

OXE300 PRESENTATION

The next level of technology and Diesel outboard
power step
HSBO 2021

OXE
DIESEL

OXEMARINE





The agenda

This presentation is for you to understand the OXE300, how and why it was developed from a pure technical perspective.

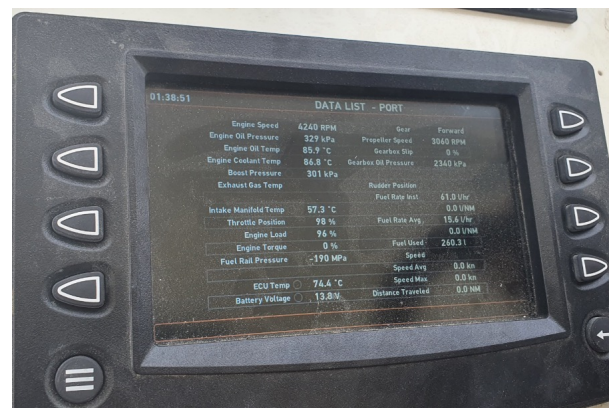
During the presentation you still might feel the urge to ride one...



Well proven & Reliable: OXE300

Designed for 300 hp @:
Ambient -20 to 45 deg C up to 32 deg. SW

Validated in Dubai
Ambient: 44 deg C air, 36 deg. SW and 63% rel. humidity



What makes the OXE300 different from our OXE125-200-models?

“The OXE300 is designed as an inboard in a very tight engine room”

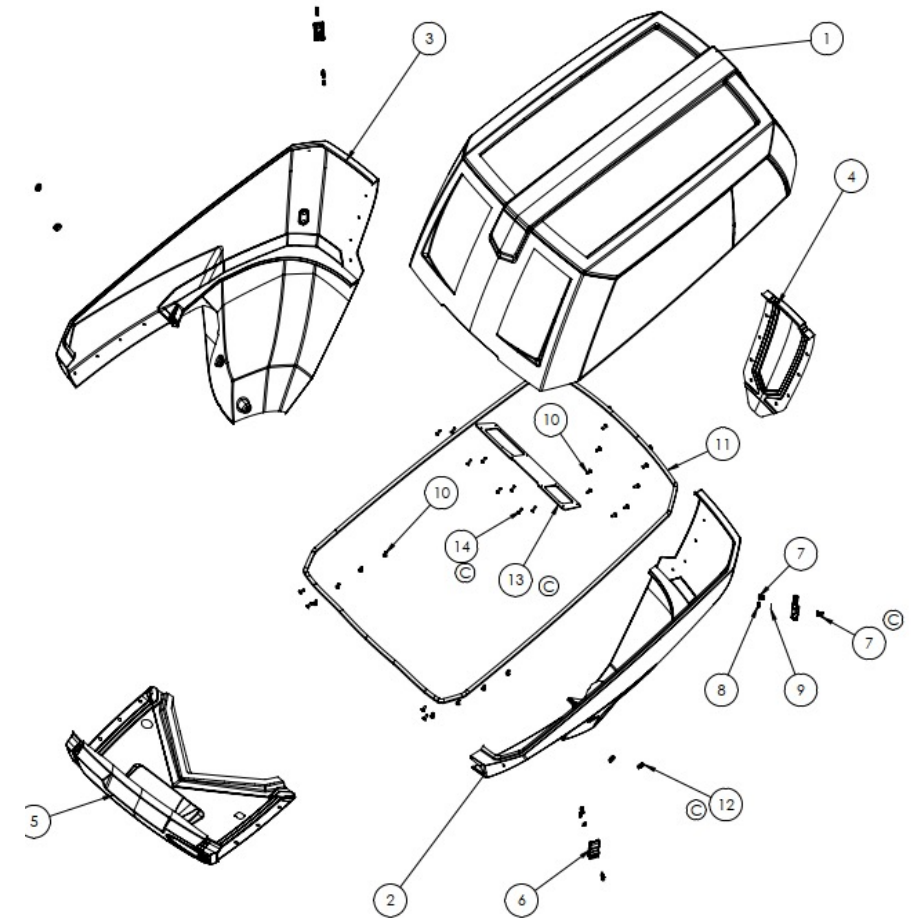
This is what you need to know some details about

- Cowl system
- Powerhead
- Marinized power head and auxiliary system
- Air intake and ventilation system
- Surface treatment and castings
- Primary transmission
- Gearbox & gearbox housing comprising the belt system
- Rig adapter
- Lower housing



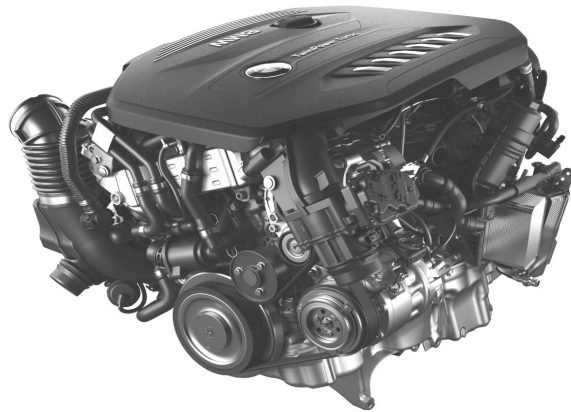
Cowl System

- Self supporting system containing 5 main parts
 - Top cowl removed for engine check and fluid filling
 - Top + sides to be removed for comprehensive service/repair
- Only rear openings at upper part of the top cowl
- Two separate air intake channels with water locks (u-channel) ending in, and sealed, towards the air filter box
- Drain channels for SW splash or rain ingress during operation, or in tilt position
- Water tight and pressurized engine compartment
- Insulated for: Noise, heat and structural transferred vibrations
- Flush and drain valve in port side of front cowl



The powerhead

The OXE 300 Bi-turbo powerhead is a marine-converted tailor-made unit to fit the outboard application. The well-known application of the automotive powerhead is found in e.g. BMW 540d and 740d.



*The BMW B57D30T0 Powerhead as found in the BMW vehicles.
After marine conversion it is not to be recognized, apart from the performance...*

Main Characteristics

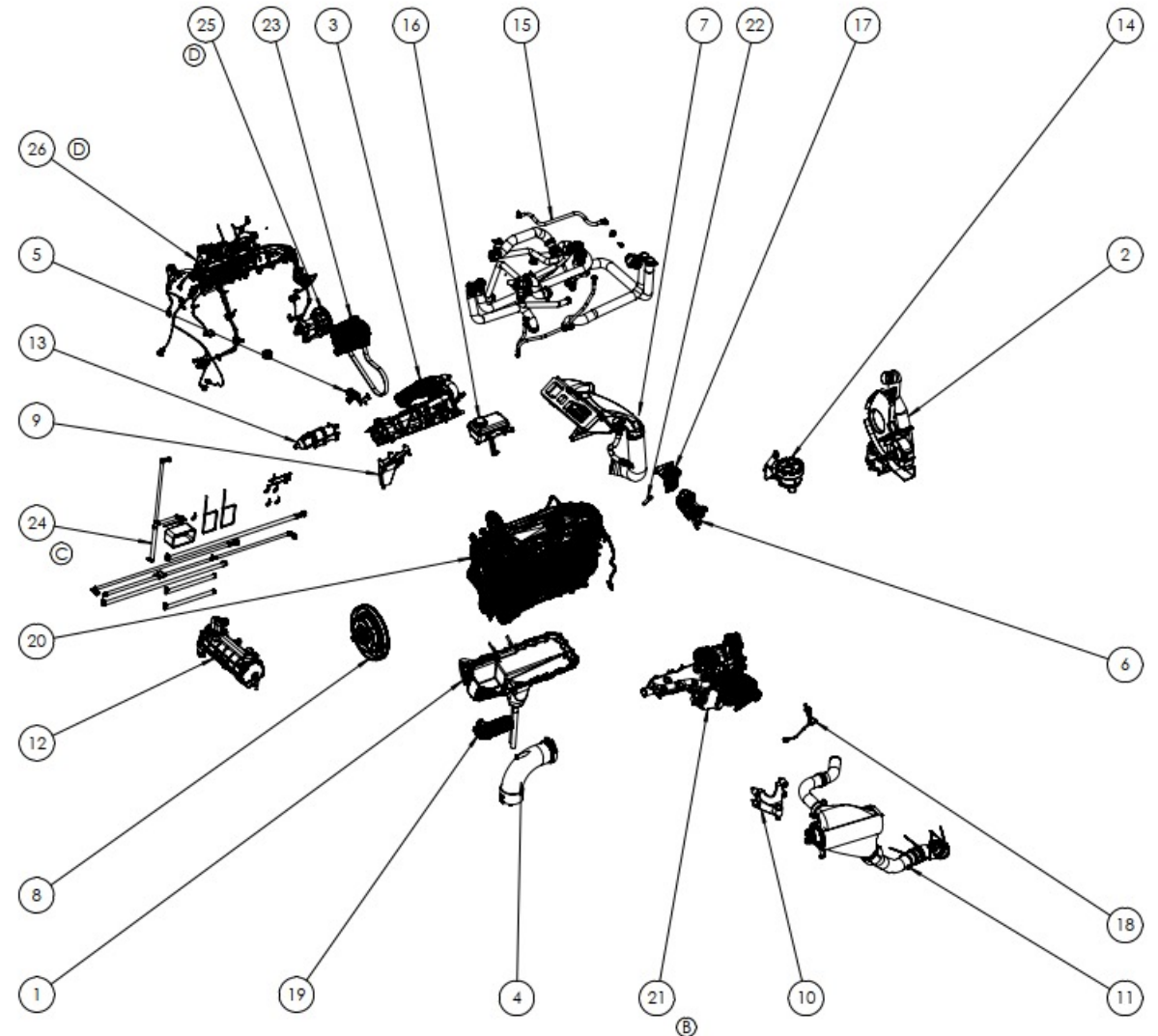
Displacement	2993 cc
Bore x stroke	84.0 x 90.0 mm
Compression ratio	16,5:1
Emission standards*	IMO Tier II, EPA Tier3
Maximum power @ engine speed	300 hp on prop shaft @ 4 000 – 4 200 rpm engine speed
Maximum torque @ engine speed	680 Nm @ 1750 rpm
Cooling system	Closed loop, glycol to sea water CuNi heat exchanger
Idle Speed	720 rpm



*EPA-3/IMO-II/RCD-II approved
225 kg (incl HEX)*

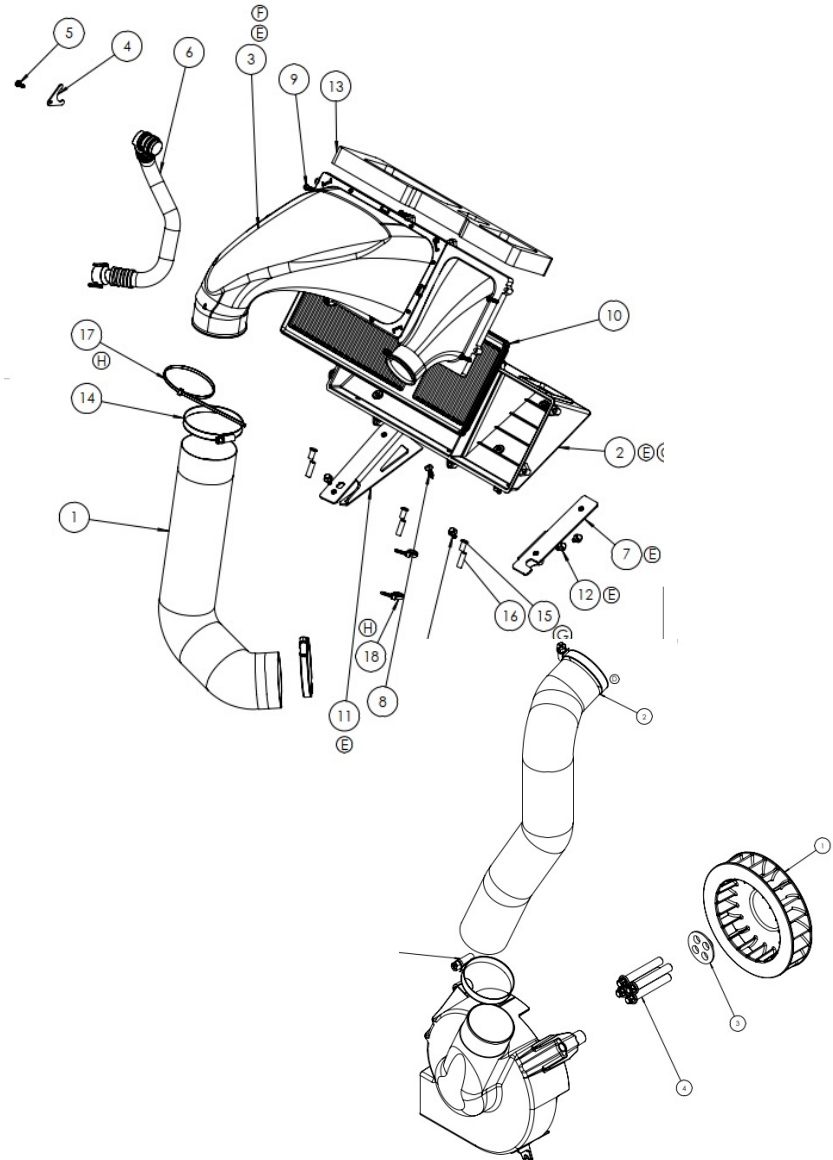
Marinized Powerhead and Auxiliary System

- Bi turbo system
- Piezo electric fuel injectors
- Chain driven cam shafts
- Twin circuit SW-pump
- Anti collaps springs in all SW-suction hoses
- Air intake system
- Protection for all rotating parts
- Insulation of all warm/hot parts
- Dual circuit cooler for hydr. oil/diesel
- HD high capacity SW filter
- Intake air swirl system removed (new manifold)
 - Less moving parts that can fail
 - No air path obstructions
- High cooling capacity:
 - Glycol 80 deg. C @ 32 deg. SW
 - Charge air max 60 deg. C @ 32/45 SW/air deg.
- Bosch ECU

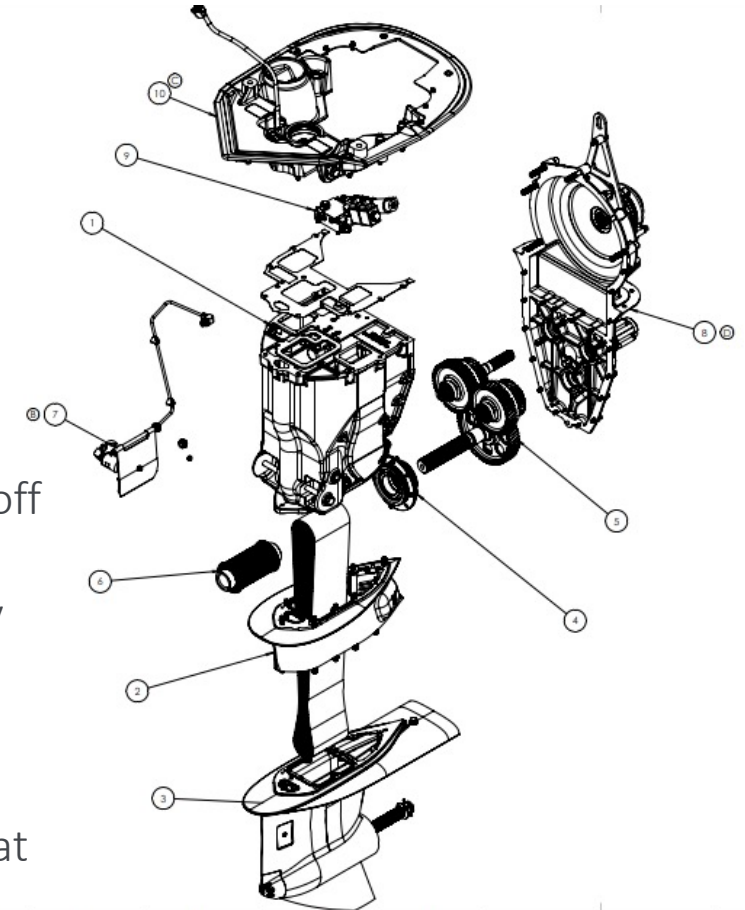


Air Intake and Ventilation System

- Complete separation between intake air and engine compartment air ventilation system
 - K&N high flow filter
 - Reduced intake air temperature
 - Minimized CAC dimensions
 - Reduced fuel consumption
- No forward directed cowl openings
 - Less noise
 - Less risk for water in air intake system
- Forced ventilation via crankshaft fitted fan
 - Ventilation air is passing through K&N filter
 - Keeps engine compartment clean and dry
 - Effective temperature control of engine compartment
- Condensate and water drain hose-system from air filter box to gearbox housing drain well

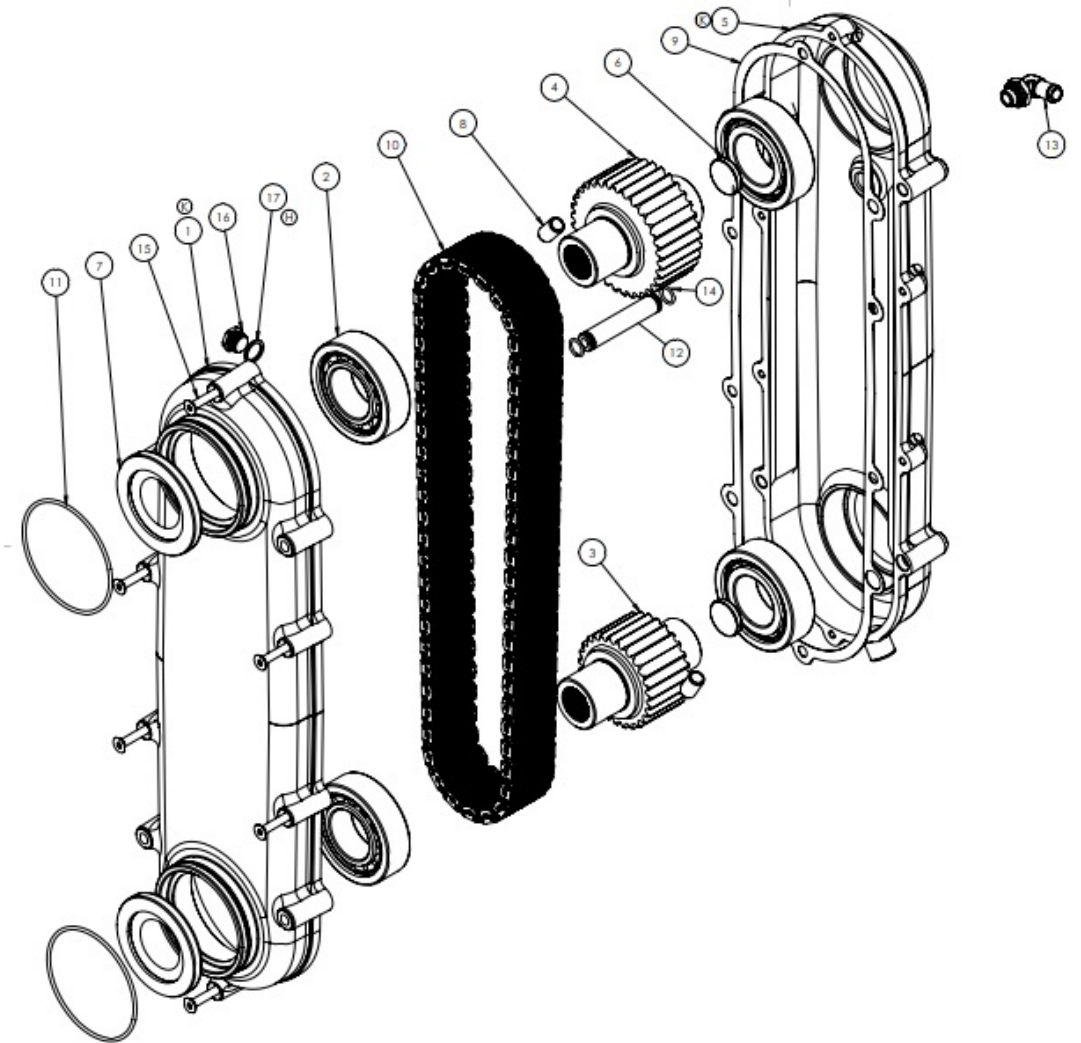


- All castings in the lower leg is from same foundry and machining workshop
 - Same alloys and electro chemical potential
 - All parts are made to, and checked, for perfect fit in joints between:
 - Lower leg
 - Rig adapter
 - Gearbox housing
 - Engine adapter
- All leg parts are black anodized as surface protection (passivation) method
 - No surfaces are left with aluminium surface
 - Surface protection (passivation) remains if painting accidentally is chipped off
 - Anodizing offers an excellent surface for bonding of the painting
- Painting (two component polyurethane) is performed after complete assembly and testing of the lower leg
 - Testing and verification of lower leg is completed before any further assembly
 - All surfaces on the aluminium parts are fully painted and masking is kept at minimum
 - Creates a continuous layer without sensitive joints missing paint protection and increases the quality impression



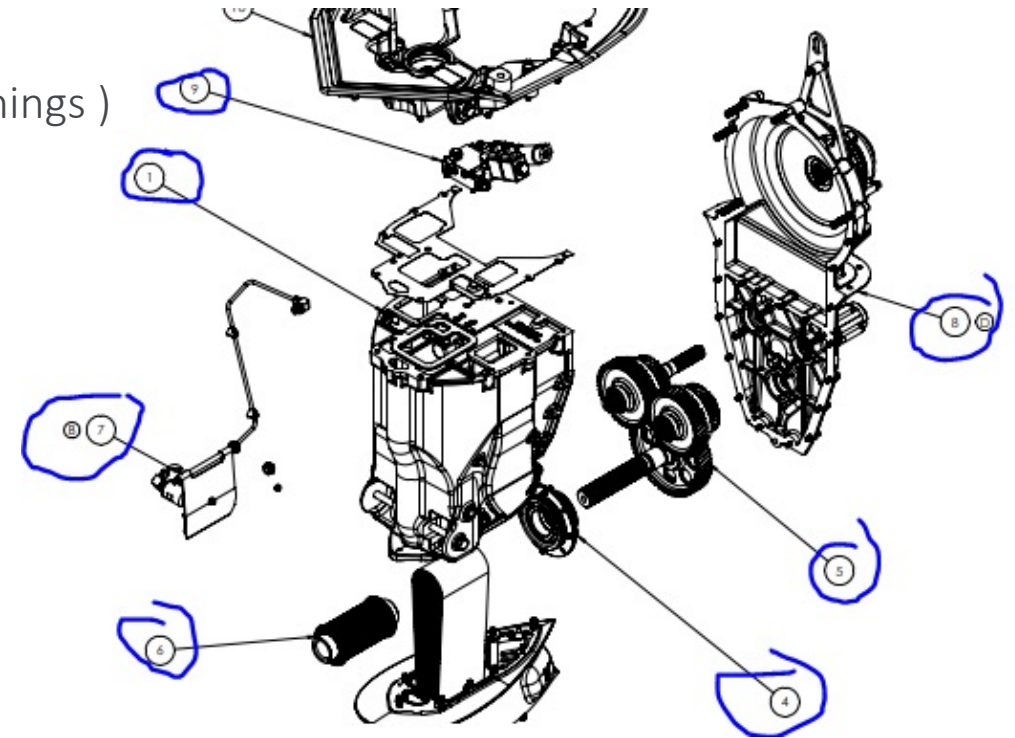
Primary Transmission

- Belt replaced by power chain
 - Reduced power losses of appr. 5 hp
 - Reduced need for cooling
 - Lubrication and cooling by gearbox oil spray via "lubrication rod" and drain back to gearbox
 - Fixed position mounting to flywheel cover
 - Hardened steel sprockets
 - Cylindrical roller bearings, no shimsing required
 - System designed for 5 000 h lifetime (E3 cycle)
 - Completely sealed from SW ingress (double seals)
 - Pressure cast aluminium housing
 - Anodized and painted



Gearbox and Gearbox Housing comprising the Belt System

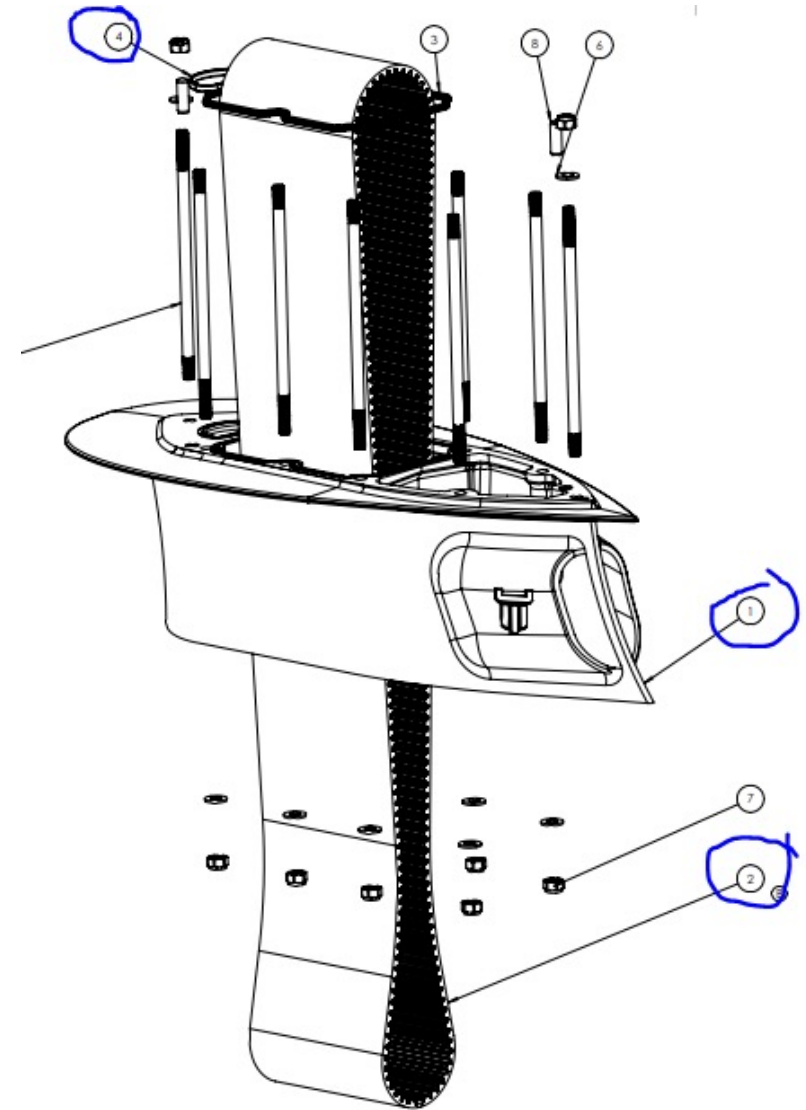
- New flywheel cover system comprising
 - Fixed engine block connection
 - Fixed primary transmission with double seals towards ocean/engine/gearbox
 - Interface to the water tight plan
- New gearbox housing comprising
 - New HD V-bushings gearbox to steering arm/yoke
 - Lower V-bushings with outer support (as on the upper bushings)
 - Increased engine oil volume to 8 liter
 - Integrated belt tensioner system
 - Less belt hysteresis work and heat generation
 - Less noise
 - Longer belt and pulley lifetime
 - New bearing housing system for upper belt pulley
 - Upper pulley in hardened polished steel
 - New valve block with increased accessibility
 - Improved engine and gearbox oil drain system
- New sprockets and shafts for increased durability
 - 5 lamellas (1 added) for improved safety factor against slip
 - Improved cooling system for lamella cooling and higher oil flow



Total gear ratio 1,39:1

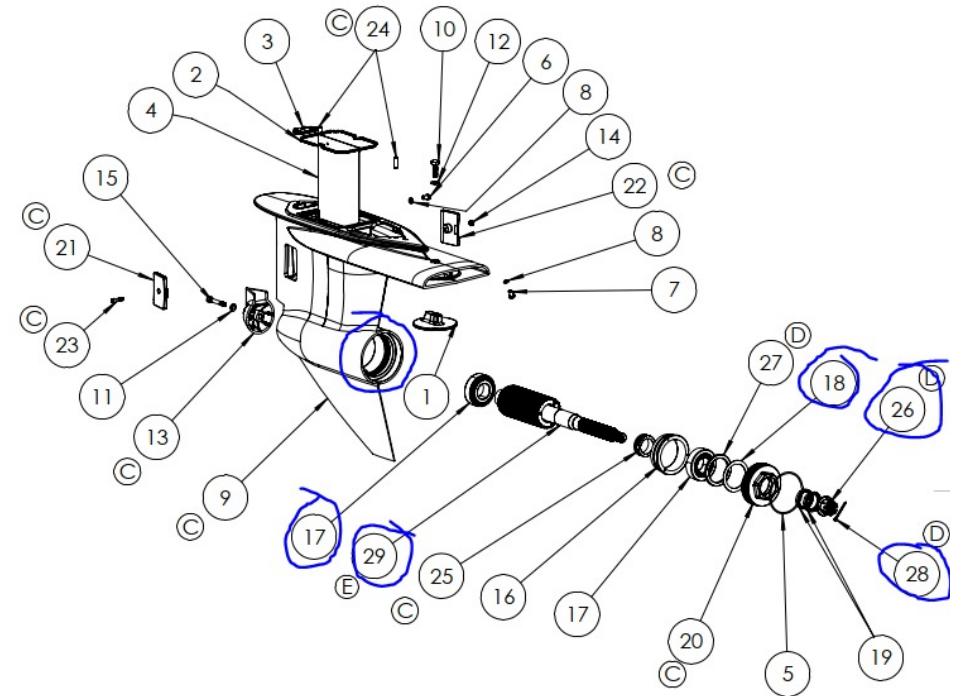
Rig Adapter

- With covered exhaust gas gills
 - Reduced engine exhaust gas back pressure
 - lower SFOC
 - Lower exhaust gas temperature
 - Improved reverse gear operations
- For 130 mm wide belt
- New SW-water inlet channel for increased flow (190 lit/min)



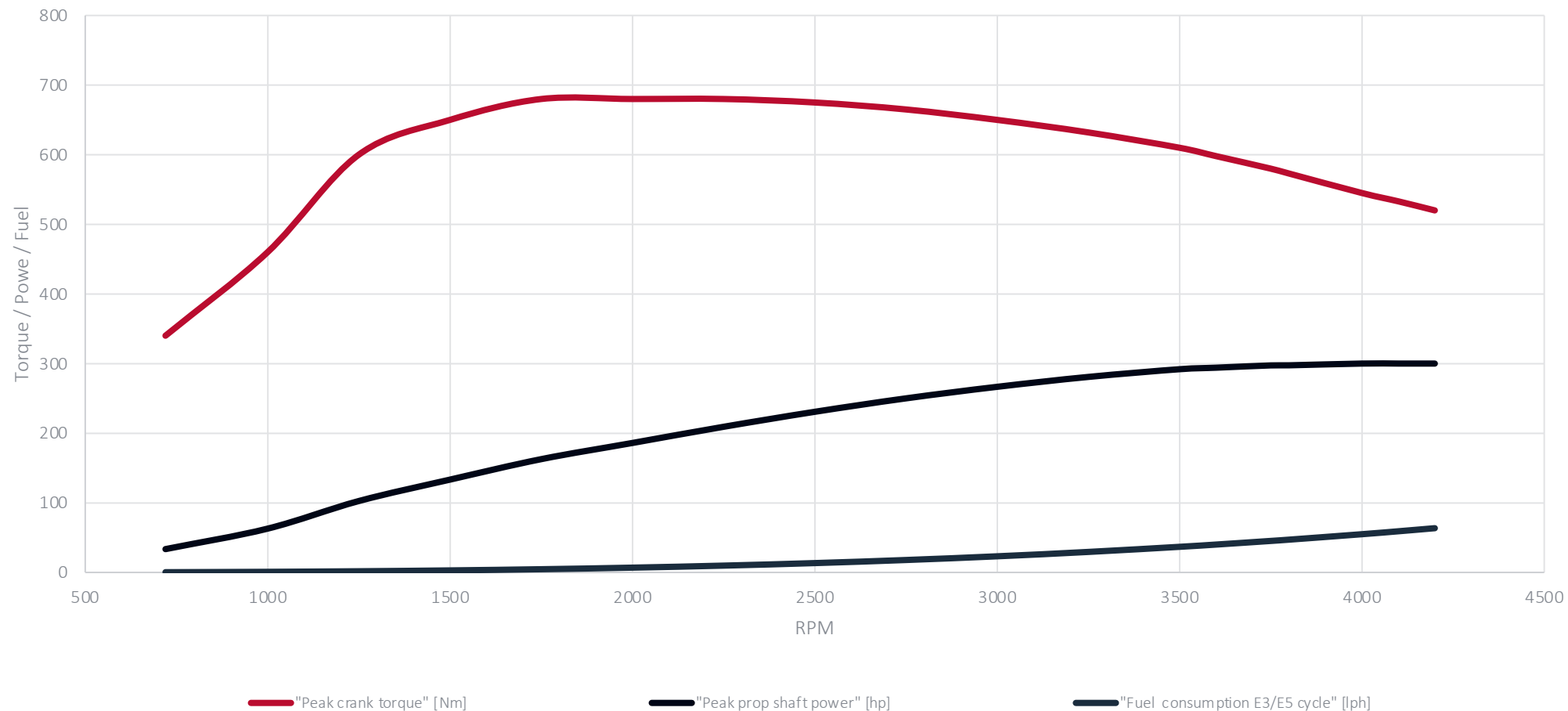
Lower Housing

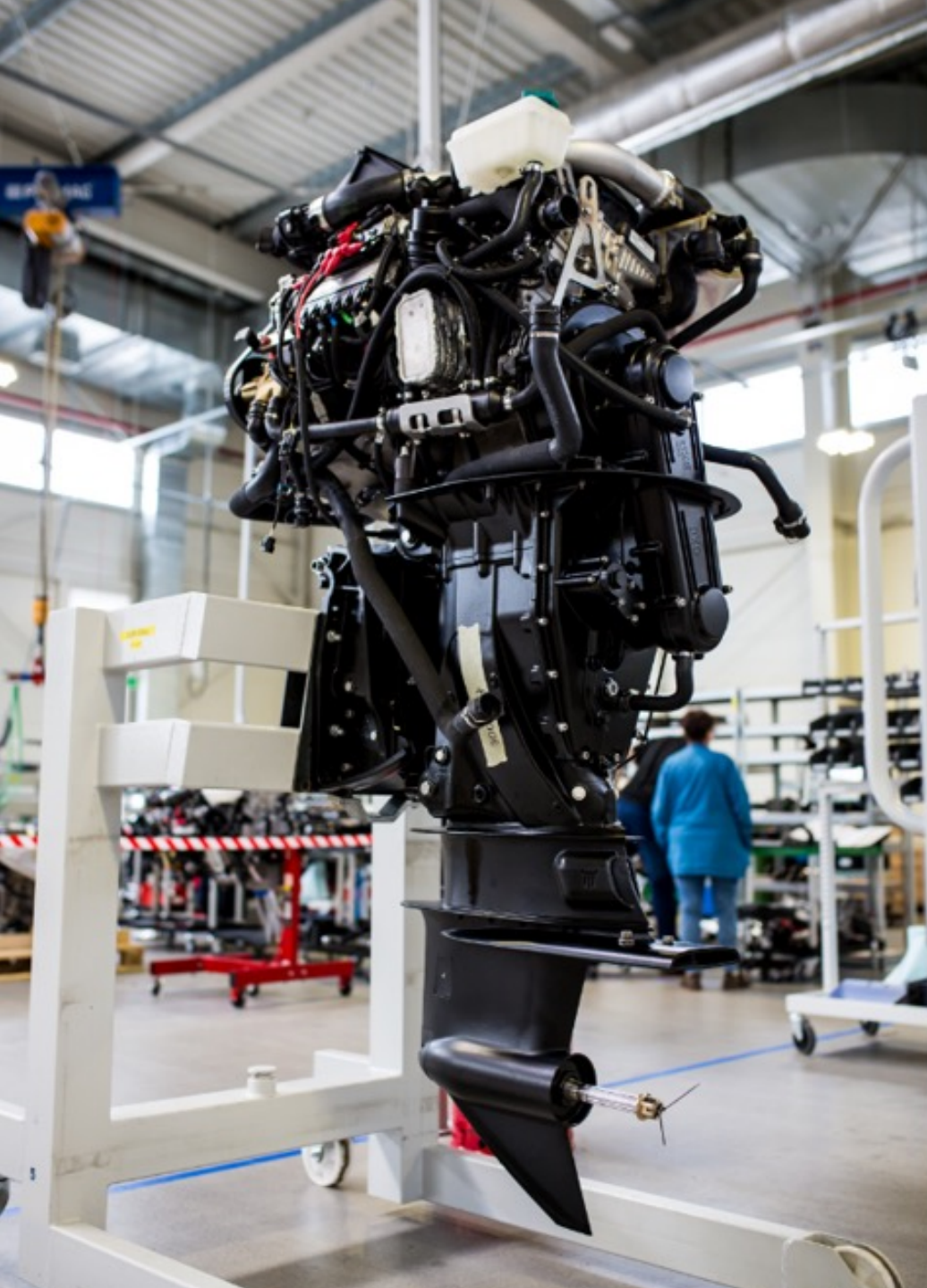
- New bearing system with
 - Increased life time
 - Reduced cost
 - Possibility to shims and extend life time
- Increased diameter on prop shaft
 - Higher strength and margin for failure
 - Lower pulley integrated (shrink fit) to the propeller shaft
 - Reduced risk for fretting and shaft/pulley damages
 - Higher surface requirements in areas for gland boxes
 - Less risk for gland box failure
 - Supplied with bronze M20x1,5 castle nut + cotter pin
- Increased material thickness in way of propeller interface area
 - Higher strength in otherwise weak area
- Optimized housing geometry for belt running surface (internally)
- Nose cone or upper SW-inlet available as standard feature



Power, Torque and Consumption: OXE300

OXE 300 hp Torque / Power / Fuel consumption





Summary

- Surface treatment and castings
- Lower housing
- Rig adapter
- Gearbox & gearbox housing comprising the belt system
- Transom unit
- Primary transmission
- Engine adapter & engine mounts
- Marinized power head and auxiliary system
- Air intake and ventilation system
- Cowl system

Additional questions and thoughts when having the complete picture?

