

**DURAMAX**<sup>®</sup>

# DryMax<sup>®</sup> Stern Tube Seal System



LLOYD'S REGISTER  
TYPE APPROVED PRODUCT

- ▶ Environmentally Friendly
- ▶ Water-Lubricated System
- ▶ Eliminates Shaft Wear



For propeller shafts  
from: 3.5" - 15" diameter (89-381mm)

PRODUCT INFORMATION AND SELECTION GUIDE

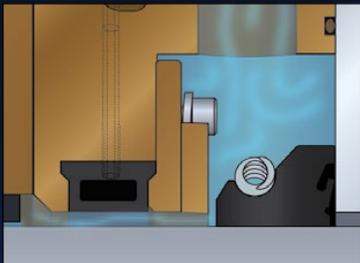
Duramax Marine<sup>®</sup> is an ISO 9001:2015 Certified Company

**DURAMAX MARINE**<sup>®</sup>



# DryMax® Stern Seal System is engineered for optimum sealing performance.

## Robust and reliable hydrodynamic seal design.



The DryMax® Stern Tube Seal System was designed, built and tested by Duramax Marine® in the USA. The seal is a water-lubricated axial shaft seal system

constructed of the highest quality materials which have been engineered to deliver long service life.

## Engineered for low maintenance and long life.

The DryMax® Shaft Seal eliminates wear on propulsion shafts caused by traditional radial lip sealing systems. The unique nature of the DryMax® design creates a highly effective seal which accommodates shaft movement in both the axial and radial directions.



The DryMax® Shaft Seal is a reliable system that uses no grease or oil and is easy to install and maintain. It is a great addition to a full line of proven and reliable marine products developed by Duramax Marine® and engineered to protect the environment.



# Duramax Marine® technology is the difference.

Duramax understands rubber technology and its hydrodynamic interaction with water lubricated surfaces. We used our expertise in the science of tribology to engineer a rubber and metal material pair to make them perform in a way that surpasses other materials used in traditional sealing systems.

Our proven water-lubricated rubber bearing technology is used on more navy, commercial and recreational vessels around the world than any other bearing. Almost every U.S. Navy surface ship and submarine runs on Duramax® water-lubricated rubber bearing technology. This same bearing science inspired the technology utilized in the DryMax® Sealing System.

The DryMax® Seal is a perfect marriage of material pairs from the proprietary rubber formulations used in our seal ring to the engineered DuraChrome® Mating Ring that it runs on. Researching and developing these materials is critically important to how they will wear and even better... how they won't.

As anyone in the marine industry knows, keeping water out of your ship is no easy task. The DryMax® Shaft Seal System is designed to keep water out and your bilge dry!



# DryMax® Shaft Seal keeps your bilge dry.

## Simplicity of DryMax® design.

Leonardo da Vinci is credited with saying, "simplicity is the ultimate sophistication". This statement summarizes the uniqueness of DryMax® Seal System. Some competitive sealing systems can be overcomplicated and difficult to service. The design of the DryMax® has only 2 primary sealing parts; the seal ring and our DuraChrome® Mating Ring which never require adjustment.

The superior design of the DryMax® Shaft Seal System makes it the best choice for your shaft seal requirements. It eliminates the inefficiencies of many existing designs. The DryMax® Sealing System is easy to install and requires zero maintenance. Something ship owners around the world appreciate.

## Designed for heavy duty service in clean and dirty water.

The DryMax® Seal has been engineered and tested for service in both Blue (clean) and Brown (gritted) water operating conditions. Our research and development team conducted experiments on our full scale test rig built to simulate the most difficult service conditions.

You can have confidence that the DryMax® Sealing System will provide you with many years of trouble free operation.

## Proprietary rubber Sealing Ring.

The DryMax® Rubber Sealing Ring is very durable and is easily replaced if necessary. The ring is constructed of proprietary nitrile rubber that rotates with the propeller shaft and creates a hydro-dynamic sealing interface with the highly polished DuraChrome® Mating Ring. Every seal assembly includes an active rubber seal and a spare seal ready on the shaft for change out when needed. The DryMax® Seal Ring is engineered to deliver a long operating life.

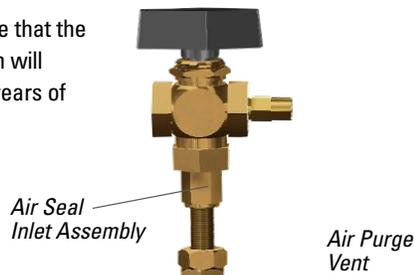
## Maximum seal life with DuraChrome® Mating Ring.

The DuraChrome® Mating Ring can be **reversed and reused** with the spare rubber ring that is stored forward of the seal assembly on the shaft. Once both sides of the DuraChrome® Mating Ring have been worn it can be restored by machining in a lathe. The Alloy used in the DuraChrome® Mating Ring was engineered to optimize operation with our rubber seal ring.

## Duramax Marine® adds to environmentally-friendly Shaft Seal Protection Systems.

The Duramax® DryMax® Shaft Sealing System is designed to protect your propulsion shaft in the toughest working environments. It is a robust but economical shaft seal system that is added to a long list of trusted Duramax Marine® products.

The DryMax® Seal supports vessel owners around the world helping to remove oil from their propulsion systems and operate an environmentally sustainable system with NO risk of oil leakage or pollution.



Air Seal Inlet Assembly

Air Purge Vent

DryMax® Bronze Housing

Seal Assembly Gasket

Propeller Shaft

Inflatable Air Seal Ring

Retaining Ring for Inflatable Air Seal

Stainless Steel Garter Spring

Isolator Washers



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The Duramax® DryMax® Shaft Sealing System can be installed in new construction or replace an existing shaft seal. In retrofit applications Duramax engineers can design an adapter plate that mates with the vessels existing stern tube flange to simplify installation.

### Heavy duty cast bronze housing and components.

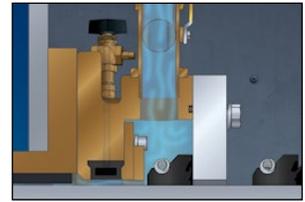
The housing and internal components of the DryMax® Seal are made from a high grade cast bronze. The material was selected to resist corrosion and in many cases will last the lifetime of the vessel.

### Sealing performance with shaft movement.

The Duramax® DryMax® Shaft Seal System allows some axial movement and very large radial motion of the propeller shaft. The seal ring will still maintain a waterproof seal even with large running clearances in the stern tube bearings.

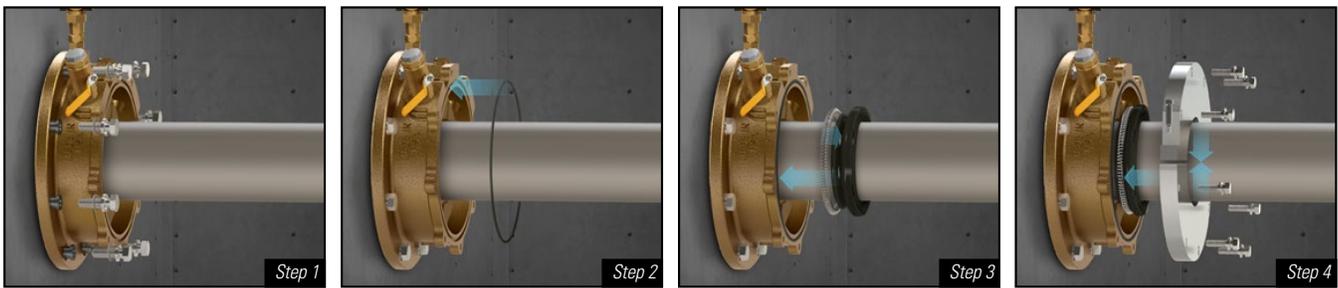
### DryMax® Seal requires no adjustments.

The DryMax® Seal uses the seawater draft pressure as the primary spring force engaging the sealing ring so there is no concern that the DryMax® Seal will ever disengage or change position. Also, there is no sliding contact of the seal with the shaft, eliminating the possibility of wear and grooving of the propeller shaft or liner.



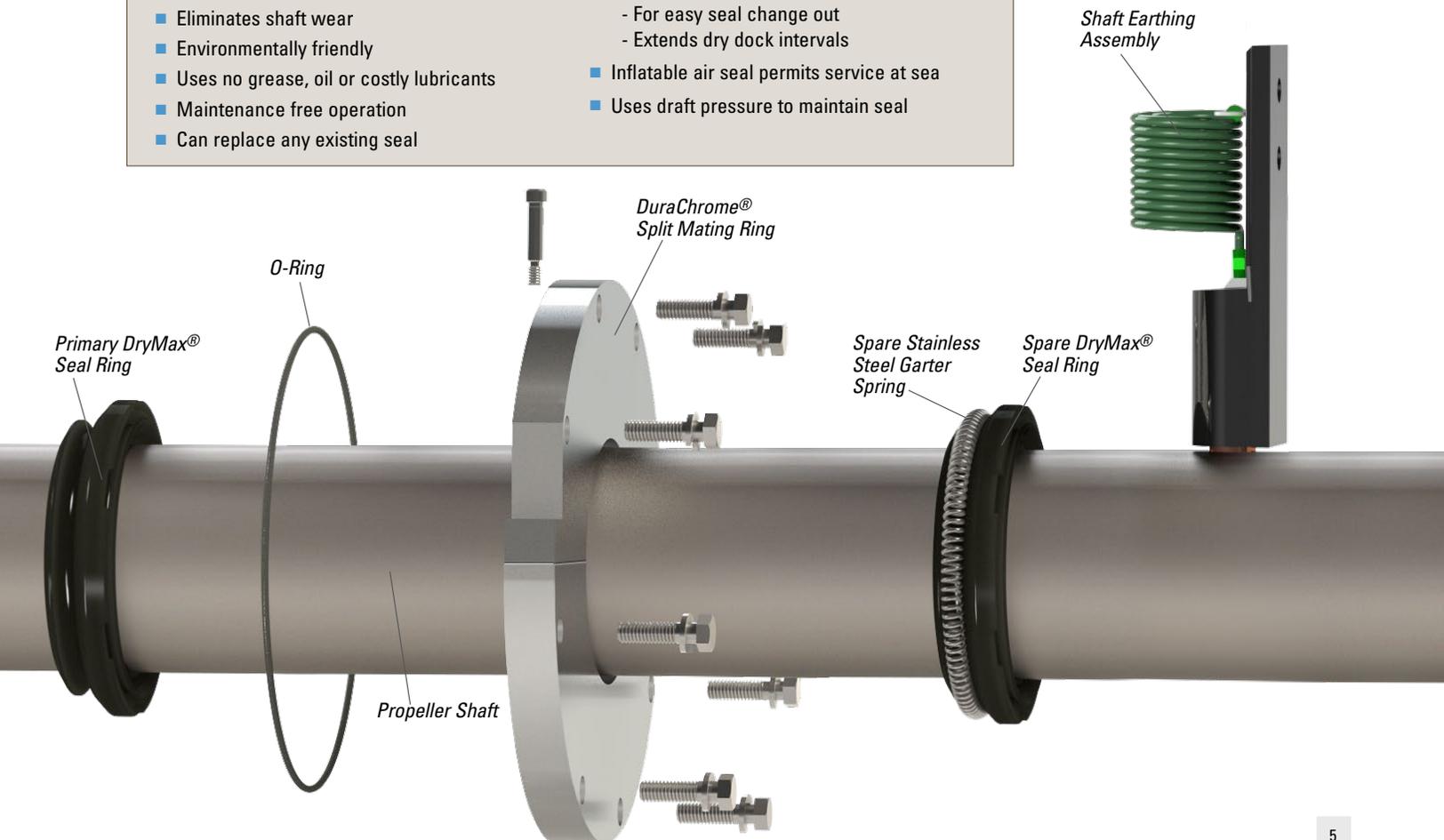
### DryMax® extends dry dock intervals.

The DryMax® Sealing System is designed to give unmatched reliability and longevity. The superior design of the DryMax® Seal will keep you and your vessel running full speed ahead.



#### DRYMAX® SEALING SYSTEM

- Easy to use and install
- Eliminates shaft wear
- Environmentally friendly
- Uses no grease, oil or costly lubricants
- Maintenance free operation
- Can replace any existing seal
- Split, reversible DuraChrome® Mating Ring
  - For easy seal change out
  - Extends dry dock intervals
- Inflatable air seal permits service at sea
- Uses draft pressure to maintain seal

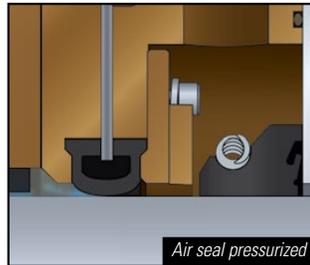


# Easy maintenance of DryMax® Seal System.

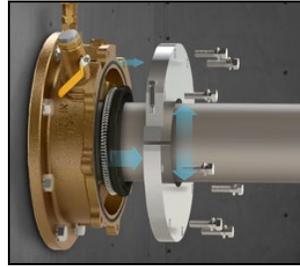
## Self retracting inflatable air seal ring.

Duramax Marine® was the first to introduce a patented air seal in the Johnson® Heavy-Duty Stuffing Box. Our engineered Inflatable air seal is used as a safety feature on the DryMax® Shaft Seal System.

The air seal is held by a bronze retaining ring in the housing. It can be pressurized to make contact with the shaft, preventing any seawater from entering the vessel. It's a safety measure if leakage exceeds allowable levels. It can be pressurized to replace the rubber seal ring at sea without dry docking.



## Engineered for easy seal ring change out.



The DryMax® primary sealing components can be renewed easily with the vessel at sea. With seawater restricted by the inflatable seal the split DuraChrome® Mating Ring can be removed and the old seal ring replaced with the spare seal.

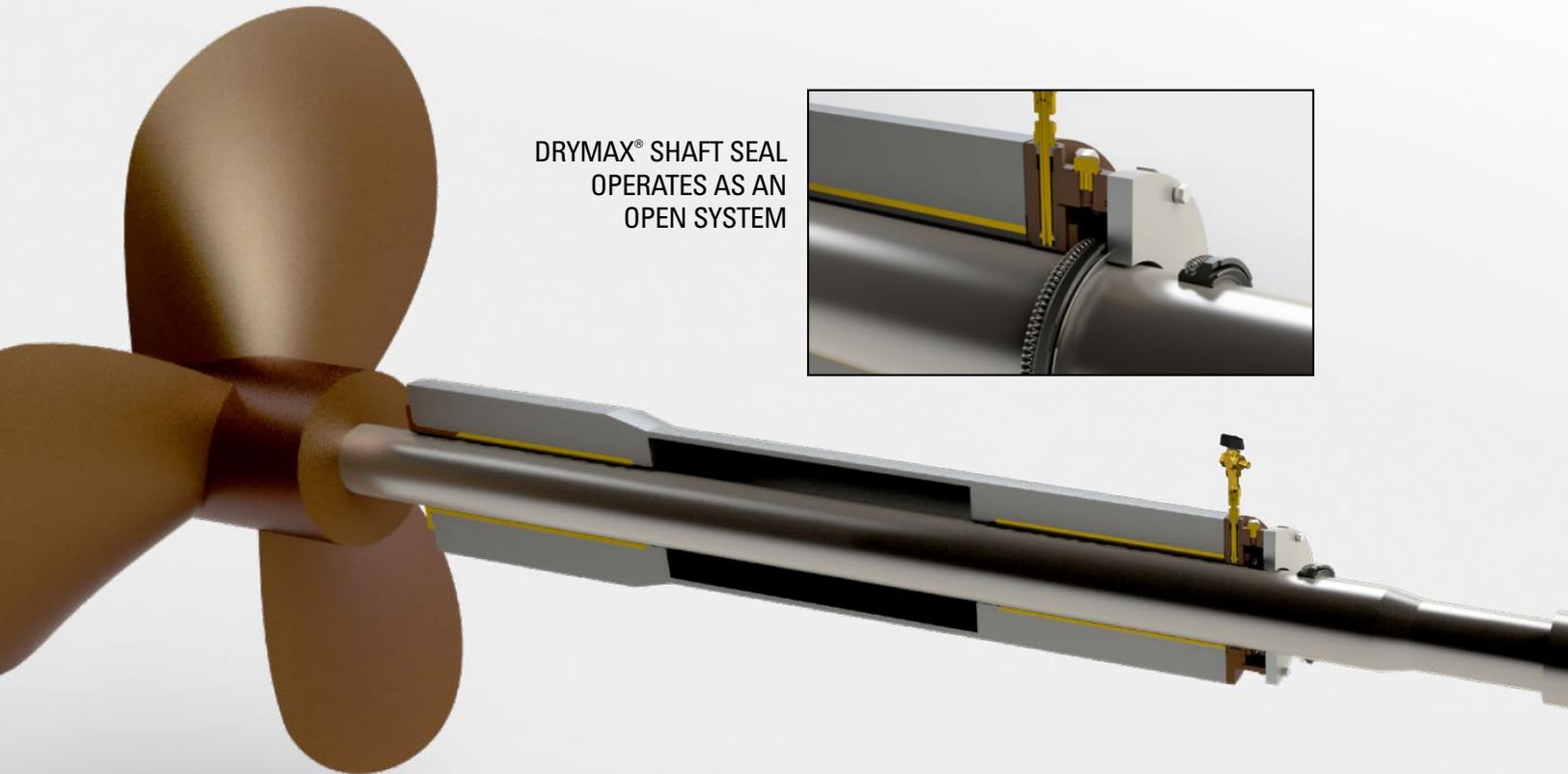
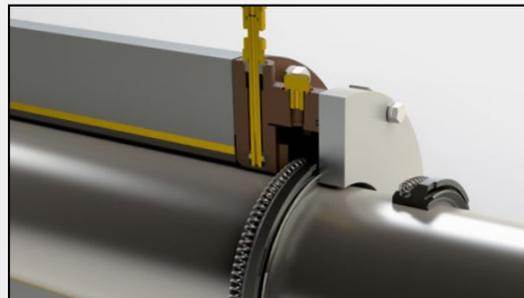
The split DuraChrome® Mating Ring is reversible and switching to the unused side extends service intervals.

## Shaft Earthing Device for corrosion control.



The Duramax® DryMax® Shaft Seal System includes an earthing assembly to help prevent shaft corrosion. The assembly contains a replaceable carbon brush that is spring loaded and grounded to the ship's hull.

DRYMAX® SHAFT SEAL  
OPERATES AS AN  
OPEN SYSTEM



# Global service and support network.

## Unmatched technical support.

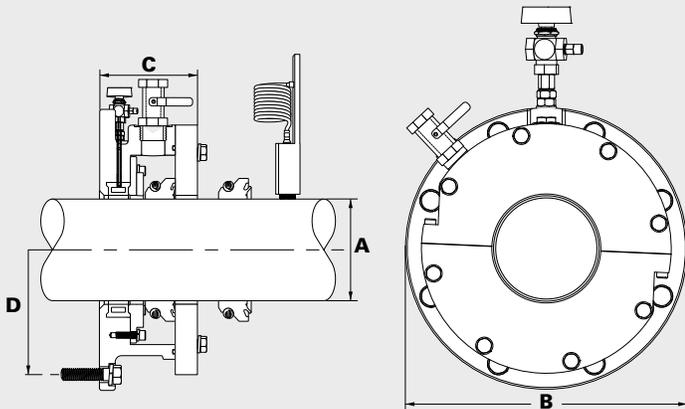
Duramax Marine® products are backed by a team of marine industry professionals that supply technical support before, during and after installation of your Duramax® DryMax® Seal System.

Our experts can assist you in converting your existing seal or stuffing box to fit our seal flange. **Once installed, if at any time you need technical help to solve a problem just contact our technical support group at +1 440-834-5400.**

Our worldwide distribution network puts our complete line of high quality marine products and spare parts within your reach to keep your vessel operating at peak performance.

## Factory authorized installation and service.

Duramax Marine® has a global service network available for new installations and service on existing systems. Our service professionals can vulcanize new seal rings on the shaft while your vessel is at sea and can help you get the most from your DryMax® Sealing System. Contact Duramax Marine® for more information.



SEAL SPACE REQUIREMENTS

Model	A Shaft Size (in)	A Shaft Size (mm)	B Flange OD (in)	B Flange OD (mm)	C Length (in)	C Length (mm)	D BCD (in)	D BCD (mm)	Mounting Bolt (in)
400	3.5 - 4.49	89 - 114	11 1/8	283	4 1/2	115	9 7/8	250.8	1/2
500	4.5 - 5.49	115 - 139	12 1/8	308	4 1/2	115	10 7/8	276.2	1/2
600	5.5 - 6.49	140 - 165	13 1/8	334	4 1/2	115	11 7/8	301.6	1/2
700	6.5 - 7.49	166 - 190	14 1/8	359	4 1/2	115	12 7/8	327.0	1/2
800	7.5 - 8.49	191 - 215	15 1/8	385	4 1/2	115	13 7/8	352.4	1/2
900	8.5 - 9.49	216 - 241	16 3/8	416	5	127	15	381.0	5/8
1000	9.5 - 10.49	242 - 266	17 3/8	442	5	127	16	406.4	5/8
1100	10.5 - 11.49	267 - 292	18 3/8	467	5	127	17	431.8	5/8
1200	11.5 - 12.49	293 - 317	19 3/8	493	5	127	18	457.2	5/8
1300	12.5 - 13.49	318 - 342	20 3/8	518	5	127	19	482.6	5/8
1400	13.5 - 14.49	343 - 368	21 3/8	543	5	127	20	508.0	5/8
1500	14.5 - 15.00	369 - 381	22 5/8	575	5 1/8	131	21 1/8	536.6	3/4

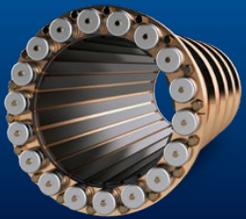
INNOVATION.  
EXPERIENCE.  
RESULTS.

Duramax Marine® is committed to providing excellence in every product we manufacture. Our Johnson Cutless® 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® products:



## JOHNSON CUTLESS® WATER-LUBRICATED BEARING SYSTEMS

Johnson Cutless® Sleeve and Flanged Bearings



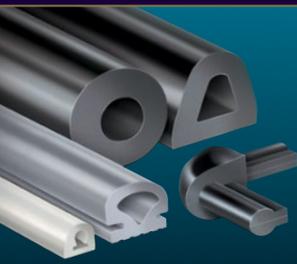
## DURAMAX® ADVANCED WATER-LUBRICATED BEARING SYSTEMS

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® HEAT EXCHANGE SYSTEMS

DuraCooler® Keel Coolers  
Duramax® Demountable Keel Coolers  
Duramax® BoxCoolers



## DURAMAX® IMPACT PROTECTION SYSTEMS

Johnson® Commercial Dock Bumpers, Fenders & Tow Knees  
LINERITE® Composite Batterboard Systems



## DURAMAX® SHAFT SEALING SYSTEMS

DryMax® Shaft Seal  
Duramax® Mechanical Shaft Seal  
Johnson® Heavy-Duty Air Seal Stuffing Boxes  
Duramax® Ultra-X® High Performance Compression Packing

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