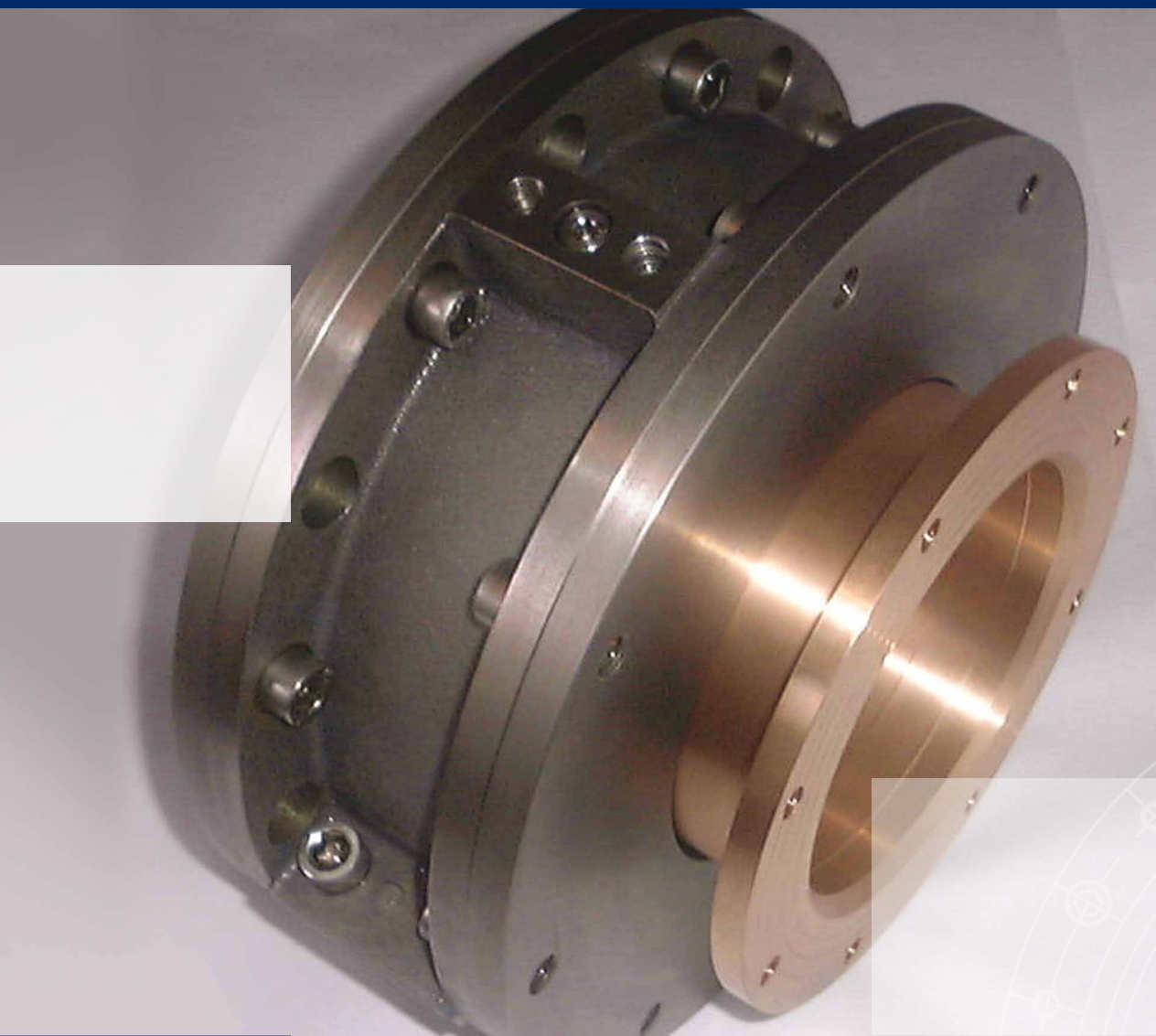




STONE MARINE
SEALS

EcoSeal



www.stonemarineseals.com



STONE MARINE SEALS

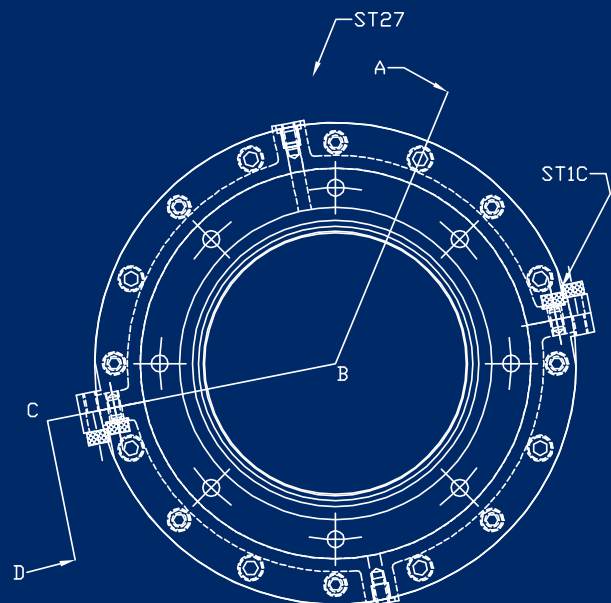
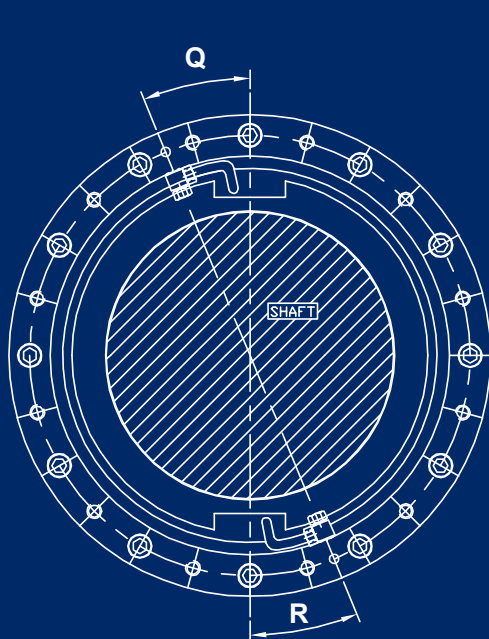
The growing demand for an environmentally friendly, leak-free propeller shaft seal has led to the creation of EcoSeal, a highly advanced new design from Stone Marine Seals. The design includes new and unique features, which make it superior to other sealing options available today.

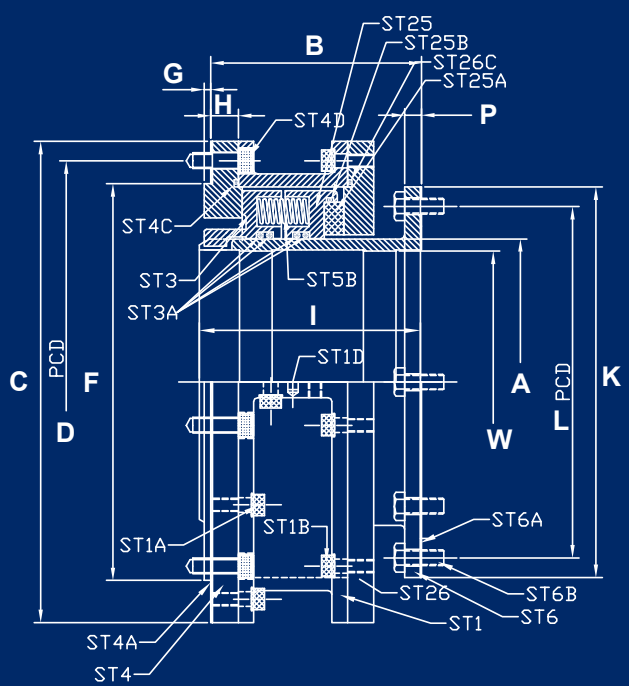
They are easily fitted as either an inboard or outboard seal and following extensive and highly successful testing, EcoSeals are now proving themselves in worldwide service.

EcoSeals are manufactured in the UK to the highest standards using materials which are carefully selected to resist both wear and corrosion. Inner wear rings are self-lubricating leaded bronze, which contain the stainless steel springs and the Phenolic Resin wear insert.

In the case of New-buildings, the customer can choose the liner material; it can be manufactured in either stainless steel or bronze. When retrofitting lip type seals with liners, the existing liner can be re-used.

The design of EcoSeals allows for fitting to vessels as diverse as shallow draft dredgers and coastal vessels to very deep draft heavy-lift ships and semi-submersibles. It is hardly any surprise that the EcoSeal is now the seal of choice for many ship operators.





| COMPONENTS | | | | |
|------------|-------------------|-----|-------|------------------------|
| PART | DESC | QTY | NOTE | MATERIAL |
| ST1 | CASING | 1 | SPLIT | BS3468 GRADE F1 |
| ST1A | MOUNTING SCREWS | 8 | | STAINLESS STEEL 316 |
| ST1B | MOUNTING SCREWS | 8 | | STAINLESS STEEL 316 |
| ST1C | BUTT SCREWS | 4 | | STAINLESS STEEL 316 |
| ST1D | DOWEL | 2 | | STAINLESS STEEL 316 |
| ST1E | DRAIN & VENT PLUG | 2 | | STAINLESS STEEL 316 |
| ST3 | OIL SEAL FACE | 1 | SPLIT | BS1400 LB4 |
| ST3A | O-RING | 4 | | NITRILE |
| ST3C | BUTT SCREWS | 2 | | STAINLESS STEEL 316 |
| ST3D | LOCATOR | 2 | | BRASS |
| ST4 | THRUSTPLATE | 1 | SPLIT | BS3468 GRADE F1 |
| ST4A | JOINT | 1 | | |
| ST4C | O-RING | 1 | | NITRILE |
| ST4D | MOUNTING SCREWS | 8 | | STAINLESS STEEL 316 |
| ST4E | BUTT SCREWS | 2 | | STAINLESS STEEL 316 |
| ST4F | DOWEL | 2 | | STAINLESS STEEL 316 |
| ST4G | MEASURING PLUG | 1 | | STAINLESS STEEL 316 |
| ST5B | SPRINGS | 6 | | STAINLESS STEEL 316S42 |
| ST6 | SLEEVE | 1 | | BS1400 LG4 |
| ST6A | JOINT | 1 | | |
| ST6B | MOUNTING BOLTS | 8 | | STAINLESS STEEL 316 |
| ST25 | INSERT HOLDER | 1 | SPLIT | BS1400 LG4 |
| ST25A | INSERT | 1 | SPLIT | |
| ST25B | O-RING | 1 | | |
| ST25C | BUTT SCREWS | 2 | | STAINLESS STEEL 316 |
| ST25D | DOWEL | 2 | | STAINLESS STEEL 316 |
| ST25E | DRIVE PINS | 2 | | STAINLESS STEEL 316 |
| ST25F | LOCATORS | 2 | | BRASS |
| ST26 | THRUSTPLATE | 1 | SPLIT | BS3468 GRADE F1 |
| ST26A | BUTT SCREWS | 2 | | STAINLESS STEEL 316 |
| ST26C | O-RING | 1 | | NITRILE |
| ST26D | DOWEL | 2 | | STAINLESS STEEL 316 |

ECOSEAL ADVANTAGES

- **No oil leakage to the surrounding environment**

Because of the double barrier design of the EcoSeal, any fluid transfer must pass between two sealing faces before any pollution can take place. Using the option to drain the seal casing inboard the vessel using our "Vent and Drain" system, the EcoSeal virtually eliminates the possibility of sea water contamination into the stern tube, or oil pollution into the surrounding sea water.

- **No parts rotate against the sleeve liner**

Unlike a conventional lip seal, all wearing parts rotate with the sleeve liner which eliminates the need to remove the tail shaft or for expensive bonding. Seal maintenance can be carried out in-situ with the split or semi-split seal option. The sleeve liner should last the life of the vessel.

- **The option to retrofit using an existing seal liner**

The EcoSeal can be supplied fully split and can be retrofitted to an existing Lip seal liner. This option gives the owner the advantages of using the EcoSeal without the expense of removing the propeller, rudder, or tail shaft, or the output shaft of a Thrust Unit.

- **The option to adjust the seal interface pressure from inboard the vessel**

The EcoSeal casing can be pressurised using either oil or air in order to adjust the sealing face pressures. Regular samples can be taken from the seal casing to ensure that the seal is performing at its optimum and can be adjusted to compensate for any change in draft or running conditions.

This option is particularly useful on vessels such as semisubmersible drilling vessels or where the draft would change dramatically when loaded and unloaded, as with Heavy Lift vessels, for instance.

- **The design compensates for any thermal expansion, hydraulic pumping or axial movement of the propeller shaft**

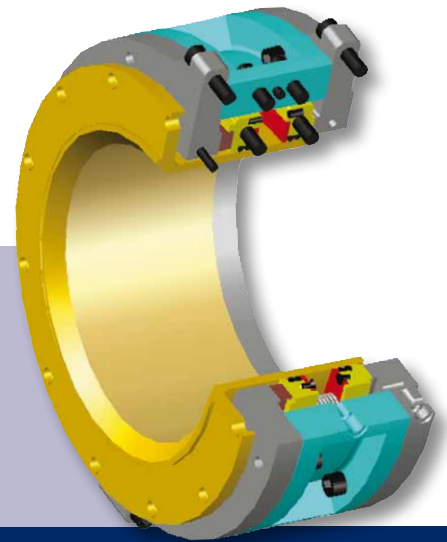
Unlike other mechanical seals on the market, the EcoSeal does not rely on the space between the sterntube end and the propeller hub to give the seal its working compression. The unique design means that the distance between the static wearing faces always remains constant. Any axial movement in the shaft will not result in a pumping effect either drawing sea water into the seal or expelling oil into the surrounding environment.

- **EcoSeals are tested to 50M depth**

Unlike our competitors, the EcoSeal is designed for the vessel. The seal is produced for the draft with which the vessel is running, so the customer can be reassured that the seal is perfectly suited for the application. Tested to 50M, the EcoSeal can suit all applications from shallow coastal vessels to deep water drill ships.

- **EcoSeals are compatible with Environmental Acceptable Lubricants (EALs)**

The US Environmental Protection Agency, (EPA), has issued a new Vessel General Permit (VGP) which requires ships sailing in US waters to use EALs in all oil-to-sea interfaces "unless technically infeasible". The EcoSeal is fully compatible with biodegradable oils and aluminium anodes, complying with the EPA regulations without any modification needed.



CERTIFICATE NO.
M-12582 & M-12584

For more information on the remarkable new Stone Marine Seals EcoSeal go to our website at www.stonemarineseals.com. On the site you will find a brochure which details the origins and development of the EcoSeal.



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