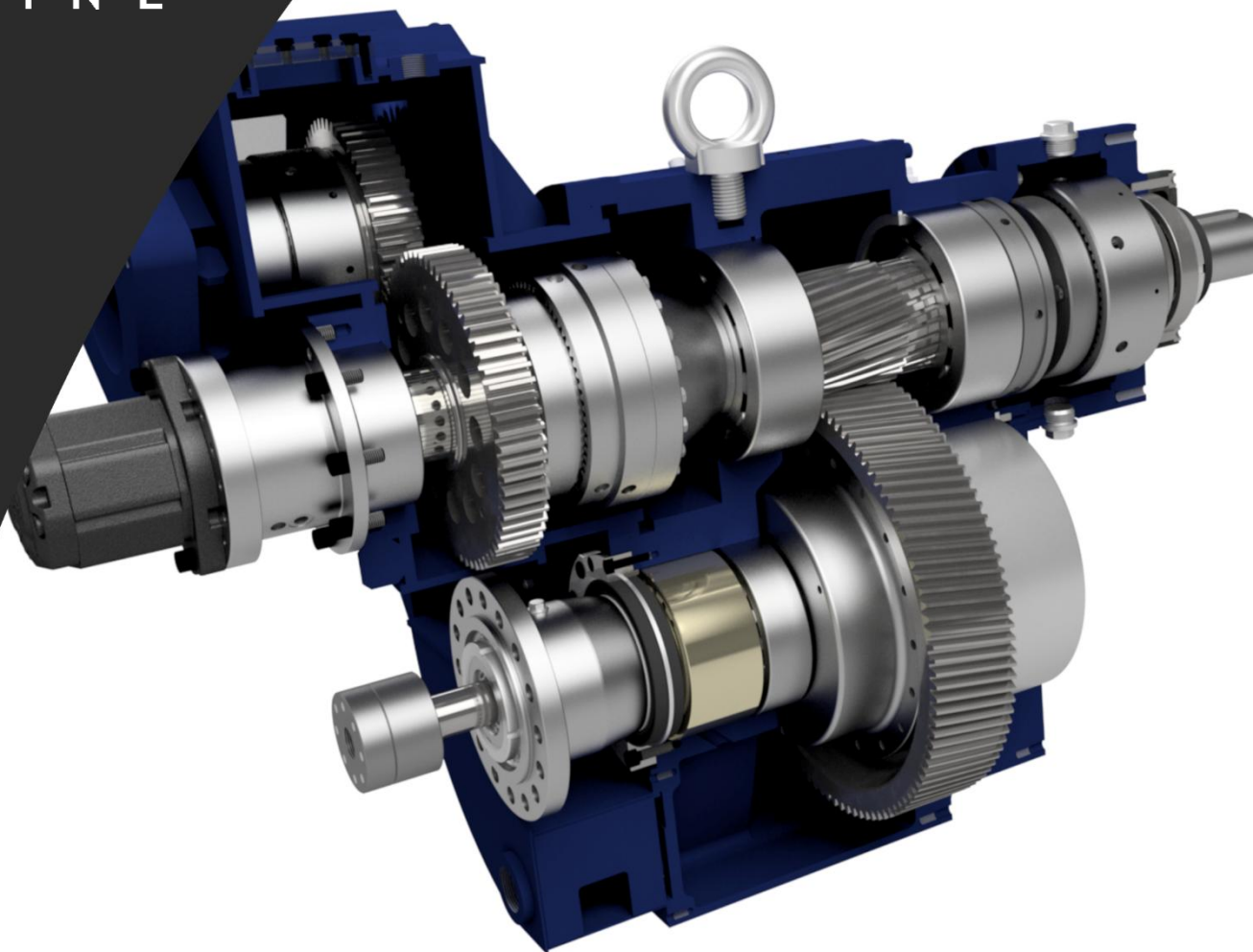




Quick Start Guide for Kumer Marine Propulsion Gearboxes

Kumer Marine AS

Address Gneisveien 11, N-3202 Sandefjord, Norway
Phone +47 33 48 54 54
Mail Sales.kumeramarine@kumera.com
Web www.kumera.com

Author Christian Skare
Guide Revision 1
Date of Revision 2026-08-05

1 INTRODUCTION

This guide provides general instructions for installation, commissioning, operation, and maintenance of Kumera Marine gearboxes.

Project-specific information is provided in the gearbox documentation package, including Dimensional Drawings, Assembly Drawings, and P&IDs.

Always follow the project-specific documentation when available.

1.1 Warranty

All gearboxes come with a limited warranty. Please note that the warranty will be null and void if the equipment is not correctly used or handled.

Please refer to the contract for terms and conditions.

2 SAFETY

Before working on the gearbox:

- Stop all rotating machinery.
- Isolate power sources.
- Allow hot surfaces to cool.
- Use appropriate PPE.

Failure to follow these precautions may result in injury or equipment damage.



Safety annotation in this manual must be respected. Key concerns are highlighted by the following colors to help clarify severity levels.

Indicates hazardous or unsafe work which can result in injury or death, or substantial product or property damage.

Indicates significant information that may not be immediately obvious to trained personnel.

Indicates notes that are important for installation and service life.

3 HANDLING AND STORAGE

Upon receiving, the gearbox should be visually inspected for damage, transport related or otherwise. Pictures/photos of damage should be taken for documentation purposes. Any complaints must be reported to Kumera Marine AS before proceeding to work on the gearbox.

3.1 Storage

The inside of the housing and unpainted exteriors is protected against corrosion during transportation and for short storage time (ca. 3 months). Conditions of storage (humidity, temperature, etc.) will affect duration of safe storage.

If the gearbox cannot be installed immediately upon delivery, it should be stored in a dry and stable environment ensuring protection of both inner and outer parts. Contact Kumera Marine for recommendation regarding long-term protection.

All bright parts, i.e., flanges and drive shafts, are coated with a preservative before shipment from Kumera Marine, which is intended only for short-term protection. Connections for oil and water, which cannot be completed until the unit has been installed, are closed with plugs before dispatch from our premises. Any connections or pipe that are temporarily removed or modified during storage must be cleaned before reassembly.

3.2 Towing

Safety measures for the gearbox must be followed before and during towing of the ship. The propeller shaft rotation must be stopped, or pitch set accordingly, to prevent the gearbox from being back driven without lubrication.

4 LUBRICATION

Correct oil type, quantity, and operating temperature are essential for gearbox reliability and service life.

4.1 Gear Oil

Use only Kumera Marine approved gear oils.

The oil shall meet the gearbox requirements for wear protection, oxidation resistance, foaming resistance, and load carrying capacity.

Synthetic PAO-based gear oils are recommended and have demonstrated the best overall performance in Kumera propulsion gearboxes.

Approved oils are listed below. Contact Kumera Marine AS before using any oil not listed in this guide.

Additional additives should not be used. In such case, the warranty will not be valid.

BRAND	PRODUCT NAME	BASE TYPE	RECOMMENDATION
ADDINOL	Ecogear M 100	Mineral gear oil	Medium
AVIA	AVILUB RSX	Synthetic PAO gear oil	High
CASTROL	Alpha SP 100	Mineral gear oil	High
CASTROL	Alphasyn HG 100	Synthetic PAO gear oil	High
CASTROL	Alphasyn T 100	Synthetic PAO gear oil	Medium
CASTROL	Performance Bio GE 220 EES	Synthetic PAO gear oil	Hot climates only
CHEVRON	Gear Compound EP ISO 100	Mineral gear oil	Medium
CHEVRON	Meropa MG 100	Mineral gear oil	Medium
ENI	Blasia 100*	Mineral gear oil	Medium
FUCHS	PLATOGEAR S-REIHE 220	Synthetic gear oil	Hot climates only
GULF	GulfSea Gear 100	Mineral gear oil	Medium
EXXONMOBIL	Mobilgard 1 SHC*	Synthetic PAO gear/engine oil	High
EXXONMOBIL	Mobilgear 600 XP 100	Mineral gear oil	Medium
PANOLIN	Panolin EP Gear Synth. 100	Synthetic PAO gear oil	High
STATOIL	Loadway Marine 100	Mineral gear oil	Medium
TEXACO	Auriga EP	Mineral gear oil	Medium
TOTAL	CIRKAN RO 100	Mineral gear oil	Medium
TOTAL	Carter SH 100	Synthetic PAO gear oil	High

None of the above listed oils are of PAG type and none are compatible for mixing with PAG oil!

* Used by Kumera Marine for FAT's.

4.2 Grease

A grease of type NLGI 2 should be used for re-greasing all pump couplings, spline sleeves and between dual shaft seals (a few pumps in the grease nipple per service).

During assembly and testing, Kumera uses XHP 222 Mobil (Blue).

5 INSTALLATION

Kumera Marine AS is not responsible for installation of the gearbox onboard the vessel.

The gearbox is secured by its footing to the hull's foundation. There should be additional support between footings and foundation by means of Chockfast, Vibracon, or similar. For deliveries sent with 3rd party footings (Rubber Design, etc.), detailed installation instructions are found in the addendum.

1. Ensure that the gearbox shaft connections have been properly aligned and documented, as described in the alignment procedure provided by the coupling suppliers.
2. Fix the gearbox position at its sides using stop blocks or equivalent.
3. Securely fix the gearbox footing to the hull.
 - a. Always properly torque the foundation bolts/nuts (It is recommended to use higher than normal quality bolts, grade 10.9 or higher). Lower grades can be used regardless, but fastener quality should be documented to be acceptable for the given installation.
 - b. If bolt diameters are smaller than normal for the available free-holes, use hardened washer type DIN 6919 recommended to ensure proper tension in bolt.

5.1 Oil Filling

The gearbox is delivered without oil.

Before start-up:

1. Fill the gearbox with the correct oil.
2. Verify the oil quantity.
3. Check the oil level using the dipstick or sight glass.
4. Remove all "No Oil" warning labels.

Always use clean oil and clean transfer equipment.

Contamination introduced during filling can reduce gearbox life.

5.2 Oil Draining

Drain plugs are found near the bottom of the gearbox. If equipped, oil can be pumped out from a pipe already connected to one of the drain holes. See the Dimensional Drawing or contact Kumera Marine, Eng. Dept. for details.

Make sure used gear oil is handled and disposed of according to local laws and regulations.

Any connections or piping which are temporarily removed or modified during installation must be thoroughly cleaned before reassembly and use.

6 COMMISSIONING

The gearbox shall be tested during vessel commissioning (HAT/SAT). It is also the most critical test of the gearbox as it must meet or exceed expectations before handing over to the owner. The following checklists must therefore be adhered to with applicable step checked "ok" and signed. If the gearbox has been in storage for more than 6 months, thoroughly inspect its condition inside and out. The interior can be checked by temporarily removing the inspection cover(s).

6.1 Before Start-up

Action	Check	Sign
All shaft connections are properly installed with acceptable alignment reports complete		
Footing bolts are secure (property torqued)		
Properly filled and with correct oil type		
Coolant connections to cooler are correct (zinc anode in place pressure and flow correct)		
Wiring at terminal box (ref.P&ID)		
Alarm sensors are functioning properly		
Oil level switch functioning properly		
Oil temp transmitters & PT100's reading accurately (compare with readings of analog gauge)		

6.2 After Start-up

Action	Check	Sign
Noise/vibrations of gearbox acceptable		
Are all manometers displaying correct pressures		
Main clutch engage smoothly		
No oil or coolant leaks		

6.3 After Warm-up (above 40 °C)

Action	Check	Sign
Record oil temperature (°C)		
Record oil lubrication pressure (bars)		
Record clutch pressures when engaged (bars)		
Record system/servo pressure (bars)		
Any leaks (oil or water)		

7 MAINTENANCE

Regular maintenance is required to ensure safe and reliable gearbox operation.

Maintain a service log and record all inspections, repairs, oil changes, and abnormal observations.

7.1 Recommendations

The maintenance table below is a general guideline which, depending on how the gearbox is operated, should be reviewed, and customized to this unique installation. Contact Kumera Marine's service department for assistance.

Frequency	Action
Daily	Check oil level and status of oil filter prior to starting, and oil pressures & temperatures during operation.
Monthly	Check for oil leakage and loose hydraulic fittings & components.
Quarterly	Inspect oil quality. Inspect zinc anodes (if applicable). Replace if more than 50% depleted.
Semi-annually	Grease all dual shaft seals (see 7.2, 10.2 and assembly drawing).
Annually	Replace oil filter elements. Grease all splined shafts (PTO/PTI). Inspect gear teeth wear through the inspection cover(s).
100-300 hours	First oil change and replacement of oil filter element(s).
2500 hours	Send oil samples for analysis. Replace oil filter element(s).
5000 hours	Regular change of oil and filter element(s).
Every 2-3 years/ 10000 hours	Check shaft alignments. Check condition of flexible coupling elements. Inspect gear teeth flanks (photo document). Inspect condition of clutch plates. Verify alarm sensors are still functional. Authorized Kumera Marine service recommended.
20000 hours / 5 years	Complete gearbox inspection by Kumera Marine service.
40000 hours / 10 years	Complete gearbox overhaul by Kumera Marine service.

7.2 Troubleshooting

Kumera propulsion gearboxes are designed for long-term reliable operation, provided the user adheres to proper maintenance routines. However, malfunctions may occur during operation and for a variety of reasons:

High oil temperature

- Check cooling water flow.
- Check oil cooler condition.
- Check oil pump operation.

Low oil pressure

- Check oil level.
- Check filter condition.
- Check oil pump operation.

Water in oil

- Stop the gearbox.
- Inspect the oil cooler.

Excessive vibration

- Check alignment.
- Inspect couplings.

Oil leakage

- Inspect shaft seals and external connections.

8 RECOMMENDED SPARE PARTS

The recommended spare parts inventory depends on operating conditions and vessel availability requirements.

Kumera Marine AS recommends keeping the following items onboard:

- Oil filter elements
- Oil seals for input and output shafts
- Oil pump
- Zinc anodes (for seawater-cooled systems)
- Pressure gauges
- Pressure transmitters
- Temperature sensors
- Approved gearbox oil
- Grease for shaft seals and spline connections

Review spare-part usage during the first year of operation and adjust stock levels accordingly.

Contact Kumera Marine AS for project-specific spare-part recommendations.

Telephone switchboard	+47 33 48 54 54
24 hours service	+47 952 46 460
Service E-mail	spareparts.kumeramarine@kumera.com