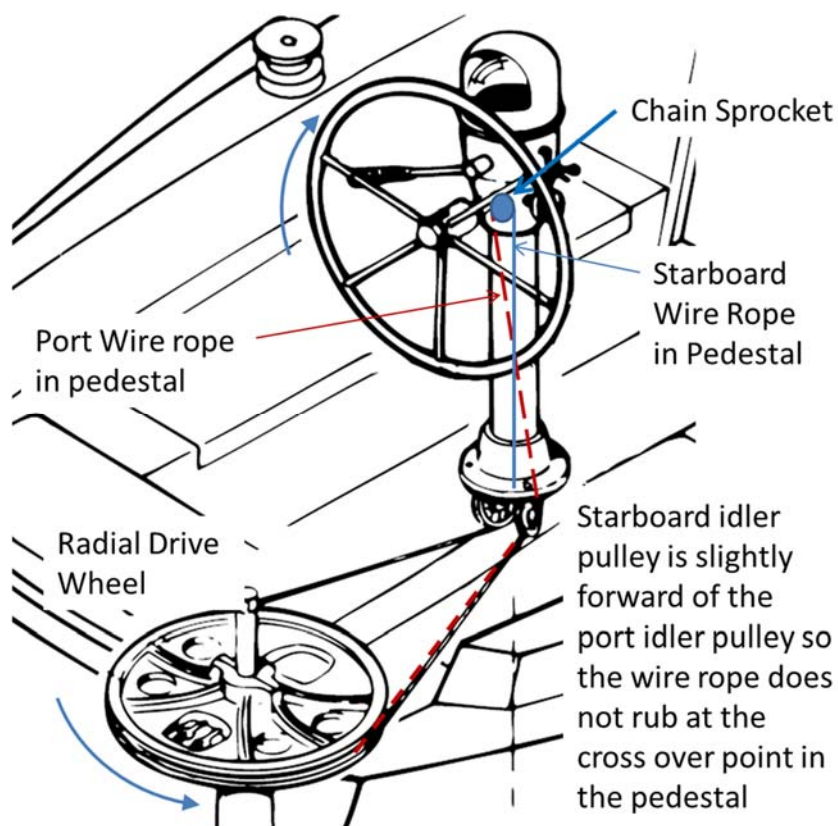


This is a review of how the steering system and upper rudder bearing was overhauled on a 1991 Hunter 30T. The steering system was in bad shape due to lack of service while living in salt water. My thanks for the excellent technical support and "how to" ideas from Edson, Norton Yachts Hunter Dealer in Deltaville, VA and Eddie Breeden at Marlow Hunter factory in FL. This work was done in a local yard by yard technicians under my direction (mostly...).

The big picture:

Turn steering wheel and chain sprocket toward starboard pulls up on port wire rope inside pedestal, which then crosses over in pedestal and pulls on the starboard side of rudder radial drive wheel. Note: EDSON tech said the port wire rope in the pedestal should cross in front of the starboard wire rope. In other words the port wire rope is closest to the bow and the starboard wire rope is closest to the stern. But they do cross in the pedestal with the port wire rope exiting the pedestal through the starboard idler pulley at the base.



Steering and Radial Drive Wheel. Adapted from Edson catalog. Useful in showing yard mechanics how to route the wire rope.

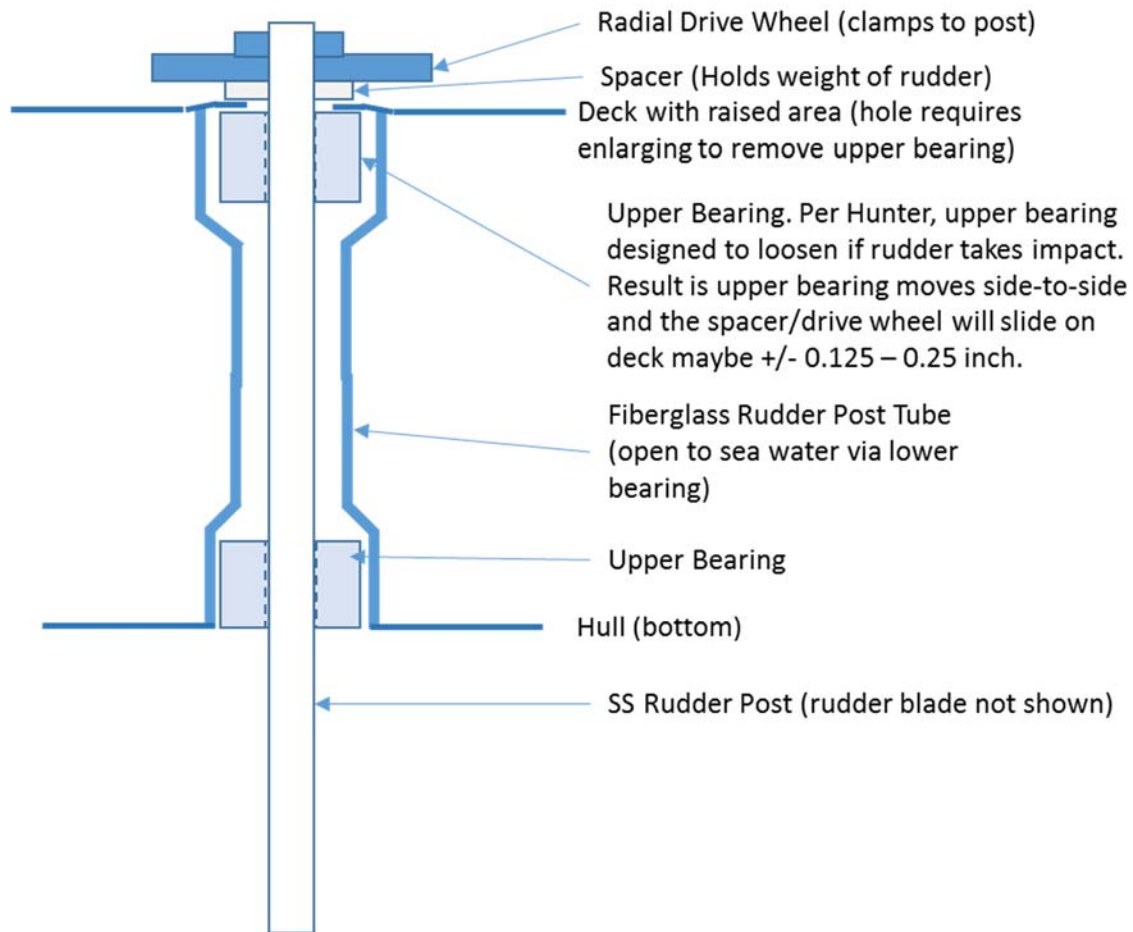


Illustration of “best estimate” of the rudder bearing mounting system.



Rudder Post fiberglass tube shown bonded to bottom of deck. Upper bearing sits in wide section.



Drive wheel with deck cover removed. I gasped the first time I saw how lacking in maintenance the steering system was. Wheel, wire rope and ss chain were replaced.



Pulleys directly below pedestal. They were in decent shape and were not replaced.



6.5-in (radius) Edson Radial Drive Wheel with deck cover removed.

Drive wheel is two halves that are clamped on to the SS rudder post. Edson bores new drive wheels to the measured diameter of the rudder post. The hole is bored a few thousands undersized so there is a good interference fit per some SAE standard for clamping on the rudder post.



The white spacer supports the weight of the entire rudder system on top of the deck. There is a raised area on the deck for the spacer to rest on. The entire spacer and drive wheel were moving side to side between 0.125 and 0.25-in, which was the first clue something was wrong.



One inch drop of rudder post.

This is an image of the hull bottom and top of rudder blade. The SS rudder post is visible. A white (but painted) spacer sits on top of the rudder blade and bears against the bottom of the lower rudder

bearing. The lower surface of the lower rudder bearing can be seen, (white ring in bottom of hull surrounding the post) and is about 0.9-in thick. Exact dimensions are given below.

The Work:

Once the boat was on the hard, the rudder was chocked/cribbed and the 6.5-inch radial drive wheel was removed. Edson recommended that the wheel may have to be cut off with a sawsall. The yard tech was able to grind the bolt heads off and drive the bolts out. A few taps with a hammer split the drive wheel back into two pieces. It is important to have the rudder blade supported or the rudder will drop out of the boat. With standard blocking at the yard, there is about 12-16 inches of space below the rudder blade and the hard. For complete removal they have to then lift the boat in the sling probably another 5-6 feet (or dig a deep hole below the rudder if you are at home...). The yard used a small jack to adjust the rudder up/down during this work because only the top bearing was replaced.

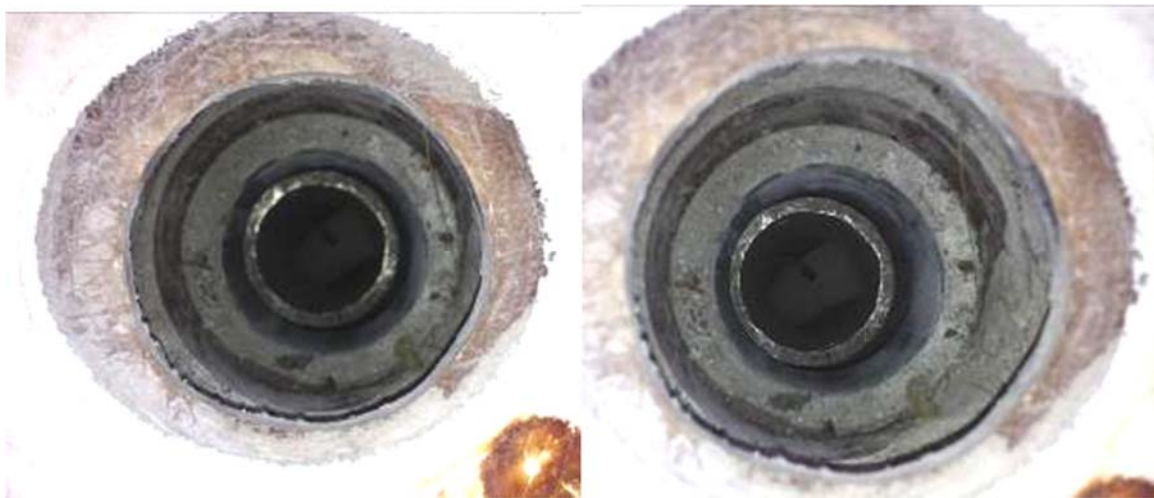


Below is an image of the deck with the drive wheel removed and the rudder dropped below the deck



surface.

The upper surface of the upper bearing is visible in the hole. It is loose, which is a good thing. Otherwise, the rudder would need complete removal, then a large dowel (think baseball bat) would be inserted through the lower bearing hole and the upper bearing driven out from below. The bearings were bonded in place at the factory with either 3M 5200 or epoxy.



Believe it or not, the hole in the deck was a bit too small to pull the bearing out. So the hole was “professionally” opened to where the bearing could be lifted out.



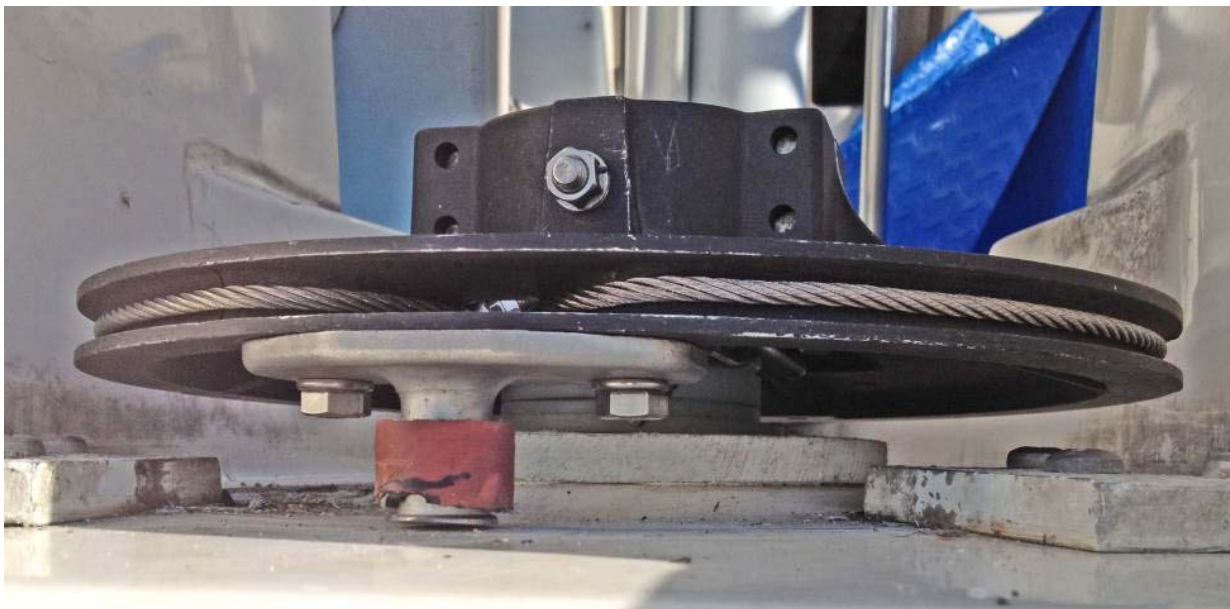
Upper bearing removed with post up in normal position.

A new bearing was made and bonded in place with 5200. In this image the top of the bearing would be about level with the small ridge that is about 0.75-in below the deck (visible on the left of the post). We decided to make the bearing double height to bring it up to the interface between the deck and rudder post tube (visible in upper left of hole). The tech did this without asking so I just went with it. That was before I was informed by Hunter the bearing was designed to pop loose if the rudder was hit or drop aground. I just have to be more careful now.

Unfortunately I do not have a photo of the new bearing in place. Sorry. But it is snug with the post to the lower surface of the deck and is about 4-inches in length versus the 2.875 length called for in the drawing.

Close out:

The next photo shows the new, black anodized radial drive wheel mounted on the rudder post in the final position. Note we added a half-inch thick plate of synthetic material over the deck opening to seal it against debris (a cover plate if you will). A carefully placed screwdriver and light tap will free this cover from the raised area of the deck if needed so the upper bearing can be serviced.



Note the original deck spacer is visible in lower photo. That spacer was cut down in height to compensate for the new cover plate. Looks like I need a better piece of hose for the rudder stop.

The rudder bearing is 3.250-inch OD and 2.335 to 2.340 ID. It is important to use Ultra-High Molecular Weight Polyethylene. It wears well and does not swell when submerged in water. It can be purchased in tubes and machined down by any machine shop. The drawing from hunter is below. It's best to remove the old bearing, see if it can be rebounded, or needs replacement. Make the OD measurement from the original bearing and then have the hole bored, based on the actual diameter of the rudder

3.250"

2.335" ϕ 2.340" ID

0.4575"

4.375"

0.375"

0.375"

0.375"

0.375"

0.375"

0.375"

2.875"

NOTE:
USE 2 PER BOAT (1) P Hull
(1) P DECK

HUNTER MARINE
 DATE 12-18-21 ^{BEARINGS}
 SCALE FULL ^{OUT MAIN FROM 3 TO 28}
 POINT GENE ^{GENE 6:2:28}
 TIME 4H 17.1-3.89.40 ¹⁰⁰
 H30 RUT. BEARINGS 306 106