SAGA BOAT STUFF TO REMEMBER

Saga Owners are welcome to call Carl if there are questions regarding the following information 269 207 2219

Last updated October 12, 2006; updated material is highlighted in red.

Tides Marine

Tides Marine is the manufacture of the rudder bearings and the drip less shaft seal on the Sagas. The web site for Tide Marine is www.tidemarine.com . The address for Tide Marine is the following:

Tides Marine
3251A S.W. 13th Drive
Deerfield Beach, FL 33442
(800) 420-0949
Tel: (954) 420-0949
Fax: (954) 420-5234

Lower Rudder Bearing Removal

The rudder obviously has to be removed from the boat. The lower bearing can be accessed from the top of the fiberglass tube in the sail locker. The lip seal on top of the rudder bearing can be removed but it is not necessary using the following procedure. Some rudder tubes on Sagas have set screws in the rudder tubes. The set screw should be removed if one exists on your boat. Hull 30 did not has a set screw. The bearing was secured in place with 3M 5200 consistent with Tide Marines recommendations.

We made up a simple puller device that extracted the bearing relatively easy. The puller consisted of a piece of pipe about 8 inches long with an inside diameter slightly larger than the outside diameter of the bearing (Part A). We used steel pipe but thick wall PVC pipe may be strong enough.

Part B consisted of a round piece of metal that is slight smaller than the inside of the fiberglass tube such as a pipe flange that is available in a hardware store. Part B must be larger than the rudder shaft, the larger the better, as long as it still fits into the fiberglass tube and engages the top of the bearing/lip seal.

Part C is a threaded rod 3/8 inch diameter or greater that is long enough to go through the 8 inch length of pipe, the lower rudder tube plus approximately four additional inches. A nut and washer is required at both ends.

Part D is a piece of metal that will span at least the diameter of Part A with a hole in the center for Part C to pass through.

Part E is a piece of metal with a hole in the center or washer for Part C to pass through. Part E must be sized to engage Part B but not larger than the inside of the fiberglass tube.

Procedure:

Place Part B in the fiberglass tube on top of the old rudder bearing with Part E on top of Part B. Put a nut and washer on Part C and place Part C down though rudder tube from the top.

From outside the hull put Part A (pipe) over Part C (threaded rod) and against the hull so the diameter of Part A (pipe) goes around the bearing diameter. Place Part D across the bottom of Part A (pipe) with Part C (threaded rod) coming through the hole in the center of Part D. Put nut and washer on Part C and tighten the nut on the outside of the hull. As you tighten the nut the bearing should be extracted from the fiberglass tube. When you start to tighten the nut watch the bearing to insure that the bearing is being extracted and not hung up in anyway.

Tides Marine suggested that the bearing could be removed by using a 2 X 4 and beating the bearing out from the top. We found that the progress was very slow and the impact may have affected the electronics or filaments in various lights so we devised the less aggressive method that work well.

All types of Pumps - Sales and Service:

Depco Pump Company

I have had very good service for sales and repairs of all types of marine pumps from potable water pumps to engine fresh water pumps from Depco Pump Company. I had trouble installing new seals in my Yanmar fresh water pump because the diagram in the parts manual was in error. Depco Pump was able to fix the pump without charging me except for the freight. The web site is www.depcopump.com . The address and telephone number is:

Depco Pump Company
P. O. Box 6820
2145 Calumet Street
Clearwater, FL 33765
Telephone: 800-446-1656

Alternator and Starter Repair

Hehr Power Line Alternator

I have used this company for alternator repair: Robert's and Son, Inc. repair all types of alternators and is an authorized Hehr Power Line repair facility. They also repair many other brands of alternators. It is important that Power Line alternators be repaired with Power Line parts. Parts that are normally used to repair alternators are not robust enough and will not last in Power Line alternators, I speak from experience.

Robert's and Son, Inc. Telephone - 877 7772 1009
P. O. Box 110
60 Columbus Ave.
Garfield, NJ 07026

Spartite Replacement Material

The following information concerning a Spartitie equivalent was obtained from the Valiant Mailing List. I have not tried the product however Valiant Owners have used the product. The cost is about $30. The product does not come in a kit form with mixing sticks, putty, etc. According to a chemist on the Valiant list the material has the same specs as spartite.

The Spartite equivalent in McMaster Carr catalog – Item Number 8644k18 -- McMaster Catalog web site is www.mcmaster.com

Seacock Removal & Replacement (1-1/2 inch seacock)

I used this procedure to replace a 1-1/2 inch sea cock on Discovery

- Boat must be out of water
- Remove hose from sea cock
- Loosen the 3 quarter inch nuts to the top of bolt that hold the sea cock in place. Do not completely remove nuts. Tap on nuts with hammer from the inside of the boat to remove bolts though the hull. Some fiberglass filler will pop out as the bolt head comes out on the outside of the hull.
- Remove the though hull: The through hull is a PVC 1-1/2 inch pipe nipple bedded in 3-M 5200 or equivalent as it comes though the hull and screwed into the sea cock on the inside of the hull. There is no though hull flange on the outside of the hull.
- On the outside of the hull remove the fiber glass filler around the edge of pipe nipple on the outside of the hull so the layer of caulking is just becoming visible. Using a small saw blade such a hack saw blade make saw cuts vertically on the inside of the PVC pipe nipple so the pipe nipple can be collapsed on itself and removed. Remove the pieces of the through hull after completing 4 or 5 cuts. Be careful not to cut into the threads in the seacock if you are going to clean and fix the seacock.. The sea cock may be re-useable. If you plan to replace the sea cock don't worry about cutting the threads.
- Once the pipe nipple (through hull) is removed then remove the 3 quarter inch bolts. The sea cock should now break lose from the bedding compound on the inside of the hull with some effort. Removing the seacock with out removing the through hull takes a bigger man than me.

Sea Cock Disassembly: **(OPTIONAL)**

The 1-1/2 inch Forespar sea cocks with the triangular base installed on my Saga were intentionally made so the valve cannot be disassembled. However, on the bottom of the valve base there is a small pin that must be removed in order to unscrew the base from the valve body. With some effort remove the pin - remove some of the base material around the pin so that the pin can be pulled out. Then un-screw the base from the valve body. Clean and grease the valve. Apply a thread sealant and screw the valve base back to the valve body until the valve handle starts to become stiff as the handle is rotated. Adjust to your liking. If you think it is necessary drill and taps a hole for a #6 machine flat head screw in the bottom of the valve base to serve as a new re-moveable pin.

Sea Cock Re-installation:

Clean the area where the original seacock was installed.

Purchase a threaded Forespar through hull and cut the end off so the fitting is like the pipe nipple that was originally installed. I do not recommend the PVC pipe fitting

originally installed. Apply sealant and screw the new through hull into the seacock. Don't worry about the length being to long at this point.

Apply an adhesive sealant liberally in the hole for the through hull and about 3/8 inch thick layer on the bottom of the seacock base. Align the screw holes in the valve base with screw holes in the hull by installing the bolts from the outside of the hull. Press the valve down slightly until the caulking starts to push out from under the valve base by tightening the nuts slightly on the inside of the hull. Make sure the caulking is also filled in around the through hull. Let set until the caulking is set up.

When the caulking is set tighten the nuts that secure the seacock to the hull compressing the caulking. Do not over tighten. Trim the through hull so it is flush with the hull or just slightly indented from the hull surface. Clean excess caulking around the through hull and seacock, fill and fair over the bolt heads and edge of through hull with epoxy and apply bottom paint around though hull. You're done.

How to disconnect the engine control/starter interlock so the engine can be started in gear

The engine control/starter inter lock can be take out of service in many different ways. Probably one of the simplest ways does not require opening up the engine control housing on the pedestal and also makes putting the feature back in service very easy.

- Identify the 2 conductor wire that goes to the switch in the pedestal shifter where it exits the bottom of the pedestal in the sail locker. Make sure you identify the correct wire. The compass light wire also exits from the same location.
- At a point on the wire 6" to 8 " from where it exits the bottom of the pedestal cut the wire.
- You now have two ends. Take the end of the wire that leads back to the engine and strip back enough insulation on the wire so the two conductors leading back to the engine are exposed and can be connected.
- Using some type of wire connector, connect the two conductors that lead back to the engine. This procedure takes the switch out of the circuit.
- Tie the wires up so they are secure and you are done.
- To put the interlock back in service simply splice the two ends that you made when you cut the wire back together as they were originally.
- Using this procedure the switch and the connection inside the pedestal is not put at any risk from disassembly.

Raymarine Rudder Feedback and Fluxgate Compass Diagnostic Procedure

I recently had an auto pilot failure as I we left Block Island for Cape May, a 28 hour run and had to hand steer. The symptoms I won't get into but all things pointed to a failure in the compass or rudder feed back units. Raymarine provided the following diagnostic test to determine if the two units were working properly.

Flux Gate Compass

- Turn off power to the auto pilot and related systems.
- Disconnect the five wires from the flux gate compass at the core pack processor.
- Using a digital multi-meter measure the resistance across the following combination of wires. You should get the following values for each test. Little variation is expected.

Blue wire to Shield wire	6 to 10 ohms
Red wire to Shield wire	open – no resistance – not zero
Red wire to Green wire	3 to 6 ohms
Red wire to Yellow wire	3 to 6 ohms

If you get these values your compass should be working correctly.

Rudder Feedback Unit

- Turn off power to the auto pilot and related systems
- Disconnect the four wires from the rudder feedback unit at the core pack processor.
- Using a digital multi-meter measure the resistance across the following combination of wires. You should get the following values for each test. Some variation can be expected.

  Red wire to Green wire 5000 ohms

  Red wire to Blue wire – Slowly turn the wheel lock to lock while measuring the resistance across the two wires. Depending the direction you turn the wheel you should get a range or be within a range of values that go from 1500 ohms to 3500 ohms.

  Green wire to Blue wire – Slowly turn the wheel lock to lock while measuring the resistance across the two wires. Turning the wheel the same direction as the above test you should get a range of values or be within a range of values that go from 3500 ohms to 1500 ohms.

  My rudder feedback unit values were 1740 – 3000 ohms on the Red to Blue test and 3150 to 1900 ohms on the Green to Blue test. These values were within the range and OK. The values for the fluxgate compass were not even close to the specified values so the compass had to be replaced.

Re-boot Procedure for Raymarine Auto Pilot

My auto pilot would not recognize or acquire a compass heading as the boat was turned by the auto pilot in the auto mode. When the auto pilot was told to turn 10 degrees the boat would turn but not stop on the correct heading and keep turning.

The following mode changes and how to get to Dealer Set Up is described in the Ray Marine auto pilot manual.

The procedure is simply to change the set up hull type to a planning hull, exit to stand-by, re-enter the dealer setup and change the hull type back to displacement hull. Exit dealer set up back to stand-by and the system is reset.

The technician at Raymarine told me that most of the time this problem can be corrected by a re-booting procedure that is not published in the Manual. The first step is to go into the dealer set up mode from stand-by and change the set up from displacement hull to planning hull. Next exit the dealer set up mode by going back to stand by. Re-enter the dealer set up mode and set the hull type setting back to displacement hull. Exit the dealer set up mode and go back to standby. The system should be re-set.

All engine related information pertains to the Yanmar model 4JH3E

Transmission Linkage Adjustment: (transmission cable length on Discovery is 13 feet)

Improper adjustment of transmission linkage may lead to transmission failure or failure to go in gear. I have found the transmission linkage on two Saga Yanmar engines to be improperly adjusted. At times the transmission would not go into forward gear without first shifting into reverse and then immediately putting the transmission into forward gear. The following steps will help to insure the linkage is properly adjusted.

- With the boat not running and the transmission in the neutral position, disconnect the control cable from the shifting lever at the transmission.
- With the control cable disconnected move the shifting lever at the pedestal into forward, then to reverse and back to neutral to find the natural neutral position of the pedestal control. The shifting lever at the transmission is disconnected and in the neutral position at this time.
- If the connecting stud/pin on the end of the control cable lines up with the hole on the transmissions shifting lever no further adjustment is necessary. Reconnect and you're done.

- The lever on the transmission will have to be rotated if the connecting stud/pin on the control cable does not line up with the hole in the transmission lever.
- The shifting lever on the transmission is friction fit around a shaft that comes out of the transmission. Loosen the nut on the bottoms side of the shifting lever and rotate the lever until stud/pin and the hole in the transmission shifting lever line up. The transmission's lever and the controls at the pedestal should both in the neutral position during this process.
- The neutral position for the pedestal control and neutral position for the transmission should be synchronized, fit easily together and then reconnected.
- Visually check the forward and reverse shifting at the transmission to make sure that the forward and aft movement of the control cable shifts the transmission to your satisfaction.
- Too much forward adjustment or reverse adjustment could cause on going transmission slippage and premature transmission failure.

Throttle Cable Attachment: (throttle cable length on Discovery is 12 feet)

I have found that the fitting that the throttle cable screws into at the engine was not installed properly at the factory. The throttle cable screws into a threaded hole in the end of a bolt like fitting connected to a lever on the governor. The cable should screw into the hole of the bolt like fitting that has a cir-clip that retains a spring on the end. On our boat the fitting was reversed and the cable screwed into the hole on the other end with the hex head (the threaded hole goes through the bolt like fitting). I won't get into all the ramifications of this error but it did cause my throttle cable to break.