



## SHAFT & RELATED PRODUCTS



## SHAFTING SYSTEM



## ***Propeller Stern Shaft***

The stern shaft materials have passed EN10204-3.1 certification, covering various grades of: low carbon steel, alloy steel, stainless steel, ductile iron, aluminum alloy, copper alloy, titanium alloy.

The main processes are: free forging, die forging, rolling ring, high pressure casting, centrifugal casting, normalizing, quenching and tempering, solution treatment, aging treatment, carbonitriding, turning, milling, drilling, grinding, high frequency quenching, galvanizing, chrome plating, anodizing, powder spraying and other processes.

We can produce propeller shafts with: A max length of 16000mm, max diameter 500mm and max single piece weight 16 Tons. At the same time, we are good at terminal machining of complex products, dimension accuracy: Min 0.01mm, roughness: Min Ra0.6.



## ***Shafting System Counter shaft***

The intermediate shaft, covering various grades of: low carbon steel, alloy steel, stainless steel, ductile iron, aluminum alloy, copper alloy, titanium alloy.

The main processes are: free forging, die forging, rolling ring, high pressure casting, centrifugal casting, normalizing, quenching and tempering, solution treatment, aging treatment, carbonitriding, turning, milling, drilling, grinding, high frequency quenching, galvanizing, chrome plating, anodizing, powder spraying and other processes.

# SHAFTING SYSTEM



## ***Shafting System Coupling***

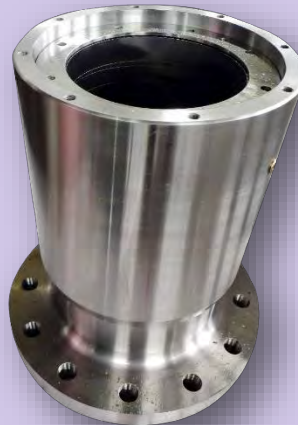
The shaft coupling is the component which joins the propeller shaft to the gearbox output flange. Some are bolted directly to the gearbox but many installers use a flexible couple, such as R&D flexible couplings, which would then bolt to the gearbox. Our range includes couplings for most popular transmission types, bored for imperial or metric shafts.

Besides the standard coupling, the Solid Half Coupling, Clamp on or Split Half Coupling, Bobbin Coupling and Coupling Adapters are also available.

Material: carbon steel, stainless steel

Processing methods: forged and lathe machining

Dimensions: designed according to the shaft and gearbox.



## ***Shafting System Hydraulic Coupling***

The shaft coupling is the component which joins the propeller shaft to the gearbox output flange. Some are bolted directly to the gearbox but many installers use a flexible couple, such as R&D flexible couplings, which would then bolt to the gearbox. Our range includes couplings for most popular transmission types, bored for imperial or metric shafts.

Besides the standard coupling, the Solid Half Coupling, Clamp on or Split Half Coupling, Bobbin Coupling and Coupling Adapters are also available.

# SHAFTING SYSTEM



## ***Shafting System Sealing Device***

High abrasion resistance due to dynamic static friction pairs made of hard alloy materials. Automatic compensation of axial abrasion  
Anti-corrosion, strong environmental adaptability, long life span  
Applied for high-speed ship shaft seals.

### **Main Specifications**

Shaft Diameter:  $\Phi 100 \sim \Phi 250 \text{mm}$

Rotating Speed 0- 1500rpm(depend on the shaft diameter)

Water Pressure: 0-0.2MPa

Model Selection Principle

Selecting according to the installation of stern shaft sealing device  
diameter of shaft(or collar diameter) and  
interface size requirements

Setting aside enough maintenance operation space.

Customized design can be done (shaft diameter, connecting interface, etc)

### **Application:**

It can be applied to all kinds of vessels, of which the working medium is oil or water.





## ***Propeller Shaft Rubber Bearing***

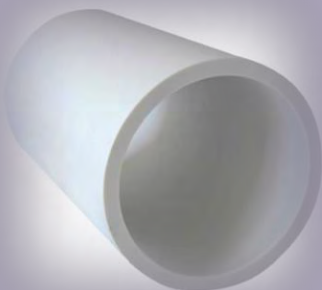
Bronze rubber bearing, bronze rubber bush for water lubricant for marine industry. Naval brass rubber bush adapts equally well to strut and stern tube mounts. And are often used effectively as rudder-stock and pintle bushings. Bearing diameters are precision fitted to the designated shaft size with the correct clearance for efficient water lubrication.

External brass shells are machined and polished to provide easy fitting. Specially formulated oil and chemical resistant nitrile rubber is securely bonded to the shell. Unit with thin shells are available for the struts of small craft. Sleeve bearings are usually installed by light press-fitting and locked in place with once pointed set screws.



## ***High polymer bearing***

The high polymer is widely used in the bearing for ships' stern tube and rudder. It can be used for all kinds of vessels around the world. It is the main material for the bearings. The High Polymer Bearing material is a co-polymer high polymer material, with all generalities of sliding bearings, suitable for open and closed lubrication system can meet the needs of a variety of environment. The high polymer bearing is with high abrasion resistance, multi-purpose and stability. It brings remarkable economic benefits to ship owners and shipyards and brings great social benefits for marine bearing materials domestication.



# SHAFTING SYSTEM



## ***Propeller Shaft Stern Tube***

The marine shaft system is a main part of the steering system for vessels. The whole shaft system includes propeller, stern tube, bearing, hydraulic coupling, middle bearing, hydraulic nut, nozzle, stern tube seal, tail shaft, etc.

There are two kinds of lubrication systems for the stern tube: water lubrication and oil lubrication.

For a water lubricated bearing, its diameter should be not less than 4 times that of the steel shaft. If the bearing is over 380mm in diameter, forced water lubrication must be used, in which case, a circulating pump or other source with water flow indicator will be required.

The stern tube is normally made of cast iron slightly larger at the forward end to ease removal. The forward end is flanged and bolted to a double plate stiffened aft peak bulkhead. The forward end is supplied with a stuffing box and gland, the after end with a bearing comprising lignum vitae or similar, the wood is dove tailed into a brass bush, the wood is machined and cut on end grain. Can be lined with Lignum Vitae, rubber composition (cutlass rubber) or an approved plastic material (Certain plastics possess good bearing properties being inert and very tolerant of slow speed boundary lubrication conditions. Cresylic resin bonded asbestos give good results in condition of heavy water contamination in the lubricating oil of almost 100%)



## ***Propeller Nozzle***

Kort nozzles or ducted propellers can be significantly more efficient than un-ducted propellers at low speeds, producing greater thrust in a smaller package. Kort nozzles may be fixed, with directional control coming from a rudder set in the water flow, or pivoting, where their flow controls the vessel's steering.

Nozzles are necessary when a maximum thrust is required at low hull speed. The tug is a good example as well as a fishing trawler whilst fishing at low speed: they need nozzles. Nozzles can be in a fixed position with a rudder placed on their aft part. Or nozzles can be directed: in this case they work as Rudders.

Material: steel

Thickness of the material: 10mm, 15mm, 16mm, etc.

Diameter:  $\varnothing$ 1100mm to  $\varnothing$ 3800mm

Height: 800mm to 2500mm

Specifications will be designed according to the vessel

# SHAFTING SYSTEM

## Shafting System Intermediate Bearing



This kind of large pressure intermediate bearing is suitable for vessels whose shafting pressure is 0.6(Mpa) larger than normative pressure and that need self-aligning.

Advantage of product:

- 1.Improve carry capacity of middle bearing.
- 2.Self aligning and fine lubrication ability.
- 3.Convenient for installation and disassembly.
- 4.Endurable and stable product, quality guarantee, long life.

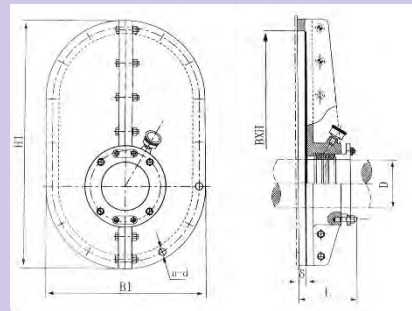
## Shafting System Stuffing Box



A stuffing box is an assembly which is used to house a gland seal. It is used to prevent leakage of fluid, such as water or steam, between sliding or turning parts of machine elements.

### Type A, B and C

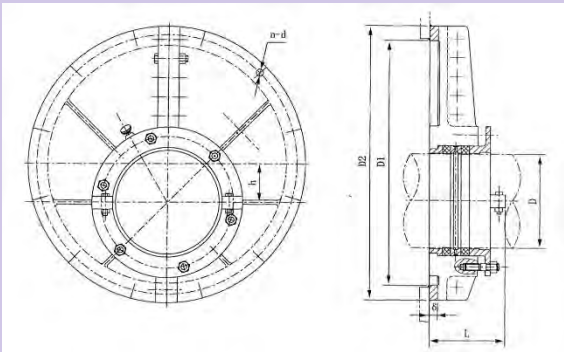
- 1. Type A is suggested for vessels of which bulkhead space is large.
  - 2. When the bulkhead space is small or there is a design requirement, the type C and B are optional.
  - 3. The sizes of this table are for reference only.
- Products can be manufactured according to customer's requirements.



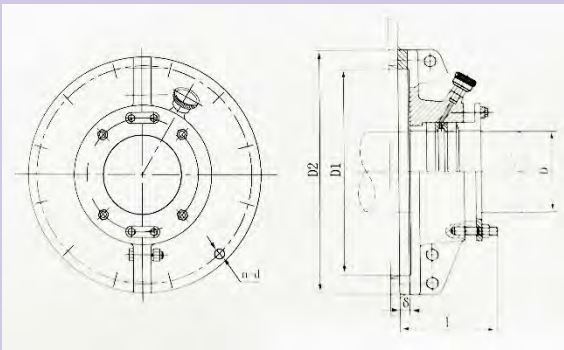
Type A						
Model	D	D1	B×H	B1	H1	—L
A70	70	72	220×360	280	420	120
A80	80	82	240×400	300	460	120
A100	100	102	290×490	360	560	120
A120	120	122	350×590	420	660	150
A150	150	153	410×690	480	760	150
A190	190	193	470×800	550	880	190
A200	200	203	480×820	560	900	190



# SHAFTING SYSTEM



Type B					
Model	D	D1	D2	D3	—L
B220	220	224	576	646	180
B250	250	254	646	716	180
B320	320	324	798	878	210
B380	380	384	918	998	210
B450	450	455	1065	1145	230
B500	500	535	1234	1324	230



Type C					
Model	D	D1	D2	D3	—L
C70	70	72	220	280	120
C90	90	92	260	320	120
C110	110	112	310	380	150
C150	150	153	410	480	150
C170	170	172	440	520	190
C190	190	193	470	550	190
C200	200	203	480	560	190