

# Volvo Penta

## Volvo MD2040 Seals Question

Hello Mr Neeson,

i have 2 Volvo MD2040 with Volvo saildrives on my catamaran . The engines are 13 years old (2300 hours each) and i have saltwater in both S-drives after 6 months. In the last 3 years the interval when i had water in my oil was getting down to 6 months. Every half a year i have to change both oil seals with original Vovlo seals that i bought from Marine Parts Express and i still get milky oil and a 1 to 2 mm higher oil level on both engines.

I might have a problem with both propshafts. The aerea where the seals sit seem a bid more polished then the rest, but not worn out. But i am not an expert My French mechanic that helped me change youre seals at the beach in Mayotte was convinced they where of poor quality, possibly from China (his words)

I filled out 3 Forms on the Volvo Penta contact page with these questions and i did not get an answer from them.

I was always impressed with youre exellent customer service and therefore i ask you if you would know anybody that could help me fix this headache.

I am in Brazil and plan to sail to Trinidad for those repairs .

I send you a mail about those seals getting rusty and them being magnetic in sept  
Question : Do you have an idea what my problem is?

Are there other areas where water can get in?

many thanks

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Hello Sir:

These seals came directly from Volvo Penta. They shipped out of the Volvo Penta warehouse directly to us and then shipped to you.

I did call Volvo Penta technical and they agreed that the springs should be stainless steel.

They said that the Volvo Penta drawings show that the springs are stainless steel as well.

Volvo Penta is going to have the warehouse go check the supply of these. They will get back to me with the results.

The problem may be that stainless steel can be magnetic depending upon the formation of

the stainless steel. Below is a write-

up that I got from somewhere, back from the day

when I was doing destructive testing on SS that were used by Timken (the bearing company).

I loved the .

"Magnetic permeability is the ability of a material to carry magnetism , indicated by

the degree to which it is attracted to a magnet. All stainless

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steels, with the

exception of the austenitic group, are strongly attracted to a magnet.

## Austenitic Grades

All austenitic grades have very low magnetic permeabilities and hence show almost

no response to a magnet when in the annealed condition; the situation is, however,

far less clear when these steels have been cold worked by wire drawing (I.E. MAKING

A SPRING), rolling or even centreless grinding, shot blasting or heavy polishing.

After substantial cold working Grade 304 may exhibit quite strong response to a

magnet, whereas Grades 310 and 316 will in most instances still be almost totally

non-responsive.

The change in magnetic response is due to atomic lattice straining and formation

of martensite. In general, the higher the nickel to chromium ratio the more stable

is the austenitic structure and the less magnetic response that will be induced by

cold work. Magnetic response can therefore be used as a method for sorting grades

of stainless steel, but considerable caution needs to be exercised.

## Stress Relieving

Any austenitic (300 series) stainless steel which has developed magnetic response

due to cold work can be returned to a non-magnetic condition by stress relieving.

In general this can be readily achieved by briefly heating to approximately

700 - 800°C (this can be conveniently carried out by careful use of an

oxy-acetylene torch). Note, however, unless the steel is a stabilized grade

it could become sensitized to carbide precipitation. Full solution treatment at

1000 - 1150°C will remove all magnetic response without danger of reduced

corrosion resistance due to carbides.

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If magnetic permeability is a factor of design or is incorporated into a specification, this should be clearly indicated when purchasing the stainless steel from a supplier.

## Cold Working

Many cold drawn and/or polished bars have a noticeable amount of magnetism as a result of the previous cold work. This is particularly the case with grades 304

and 303, and much less so for the higher nickel grades such as 310 and 316.

Even within the chemical limitations of a single standard analysis range there

can be a pronounced variation in the rate of inducement of magnetic response from cold work.

## Magnetically Soft Stainless Steels

In some applications there is a requirement for a steel to be "magnetically soft".

This is often required for solenoid shafts, where it is necessary for the plunger to

respond efficiently to the magnetic field from the surrounding coil when the current

is switched on, but when the current is switched off the magnetic field induced in

the steel must quickly collapse, allowing the plunger to return to its original

position. Steels which behave in this way are said to be magnetically soft.

For corrosion resisting applications there are ferritic stainless steels which

are magnetically soft, usually variants of a grade "18/2" (18% chromium and 2%

molybdenum) but with very tightly controlled additions of silicon and often with

sulphur added to make them free machining. Special mill processing guarantees

the magnetic properties of the steels.

I appreciate you letting me know on this as it is possible that Volvo's supplier slipped in some duds. Volvo Penta has pretty robust QA procedures, but it may not be something they check.

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J. D. Neeson

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Hello Sir:

Back in September, I talked with the Volvo boys and they eventually got back to me and assured me there was not an issue with the seals. Supposedly, any time Volvo Penta changes suppliers for a part the part number is supposed to change as well. This seal has the same number and according to Volvo Penta tech guys, they have not changed manufacturers.

I can't really remember what the seals that I sold five years ago, but I have to admit that the newer ones don't look as beefy. But that might just be my memory playing tricks.

I think more likely your sail drive shafts are slightly bent. When you next take out the boat you should have your mechanic put a dial indicator on them and see if they are true. Supposedly they can't be more than 4 thousandths from true. If they are a little off they will, over time, eat up the seals. This would explain why the seals are not lasting as long each time.

I spend a couple of minutes trying to find an aftermarket equivalent seal for 3593663, but I wasn't able to so I think you are stuck with Volvo Penta's seal.

J.D.

Unique solution ID: #1057

Author:

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