6.3 Water Pump rebuild.

Some weeks ago the Water Pump in my 6.3 started to leak. When I discovered this, I instantly recalled reading about how very expensive new 6.3 Water Pumps (WP) are. I didn't remember how expensive, but only that the cost issue surfaced in every discussion thread.

First I thought this would be in the $1000 area, but after searching the internet I found out that I was able to buy rebuilt WP's for about $450 and the Core was refundable. The down side (for me) was that the pumps I found where only available in the US, beside one supplier I found in Australia ($600+). I live in Europe, so shipping would be added to the base cost. I would also have to pay 15% tax and 24.5% VAT on top of everything. Then I would also have to pay for the shipping of my own pump (core) back to the supplier to get the refund. A $450 pump would actually be costing me about $750 at my doorstep. Well maybe not $1000, but enough.

First I wasn't sure the 6.3 WP's where rebuildable, but after looking at cross sections I found out this was a pretty simple unit. Inside the WP housing there was just a twin bearing shaft with a impeller on one side and a fan hub on the other. A sliding seal ring was pressed against the counter-ring inset into the impeller, and my guess was that this failing seal was the cause of the leak.

Here is a picture of the leaking WP:

1. Removal

Removing the pump is easy. Start by draining the water from the radiator. Then slacken the two V-belts by releasing the twin unit (Air Pump & Power Steering

Pump) and remove the belts. Remove the visco fan and pulley by unscrewing the four little bots. You can't remove them one by one, so you have to work them out together. Disconnect the two rubber hoses from the WP and the two bolts connecting the WP to the thermostat housing. Unscrew the six bolts holding the WP and remove the pump.

Here is the newly removed WP:

Here's another view:

2. Rebuild

A WP is pressed together and pressed apart. There are no bolts or screws. I have all the original MB Work Shop Manuals and they suggest pulling off the impeller, witch I don't recommend since it involves the risk of breaking the impeller. Besides you probably want to renew the bearings as well as the seals and then you have to press the whole thing apart anyway. The Manuals also suggests removing the distributor as one step in the process which is totally ridiculous (these are really the original Manuals!).

You will need a powerful press to take the WP apart. I'm not sure this is a tool you will find in the average garage. I had access to an heavy duty hydraulic press at my friends workshop for the job.

Here is a cross section of the 6.3 WP:

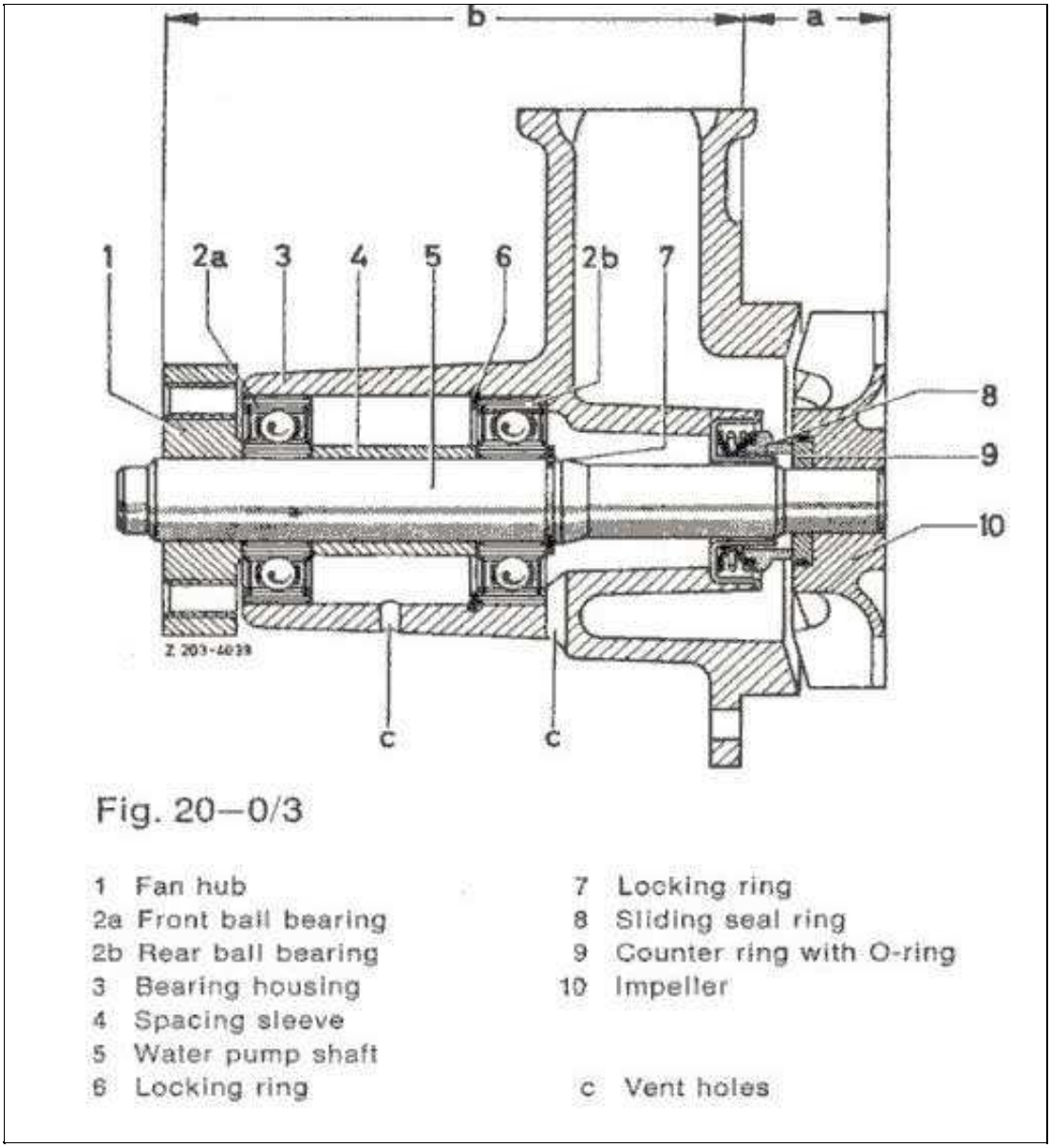

Fig. 20–0/3

1	Fan hub	7	Locking ring
2a	Front ball bearing	8	Sliding seal ring
2b	Rear ball bearing	9	Counter ring with O-ring
3	Bearing housing	10	Impeller
4	Spacing sleeve		
5	Water pump shaft		
6	Locking ring	c	Vent holes

The order of pressing the WP apart is a bit crucial. I'm not sure the order I did it in is the best, but it worked fine. These are the steps;

- Press the shaft (5) from the front of the pump out through the back with the impeller (10). Now you have tree parts; The WP housing, the

fan hub and the shaft with the impeller and seals.

- Press the shaft out of the impeller. Now you have five parts; The WP housing, fan hub, shaft, impeller and seals.

- Now you have to get the front bearing out (2a). This is a bit tricky since you can't simply press out the two bearings (2a and 2b) and the spacing sleeve (4), because there is a locking ring (6) holding the inner bearing (2b). You have to knock it out from the impeller side of the pump. When it's out the spacing sleeve (4) will come out as well.

- Remove the locking ring (6) and press the inner bearing (2b) out through the front.

- The last step is to work out the counter-ring (9) from the impeller.

Here is a picture of all the WP parts and my rebuild kit:

This is the sliding seal ring from my pump. It was not only broken, but completely rotten and broke apart in my hands. This is not a original MB part and it's made out of plastic and rubber. No wonder why the pump was leaking;

Here is the pump ready to be pressed together:

These are the steps I did when pressing the WP together;

- Press the new inner bearing (2b) into the WP housing.
- Insert the locking ring (6) which holds the bearing in place.
- With the pump facing the front up, insert the spacing sleeve (4) on top of the inner bearing (2b). Now you have to take care; Press the front bearing (2a) in place until it reaches the spacing sleeve and

don't let the sleeve get out of place! Sick your skinny index finger inside the front bearing centre hole and into the sleeve and flip the pump over. Place it on top of the fan hub (1). Now press the shaft (5) down through the bearings and sleeve and into the fan hub and though until the clip (7) on the shaft reaches the inner bearing.

- Insert the new sliding seal ring (8).
- Insert the new counter ring (9) into the impeller (10).
- Press the impeller (10) onto the shaft and take special care to leave sufficient space for it to rotate (otherwise you have to press it all apart again).

Here is a picture of the rebuilt pump:

Here's another view:

3. Installation

Installation of the Water Pump is just reversal of removal. Slide the main gasket over the impeller and onto the WP housing. Insert the pump into the engine, bolt up and connect the two water houses. Slide in the new thermostat housing gasket and screw in the two bolts and tighten.

Here's a picture of the newly installed WP:

Up to this point everything had been really easy and straight forward, but this is where the shit hit's the fan; Installing the visco fan is not straight forward. Some German swearing is needed; I did it like this; Tilt the pulley on the pump and slightly screw one bolt into the fan hub. Slide the visco fan on the bolt and screw in or tilt the bolt on the opposed side; "Scweiße!" (shit!). Easy? Right! "Scweiße!". Screw in (tilt) the remaining two bolts "Scweiße!". Work the bolts in little by little "Scweiße!". The visco fan will have to be pressed equally by the bolts onto the WP shaft "Scweiße!". Rotate the WP and schrew the bolts one by one, little by little "Scweiße!" until the visco fan has been bolted tight "Phefffff!". Ok, that's done.

Now you only need to reinstall the V-belts, tighten them and refill the radiator & engine with water and anti freeze.

Here's a picture of the fully installed WP:

4. Conclusion

If Star Motors where next door, I probably would never have even considered rebuilding the pump and just walk over there with the old one and buy a professionally rebuilt pump from them for about $450. I would get a $100 refund for the Core, so I would actually be buying the pump for $350. That's a fair price for a professionally rebuilt WP, but it's not the price I would be paying for it ($750).

Anyway, I did not rebuild the Water Pump to save money. I just like fixing things myself when ever I can.

Parts:

$20, 1 sliding seal ring

$10, 1 counter ring with a O-ring
$15, 2 high quality bearings
$15, 2 gaskets

$60 total (rughly)

Labor:
---
1 hour removal of WP
30 minutes pressing WP apart
30 minutes pressing WP together
2 hours installing WP
---
4 hours basic labor

Of course there was a little more labor involved, like polishing (removal of rust) and spraying the pump, reading the manuals and preparing the job in general. There was also some additional cost involved as well, like the spray-can of primer.

November 2003

Sveinn Thorsteinsson
300SEL 6.3, 1968

sv1@vks.is