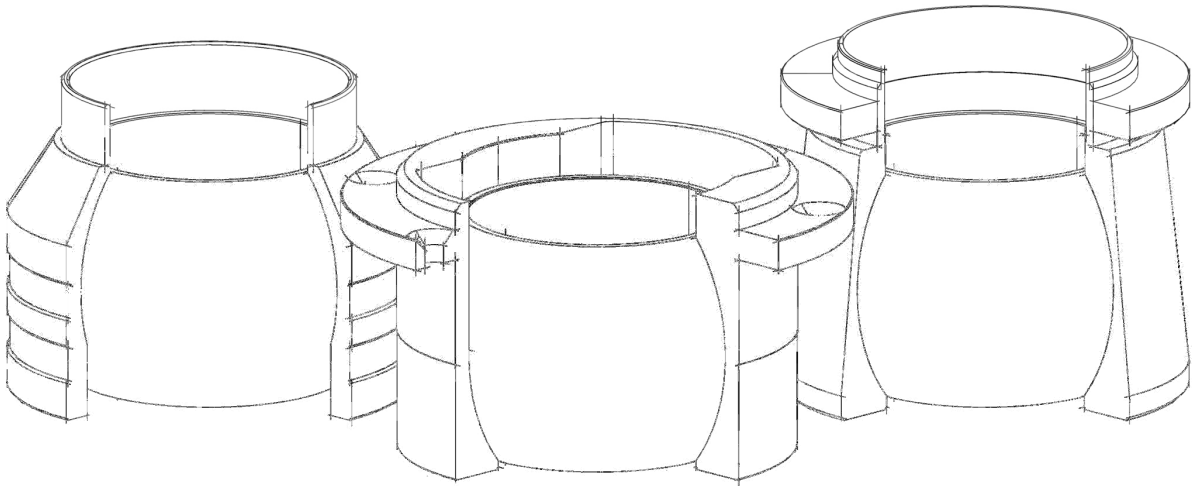


JP3



TYPE 1 BEARINGS

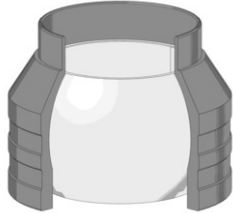
Designed to be fitted to boats up to 45 feet in length the **TYPE 1** bearings feature a spherical Ertalyte® knuckle fitted within a precision machined aluminium housing. This results in a bearing that is simple, light and strong.

- The spherical knuckle allows the bearing to self-align while the rudderstock rotates within the bearing.
- Bearings can be used with both metallic and composite rudderstocks.
- Bearings are available in any size for 20mm to 110mm in 10mm increments. Knuckles can be bored any size to suit the rudderstock.
- Bearings are available in three housing styles to suit all installation details.
- Aluminium bodies are anodised in our in-house anodisation plant to ensure quality and prevent corrosive action.
- The bearing is non-watertight and is to be installed with either a full between the upper and lower bearing or half rudder tube between the lower bearing and a seal carrier located partway up the rudder stock above the waterline.
- **Type 1** Bearings are BUREAU VERITAS and CE approved.

HOUSING STYLES

Type 1 bearings are available with three housing styles

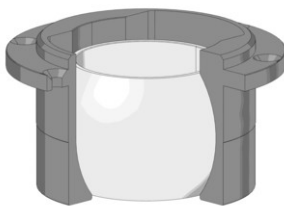
TYPE 10.11.XX



The bearing is cylindrical and outer surface is machined with a groove to ensure a good bond with the bearing is laminated into the hull.

The bearing can be used as either an upper or lower bearing. One end of the bearing is machined to match the rudder tube

TYPE 10.13.XX



The bearing is flanged for bolting to the deck.

Lower side of the bearing is machined to match the rudder tube
Watertight seal or a cap can be supplied on request

TYPE 10.14.XX



This bearing is designed for use in production boats. The outer surface is the bearing is tapered for installation in a matching tapered recess.

The bearing can only be used a lower bearing.
Upper side of the bearing is machined to match the rudder tube.

BEARING SIZES AND LOAD RATINGS

Bearing Reference *	Minimum Stock Diameter	Maximum Stock Diameter	Radial SWL **
	mm	mm	kg
10.XX.03	20	34	488-1100
10.XX.04	34	44	1100-1925
10.XX.05	45	50	1925-2766
10.XX.06	51	60	2766-3608
10.XX.07	61	70	3608-5051
10.XX.08	71	80	5051-6735
10.XX.09	81	90	6735-8660
10.XX.10	91	100	8660-10825
10.XX.11	101	110	10825-13230

* The `XX` designation refers to the housing style. Each size is available in the three housing sizes.

** Bearing loads vary with stock size. The figures given are for minimum and maximum stock sizes.

COMPLIMENTARY PARTS

Rudder Tubes

Half and Full Rudder tubes can be supplied by JP3 on request

A half rudder tube is bonded to the lower rudder bearing and extends to height above the waterline where secondary seal ring is fitted to the rudder tube. This detail is more commonly used where there is either a quadrant or tiller below deck.

A half rudder tube is also bonded to the lower rudder bearing and extends to the upper bearing which is bonded to the top of the rudder tube.

Seal & Retaining Rings

Secondary seal rings can be supplied with lip seal matching the stock diameter.

Rudder Caps

A sealing rudder cap that fits with an o-ring seal can be supplied. These are a light press fit into the bearing housing

Composite Housings

Separate composite housings can be supplied loose.

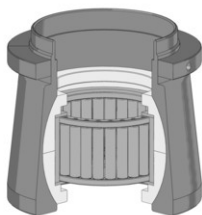
These compliment the 10.14.XX series of bearings. The housing can be glued and laminated in a either an existing composite or wooden hull.

Metal Housings

Matching flanged housings can be supplied loose for use with metal hulls

Again these compliment the 10.14.XX series of bearings. The housing can be fitted and welded into a metal hull while still allowing the bearing to be removed for future maintenance.

Inner Needle Races

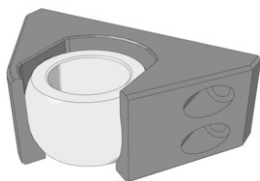


Needle roller inner races can be supplied for specific applications where lower bearing loads are high and reducing friction is needed

The races can be fitted to each of the three housing styles.

Please contact **JP3** with your specific requirements

Custom Parts



Custom parts based on the Type 1 bearing such as the bearing housing that can be bolted directly to a transom are available on request.

This allows a transom hung to be used while still having a self aligning bearing.

INSTALLATION

Four typical Installation Layouts are shown on pages 7-10

1. Type 1 installation with half rudder tube & 10.14.XX bearing
2. Type 1 installation with full rudder tube & 10.11.XX bearing
3. Type 1 installation with a wooden hull.
4. Type 1 installation with a metal hull.



All bearings should be aligned with the rudder stock centre line. The bearing alignment is designed for allow stock deflection under sailing loads, NOT for aligning the bearing with the hull and the stock at a different angle.



DO NOT USE CARBON FIBRE to laminate in the bearing.



When fitting bearings through existing the deck ensure there is no carbon fiber in way of the bolts and the bearing is isolated.



Do not paint or antifoul the bearings.

TYPE 10.11.XX

Correctly align the bearing in the boat

Laminate the bearing and supporting structure in accordance with the designer's specification.

TYPE 10.13.XX

Ensure the cutout for the bearing the same size as the bearing. The bearing should be a neat fit in the deck so the load is effectively transferred into the deck. The bolts are to retain the bearing in the deck.

Apply a suitable marine sealant to the underside of the flange and bolt into the deck.

TYPE 10.14.XX

This specific shape of bearing has been designed for production boats.

It does require the use of an aluminum plug or master supplied by **JP3**, which is installed on the mould.

The advantages with this system are that:

- o It allow for precise positioning on each hull and repeatability
- o A strong bearing housing laminate the is fabricated together with the hull
- o No additional lamination is required
- o Bearing installation is quick
- o The bearing can be removed for servicing at a later date.



STEP 1

Bolt the conical bearing master to the hull mould



STEP 2

As the hull is laminated the master's shape is reproduced in the hull

Laminate the bearing and supporting structure in accordance with the designer's specification



STEP 3

The upper part of the molded recess is then trimmed off leaving the bearing housing.



STEP 4

The lower bearing is fitted into the moulded housing with a bead of suitable marine sealant at the top and under the threaded collar

RUDDER TUBE INSTALLATION.

Rudder tubes are supplied glued with Sikaflex 291 to the bottom bearing

When the tube is threaded to a Type 10.14.XX bearing, the tube is supplied separately and is glued to the lower fitting that screw onto the bearing.

For full rudder tubes the tube will be supplied slightly over length and will need to be trimmed.
The top bearing should be glued to the top of the tube as final assembly.

MAINTENANCE

While no further immediate maintenance is required the rudder bearings like all moving parts will require cleaning and maintenance. This can easily be scheduled around other work and haul outs.

We recommend the following schedule as a minimum.

ANNUALLY

When the boat is hauled for underwater maintenance such as the antifouling the rudder bearing should be inspected externally and for movement.

EVERY SECOND YEAR

When the rudder is removed is a good time to also remove and inspect the rudder bearing.

EVERY FIVE YEARS - SERVICE

The rudder bearing is removed and returned to the factory for a full service.

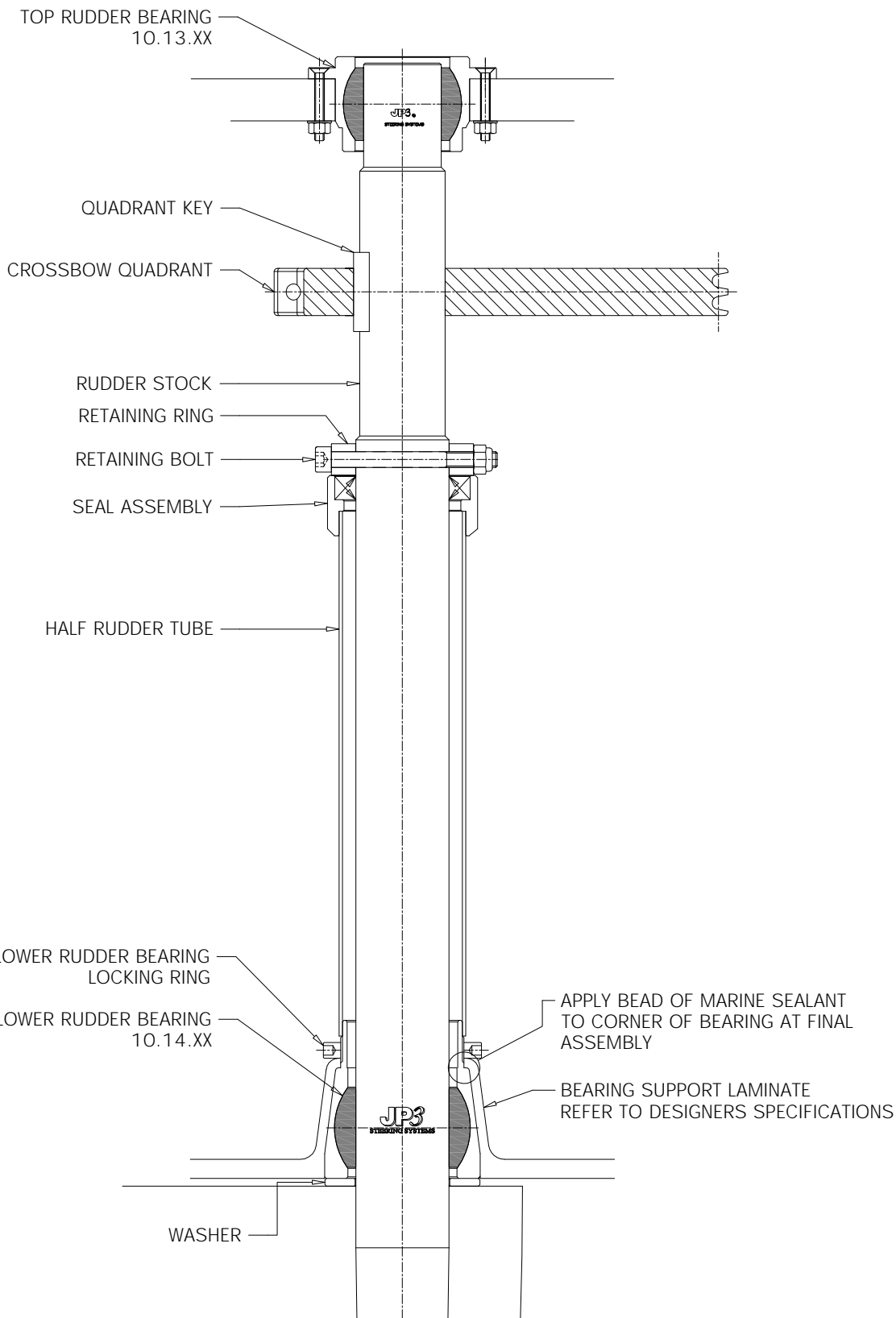
Typically this will involve disassembly, a full clean and reassembly with new seals. JP3 has a large dealer network and in a lot of locations a local agent can service bearings.

The exact schedule of when a bearing may need servicing is very dependent on usage and the need to service the may vary.

JP3 Factory Contact Details.

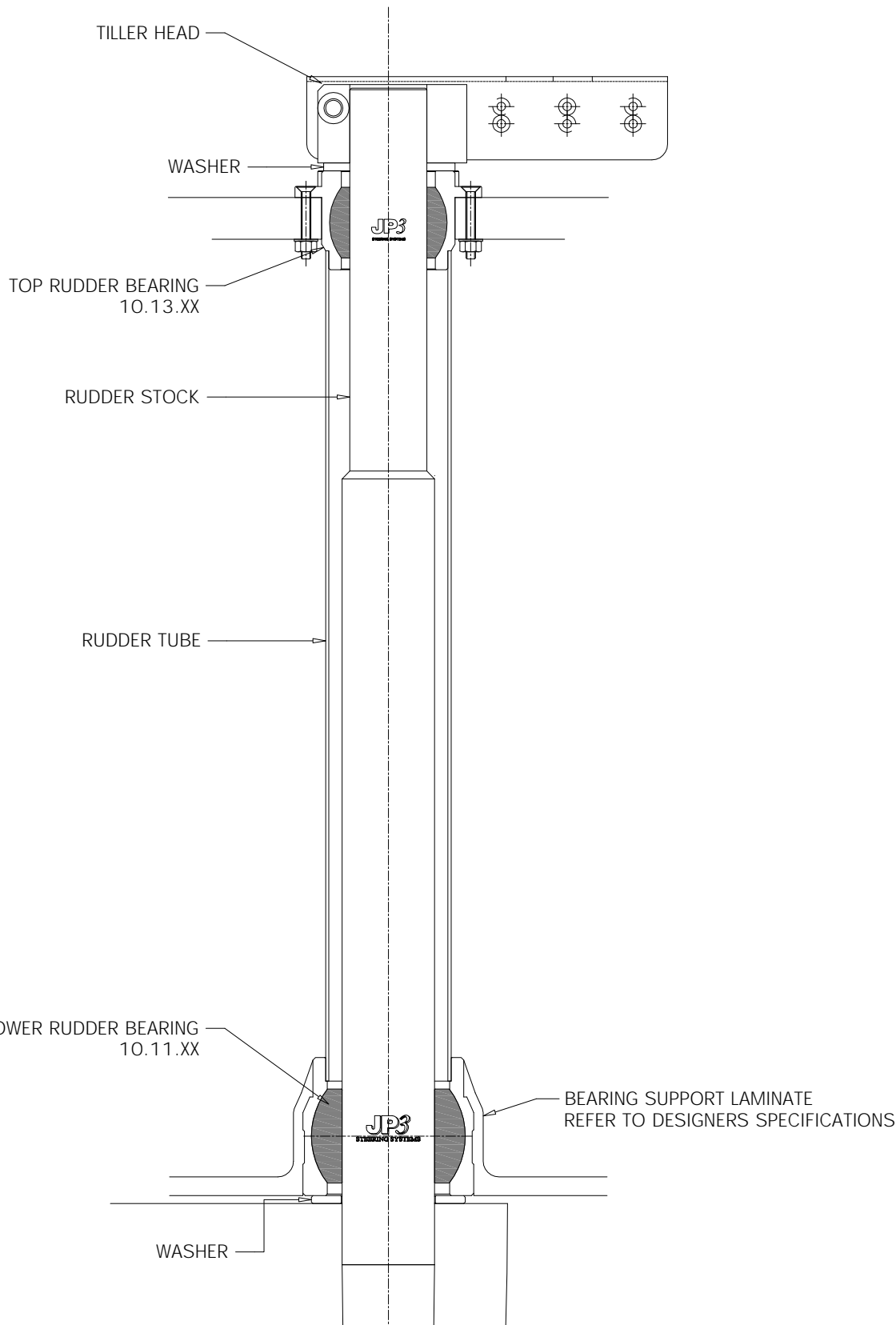
JP3	Ph:	+33 (0) 5 46 35 10 78
ZI du port	Fax:	+33 (0) 5 46 35 10 93
17230 Marans	Email:	info@jp3steering.com
FRANCE	Website:	www.jp3steering.com

Rep.	Qté	Désignation	Matériau	Revêtement	Observation
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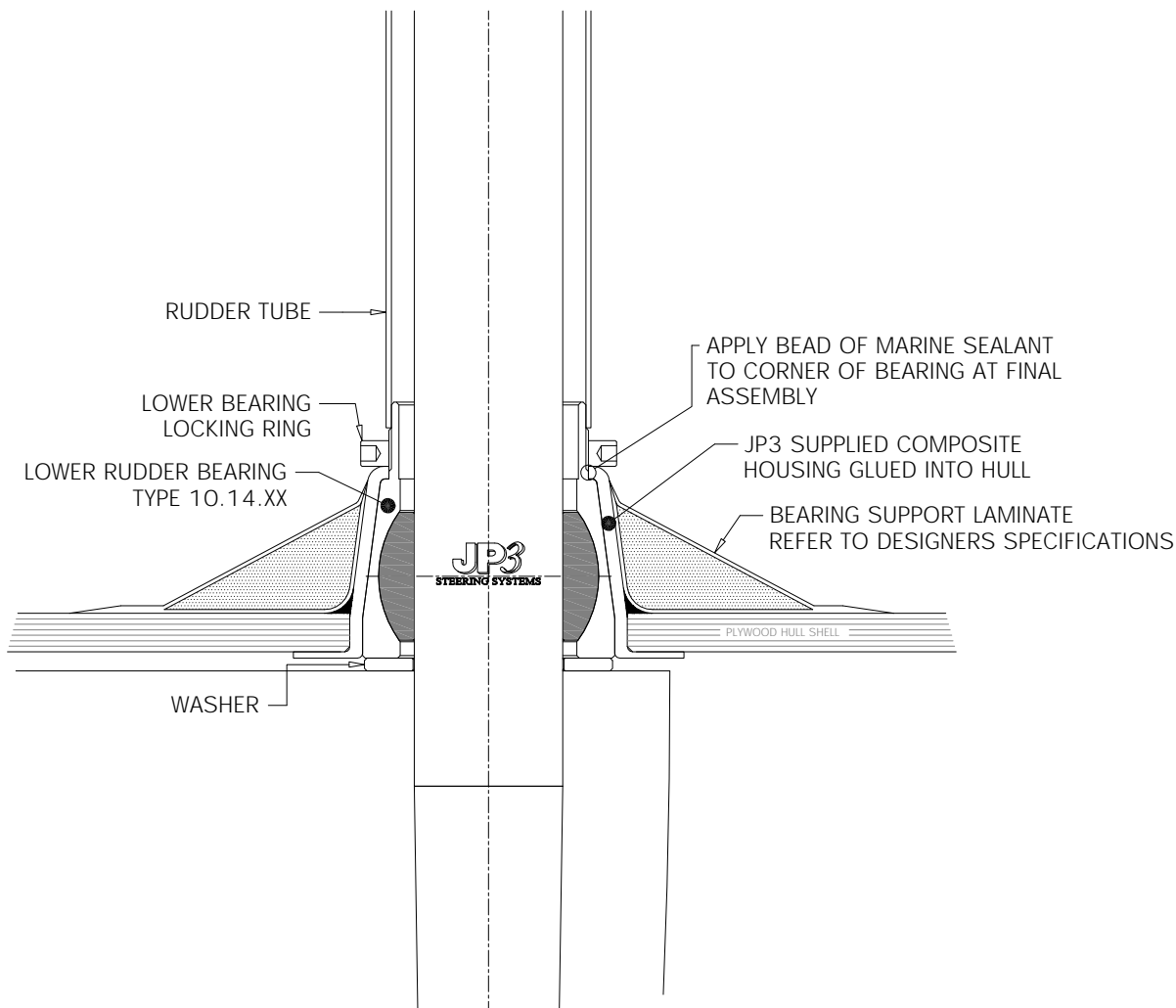
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		<div>TYPICAL TYPE 1 BEARING INSTALLATION HALF RUDDER TUBE & 10.14.XX BEARING</div>		Dessiné le : 11 MAR 08
		Plan N°:	CAD:	
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Rep.	Qté	Désignation	Matière	Revêtement	Observation
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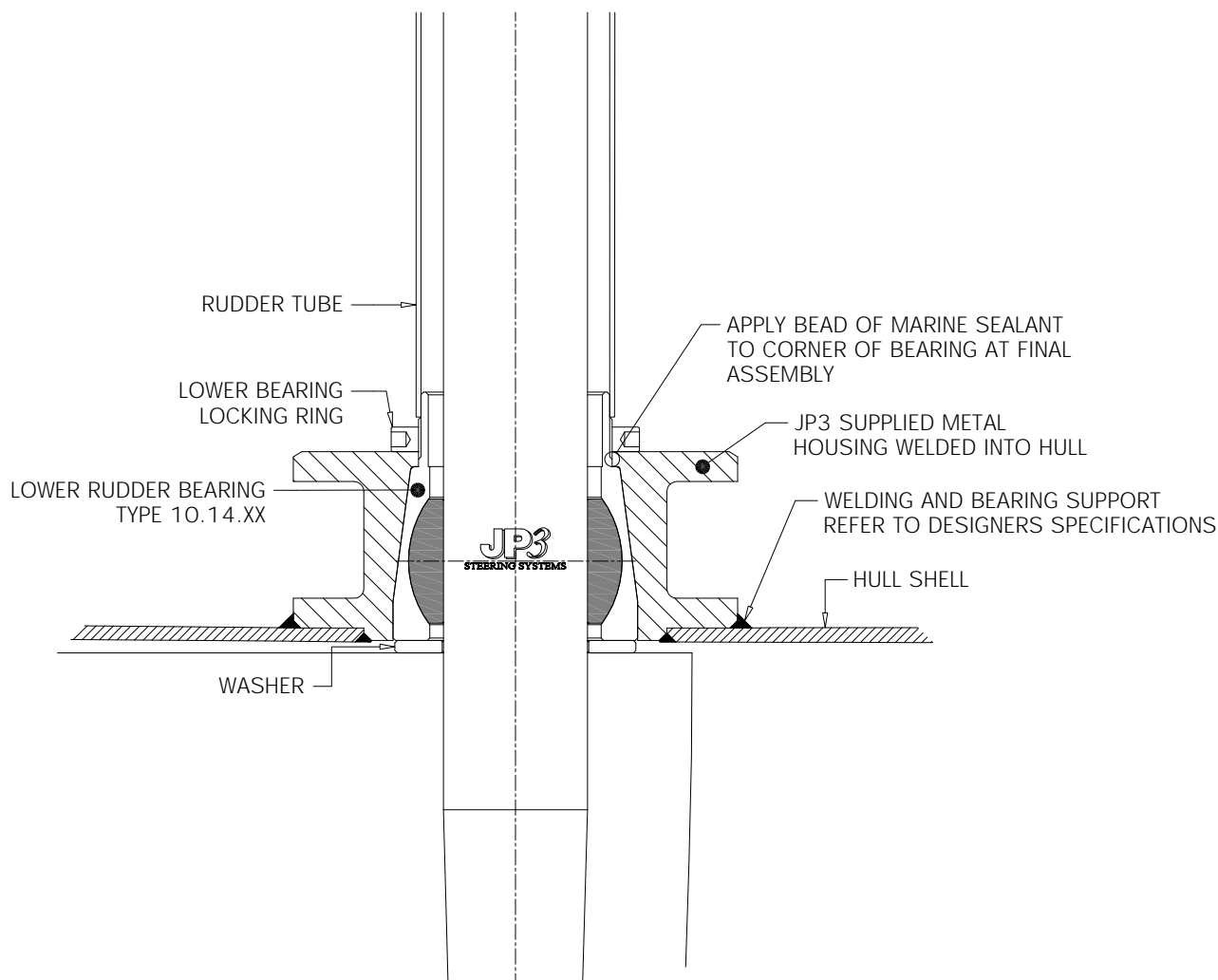
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		<div>TYPICAL TYPE 1 BEARING INSTALLATION</div> <div>FULL RUDDER TUBE & 10.11.XX BEARING</div>		Dessiné le : 11 MAR 08
		Plan N°:	CAD:	
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<div> <div>JP3</div> <div>STEERING SYSTEMS</div> <div> Le Bout des Barques BP54 17230 MARANS - FRANCE Tel: 33 (0)5 46 35 10 78 Fax: 33 (0)5 46 35 10 93 </div> </div>		Chantier:	Projet:	Dessiné par : T-5
		<div>TYPICAL TYPE 1 BEARING INSTALLATION IN A WOODEN HULL</div>		Dessiné le : 11 MAR 08
		Plan N°:	CAD:	
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<div>JP3</div> <div>STEERING SYSTEMS</div> <div>Le Bout des Barques BP54 17230 MARANS - FRANCE Tel: 33 (0)5 46 35 10 78 Fax: 33 (0)5 46 35 10 93</div>	Chantier:		Projet:	Dessiné par : T-S
	TYPICAL TYPE 1 BEARING INSTALLATION IN A METAL HULL			Dessiné le : 11 MAR 08
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