric power switch on the (B+) side. (See specifications of cable length between battery and switch in the diagrams on the following pages).

2. Install the (B+) starter supply cable to the engine starter power connector. (See layout and specifications of the cables in the engine application schematics to follow).

3. Install the control (B+) power supply cable to the ECU & helm power connector on the engine's power cable connector terminal. (See layout and specifications of the cables in the engine application schematics to follow).

4. Turn off the main electric power switch and the ignition key before installing the ground cable.
5. Connect the ground cable to the battery GND terminal and torque to specification.
6. Connect the other end for the (B-) Ground to the engine's battery power connector terminal.
7. Connect a common ground cable (wire size same as engine battery cables) between negative (–) terminals on all starting batteries.

Separate control for two different electrical circuits (6)

- Switches (4)and (5) are connected to different functions within the engine.
- Modern outboard engines (like the 300 hp engine shown) often have separate power feeds:
- One for the engine's starting and ignition system.
- One for electronics, sensors, or accessories (e.g., power steering, CAN bus, ECU, etc.).

Safety and maintenance

- Controls the starting and charging system but must not be switched off separately.
- If a fault occurs in one circuit, you can isolate it without affecting the other.
- Protection with separate fuses.
- Components 2 and 3 are fuses or circuit breakers. Two protected circuits require two switches to isolate each one properly.

Manufacturer-specific design

- Some engine manufacturers require this configuration to distribute current load and avoid overloading a single cable or switch.

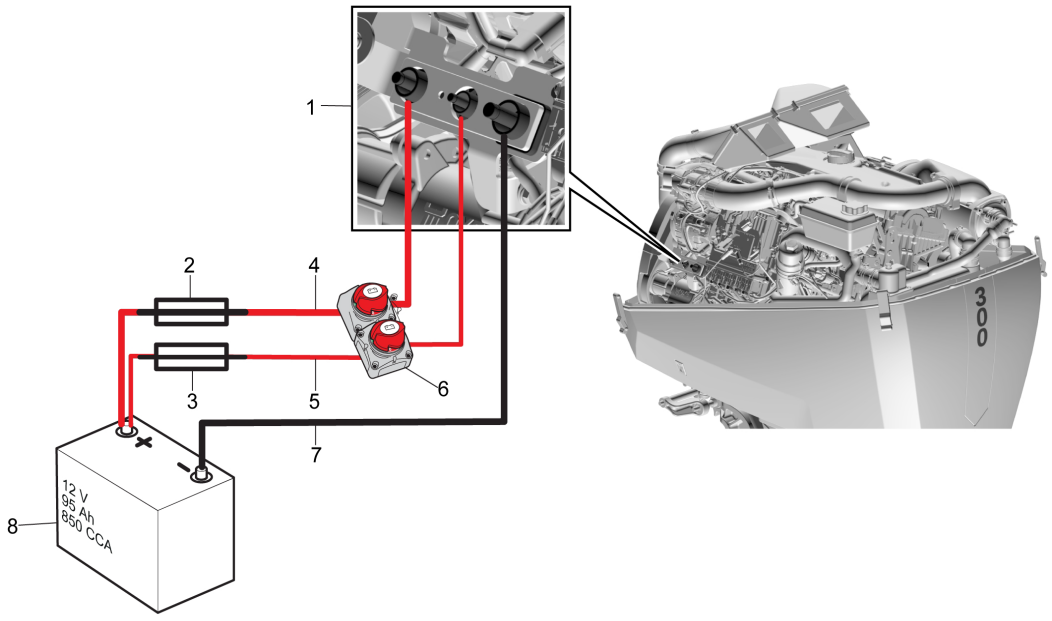


Fig. 105 *Helm harness engine*

Item	Description
1	Engine power cable connector terminal
2	Fuse, 350 A
3	Fuse, 100 A
4	Starter supply cable
5	Control supply cable
6	Master switch
7	GND cable
8	Battery

Fig. 106 *Helm harness engine table*

BATTERY CABLE LENGTHS VERSUS CABLE AREA.

The standard battery cables are 5 meters. If longer cables are required for an OXE Engine installation, the cables need to have larger size (area) according to the table below.

Description	Oxe part number	Length (m)	Area (mm2)
Control Supply Cable	30-0116-803	5	25
	Not supplied by OXE	7 10	35 50
Common Supply Cable	30-0116-807	5	35
	Not supplied by OXE	7 10	50 70
Battery GND Cable	30-0116-811	5	50
	Not supplied by OXE	7 10	70 95

Fig. 108 *Helm harness engine table*

Electrical components

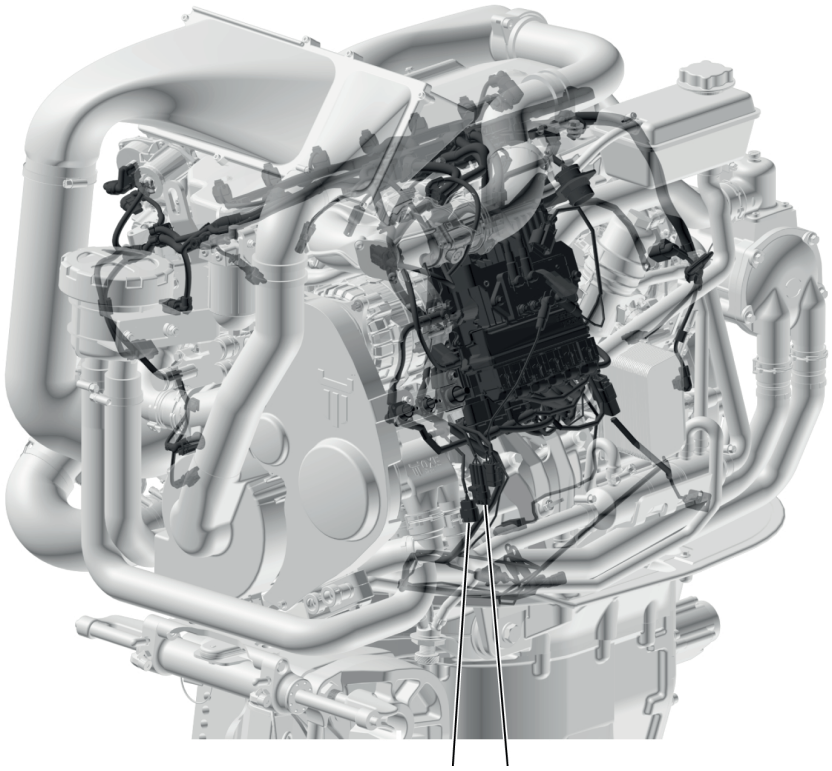


Fig. 107 *Electrical components*

EMERGENCY STOP/MAN OVERBOARD (MOB) SWITCH/ KILL SWITCH

The purpose of a kill cord stop switch is to turn off the engine when the operator moves far enough away from the operator's position, this would occur if the operator accidentally falls overboard . The kill cord is attached to the kill switch at one end and the driver's leg or hand at the other end. If something goes wrong and the driver becomes dislodged from his driving position, the kill cord is pulled away from the kill switch so that the spring-loaded switch can be activated. The kill cord usually is 122–152 cm (4–5 feet) in length when stretched out, with an element on one end made to be inserted into the switch and a snap on the other end for attaching to the operator.

Follow the instruction below:

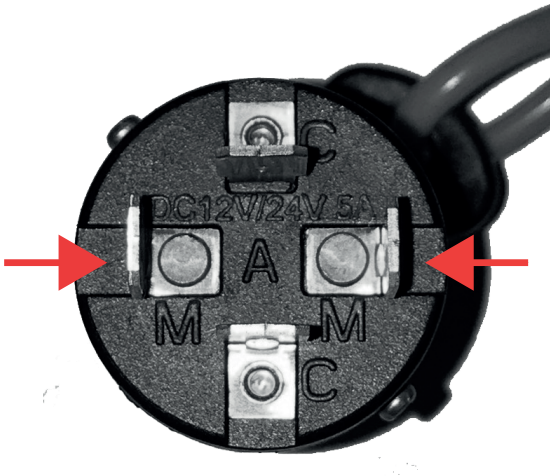


Fig. 109 *Emergency stop*

Fig. 110 *Emergency stop wires*

1. Connect the Kill Cord Loop (KCL) wires in the Common I/O harness, OXE part number 30-0116-629, to the Emergency switch connectors marked “M”. See, red arrows on Figure 104.
2. Use a 6,3mm Female Spade connector on the KCL wires.

If the emergency switch connector has the ID SW-2711-G, do as follows:

3. See figure 3 for how to connect it to the 6.3 mm female connector.

NOTE

Attach the hand bracelets safety fork, on the emergency switch, before attempting to put the ignition on.

WARNING

Stop the engine immediately if the operator falls out of the boat to reduce the possibility of serious injury or death from being struck by the boat. Always properly connect the operator to the stop switch using a lanyard.

PROPELLER

SELECT THE CORRECT PROPELLER

Selecting the correct gear ratio and propeller for your application is the most important to get the best performance from the OXE outboard engine. Propeller choice can affect boat top speed by as much as 5 to 10 knots. It also has a direct effect on acceleration, cornering, pulling power and fuel economy.
An improper propeller choice can significantly affect the performance of your boat and could result in damage to the outboard engine.
The OXE Diesel engine, in comparison to a gasoline outboard engine, delivers more torque at the propeller shaft, and therefore it is possible to select a larger propeller blade surface area to maximize performance.

PROPELLER BLADES

In general, propellers with three blades provide well-balanced performance and are ideal for achieving high speeds.

Propellers with four or five blades typically enable faster planing and greater efficiency at cruising speeds but do not match the top-end speed of a three-blade propeller. Additionally, four- or five-blade propellers may perform better in heavier applications.

PROPELLER ROTATION

OXE outboards are delivered right-hand or left-hand rotation. To move the boat forward, the propeller rotates in a right-hand (clockwise) direction as viewed from the rear.

Diameter and pitch
The diameter is the distance across the imaginary circle that is made when the propeller rotates.

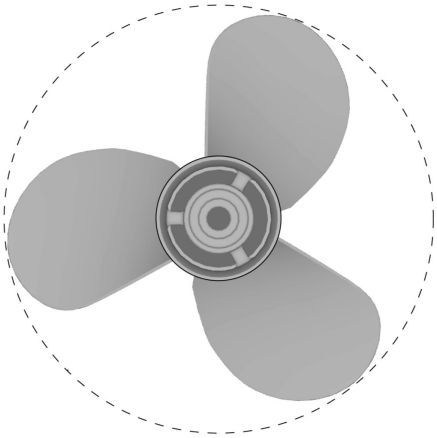


Fig. 111 *Propeller rotation*

In comparison to other manufactures' equivalent outboard engines, the OXE has a larger distance between the prop shaft and the cavitation plate to accommodate up to a 17" diameter propeller.

Pitch is the theoretical distance a propeller will travel in one complete revolution. For example, a 21 in. Propeller would ideally move 21 inches forward with each revolution. In practice, the actual distance travelled is less than the pitch because of "slip" which is necessary to produce thrust.

1. The distance a propeller travels in one revolution
2. Propeller diameter.

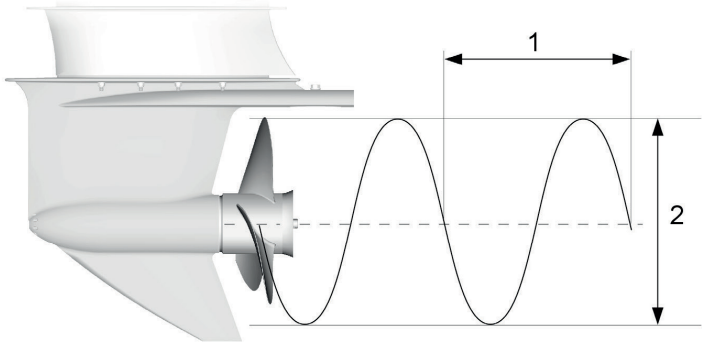


Fig. 112 *Pich - Lower: More power and less speed*

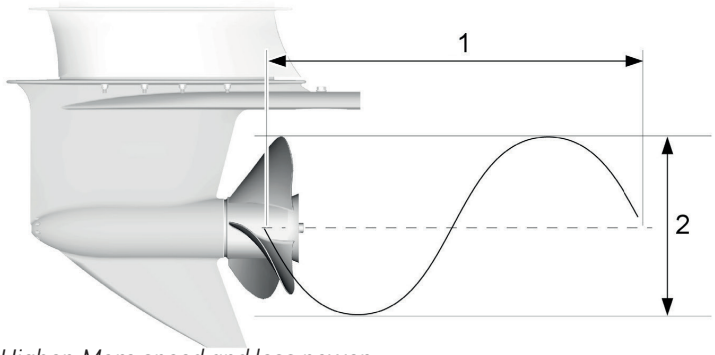


Fig. 113 *Pitch- Higher: More speed and less power*

PROPELLER SLIPPAGE

Slippage depends on vessel weight, number of engines,propeller surface area,and number of blades.

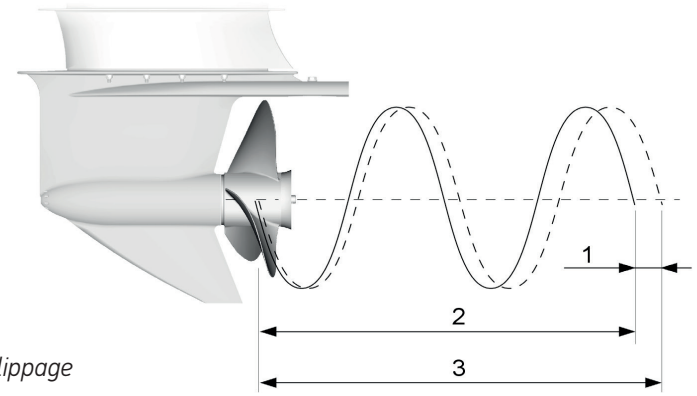


Fig. 114 *Propeller slippage*

1. Slip.
2. Real distance.
3. Theoretical distance.

Slip examples
Lightweight, high-speed vessel average 10-15% slip. Using 14.5–16"diameter propellers.
Heavy medium speed vessel 3-3.5 ton per engine 10-20% slip. Using 15.5 – 17" diameter propellers.

PROPELLER TESTING AND OPTIMIZING

Choose a propeller for your application that will allow the engine to operate within the specified full throttle operating range. When operating the boat at full throttle under normal load conditions, the engine rpm should be in the upper half of the recommended full-throttle rpm range. Refer to Specifications. If engine rpm is above that range, select a propeller of increased pitch in order to reduce engine rpm.

If engine rpm is below the recommended range, select a propeller of reduced pitch to increase engine rpm.

A target of 4100 rpm ±100 rpm at W.O.T during full loaded conditions. This may need to be adjusted if vessel conditions change.

Diameters between 14.5" and 16" have proven to be the best overall performing with the OXE Diesel outboard.
17-22" pitch have proven to be the best for high speed.
14-19" Pitch have proven to be the best for low/medium-speed load performing.

ENGINE UNDER OR OVERLOADING

NOTE

This may effect warranty coverage according to the Global Warranty Policy.

Overloading of the engine with a propeller with too much pitch is the most common source of fuel inefficiency and engine damage. Overloading can also result from the use of a propeller with too large diameter, but that is less common. Overloading can result in severe engine damage. With a diesel engine, it is the load and not the rpm that determines fuel consumption. Therefore, continuous overloaded operation results in an unnecessarily high fuel consumption, increased maintenance costs and void Global Warranty Policy.

- If the propeller blades have too much pitch, the engine will operate below the normal range at full throttle.
- If the propeller blades have too little pitch, the engine will operate above its normal rpm range and damage from over-speeding can occur.

THEORETICAL SPEED CALCULATIONS

(((rpm / gear ratio) × propeller pitch) / 1396) - slip % = theoretical speed in Knots.

Example
(((4200 / 1.39) × 21) / 1396) – 10 % = 40.9 knots.

In this example, the engine is operating at 4200 rpm. The gear ratio is 1.39:1 reducing the propeller shaft speed to 3021.5 rpm.

With a pitch of 21", the theoretical speed is 45.4 knots. Minus 10% slip = 40.9 knots.

GENERAL PROPELLER AND APPLICATION TABLE

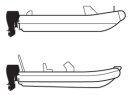
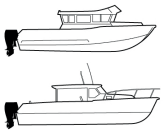
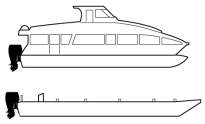
Application	Vessel type	Diameter	Pitch	Number of blades
– Lightweight – Planing – Lightweight		14.5 - 16”	17 - 26”	3/4
– Medium weight – Intermediate speed – Planing or displacement		15-17”	15-21”	3/4/5
– Heavyweight – Low speed – Displacement	 Pontoon/Barge	15.5-17”	11-17”	3/4/5

Fig. 115 *Propeller and application table*

NOTE

Contact your local OXE Marine dealer to obtain a list of propellers that have been thoroughly tested and could fit your application.

CAUTION

During commissioning, it is important to test the vessel in a fully loaded condition.

PROPELLER INSTALLATION

WARNING

Rotating propellers can cause serious injury or death.

- Never run the OXE Diesel engine out of the water with a propeller installed.

- Before installing or removing a propeller, set the drive unit to neutral and engage the kill cord stop switch to prevent engine start.

- Always install a new hub kit when fitting a propeller. Contact your OXE Diesel dealer or propeller manufacturer for the correct hub kit and parts.

- In twin or multi-engine set-ups, use one right-hand and one left-hand rotating propeller. Both must be the same brand, diameter, and pitch.

- Do not hold the propeller with your hand while loosening or tightening the propeller nut—this can cause serious injury.

For proper propeller installation do as follows:

1. Apply marine grease (according to Section "Recommended fluids and grease", page 9) to the propeller shaft (F) before installing the propeller. This aids future removal and corrosion resistance.
2. Install the propeller washer (E) and the propeller (D) on the propeller shaft (F).
3. Install the propeller washer (E) before installing the propeller. Failure to do so may result in damage to the lower case and propeller boss.

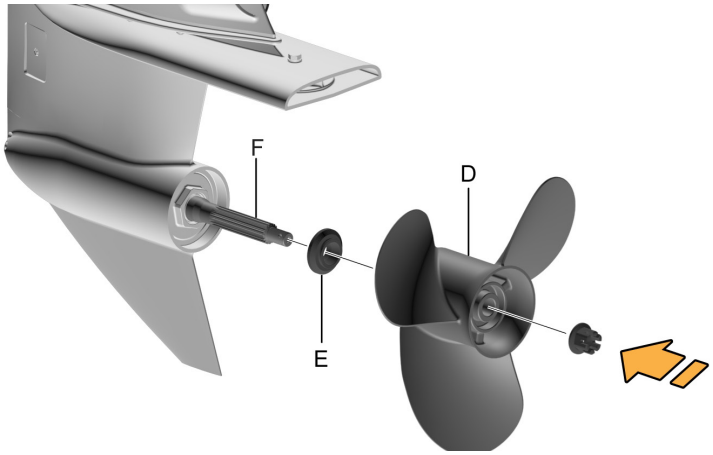


Fig. 116 *Propeller installation*

4. Secure the propeller with a wooden block (A) according to the illustration below.
5. Tighten the propeller nut (C) to a tightening torque of 120 Nm (88.5 lb-ft).

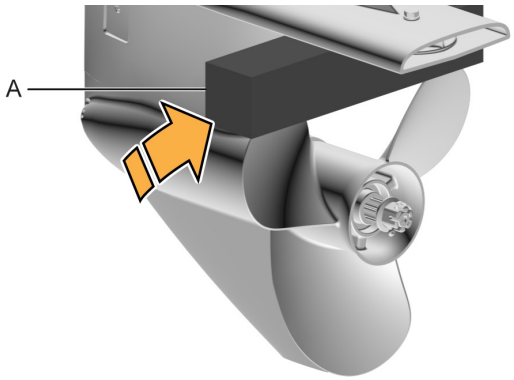


Fig. 117 *Propeller installation*

NOTE

The propeller nut may differ depending on the propeller manufacturer and model.

Always have an extra propeller, including necessary tools on-board.

6. Align the propeller nut with the propeller shaft hole. Insert a new cotter pin (B) in the hole and bend the cotter pin end.

WARNING

Use a new cotter pin and bend the ends over securely! Otherwise, the propeller could come off during operation!

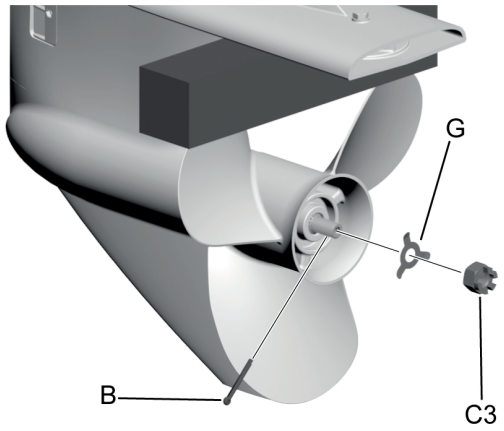


Fig. 118 *Propeller installation*

7. Tighten the propeller nut after the specified tightening torque has been reached, until it is aligned with the hole.

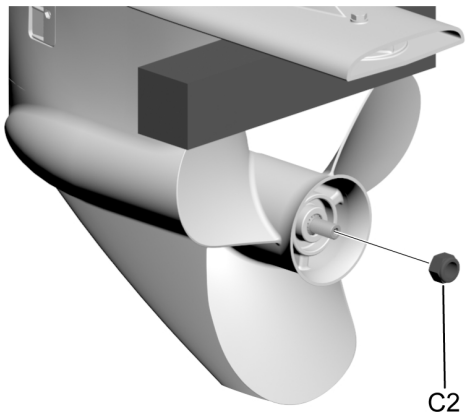


Fig. 119 *Propeller installation*

After having attached all parts and fastened the propeller nut to the correct tightening torque:

1. Loosen the wooden block.
2. Ensure that the propeller is undamaged and rotates freely other lower housing.

ENGINE SETUP AND CONFIGURATION - ELECTRONICLLLY

NOTE

OXE Diesel outboards are delivered standard as a single-engine installation. If used in a single-engine application, no engine setup is required.

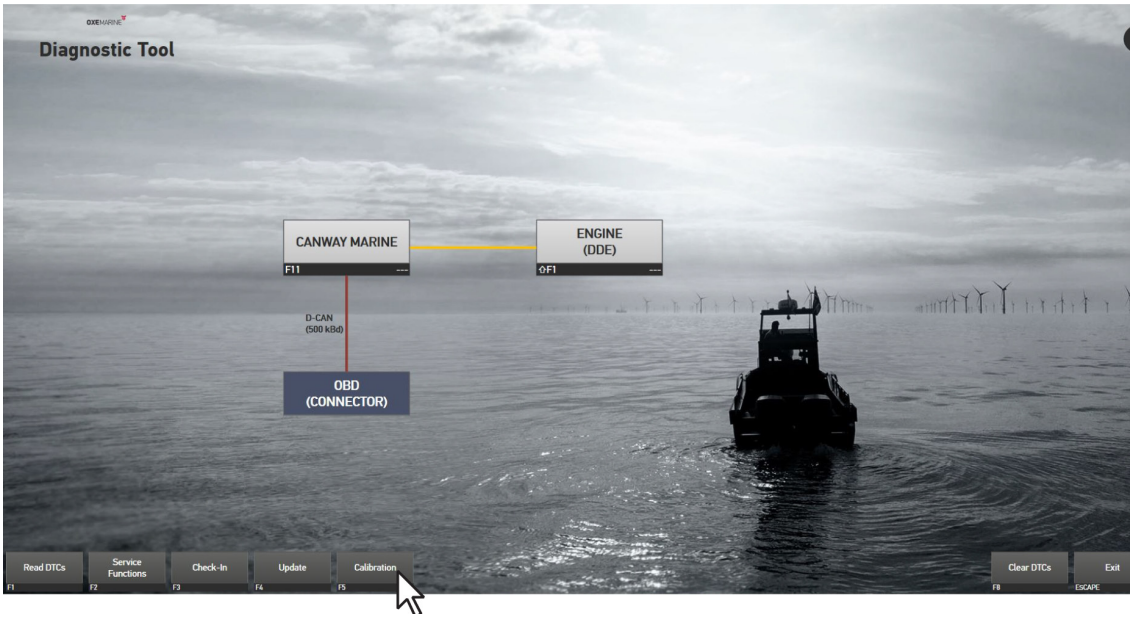
SETTING ENGINE ROTATION

Connect to the engine using OXE specific tool and software, ODT - OXE Diagnostic tool
For assistance and help, please refer to your training material or contact your local OXE Marine dealer.

SETTING NUMBERS OF ENGINES

Follow the steps below:

1. Go to Calibration tab to manage engine settings.



2. Select Number of engines.

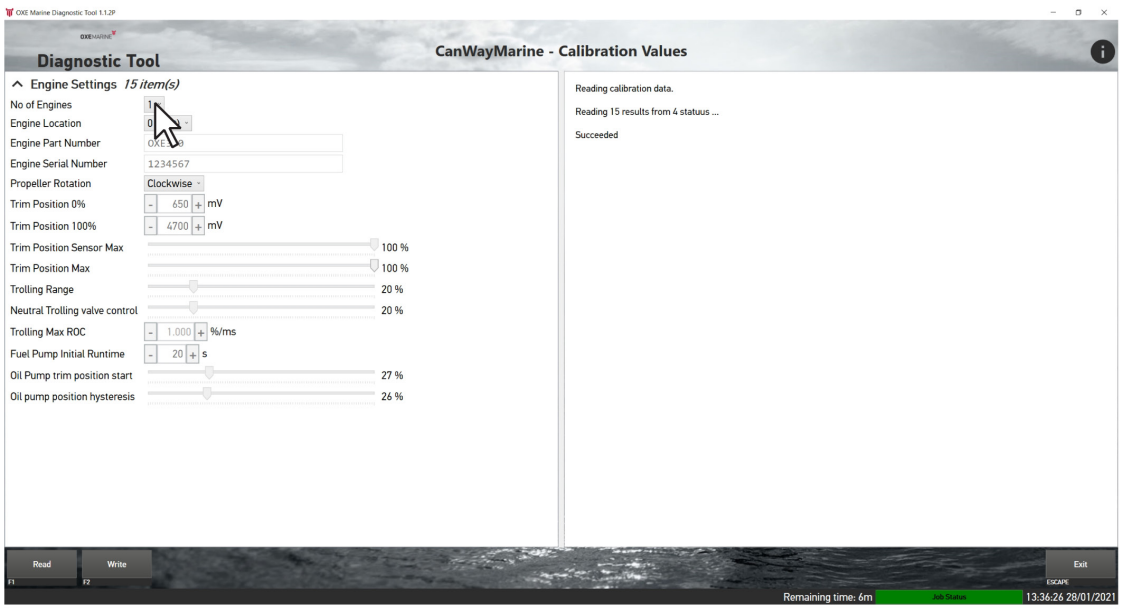
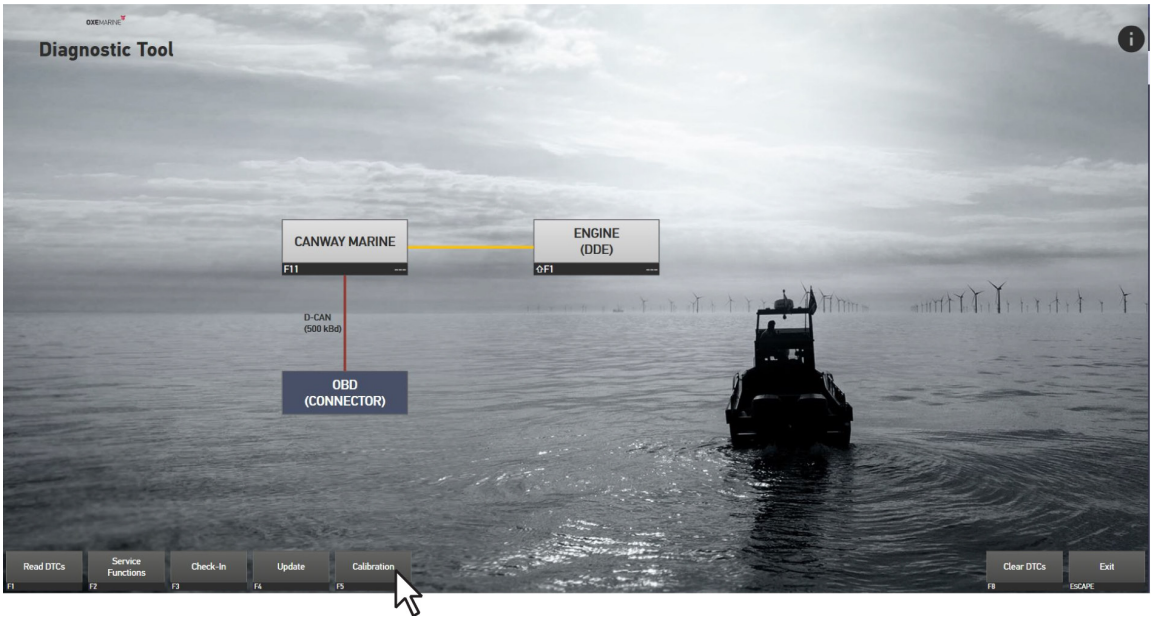


Fig. 120 *Setting numbers of engines*

Setting engine location

Follow the steps below for proper engine location:

1. Go to Calibration tab to manage engine settings.



2. Select Engine Location. Double tap and enter Engine Location, finalize acknowledge by pressing Enter.

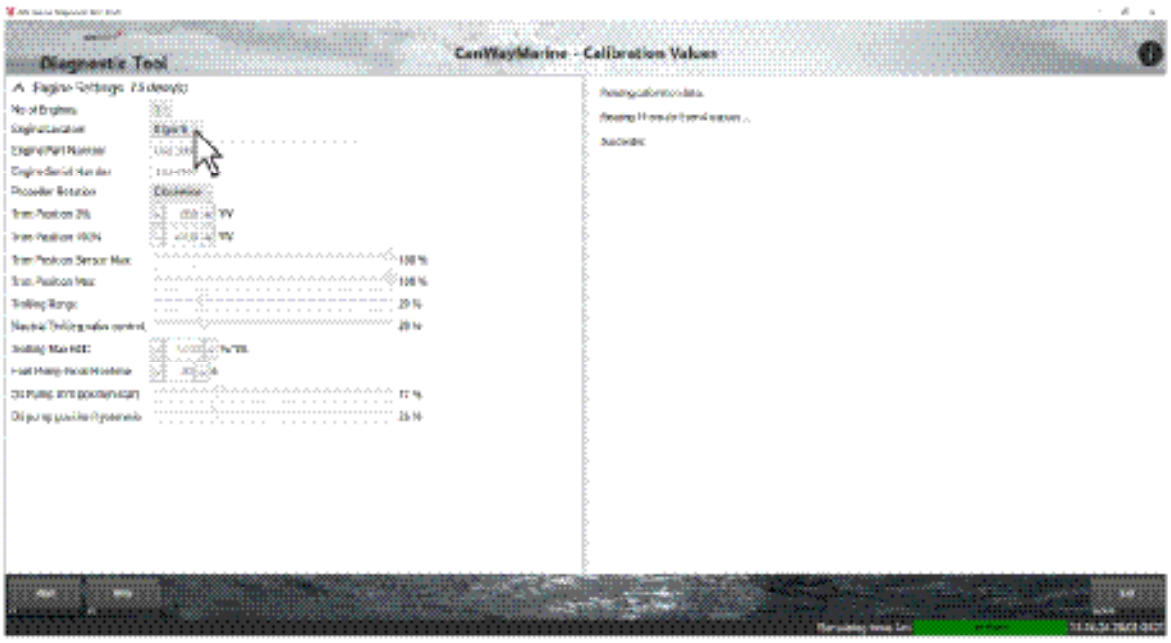


Fig. 121 *Setting engine location*

3. Double tap and enter Engine Location, finalize acknowledge by pressing Enter.

See the table, Figure 117 below for the location of the engine.

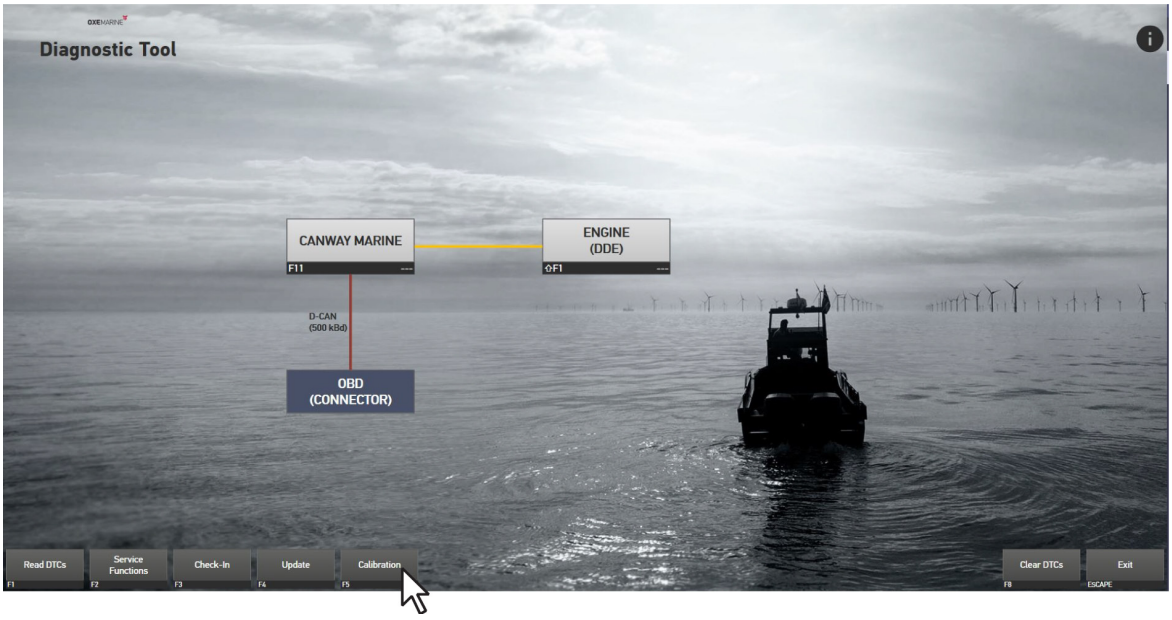
No of engines	Port	Port Centre	Centre	Starboard centre	Starboard
1	0	-	-	-	-
2	0	-	-	-	1
3	0	-	1	-	2
4	0	1	-	2	3

Fig. 122 *Setting engine location table*

Setting engine rotation

Follow the steps below for proper engine rotation:

1. Go to Calibration tab to manage engine settings.



2. Select Propeller Rotation.

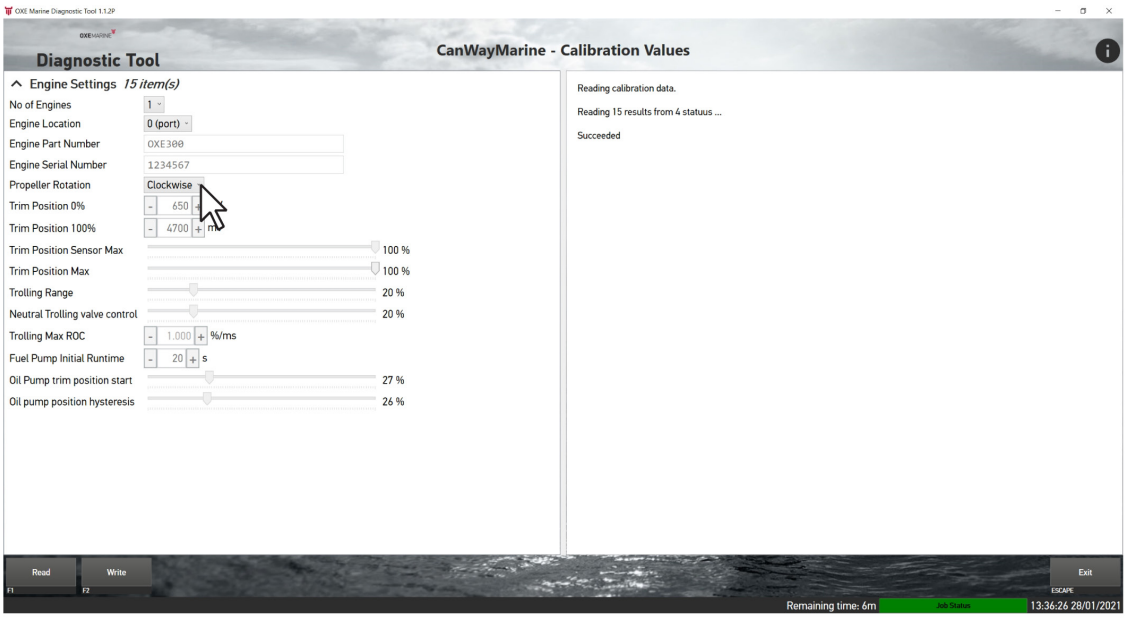


Fig. 123 *Setting engine rotation.*

3. Double tap and enter Propeller Rotation, finalize acknowledge by pressing Enter.

CW (Clock wise) = Right hand rotation.

C CW(Counter clock wise) = Left hand rotation.

CAUTION

Prior to adjusting the rotation electronically, it has to be adjusted mechanically. Refer to Service and Workshop Manual for further details.

NOTE

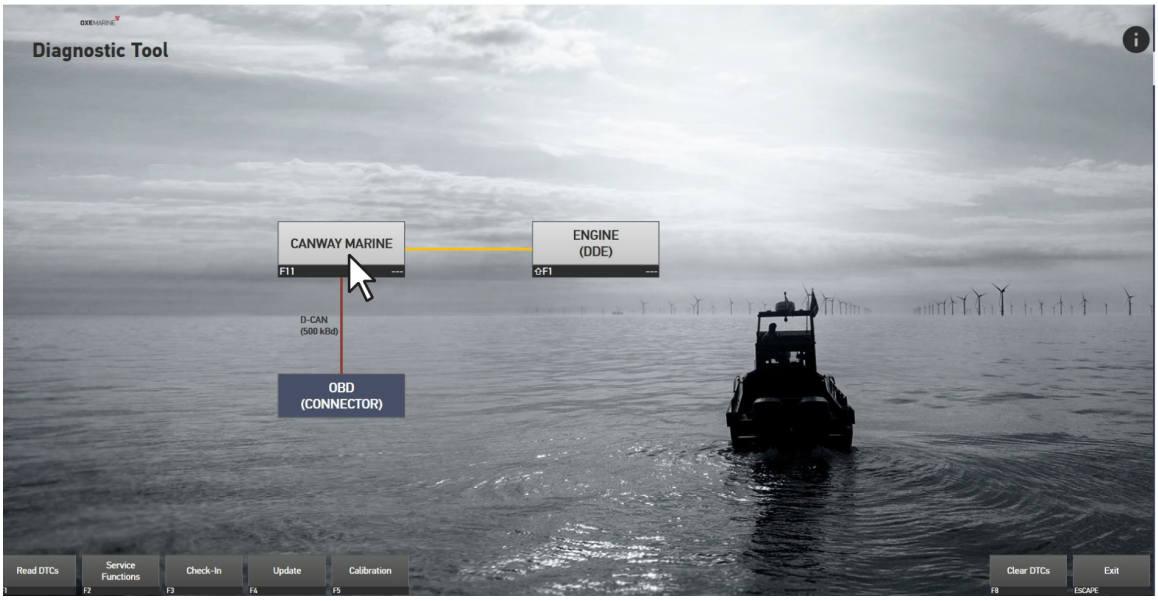
Please refer to the Mounting chapter in the Installation Manual for further info regarding rotation option in multiple engine installation.

Setting trim angle limitation

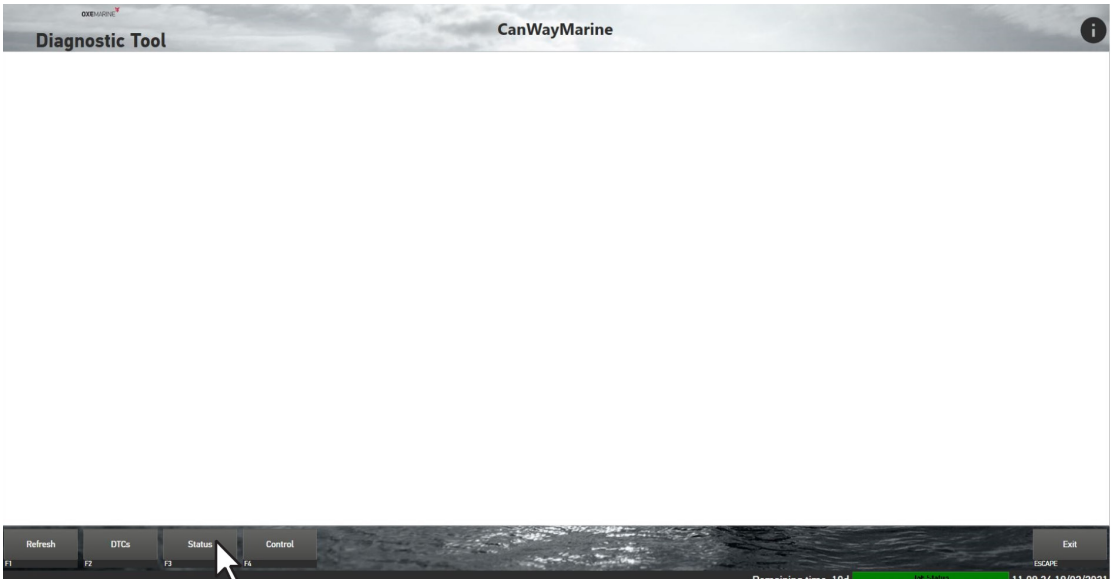
(If applicable)

To set the Max trim position in applications where the trim angle needs to be limited due to vessel interference, refer to the following steps.

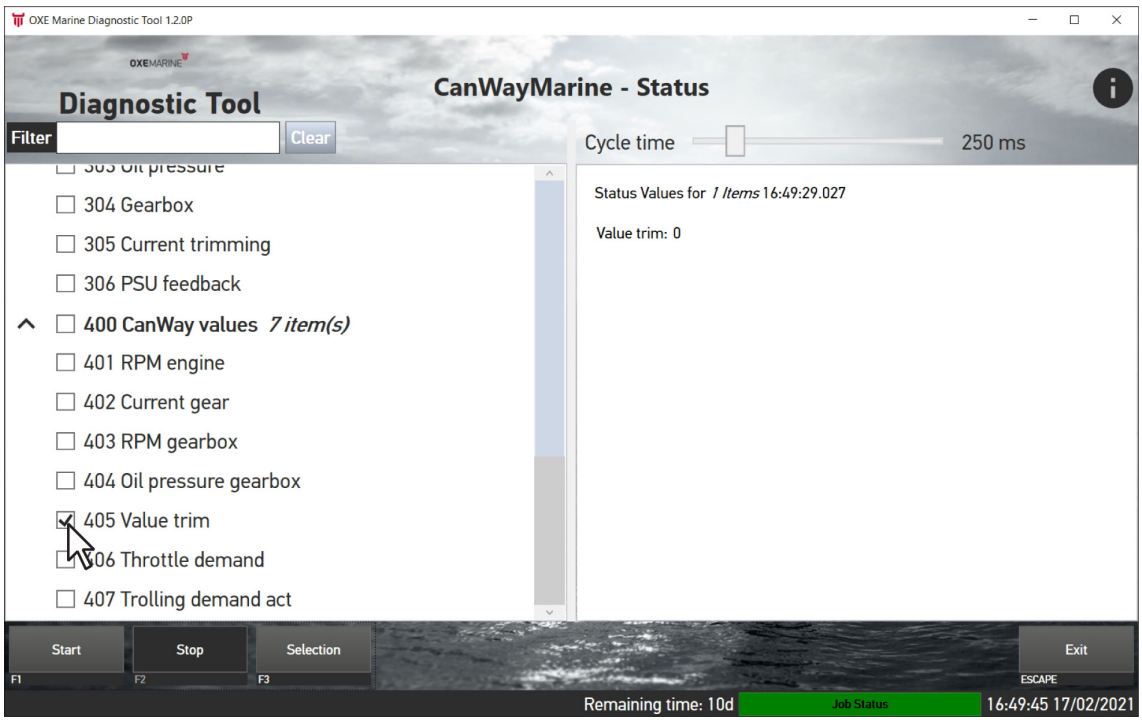
1. Select CANWAY MARINE.



2. Select Status.



3. Select 405 Value trim check box.



4. Select Start and monitor the Value trim percentage. Carefully trim the engine to desired max position without interference. Take a note of the percentage in Value trim.

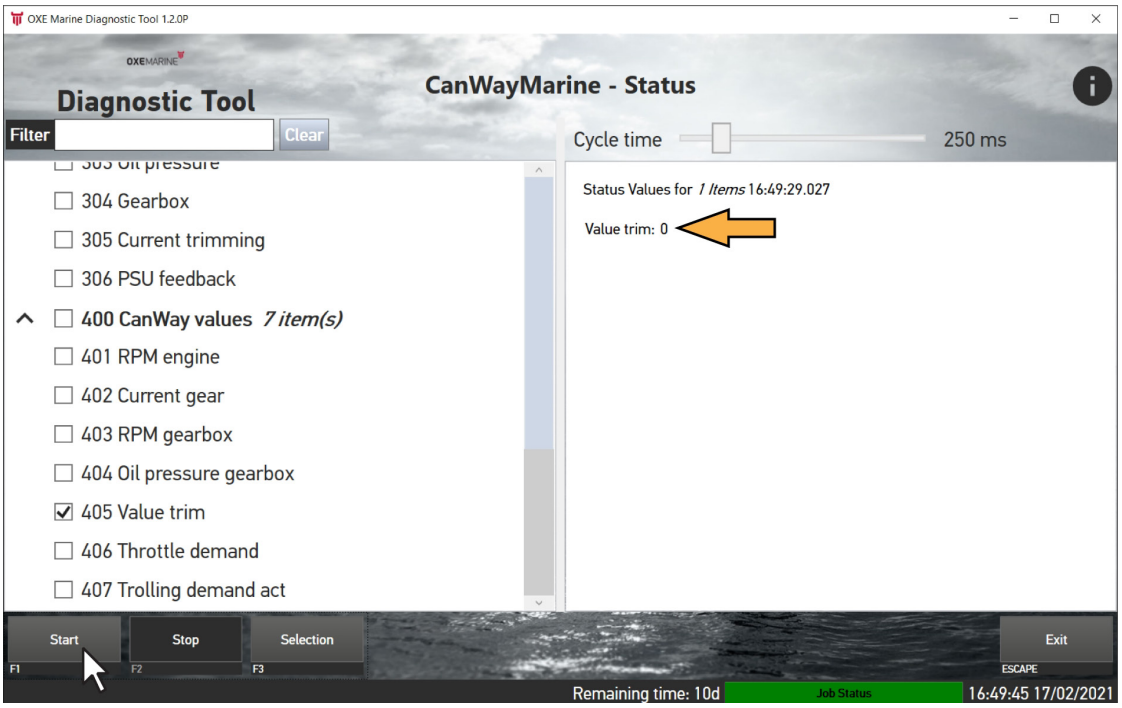
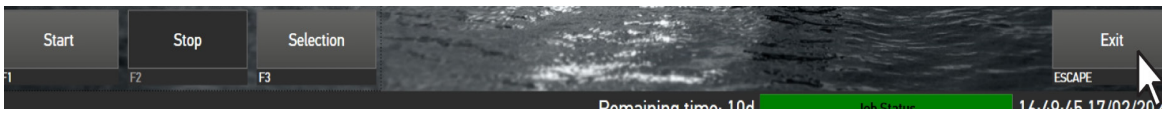
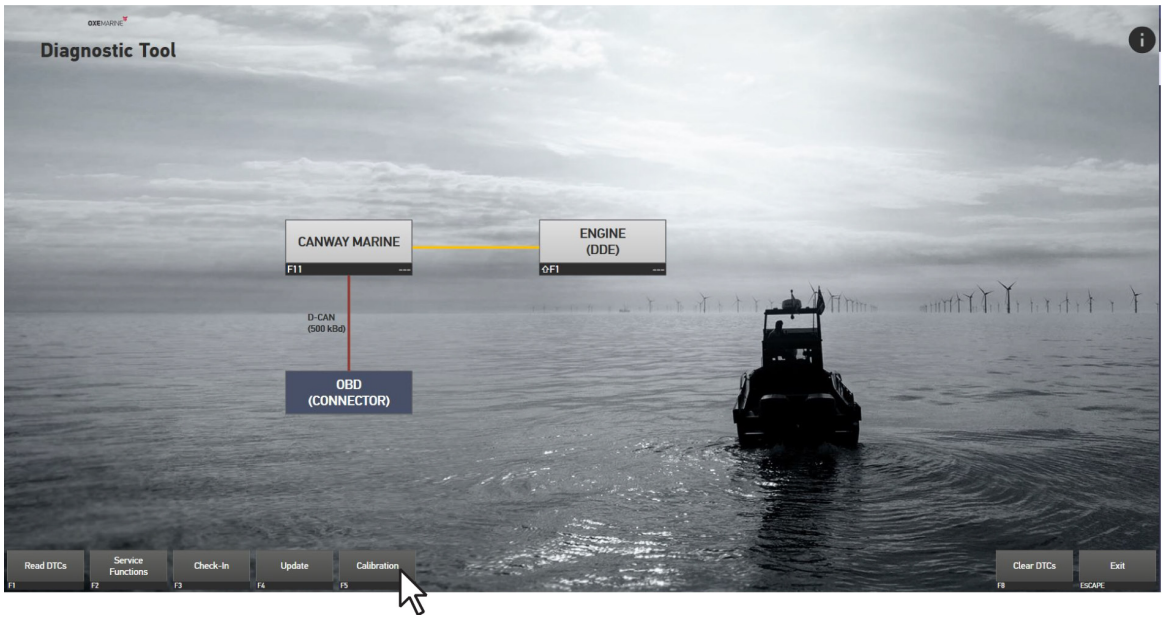


Fig. 125 *Setting trim angle*

5. Select Exit to go back to the main page.



6. Select Calibration.



7. Adjust Trim Position Max to desired Max according to previous reading in step 4 and tap write to complete.

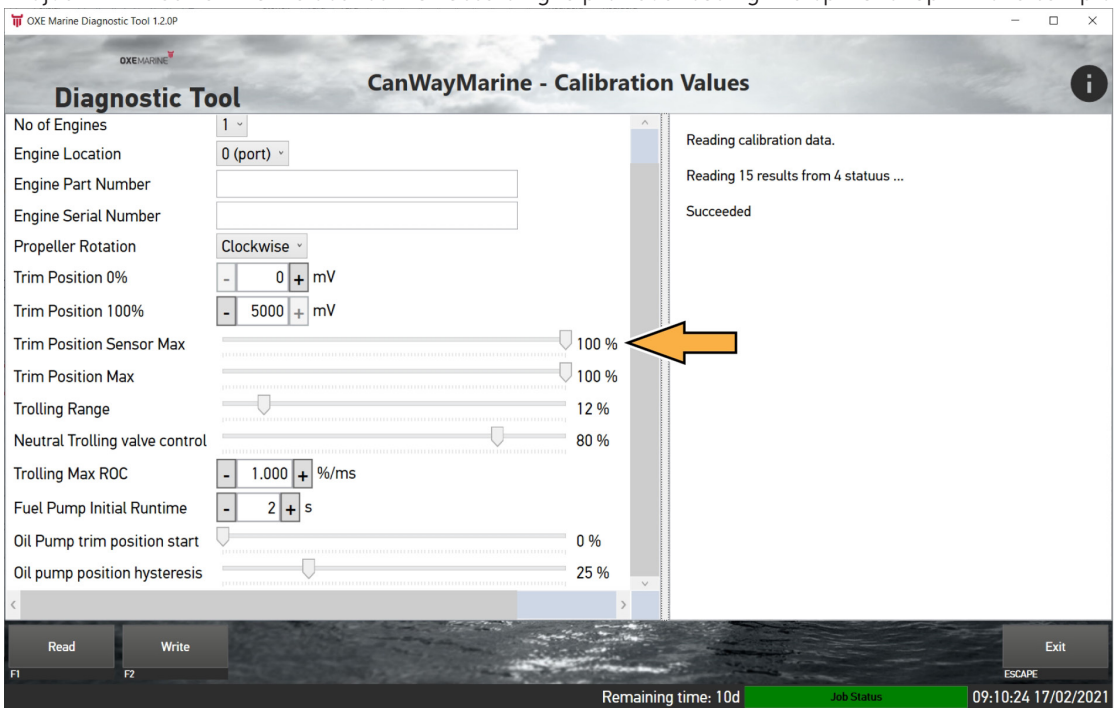


Fig. 126 *Select callibration*

NOTE

To undo this setting and return to 100% range (factory setting), simply adjust the Trim Position Max to 100%.

SAMPLE EXHAUST EMISSION

It is possible to collect exhaust emissions from the engine.

1. Fit a double banjo connector at the position of the exhaust pressure single banjo connector.
2. From the double banjo connector, an exhaust gas analysis instrument can be connected to perform emission measurement.

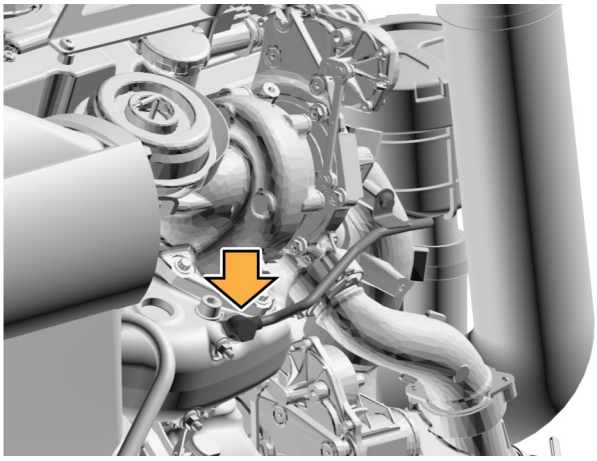


Fig. 127 *Sample exhaust emission*

START/TEST RUNNING ON LAND

There are three different methods to test run the OXE outboard on land.

Method one:

1. Connect a 1/2" threaded hose connector to the flush valve fitting located on the port side of the cowl (A). See figure 128.
   On the DL6 model, the flush valve fitting is positioned at the rear — see figure 129
2. Connect a hose between the hose connector and a freshwater supply.
3. Open the freshwater supply and start the engine.

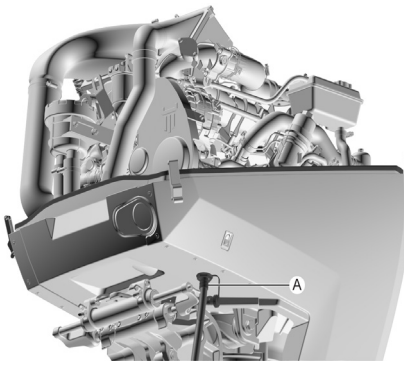


Fig. 128 *Start /test running on land*

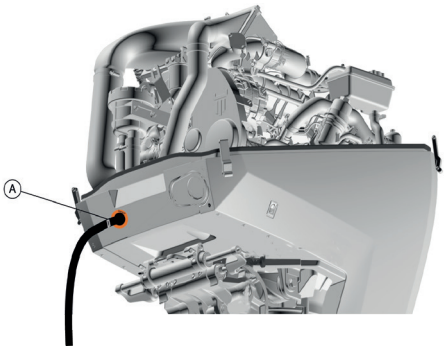


Fig. 129 *Start /test running on land DL6*

NOTE

When connected to the three way valve engine, RPM should be kept at IDLE speed only.

Method two:

1. Connect a flexible hose to the seawater strainer inlet hose (B).
2. Connect the other end of the hose to a freshwater supply.
3. Open the freshwater supply and start the engine.

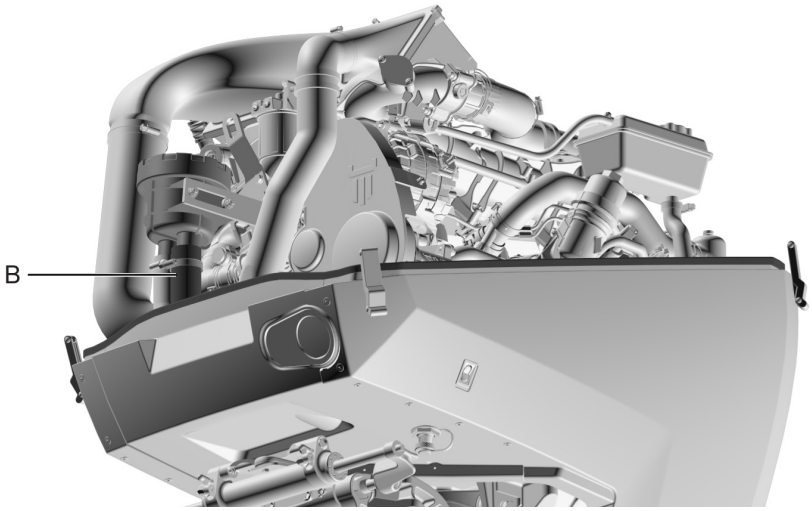


Fig. 130 *Start /test running on land*

Method three:

1. Fill up a container with water.
2. Lower the engine into the container with the water intake points below the waterline and start the engine.
3. Start the outboard and run the engine while observing the water level in the container carefully.

WARNING

- When the nose cone water intake (D) is open and the side water intakes (C) are closed, ensure that the water level in the container stays above intake D throughout the procedure. Add more water if necessary.
- Conversely, if the side water intakes (C) are open while the nose cone intake (D) is closed, make sure the water level remains above intake C during the procedure. Top up with water if needed.

Failure to observe these instructions may result in air entering the system and impeller damage!

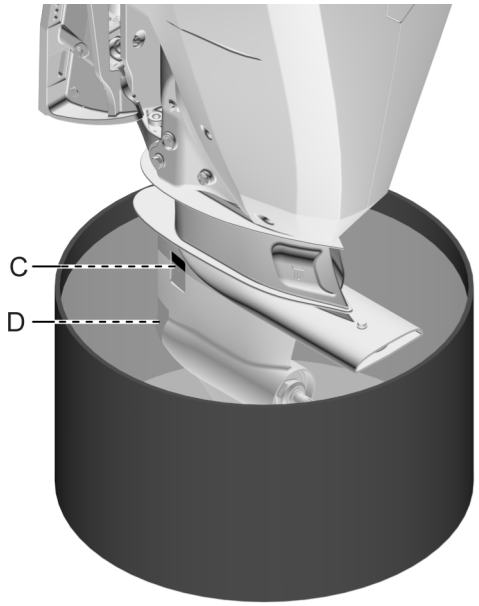


Fig. 131 *Start /test running on land*

DELIVERY AND WARRANTY REGISTRATION

Basic Warranty Registratin:

Please submit through your local OXE Marine dealeror distributor or send thisform to:

warranty@oxemarine.com.

Number of Engines Installed

Number of Engines Installed

	Serial Number	Engine position	Propellor Rotation (CW or CCW)
1			
2			
3			
4			
5			
6			

Basic Registration Information	
Name of end user of engine(s)	
Location (Country, Region)	
Additional Information	

Delivery and Application:

Vessel Information	
Vessel Purpose *	
Vessel Type **	
Boat Type	
Boat Manufacturer Company	

*For example, patrol boats, passenger ferry.

** Commercial-displacement, commercial-semi displacement, commercial planning, Leisure, Commercial-planning traditional hull, commercial planning stepped hull, commercial planning air stepped hull.

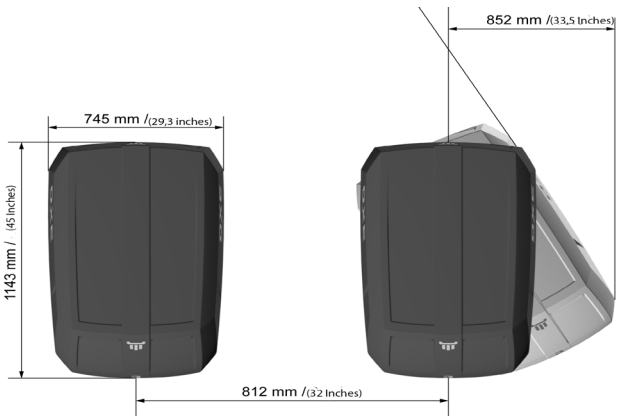
Vessel Measurements	
Length (Metres or Feet)	
Weight (Kilograms or Pounds)	
Desired Max Speed in Knots	
Desired Cruise Speeds in Knots	

Steering Installation Information	
Steering Installation & function (Please select)	
Mechanical	
Electrical	
Hydraulic	

ECU & Starter Information	
ECU & Starter fuse 100A/350A Installed?	
ECU 100A	
Starter 350A	
Confrim both installed	

Installation Checklist (Yes/No)	
Kill cord installed	
Main switch	
Upper belt setting - High Speed	
Coast key installed	
Upper belt setting - High Torque	
Additional information - Installed Equipment cranes , bow thusters etc.	
Throttle Function / range throttle range check 0 -100	
Instruments & Gauges function checked	
Trim Function & Clearance in line with diagrams	
Measurement from cavitation plate to hull bottom Inches (0 is in line with hull bottom -1 is 1 inch below hull bottom)	

OXE300 From cnter to fully steer both port and starboard engines needs to be at 852 mm/33.5" minimum



HAT Pre-start Battery & Fuel:

Fuel General and Used	
Fuel Fluid Used	
Sulfur content of diesel fuel used	
Grease used	
Bleed air out of the fuel system (Yes/No)	

Fuel measurements	
Bleed air out of the fuel system (Yes/No)	
Fuel Line Inner diameter feed	
Inner diameter fuel return	
Distance between fuel tank and EXT fuel-pump (max 1000mm/ 39.37 in)	
Fuel line Feed & return Hose, length	
Select Fuel Measurement Unit (Litres/Gallons)	
Fuel tank size volume capacity (min 100 l (26.42 gallon)	

Battery information	
Battery Size (Ah)	
Battery CCA (Cold Cranking Amps) CCA)/Marine Cranking Amps (MCA) Min. rec. CCA 850 or MCA 1050	
Battery MCA (Marine Cranking Amps)	
Battery(s) fully charged (Yes/No)	
Battery cable installation/routing/main switch (Yes/No)	
Battery Secured Connections tight (hex nuts & lock-washers used (Yes/No)	

Fuel Specific Selection	
Oxe Engine Oil Used (8l/ 8.5 quarts)	
Gearbox and primary transmission oil (2.5l/2.6 quarts)	
Engine coolant level (Yes/No)	
Power trim and tilt unit, PTT 0.5-0.7 liters /quarts	
Power Trim & Tilt fluid level (Yes/No)	
Lower Unit (belt) Oil Used	
Lower Belt oil level (Yes/No)	
Engine Oil level (Yes/No)	
Gearbox Oil level (Yes/No)	
Coolant Used (10L/10.6 quarts approx.)	
Fuel Selection other specifications/notes	

Fuel Check List	
External fuel pump and filter installed according to manual - Prefilter must be installed before external pump! (Yes/No)	
Fuel line / Connections properly installed hoses free from any moving parts) (Yes/No)	

HAT After-start:

Fuel Specific Selection	
Fuel pressure at IDLE (MPa) (After warm up)	
Engine Oil pressure (KPa) (After warm up)	
Engine Idle speed (RPM) (After warm up)	
Gearbox Oil pressure (KPa) (After warm up)	
Verify Alternator charging voltage (V)	
Leak check – fuel / oil / water / exhaust: (Yes/No)	
Verify Steering function (Yes/No)	
Test kill cord/Coast key functionality (Yes/No)	
Verify gear shifting function (Yes/No)	
Test Start-in-gear protection function (Yes/No)	
Verify Seawater circulation (tell-tail) (Yes/No)	
Additional information - After start	

SAT – Idle:

IDLE/Low Speed Checklist	
Engine IDLE speed (RPM)	
Battery voltage at IDLE	
Engine Oil pressure (KPa)	
Fuel pressure at IDLE (MPa	
Gearbox Oil pressure (KPa)	

Engine Coolant operating temperature (C)	

SAT – WOT:

Propellor Final Selection	
Propellor Manufacturer/Brand	
Propellor Series Selection	
Propeller Hub	
Propeller Material	

Propellor Measurements	
Propellor Diameter (Inches or CM)	
Propellor Pitch Multi	
Propeller Hub	
Propeller Material	

SAT WOT / High Speed	
Engine Oil pressure (KPa)	
Intake air temperature WOT (C)	
Engine Coolant operating temperature WOT (C)	
Gearbox Oil pressure (KPa)	
Voltage WOT (V)	
Fuel pressure at WOT (Mpa)	

Trim level	
Trim level at maximum speeds (%)	

Input data types	Liters/hour	Enigine location	Rotation e.g CW
Volume flow rate type (Liters per hour/ Gallons per hour)- Specify.			
Engine selection (Serial and position)			

KNOTS 720		Fuel rate 720		Engine load 720	
KNOTS 1000		Fuel rate 1000		Engine load 1000	
KNOTS 1500		Fuel rate 1500		Engine load 1500	
KNOTS 2500		Fuel rate 2500		Engine load 2500	
KNOTS 3500		Fuel rate 3500		Engine load 3500	
KNOTS 4000		Fuel rate 4000		Engine load 4000	
KNOTS 4200		Fuel rate 4200		Engine load 4200	

SAT – Conditions:

SAT conditions information	
Sea State	
SAT Type (Sea Water, Fresh Water)	
Temperature (Celsius or Fahrenheit)	
Load: Fuel Weight	
Location of test	
Dry Weight	
Load: Persons on board	
Sea Trial Conditions Notes	

SIGNING- Customer /End user of engine(s)	
Sea Trial approved by/inspector (Name)	
Company	
Date (YY-MM-DD)	

Signature:

SIGNING- Commissionning Agent (OXE dealer, distributor or OXE technician)	
Sea Trial completed by (name)	
Company	
Date (YY-MM-DD)	

Signature:

REPORT FORM

Do you have any complaints or comments about this manual?

Please, write your comments down and send a copy ofthe form to registration@oxemarine.com.

We prefer if you would write in English.

From_____

_____

_____

_____

Refers to publication_____

Publication No._____Issued_____

Suggestion/reason_____

_____

_____

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_____

OXE Marine AB,

Metallgatan, 6

SE 262 72 Ängelholm SWEDEN

SWEDEN

registration@oxemarine.com

Date_____

Name_____

REINSTALLATION OF THE TOP COWLING

Before reinstalling the top cowling, check that the sealing is not dry, broken or worn, as this will allow water to enter the engine.

WARNING

Refer to the AWMSS warning label located on the engine hood. Ensure that the AWMSS hose is not compressed or obstructed during reinstallation of the engine hood.

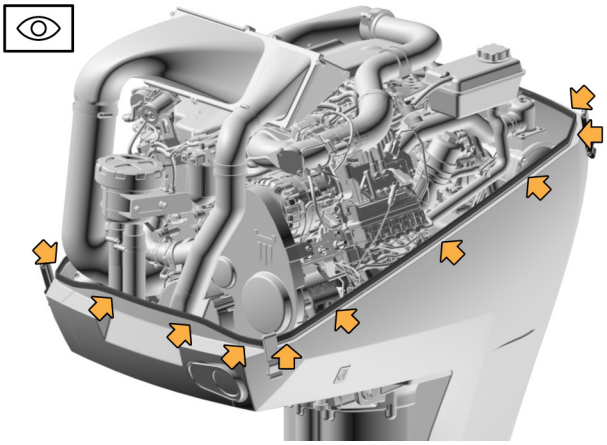

Fig. 132 *Reinstall cowling*

1. Lower the cowling carefully into place.
2. Ensure that the hatches are folded outwards.
3. Close the hatches.
4. Check the fitting of the top cowling. Make sure that the cowling is securely closed and that there are no gaps. A loose or improperly fitted cowling could allow water to enter the engine. Reinstall the cowling if it is not correctly fitted.

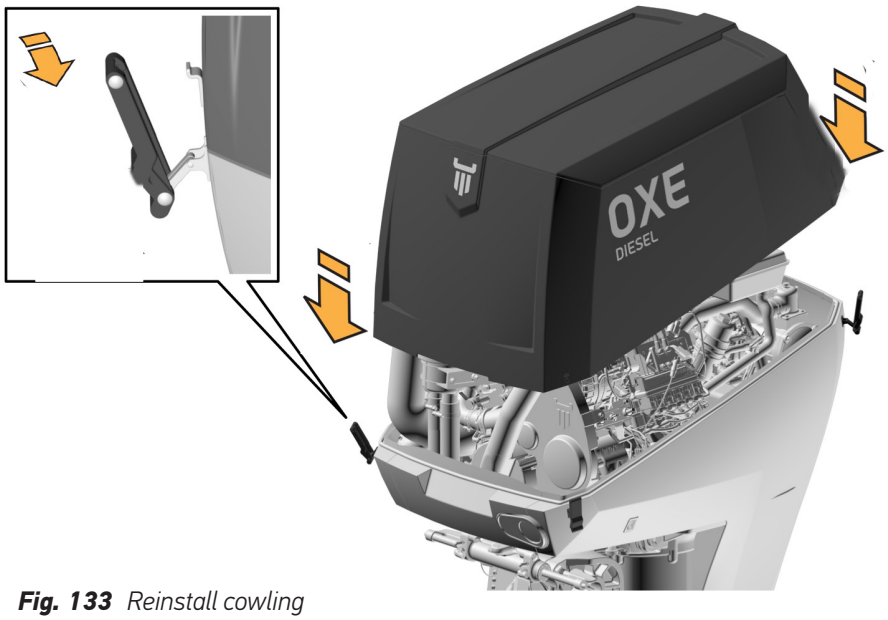

Fig. 133 *Reinstall cowling*

NOTES

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