MR2 SW 20 NA Gen 2 oil filter relocation

The advantages of relocating the oil filter away from the motor are that it makes it easier to get at when you want to change it, and you'll also have the space fit a much larger filter. In theory anyway, a larger filtering element area should give better filtering and last longer before clogging up, with less oil pressure drop caused by the filter, and less chance of the relief valve in the filter opening and passing unfiltered oil through. Larger filters and relocation kits also add to the oil capacity in the system.

All of these are good features, but it might be hard to justify fitting an OFR kit for these alone, because if you wanted to do the job properly with the best quality components, the total cost of the kit, plus hoses and fittings would be well over $400.

The main reason I fitted it was because I wanted to fit an oil cooler at a later date, and most oil cooler setups need either an OFR kit or sandwich plate to access the oil feed from the pump. I chose the OFR because sandwich plates make it very hard to fit the oil filter in the confined space under the headers on the Gen 2 3SGE. (Virtually impossible on the Gen 2 3SGTE)

Gen 3 motors have a different filter mount, and don't have that problem.

Of the 3 filters shown, the 2 smaller ones will both fit both NA and turbos in the OEM position, and you can easily see how much larger my new filter is compared to the other 2.
The spin on filter I selected (Amsoil ea 036) also has a synthetic filtering element, *claimed* to give superior filtering to the normal paper type, and allowing longer oil change intervals.

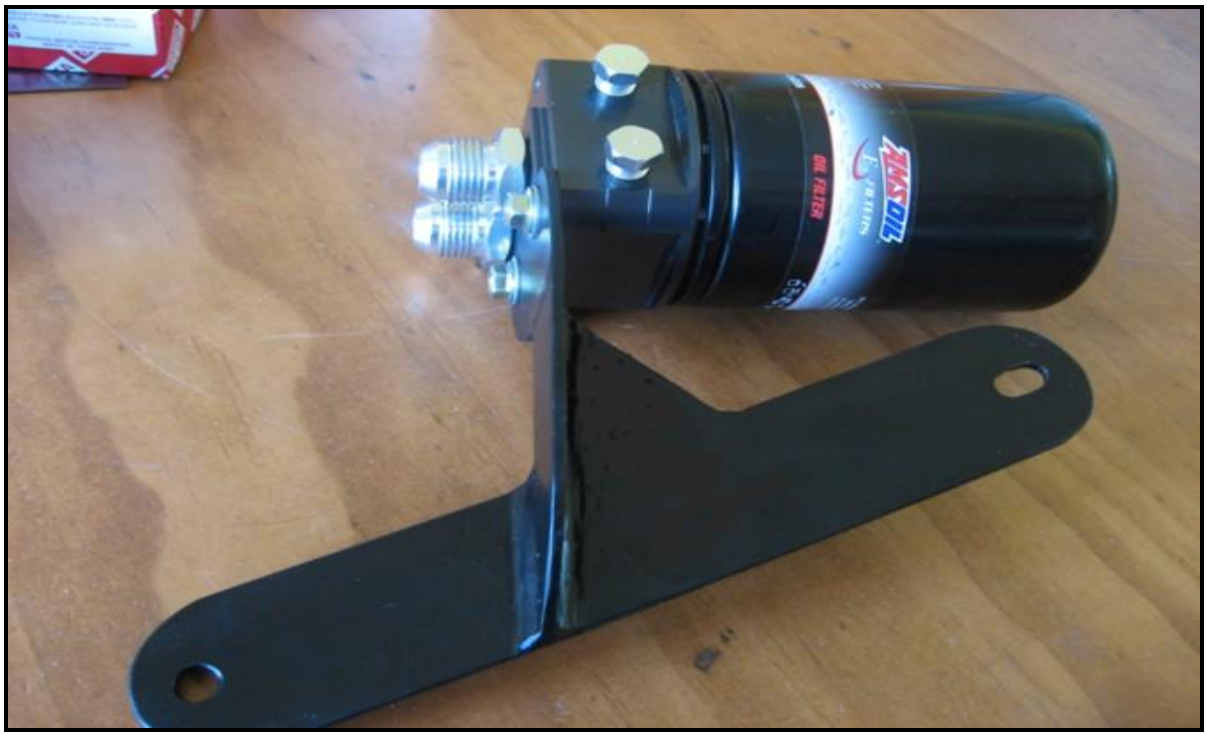
In selecting the parts to buy, I was advised to go for a kit with billet aluminium adaptors for the engine and filter mounts, rather than cast units.
The kit I got was from Maxspeed, and the contents of the kit are shown in the next picture, and the hoses and hose end fittings were bought separately.
Using this particular kit meant that I had to use a filter with a different mounting thread, (20 x 1.5mm) compared to the original Toyota filter (3/4" x 16).

Many cheap relocate kits you can buy on Ebay, have cast adaptors and barbed connectors with screw clamped rubber hoses. While they are A LOT cheaper to install, anyone considering buying these should realize that you only get what you pay for.

I didn't want to take any chances with my motor so I used Earl's connectors and dash ten braided hoses (about ½ inch inside diam.) with 45-degree elbows at the engine end, and 60-degree elbows filter end. These fittings are probably about as good as you can get, but expensive. Apart from being rated to handle much higher pressure, they are contoured inside to allow better oil flow and are very easy to remove and replace if you need to.
Below are shown the original oil filter mount on the motor, and the adaptor that screws on to it.
The adaptor was fitted the same way as an oil filter, and tightened about 1/3 of a turn after the "O" ring contact. To solve the problem of getting the hose connectors aligned correctly when tightened up, I made a washer from thin aluminum sheet to go under the threaded insert in the adaptor. By sanding the washer down to the right thickness, I eventually got the right lineup with the outside hose connector on the adaptor (oil feed from pump) facing in under the exhaust headers. I used loctite on the threaded insert before final assembly. Short stubby open-ended spanners were needed to tighten the hose ends in the confined spaces.

Care was needed when fitting the hoses between the engine adaptor and filter mount. They go: outside connector to outside connector (pre filter), and middle connector to middle connector (post filter).
I ended up with about 20mm hose clearance under the headers. The access to the dipstick was a bit tight, but ok.
On the NA sw20 there is room to mount the filter down alongside the driver's side vent fan, which allows fairly short hoses. A different location would be needed for a turbo car unless the intercooler was relocated.

The filter and bracket assembly.



The view of the installation looking down into the engine bay.

I found 2 unused holes (turbo intercooler mounts) already tapped into the chassis rail conveniently just below where I wanted to mount the filter, so I used them to hold the mounting bracket.
There is about 20mm clearance between the airconditioner drive belt and the filter, and the hoses just clear the front of the engine compartment without touching. You can just see the plug in the gauge sender port on the side of the filter mount.
I have aftermarket oil pressure and temperature gauges fitted, and had been carefully monitoring pressure before starting this project. One concern was whether I would experience any drop in oil pressure because of the relocation, however I have not seen any difference since fitting the kit, probably because of the hose size used and the short hose lengths.
I also took care to mount the filter down as low as possible, and even though the filter has an anti-drainback valve I was worried about whether the hoses would drain out after engine shutdown and cause a delay in regaining oil pressure when re-starting the engine. As it turns out, there seems very little difference in this with the filter in the new position compared to the original location. One thing I have noticed is the motor now needs an extra half litre of oil to fill, which can't be a bad thing.

This whole project was fairly straightforward. The only tricky part I found was assembling the hoses. I had never worked with this type of fitting before and had to be very careful in calculating, measuring, and cutting the hoses to the EXACT length, taking care not to damage the aluminium fittings during assembly. To make the mounting bracket I first made a cardboard template and then welded it up from 3mm steel strip.

Most of the cost of this project was in the expensive hoses and hose ends, and ended up being more than I had originally bargained for. I could have saved a lot by going for a cheap kit with cheap fittings and hoses, but I believe this is the sort of job that should be done properly, or not done at all.

Are the benefits worth the cost? Well, the exact benefits are hard to measure exactly. But easier filter replacement, a larger oil capacity and longer change intervals plus better filtering with less pressure drop through the filter, and less chance of the bypass valve allowing unfiltered oil through, has to be a move in the right direction. I also now have the basic setup needed to fit my aftermarket oil cooler at a later date.

Ian Morrison