Delivering World-Class Product Solutions For Over 100 Years

Duramax Marine® is an ISO 9001:2015 Certified Company

## DURAMAX MARINE<sup>®</sup>

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Our Mission Is Simple: To Keep You Moving Full Speed Ahead.

Delivering world-class marine and industrial product solutions designed for superior performance and durability. Backed by over 100 years of unmatched customer service. That's why marine and industrial professionals trust Duramax Marine® to help keep them running at peak performance.

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#### WE BUILD MORE THAN JUST TECHNOLOGICALLY ADVANCED PRODUCTS. WE BUILD RELATIONSHIPS.

Our customers rely on our unique depth of experience. Whether it's to answer a technical question, give technical support, or a special request that needs a custom product solution, you can expect a quick response. Our international network of sales representatives and customer service specialists are the best in the business. And with our extensive worldwide network of stocking distributors and regional warehouses, delivery of standard products is immediate. So you don't waste time in dry dock or have down time.

## WE GO BEYOND ROUTINE CUSTOMER SERVICE.

No matter where you are in the world, whether you're an owner, shipbuilder, engineer, or technician, you are an appreciated customer. Our customer-focused representatives have extensive product knowledge.

Even if you haven't placed an order, you'll get the answer to your problem with one phone call. When you call +1.440.834.5400, one of our product experts will talk to you personally, and get results.

## DURAMAX MARINE® LLC IS AN ISO 9001:2015 CERTIFIED COMPANY.

We are proud to have been audited and certified by an independent ISO 9001 registrar; Smithers Quality Assessments (SQA). This certification establishes that Duramax Marine products and services are produced using a quality management system that meets internationally recognized requirements.















www.DuramaxMarine.com

# Quality that shows above and below the surface.

Attention to detail is more than just a company policy. It's a matter of personal pride with the people who craft our products. Our commitment to excellence is evident in every product we manufacture. Our Johnson Cutless® Bearings, Duramax<sup>®</sup> Advanced Bearing Systems, Johnson® Stuffing Boxes and Ultra-X® Packing, Shaft Seal Systems, Keel Coolers, Box Coolers and Impact Protection Systems are known worldwide for their engineered quality and dependable performance.

#### WE'RE THE WORLD LEADER IN WATER-LUBRICATED BEARING SYSTEMS.

Duramax Marine® Johnson Cutless® Sleeve and Flange Bearings have set the standard in the marine industry. Our Advanced Bearing Solutions are custom designed and manufactured to exact tolerances to match specific applications in extreme working environments.

We use the highest quality raw materials and compound our own rubber formulas, then test them in our accredited lab. Through our proven, state-of-the-art production processes, we manufacture products you can trust, even before you put a micrometer to them. When customers compare our bearings to the competition, they can appreciate the difference.

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#### IF THERE'S A BETTER WAY, WE'LL FIND IT.

To excel in business today you've got to be a leader. Duramax Marine<sup>®</sup> has led the industry for decades. We engineer innovative products to solve your specific problems, to increase performance, and reduce maintenance costs. We respond quickly to your needs so you meet your schedule and keep your vessel - or operation - running smoothly. Our commitment to you has also resulted in service innovations. Real-time inventory and additional field warehouses simplify ordering and reduce back orders. Shortened shipping distances result in faster delivery.



Johnson Cutless<sup>®</sup> Water-Lubricated Bearing Systems



Duramax<sup>®</sup> Advanced Water-Lubricated Bearing Systems



Cutless<sup>®</sup> Industrial Water-lubricated Bearing Systems



Duramax<sup>®</sup> Heat Exchange Systems



Duramax<sup>®</sup> Shaft Sealing Systems



Duramax<sup>®</sup> Impact Protection Systems

Duramax Marine® products are at work around the world. From the Americas. To Europe. To the Pacific Rim.

www.DuramaxMarine.com







The workboat industry trusts Johnson Cutless<sup>®</sup> to carry the load in the harshest working environment.

## Johnson Cutless<sup>®</sup> Water-Iubricated Bearing Systems.

The Johnson Cutless<sup>®</sup> Bearing is trusted by more industry professionals than any other. It is the original, true, Cutless® Bearing. And, only available from Duramax Marine®. Our precision-designed, specially formulated nitrile rubber is precision molded to fit the shaft in accordance with U.S. Navy Buships clearances for a low coefficient of friction. Johnson Cutless® Bearings are used for marine propulsion and rudder applications. They are also used extensively in industrial pump applications.

Our water-lubricated bearings have proven themselves for decades, setting performance standards. They are designed and engineered to cause grit particles and other abrasives to be washed into grooves and flushed away, protecting the shaft and prolonging bearing life. Our bearings possess inherent vibration-damping qualities and are non-polluting. Standard Johnson Cutless® Flange, Sleeve and Non-metallic Sleeve Bearings are readily available from a network of stocking distributors and sales agents worldwide. Custom sizes and custom materials can be furnished for your special applications.

#### JOHNSON CUTLESS® SLEEVE BEARINGS

Precision machined naval brass shell featuring specially formulated molded nitrile rubber that meets MIL-DTL-17901C(SH) Class II type bearing specifications. Over 100 different sizes in stock, including inch and metric. Custom sizes and materials by request for unique applications.

#### JOHNSON CUTLESS® NON-METALLIC SLEEVE BEARINGS

Non-metallic shell that resists corrosion, with specially formulated, tough, molded nitrile rubber. Over 100 different sizes, in inch and metric, are available in stock. Custom sizes and materials upon request for special applications.

#### JOHNSON CUTLESS® FLANGED BEARINGS

Centrifugally cast naval brass shell with integral flange, and molded, specially formulated, nitrile rubber lining. Meets MIL-DTL-17901C(SH) Class II type bearing specifications. Available in solid and split design. Over 70 sizes in stock. Custom sizes and materials upon request.

#### DURAMAX<sup>®</sup> NCB (NICKEL-CHROME-BORON) SHAFT LINERS

Duramax<sup>®</sup> Shaft Liners can double the life of conventional materials such as 316 or heat treated 410 stainless and give 4-5 times increased wear life. A 58 to 62 Rockwell "C" hardness rating of Duramax<sup>®</sup> NCB increases service life of shafts and shaft sleeves where mechanical abrasion and corrosion take place.



#### DX 490 RUDDER BUSHINGS

Molded hard nitrile rubber composition withstands rugged conditions common to rudder steering applications. Provides high rigidity for maximum stability. Can be lubricated with water, grease or oil. Molded I.D. and O.D. dimensions allow ample material for finish machining at job site. Our in-house laboratory and testing facilities ensure your products meet the highest quality standards in the industry.





LLOYD'S REGISTER TYPE APPROVED PRODUCT











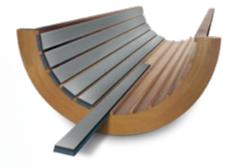
Duramax Marine® Advanced Bearing Systems are found in most U.S. Navy surface combat craft and commercial marine vessels around the world.

## Duramax<sup>®</sup> Advanced Water-Iubricated Bearing Systems.

Duramax Marine<sup>®</sup> is the leader in the development of advanced water-lubricated propulsion bearing systems. Our innovative bearing solutions are a result of researching the scientific fundamentals of bearing technology, then combining research with a solid base of product application knowledge. We are continually advancing rubber-based elastomer bearing technology, setting new standards in superior bearing performance in real world applications. Our R&D focus is on low friction, low acoustic signatures, increased bearing and shaft life. If you have a unique challenge, talk to a Duramax<sup>®</sup> bearing expert for an innovative bearing solution. Call: +1 440-834-5400.

#### ROMOR® SEGMENTAL HOUSINGS

Centrifugally cast bronze housings that are precision machined with keystone or dovetail races. Longitudinal water grooves between staves provide optimum water flushing and lubrication. They are available in split or solid configurations and custom lengths and diameters.





#### DURABLUE® COMPOSITE RUDDER BUSHINGS, THRUST WASHERS AND WEAR PADS

Duramax® DuraBlue® composite material is dimensionally stable and needs no lubrication. Experiences virtually no swelling in sea water. It has a low coefficient of friction value of 0.1 to 0.2, resulting no stick-slip during rudder operation. DuraBlue® is stable with misalignments, tolerates edge loading and maintains a high compression strength. It has a highstrength-to-weight ratio and resists damage or fracture. Absorbs stresses and high impact loads associated with rudder applications better than metal material alternatives like bronze, brass along with nylon and other urethane based products. In standard sizes and custom machined for exact applications.

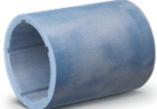
#### ROMOR® I STAVE BEARINGS

Specially formulated nitrile rubber permanently bonded to ultra high molecular weight polyethylene (UHMW-PE) backing. Bearing surface is engineered with a controlled thickness, 15 to 20 micro-inch glass smooth finish and 80 Durometer, Shore A hardness providing lower coefficient of friction, less break-in time, vibration dampening, quiet operation and longer bearing and shaft life.

ROMOR<sup>®</sup> I Bearings are non-polluting and meet MIL-DTL-17901C (SH) Class III specifications. ROMOR<sup>®</sup> I is available in two configurations:

For naval bronze dovetail housinginterchangeable with brass-backed Class I staves and 1/4 the weight.

Radius-backed for standard round-bore cylindrical stern tubes.



DURABLUE® COMPOSITE WATER-LUBRICATED STERN TUBE BEARINGS

Duramax<sup>®</sup> DuraBlue<sup>®</sup> water-lubricated stern tube bearings are manufactured using a unique synthetic reinforced composite that incorporates solid lubricants for superior operation and outstanding wear life in blue water applications.

DuraBlue<sup>®</sup> is dimensionally stable, has a very low coefficient of expansion in extremely cold or tropical regions. DuraBlue<sup>®</sup> is designed to tolerate edge loading and misalignment even with the heaviest loads. It is chemical and corrosion resistant and will not cause corrosion to housing.

#### DMX® POLYMER ALLOY BEARINGS

Revolutionary polymer alloy bearing can be used in a 2:1 or less L/D configuration. Tests confirm DMX<sup>™</sup> performs better than U.S. Military Specification MIL-DTL-17901C (SH) requirements. Runs extremely well at low shaft speeds without noise, vibration or stick-slip. It has low coefficient of friction at breakaway and full range of shaft speeds. Dry run capable in event of water shut down. It's ideal for workboats, tugs, dredgers, as well as ocean-going vessels.

DMX<sup>®</sup> LOCKING STAVE SYSTEM When you need a tough, durable, water-lubricated propulsion bearing that can easily handle abrasive laden environments and result in near-zero shaft and sleeve wear, use DMX<sup>®</sup>. It eliminates the need for a bearing shell. Can be mounted inside of stern tube or strut.

DMX<sup>®</sup> SLEEVE OR FLANGE BEARING We can design and manufacture a custom sleeve or flange bearing lined with DMX<sup>®</sup> to match your specific application in a solid or split design.

## JOHNSON® DEMOUNTABLE STAVE BEARINGS

They are tough, molded, nitrile rubber staves that are used in more than 2,000 installations operating worldwide. They allow for bearing change-out without shaft or propeller removal, reducing maintenance time and cost. Choice of bearing sizes available for each bearing housing diameter.



Johnson® Demountable Rubber Bearing Staves help dredgers cut new shipping channels in extremely harsh, abrasive environments.





OEM pump manufacturers have used Cutless<sup>®</sup> Industrial bearings for over 40 years.

## Cutless® Industrial Water-Iubricated Bearing Systems.

Cutless<sup>®</sup> Bearings give optimal performance in all rotating shaft applications. They are individually inspected to insure the highest standard of quality and are manufactured to meet required industrial tolerances. They are ideal for in centrifugal, horizontal and vertical pumps. Cutless<sup>®</sup> is the long-time trusted bearing of original equipment manufacturers for centrifugal pumps, horizontal pumps, and vertical pumps, along with aerators and pumps for large hydro installations. Our elastomeric compounds are engineered to control (TSW) Total System Wear, unlike hard surface bearings that can score or cause increased wear to the rotating shaft. Cutless<sup>®</sup> Bearings efficiently dissipate heat, flush away abrasives greatly reducing shaft damage, easily withstand low and high speeds, and carry high shaft loads with minimum deflection. They have excellent bearing concentricity, resist oil, grease and chemicals, and are non-polluting and environmentally friendly.

#### SLEEVE AND FLANGE BEARINGS

They are manufactured with high quality, corrosion resistant naval brass shells and non-metallic composite shells as standard. Custom shells can be manufactured in materials such as stainless, carbon steel, Monel<sup>®</sup>, aluminum, titanium, and various composites and plastics. Custom rubber elastomer linings are engineered for any fluid or working condition, from abrasive dirty water to caustic chemicals like chlorine, sulfuric acid or high temperature oils. We can deliver a pump bearing that will perform for your specific need.

#### CUTLESS® DR "DRY START" BEARINGS

With a static friction value of 3.6 the proprietary rubber polymer compounds of the Cutless® DR reduces wear at breakaway and low shaft speed operation. Start-up torque requirements are decreased and stick-slip is minimized. It eliminates the need for a dedicated water feed line to lubricate upper bearings during "dry start" stage.

CUTLESS® CR CHEMICAL-RESISTANT BEARING

We engineered a bearing containing Viton<sup>®</sup> in its lining formulation. It protects the bearing from excessively corrosive applications. It resists corrosion and is unaffected by chloramine

and a variety of other corrosive chemical applications.

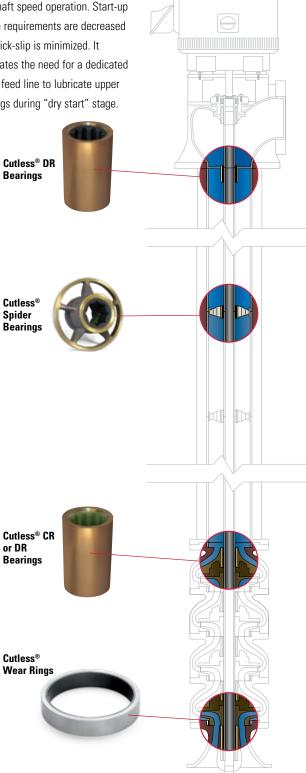


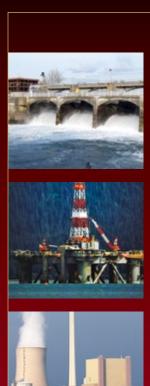
#### CUTLESS® SPIDER BEARINGS

Available with Cutless<sup>®</sup> DR or CR Bearings. Combines all the benefits of a standard Cutless<sup>®</sup> bearing with the added benefit of a proprietary "self lubricating" formulation to handle dry start ups and ease of installation. They protect the shaft from abrasives that can cause shaft damage and excessive wear

#### CUTLESS® WEAR RINGS AND SEALS

Cutless<sup>®</sup> Wear Rings are custom engineered for high-speed pump applications. They are available in stainless steel, bronze, brass or noncorrosive shells. Wear Rings' custom formulated linings handle abrasive environments, dry intermittent start-ups, or corrosive chemicals. They extend equipment life and maintain tight wear ring clearances.







## Advanced Water-Iubricated Industrial Rubber Bearings.

Our Advanced Bearing Solutions are custom-engineered to exact tolerances for extremely long wear life in extreme working environments.

Duramax<sup>®</sup> Industrial R&D has an in-house, state-of-the-art, world class lab where bearing specialists continually custom formulate elastomeric bearing technology that will allow you to operate your equipment with near zero bearing and shaft wear. Duramax<sup>®</sup> Heavy-Duty Industrial Bearings are designed to withstand low and high speeds, and can carry high shaft loads with minimum deflection.

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#### Advanced Hydroelectric Turbine Bearings

Duramax<sup>®</sup> Bearing water-lubricated bearing technology has delivered 20 years performance and 40 year liner life at the Pennsylvania Power and Light's Holtwood Dam.

Duramax<sup>®</sup> ROMOR<sup>®</sup> I staves' performance operating on split welded sst shaft liners will be hard to match with any other bearing material. It's further proof that the tribological forces which occur in water-lubricated rubber polymer delivers the best bearing solutions possible.

#### OEM's trust Duramax® Bearings for Alternative Energy Equipment

Manufacturers know Duramax<sup>®</sup> bearing specialists are continually updating and researching ways to improve our polymer formulations. We continue to research ways to increase performance levels, with extended wear life and low friction for use in new alternative windmill and solar energy installations.



Main guide shaft bearing with ROMOR®I Rubber Staves

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#### Down Hole Directional Drilling

Mud motors (drilling motors) placed in the drill string for horizontal drilling in the oil and gas mining industry uses different rotor and stator configurations to provide additional drilling power to the bit. Duramax<sup>®</sup> Industrial offers customized stator technology for progressive cavity positive displacement pump drilling operations.

## CUTLESS® ADVANCED STATOR TECHNOLOGY

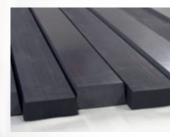
Our elastomer compounds are custom formulated for your specific application. Our unique manufacturing method results in a superior rubberto-metal bond, superior strength and abrasion resistance. Our stator technology gives you longlasting service in the harshest environments, and extends your pump's service life.



#### DMX<sup>®</sup> TECHNICALLY ADVANCED POLYMER ALLOY BEARINGS

It is the ultimate vertical pump and hydroelectric main shaft guide water-lubricated bearing material. Independently tested to operate with near-zero bearing and shaft wear. Dry-run capable up to 10 minutes in event of water shut down. Can be used in a 1:1 or less L/D configuration. Has a low coefficient of friction from 0.14 at breakaway to an unmatched 0.0036 at all shaft speeds.

DMX<sup>®</sup> is available in sleeve or flange bearing, and dovetail stave or locking stave configurations.





## JOHNSON® CUTLESS® SLEEVE AND FLANGE BEARINGS

Specially formulated, fully-molded nitrile rubber lining in bronze (as standard) or non-metallic shells have an extremely low coefficient of friction well under 0.001. Our water-lubricated bearings are designed to protect the shaft as well as the bearing in clean as well as abrasive environments.





#### DEMOUNTABLE RUBBER STAVE BEARINGS

There is a Duramax<sup>®</sup> Industrial Bearing in a locking stave configuration for shaft diameters from 3 to 35 inches. Rubber compounds are designed for your specific application, then custom machined to fit your exact specifications. The fact they can be installed without removing the shaft is a unique advantage.

#### ROMOR<sup>®</sup> I STAVE BEARINGS

Specially formulated proprietary nitrile rubber water-lubricated staves have a 15 to 20 glass-smooth finish and 80 Durometer, Shore A hardness, backed by a light-weight polymer corrosion resistant ultra-high molecular weight polymer alloy backing. It delivers unbelievably low friction at extremely low journal velocities. Available in radius back and dovetail stave designs.

DMX<sup>®</sup> extremely low coefficient of friction results in near zero TSW<sup>sm</sup> (Total System Wear). Unlike competitors' that only claim long bearing life.







Ships' captains trust Duramax<sup>®</sup> Heat Exchange Solutions to keep their diesels cooled and humming.

## Duramax<sup>®</sup> Heat Exchange Systems.

Duramax Marine<sup>®</sup> offers a line of custom designed cooling systems to meet your specific engine specifications and operational requirements. Our heat exchange system experts will personally meet with you to determine the perfect type cooling and capacity you need. We can custom build a hullmounted system that includes our streamlined, one piece 90/10 Copper–Nickel DuraCooler® in both a through-hull and flangemount design, or a Demountable System with replaceable 90/10 Copper-Nickel spiral tubes. If your requirement is an in-hull system we can supply a Duramax<sup>®</sup> Box Cooler or Plate Heat Exchanger to meet your cooling needs. For an estimate call: +1 440-834-5400.

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#### DURACOOLER® KEEL COOLER

Latest updated version of the DuraCooler® with streamlined header design that further enhances cooling efficiency over a square head design. A series of engineered flow diverter "scoops" are built along the width of the bottom edge the tubes creating a diversion of the seawater that "flushes" the stagnated areas between the tubes forcing convection between hot tubes and the lower temperature seawater. This helps increase heat transfer efficiency more than 17%. One-piece design makes it easier to install and 90/10 copper-nickel construction resists water flow erosion and acts as antifoulant. Available in through-hull or flange-mount.



#### DURACOOLER<sup>®</sup> SUPRSTAK<sup>™</sup> with TurboTunnel Design (patent-pending)

Completely redesigned doublestacked cooler is the most efficient keel cooler Duramax Marine® has ever built. It "jets" seawater in tunnel-like configuration between its upper and lower tube assemblies. Innovative design advancements have been engineered to both greatly enhance and optimize turbulent flow outside and around the keel cooler using Computational Fluid Dynamic (CFD) modeling techniques, then tested and validated utilizing a full scale water tunnel. DuraCooler<sup>®</sup> SuprStak<sup>™</sup> takes keel cooler technology to the next level. Available in solid brazed unit or in upper and lower modular design for easier installation.

#### DURAMAX® BOXCOOLER

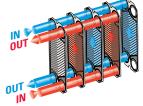
Gives you in-hull protection and large cooling capacity. Operates in a sea chest within your vessel protected against underwater hazards. Able to meet cooling needs of your engines as well as other multiple heat sources. Cooler tubes are coated with a heat-cured synthetic coating that protects against galvanic corrosion. Impressed Current Anti-fouling System (ICAF) resists biological marine growth. Control panel monitors life of copper anodes, logs data for diagnostic downloads, and sounds alarm in the event of malfunction.

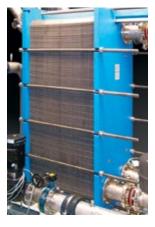
#### DEMOUNTABLE KEEL COOLER

Our 90/10 Copper/Nickel spiral tubing is resistant to salt water corrosion and sea growth, and gives superior heat transfer. Its demountable, modular design is available in 4, 6, 8, 12, and 24 tube units that can be combined to cool multiple circuits. There are no through-hull fittings or inboard sea chest needed which makes for easy installation. Tubes conform to most hull curvatures. And, it is easily expanded to re-power or add additional heat sources to your vessel.

#### DURAMAX® PLATE HEAT EXCHANGER

A unique, custom-designed, in-hull system where seawater and heat source water is pumped through alternating embossed plates that create turbulence, resulting in highly efficient heat transfer. Can easily expand system to re-power or cool other heat sources.







Helping protect vessel's propulsion shaft and run at peak performance

## Duramax<sup>®</sup> Shaft Sealing Systems.

#### Our Duramax® DryMax® Shaft

Sealing System is a superior, environmentally friendly, waterlubricated pollution free system that delivers long life, eliminates shaft wear and handles the toughest jobs every day on the job. It was designed, researched and tested in our own lab, simulating abrasive conditions of the Mississippi River.

Duramax Marine<sup>®</sup> has a long history of helping the marine industry keep their vessels running at optimum performance. Marine industry professionals know Duramax always delivers products that are rated the highest quality in the industry. This shaft sealing system matches or surpasses the quality and ability to protect the propulsion system on your vessel.

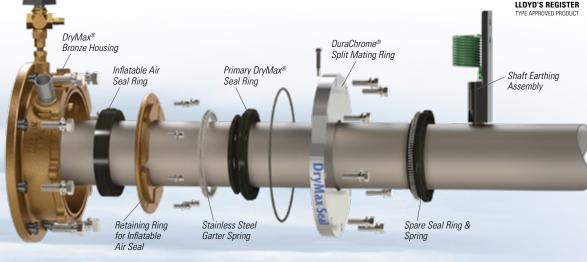
Call your Duramax Shaft Sealing system expert to custom build a sealing system for you at: +1 440-834-5400.







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#### DRYMAX® SHAFT SEAL

This two-part sealing system is designed with a nitrile rubber seal that rotates with the shaft and creates a hydrodynamic seal with a proprietary DuraChrome<sup>®</sup> Alloy Mating Ring- keeping the seawater out and your bilge dry. It is perfect for blue water or the harshest brown water environments.



The DryMax® Sealing System is designed to be a cost effective, tough seal built to handle axial and radial shaft movements, eliminating wear on the shaft, while handling the toughest jobs in harsh working conditions. It has a built-in emergency inflatable seal and a DuraChrome® Mating Ring that is reversible, delivering 2X the life, extending dry dock intervals. It is available for shaft sizes up to 36".

#### DRYMAX® RUDDER SEALING SYSTEM

DryMax<sup>®</sup> is a robust and reliable hydrodynamic rudder seal system constructed of the highest quality materials designed to deliver

long service life. DryMax<sup>®</sup> sealing system was engineered, tested and built by Duramax Marine in the USA. This axial system provides excellent sealing and can accommodate large increases in radial clearances due to wearing down of rudder stock bushings. DryMax® Rudder Sealing System is installed above the DuraBlue® Rudder Bushing and controls seawater from entering the hull.

#### JOHNSON® HEAVY-DUTY STUFFING BOXES

**∕ohnson**®

**Our Stuffing Boxes** are custom designed and constructed of the highest quality naval bronze standard to fit your exact application. They are available also in aluminum and mild steel alloys. It can be fitted with service options of water lubrication, grease service "zerk" fitting with lantern ring, or a combination of both.

This is the first model to use our "air seal" design that allows for packing change without dry docking vessel. Available for shaft sizes as small as 2-1/2 inches to 15 inches. In both solid or split design. 15-1/8 inches to 36 inches in split design.

#### DURAMAX® ULTRA-X® HIGH PERFORMANCE COMPRESSION PACKING

This packing is the ultimate packing designed specifically for the marine industry. It lasts 5X longer and has 300% Lower friction than flax packing. Doesn't get consumed in use. Stays pliable. Never hardens or becomes abrasive. No need for adjusting the gland or need to add more packing. Virtually eliminates shaft scoring. Available in sizes from 1/8" to 1-3/4". Custom sizes upon request.



Duramax<sup>®</sup> Ultra-X<sup>®</sup> compression packing transforms stuffing box into high-tech solution.

#### DURAMAX® "STRONG BOY" STUFFING BOXES AND STERN CASTINGS

Bronze Stuffing Box with rectangular mounting flange for shaft sizes of 4 inch to 8 inch. Available

with compression packing, grease

lantern ring, "zerk" fitting and 1/3 length Johson<sup>®</sup> Cutless<sup>®</sup> Bearing.

Solid Bronze Stern Casting includes Johson<sup>®</sup> Cutless<sup>®</sup> Sleeve Bearing available for 1 inch to 6 inch shaft diameters. Available with oval or rectangular base with special design for heavy propellers and loads. Has built-in scoops for lubrication.

#### DURAMAX® MECHANICAL FACE SEAL SYSTEM

"Maintenance-free" system for propeller shaft and rudder applications for shaft sizes of 3/4" to 6-3/4 inches. No lip seals or packing to change. No adjustments once installed. Dripless seal eliminates oil from bilge. Covered spring chamber is back up for problems experienced by other seals on the market. Available for steel, fiberglass and aluminum hulls.









Naval engineers use Duramax<sup>®</sup> Fendering Systems to protect vessels and engineered structures from costly repair damage.

## Duramax<sup>®</sup> Impact Protection Systems.

You can trust Duramax Marine<sup>®</sup> to supply you with the latest in fendering technology for your dock or vessel.

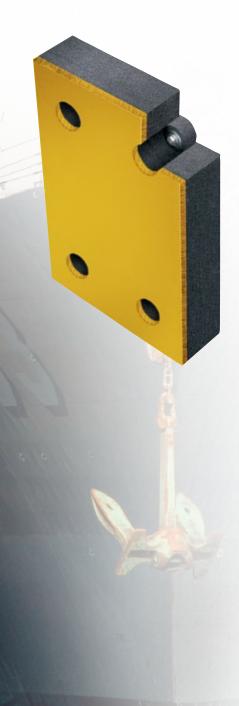
For over 40 years our fendering solutions have been used in military, marine, transportation, highway, bridge and industrial applications around the world.





#### JOHNSON® TOW KNEES

Available in single, double and pre-curved models with several plate thicknesses for every application. High quality composite rubber securely vulcanized to steel plate. Available in stock.



#### DURAMAX<sup>®</sup> LINERITE<sup>®</sup> COMPOSITE BATTERBOARD SYSTEM

It is virtually an indestructible layer of protection. Has a 0.12 lowcoefficient of friction UHMW-PE facing and a proprietary energy absorbing composite core, fused together at the molecular level. LINERITE® is environmentally friendly. Not affected by chemicals, marine organisms or freezing temperatures.

LINERITE<sup>®</sup> can be pre-curved and fitted with custom mounting holes. It is available in standard black and yellow, or can be matched to any custom color. Stocked in standard sizes or custom cut and fabricated to exact dimensions.

#### Standard LINERITE®

The perfect replacement for wood that crushes and splinters, and Solid UHMW-PE Panels that transfer energy to substructure causing damage.

#### JOHNSON® COMMERCIAL DOCK BUMPERS AND FENDERING

Unlike other companies that use SBR and other low quality compounds to make their products, we use only high quality EPDM rubber available in black and non-marking grey and white. It is unaffected by ozone which can cause cracking in SBR, natural rubber and butyl, particularly under stress. EPDM can perform up to 4X longer. Our staff of experts will help choose the perfect profile to fit your specific application from our large inventory. If needed, we can customize extrusions to any style, any shape, and any size. We can pre-curve, cut and drill your fender for easy installation.

#### WEATHERSTRIP DOOR GASKETS, WINDOW CHANNEL AND HATCH COVER GASKETS

A full line for every application. Designed for long lasting durable sealing in the toughest Marine environments. Available in a variety of cross-sections and durometers.



Duramax Marine<sup>®</sup> is committed to providing excellence in every product we manufacture. Our Johnson Cutless<sup>®</sup> marine and industrial bearings, heat exchangers, impact protection systems and sealing systems are known worldwide for their engineered quality and dependable performance. Please contact the factory for information on any of the following Duramax Marine<sup>®</sup> products:



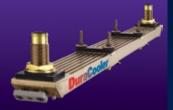


#### JOHNSON CUTLESS® WATER-LUBRICATED BEARING SYSTEMS

Johnson Cutless<sup>®</sup> Sleeve and Flanged Bearings DX 490 Rudder Bushings

#### DURAMAX® ADVANCED WATER-LUBRICATED BEARING SYSTEMS

Johnson® Demountable Stave Bearings ROMOR®I Stave Bearings and Segmental Housings ROMOR® C- Partial Arc Bearings DMX® Polymer Alloy Bearings DuraBlue® Bearings, Rudder & Pintle Bushings, Thrust Washers, and Wear Pads Industrial Pump Bearing Systems



#### DURAMAX<sup>®</sup> HEAT EXCHANGE SYSTEMS

DuraCooler® Keel Coolers Duramax® Demountable Keel Coolers Duramax® BoxCoolers Duramax® Plate Heat Exchangers



#### DURAMAX® IMPACT PROTECTION SYSTEMS

Johnson® Commercial Dock Bumpers, Fenders & Tow Knees Weatherstrip Door Gaskets, Window Channel and Hatch Cover Gaskets LINERITE® Composite Batterboard Systems





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#### DURAMAX<sup>®</sup> SHAFT SEALING SYSTEMS

DryMax<sup>®</sup> Shaft Seal & Rudder Seal Duramax<sup>®</sup> Mechanical Shaft Seal Johnson<sup>®</sup> Heavy-Duty Air Seal Stuffing Boxes Duramax<sup>®</sup> Ultra-X<sup>®</sup> High Performance Compression Packing Johnson<sup>®</sup> Strong Boy Stern Castings and Stuffing Boxes

### DURAMAX<sup>®</sup> INDUSTRIAL WATER-LUBRICATED BEARING SYSTEMS

Johnson Cutless<sup>®</sup> Sleeve and Flange Bearings Cutless<sup>®</sup> DR Bearings Cutless<sup>®</sup> Advanced Stator Technology Demountable Rubber Advanced Stave Bearings DMX<sup>®</sup> Advanced Polymer Alloy Bearings

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