ROMOR I Dovetailed Bearing Staves

ROMOR I was engineered for low friction and noise particularly at minimal journal velocities. It was field tested on the trident submarine and the results were outstanding – "no bearing initiated hull noise at any speed". The potential for squeal and stick-slip was virtually eliminated, for smoother operation. ROMOR I low friction characteristics results in better energy efficiency and a remarkable increase in bearing and shaft life.

ROMOR I Dovetailed Stave Design for Naval Bronze Housing

ROMOR I Glass Smooth Facing
Low-friction facing specially formulated proprietary nitrile rubber is engineered with a controlled thickness, a 15 to 20 micro-inch finish and 80 durometer, Shore A, hardness. The glass-smooth face greatly reduces start-up friction and operational friction levels.

Ultra-High Molecular Weight Polymer Alloy Backing
The backing is lightweight and unbreakable, corrosion resistant, and eliminates dezincification. The nitrile rubber layer is integrally bonded to this high impact backing. Together, this integral bond of nitrile rubber and polymer alloys acts as a vibration and shock absorber.

ROMOR I Dovetailed Stave Design for Naval Bronze Housing

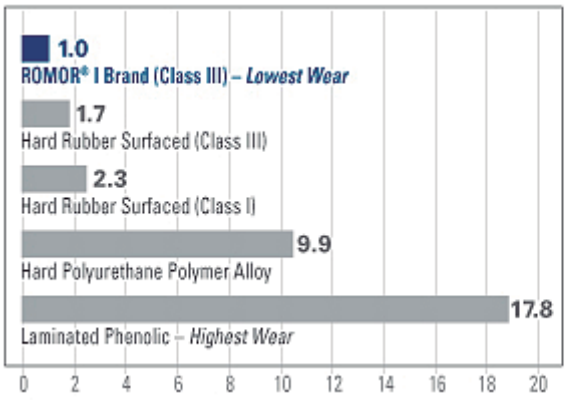
Unlike our competition, Duramax Marine® didn't manufacture ROMOR I in an attempt to meet U.S. MIL-DTL-17901C (SH) Class III standards. We met and exceeded the requirements using our actual production bearings. It's why you find ROMOR I on 90% of all surface ships and submarines in the U.S. Navy Fleet, as well as many navies around the world.

ROMOR I Dovetailed Bearing Staves have proven themselves at sea for decades.

They are engineered for an extremely low co-efficient friction, less break-in running time, vibration dampening, silent operation and extremely long journal life.

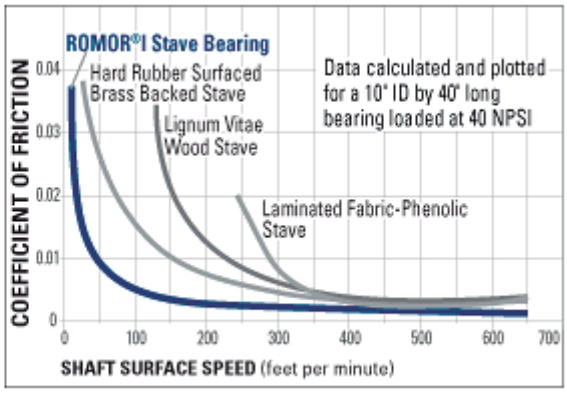
MEREX

ROMOR I Staves all-polymer construction durable in gritty, dirty waters.



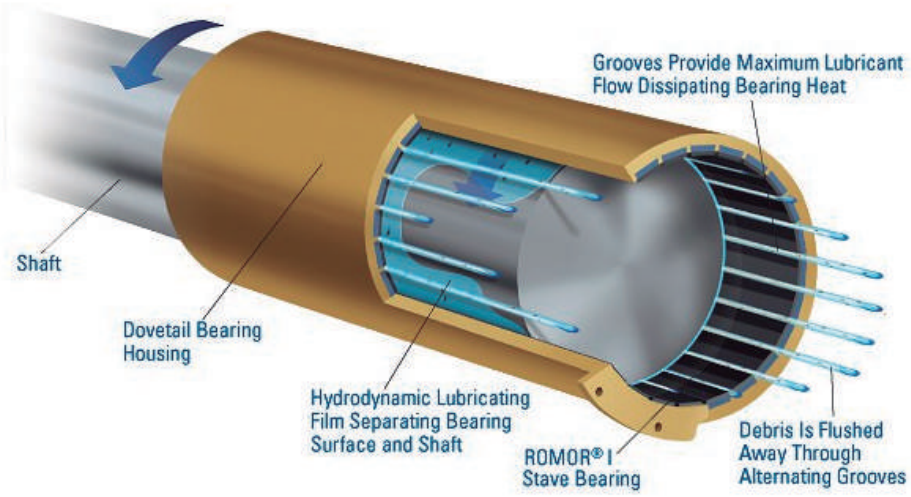
*Normalized data based on measurement of wear. Independent laboratory test in gritty water.

ROMOR I Staves low co-efficient of friction.



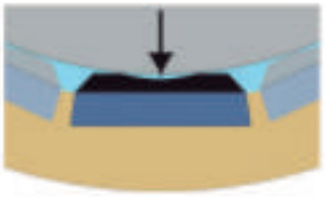
*Note low ROMOR I stave friction values at slow shaft speeds which reduces stick-slip problems.

ROMOR I Hydrodynamic Design Minimizes Bearing and Journal Wear



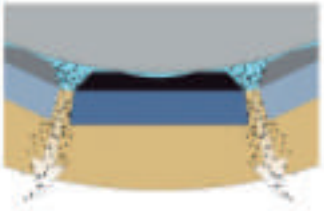
Low coefficient of friction under 0.001

During shaft rotation a hydrodynamic "water wedge" is created, causing enough pressure to totally separate the entire bearing surface and shaft with a film of water – significantly reducing bearing and journal wear. The elastic characteristic of the ROMOR I rubber bearing surface allows it to deform and form a permanent natural pocket allowing a hydrodynamic lubricating film to develop between the bearing surface and the shaft.



"Elastic Hydrodynamic" Grit Rejection

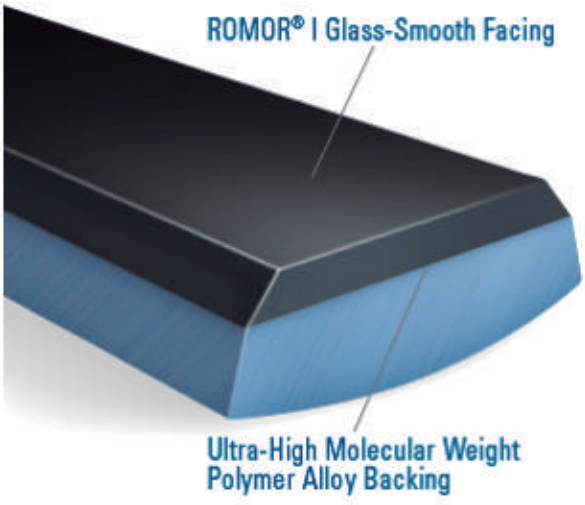
During operation, the leading ends and trailing ends of the hydrodynamic pocket are sealed by the "water wedge" resulting in "elastic hydrodynamic" grit rejection. The inherent ability of the rubber face to deform and rebound allows abrasive materials to be depressed in bearing land surface, then flushed into grooves away from shaft. This results in minimum shaft sleeve wear and shaft damage.



ROMOR I Radius-Backed Bearings

ROMOR I technology developed for the military is available in a radius-backed locking stave design for use in commercial marine round-bore stern tubes. It's the ecological answer that will help you meet the marine industries requirements for a clean new world, while dramatically cutting maintenance time and costs.

ROMOR I Dovetailed Stave Design for Naval Bronze Housing



ROMOR I low coefficient friction of 0.01 reduces your vessel's maintenance costs.

Less friction means longer bearing life and more protection for journal from damage and wear. It will drastically cut replacement costs and extend life between bearing change outs. ROMOR I is energy efficient, reduces noise and vibration and protects the shaft from excessive wear.

ROMOR I is exceptionally durable.

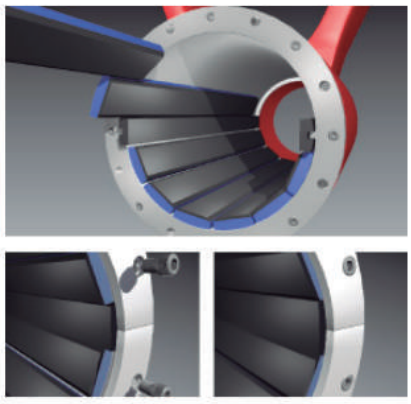
ROMOR I is tough and corrosion resistant, greatly extending wear life in the most aggressive working environments. ROMOR I staves outlast brittle materials such as: Lignum Vitae, Hard Rubber, Polyurethane Alloys & Phenolic Laminates 18 to 1.

ROMOR I Radius-backed staves are designed for ease of installation.

All-polymer light-weight staves are easy to handle, cutting installation time and maintenance costs. ROMOR I staves come in standard sizes, or can be manufactured to exact thickness and side angles to meet your specifications for ease of installation in any standard round-bore stern tube.

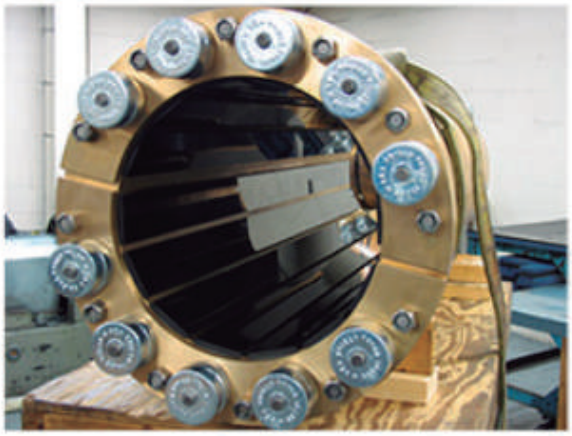
Staves can be installed without removing the bearing from the shipyard, saving time and money.

Easy installation method
- Staves all placed directly into round bore tube
- Slightly longer all-rubber locking staves placed next ROMOR I staves
- Alloy compression head is bolted to stern tube compressing locking ROMOR I staves in place.



ROMOR I Segmental Housings

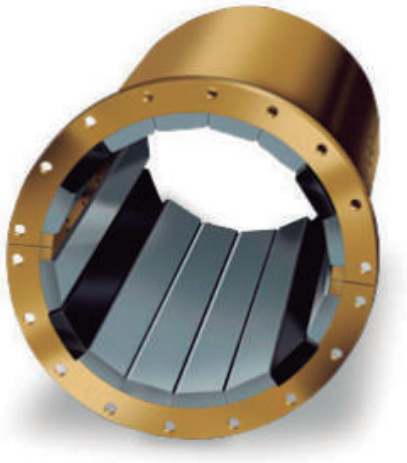
They are centrifugally cast bronze housing that are precision machined with keystone or dovetail races. Longitudinal water grooves run the full length of the housing to provide optimum water flushing and lubrication.



ROMOR I Segmental Housings are available in split or solid configuration. Custom lengths and diameters are also available

DMX Polymer Alloy Bearings

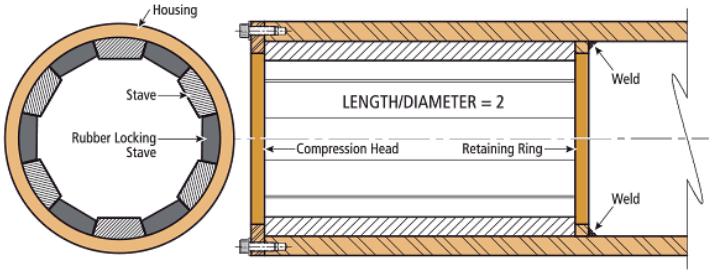
When you need a tough, durable, water-lubricated propulsion bearing that can handle the rigors of harsh working environments and result in near-zero shaft and sleeve wear, use DMX - the revolutionary polymer alloy in a locking stave configuration. It's a unique, proprietary bearing material available only from Duramax Marine.



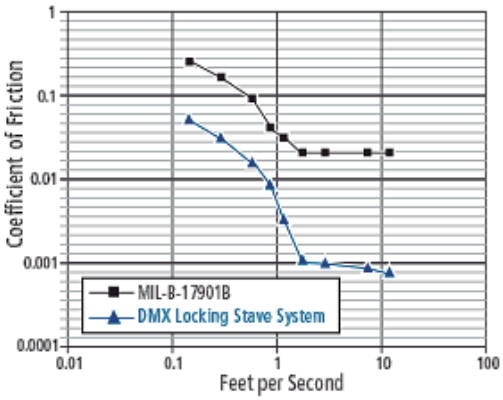
Independent Laboratory Tests

BMT Defence Services Ltd. for the United Kingdom Ministry of Defence performed extensive tests in abrasive-laden waters reported these conclusions:

Can be used in a 2:1 or less L/D configuration.
This means less material, a smaller housing and less weight. Duramax DMX was tested successfully at 40 to 240 npsi. DMX Polymer Alloy Bearings are Class Approved by Lloyd's for 2:1 L/D operation.

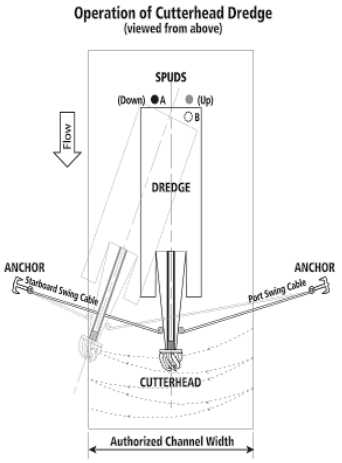


DMX operates with near-zero shaft/sleeve wear.
There was negligible shaft journal and bearing wear. In fact, the shaft finish in general improved on the vessel itself.
Grit has minimal effect on DMX.
No matter where you operate – from inland waters to open sea – DMX has proven to effectively handle abrasive materials. It's ideal for workboats, tugs, dredges as well as ocean-going vessels.



Tests confirm DMX performs better than Military Specification MIL-BDTL-17901C (SH) requirements.

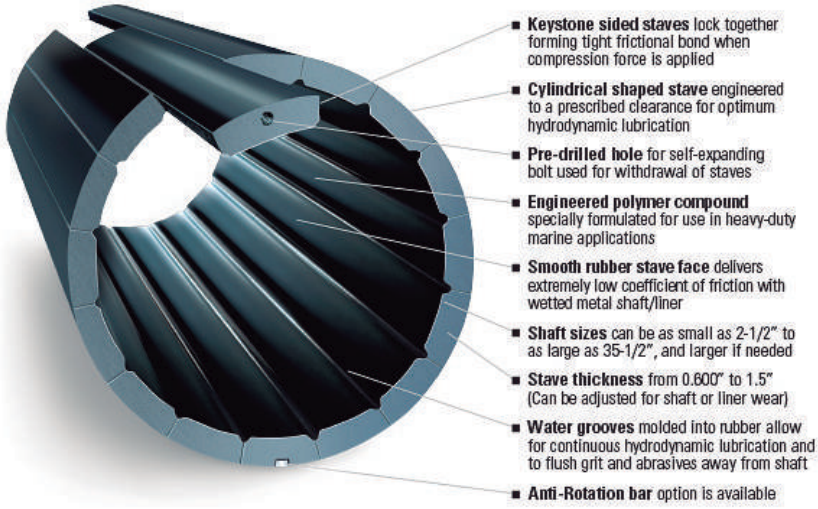
- Runs extremely well at low shaft speeds without noise, vibration or stick slip.
- It has an extremely low coefficient of friction at breakaway and a full range of shaft speeds.
- Performs exceptionally well through multiple shaft reversals with very little noise.
- Allows engine to operate with more efficiency and conserve fuel.

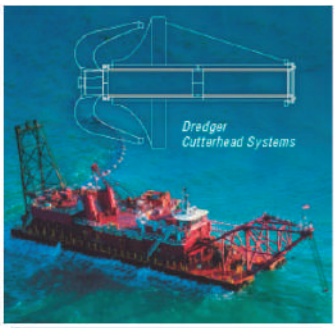


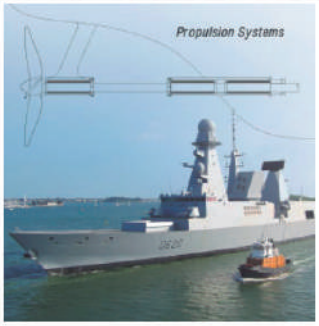
Johnson Demountable Stave Bearings

The Johnson Demountable bearing system combines the performance of precision-fitted bearings, rugged simplicity, and inherent advantages of a rubber polymer water-lubricated system. It is made up of keystone-sided molded solid nitrile staves, precision-fitted to the shaft journal. When installed, the staves form a self-locking cylindrical bearing for a round bore housing. The system provides improved water lubrication, improved shaft alignment, suppression of resonant vibration and minimizes transference of vibration to ship's structure. Bearing replacement can be done safely and quickly without shaft withdrawal. Replacement bearings cost less than one-half of conventional bearings.


Round-bore housing with lower bearing staves held in place with bottom section of compression head







Benefits of Johnson Demountable Bearing in round bore applications.

- Optimum water-lubrication
- Stave deflection helps improve shaft alignment
- Extended liner life
- Reduced mechanical vibration
- Suppression of resonant vibration
- Easy bearing installation/withdrawal with shaft & propeller in place
- Easy shaft installation & withdrawal with bearing in place
- All bearings interchangeable throughout the shafting system
- 3 Bearing sizes (I.D.) for each standard housing bore (Above 7-3/4" I.D.)
- 3 Liner sizes (O.D.) with original shaft liner in place (Above 7-3/4" I.D.)
- Housing bore is always straight never stepped
- All journals same size throughout the shafting system
- Bearing staves are solid precision-molded nitrile rubber
- Self-locking bearing staves
- Housing bore effectively sealed
- Electrolysis substantially reduced
- Initial cost competitive to conventional bearings-installed
- Replacement cost less than 1/2 of conventional bearings
- Handling and storage problems minimized

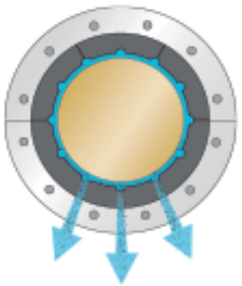
Downtime due to bearing maintenance greatly minimized

MEREX

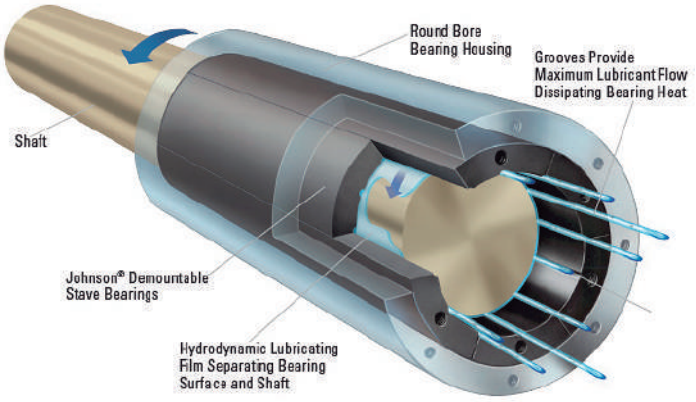
Johnson Demountable System is precision fitted to shaft journal.

Procedures at Duramax Marine include a complete fitting of all bearings and measurement of proper clearance before the system is packed and shipped. The ID of your Demountable System is machined to the proper dimensions. The complete bearing is then assembled in a tube of identical dimensions to those shown on your engineering drawings. Compression head is applied to verify an accurate fit. Finally, the bearing ID is checked for proper size. Clearances around the shaft are measured and recorded. A copy of the pertinent data & installation instructions for your specific installation accompanies the bearing.

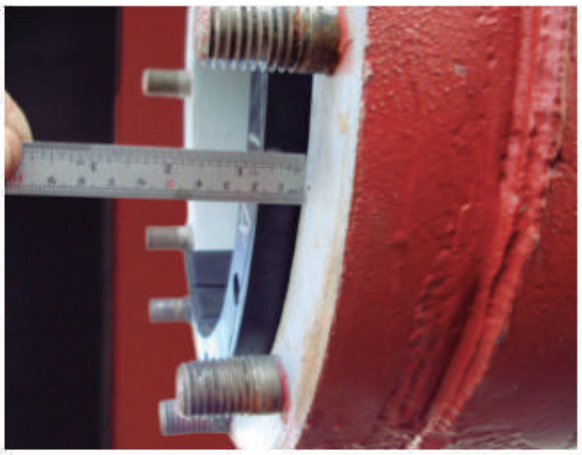
Hydrodynamic Design Separates Shaft And Bearing.



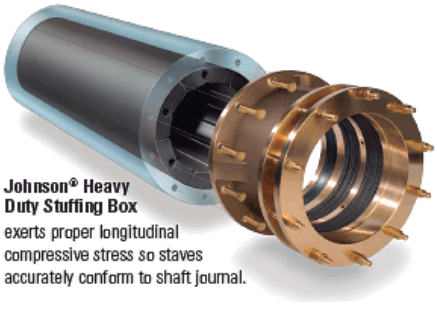
At shaft speeds in excess of 1m/sec (3.25 ft/sec), a hydrodynamic water wedge is created, separating the shaft from the bearing surface at the "Effective Area" of the bearing. A continuous hydrodynamic film of water is supplied through grooves to the sliding surfaces, minimizing frictional heat and extending wear life of the shaft and bearing. Because of the forgiving properties of the rubber stave, harmful abrasives and contaminants are pressed into stave surface, then flushed into the grooves away from shaft.



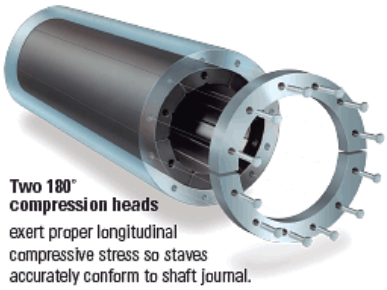
Installation is simple.



The "keystone" shape of the molded stave and frictional bonding will help secure bearing in the housing. You just place the staves around the inside of the round bore housing. The staves are sized to extend slightly after full insertion into housing. Once they are in place, a compression head or stuffing box is installed. It exerts longitudinal pressure producing a "keystone" action on the angled sides of the entire stave complement. The nitrile rubber staves undergo "controlled deformation". The molded stave is properly dimensioned to provide the correct compression force and secured bearing I.D. when in the locked position.



Johnson® Heavy Duty Stuffing Box
exerts proper longitudinal compressive stress so staves accurately conform to shaft journal.



Two 180° compression heads
exert proper longitudinal compressive stress so staves accurately conform to shaft journal.

MEREX