

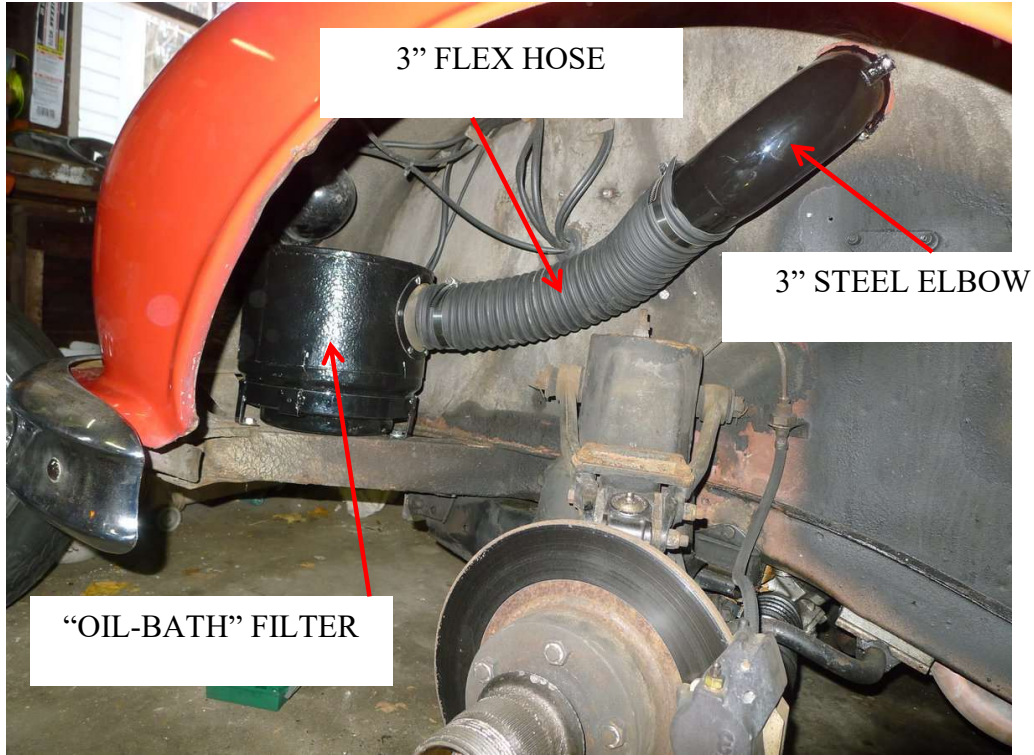
## A Mark 2 Filter Change Bruce Murray



As shown above on my car, the air intake on most 3.4 & 3.8L Mark 2's is a large paper element inside a casing with two intake pipes. There seemed to be some intake noise that I found objectionable during hard acceleration emanating mainly from the air intakes and perhaps also radiating from the large top face of the filter housing. Early Mark 2's had a different arrangement with a large oil-bath filter fitted in the left front wheel well and a 3" dia. flex hose connecting it to a silencer sitting above the cam covers.

I decided to install the early style system since it would certainly reduce the intake noise and also source the intake air directly from the outside instead of the hot engine compartment. The reason Jaguar changed the system may have been because of cost. Since the oil-bath filter is a messy item to service, I substituted a modern paper element. A modern FRAM CA148 is a widely available air filter used on many Ford cars and trucks of the 1960 -1980 period. Only minor modification to the filter housing was necessary to make the substitution.

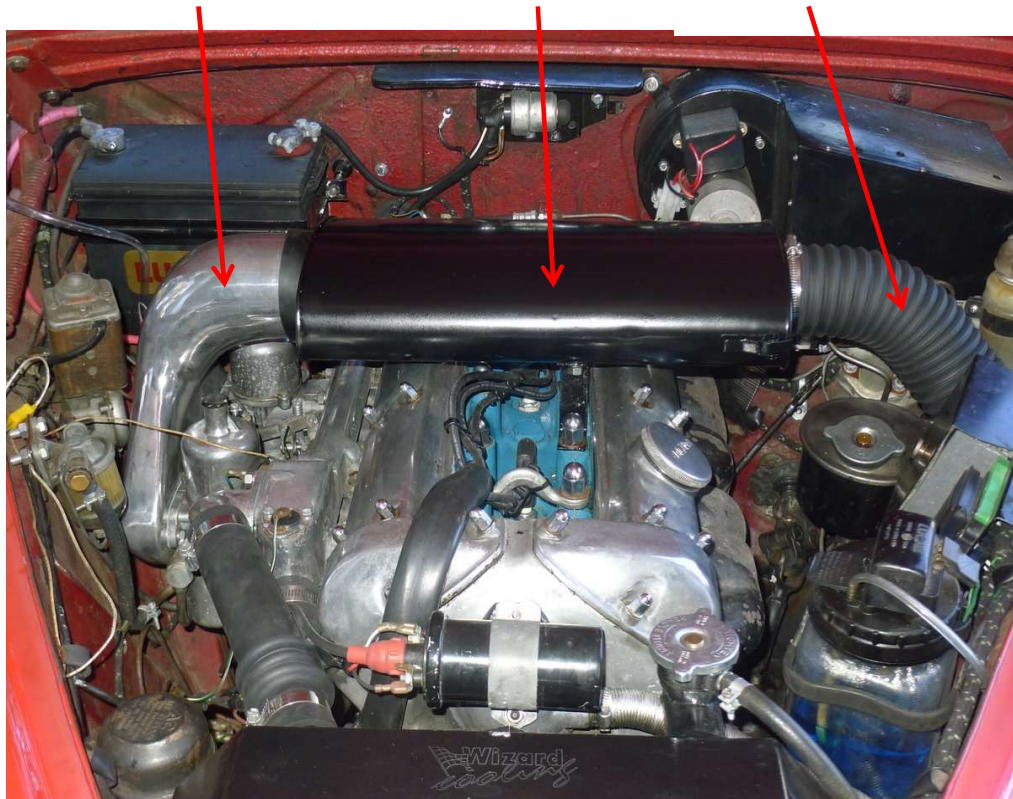
I was able to buy from Geoff Rogers an oil cleaner and a silencer. Although the former was pretty rough shape, I was able to clean it up and make it serviceable using the magic of POR15. I had to source other parts to complete the set-up. The final installation is shown in the following pictures

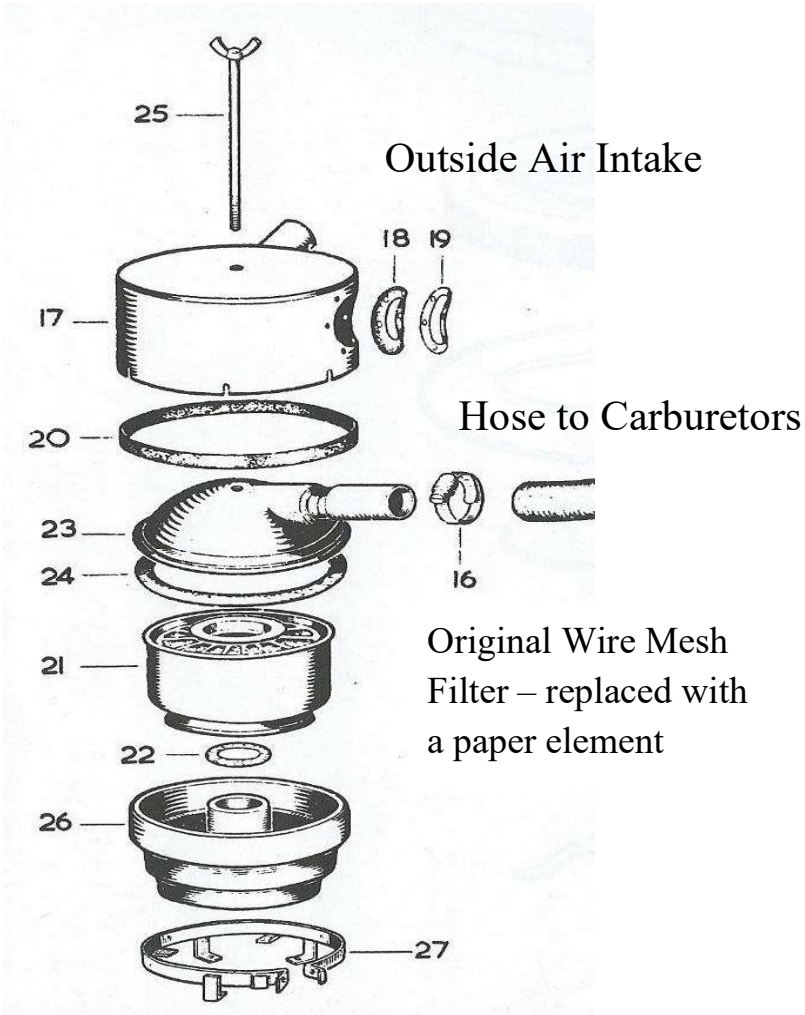


EARLY STYLE  
INTAKE PLENUM

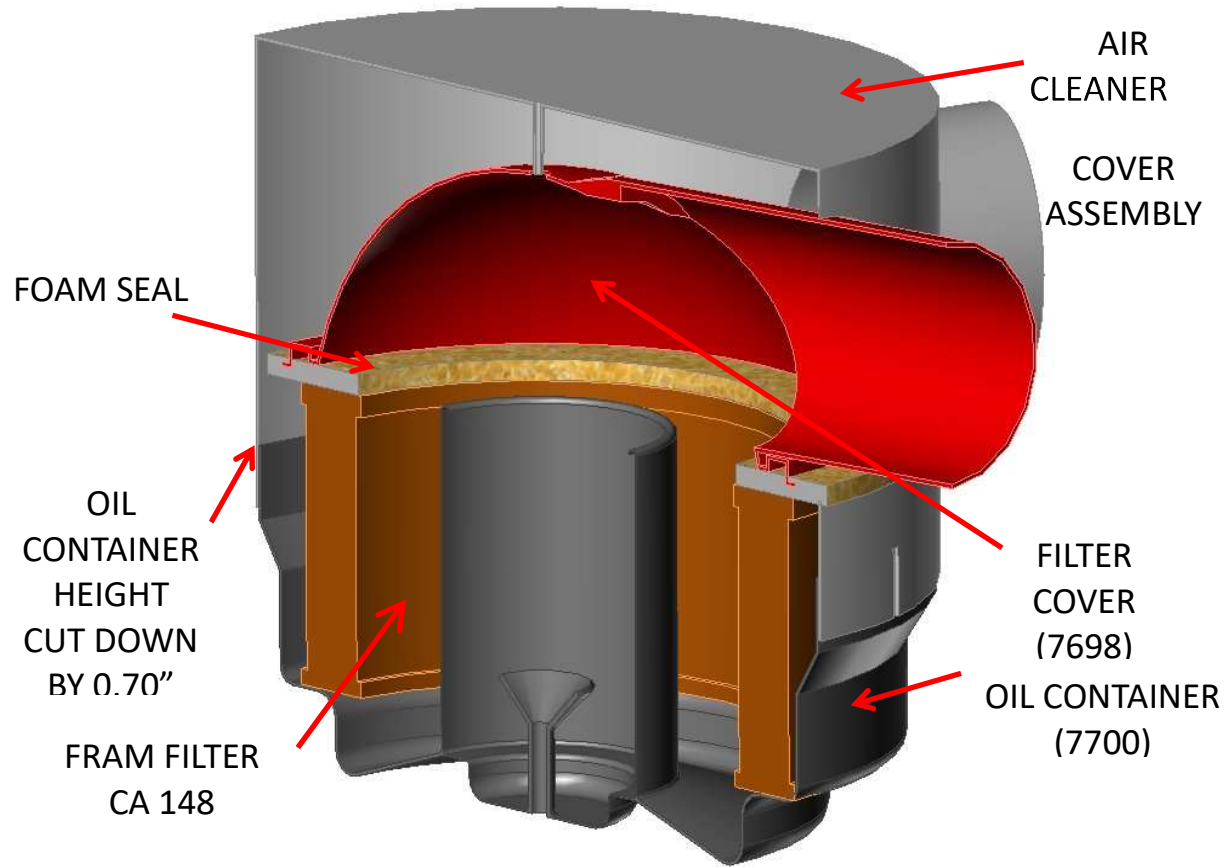
EARLY STYLE  
SILENCER

3" FLEX HOSE





The modifications to the oil filter consisted of discarding the original wire mesh filter (21), reducing the height of the oil bath (26) by 0.7", and fitting the FRAM filter plus some sealing foam



A 3" dia. hole is needed to pass the ducting through from the wheel well area to the engine space. Early cars had a hole already of course and later cars like mine simply had the area flattened but not punched through. Making this hole can be a pain unless you have access to a special tool like a 3" Greenlee hole punch. This is like a normal radio punch but with a ball bearing so that the friction is reduced. Otherwise it's probably time for the jig saw.

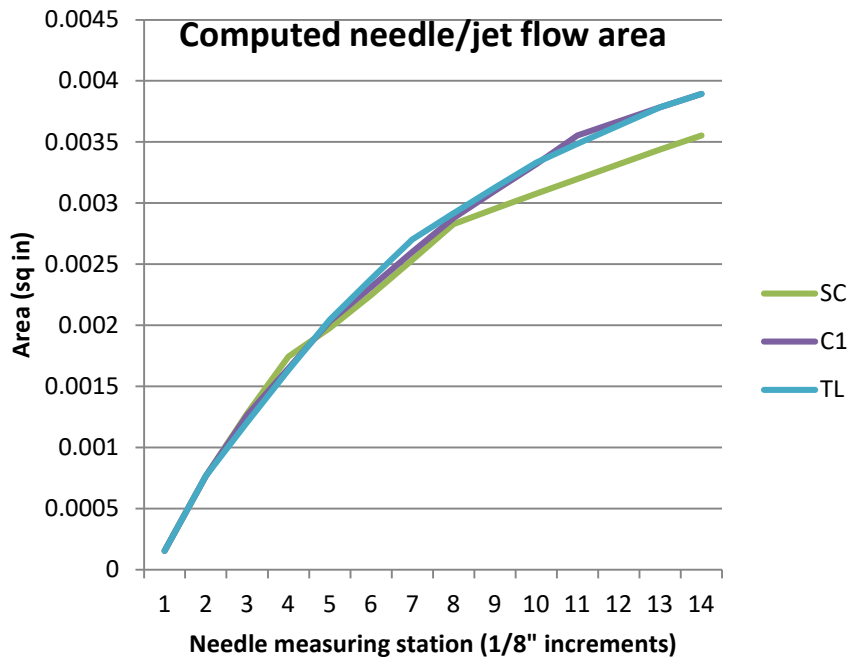
The 3" steel elbow came from Walker muffler, their part number 41685. I used three small brackets to fix it to the body

The 3" dia. flex hose is McMaster 53145K65.

## Performance

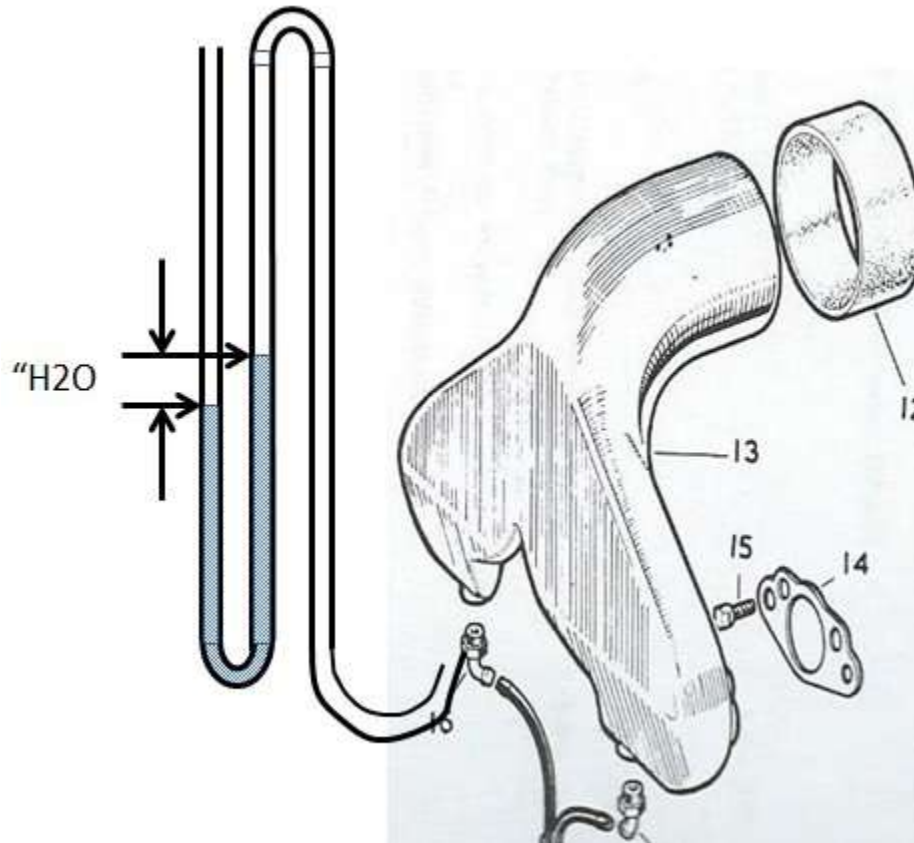
Well, how does it perform? The intake noise is definitely reduced but can still be heard. It is likely that noise is being radiated from the silencer casing as well as the flexible hose in the engine space. In due course I will do tests to verify this.

The factory engine settings for the oil bath air filter are different to those with the paper filter. Specifically, the static ignition timing is changed from 7° BTDC to 2° BTDC (paper to oil) and the SU needle is changed from a TL to an SC. The SC needle has a lower fuel delivery at high airflow and this is presumed to be due to the greater restriction of the oil bath filter.



The SC needle gives the same flow area as the TL until the piston lift is about 1".

I ran a test to see what the pressure drop was with the new “Air Bath” filter. This can be checked by utilizing one of the fuel drain holes at the bottom of the carburetor intake plenum. Perhaps this does not reflect the true static pressure in the plenum but it is probably not far off. Special holes could be drilled in other places which might yield a more accurate reading.



A water manometer was set up to read the pressure in the intake plenum that feeds the carburetors. A 10 foot length of 1/4" ID plastic tubing was connected at one end to one of the small drain ports at the bottom of the plenum. The other end was passed out under the hood and into the car where it was draped over the rear view mirror and formed into a water filled U tube with a scale attached. This made it easy to read during a road test.



The water column reading was taken at a steady engine speed. The throttle was held wide open during a climb up a long hill. The reading was 3.5" H<sub>2</sub>O at 3000RPM. This is equivalent to a depression of about 0.13 psi or to put it another way equivalent to the change in pressure with a 250ft altitude change. Even if the test were repeated at 5000 RPM, the depression would still only be equivalent to a 700ft altitude change.

Since the car was presumably designed to operate over a range of a few thousand feet altitude the intake depression does not seem to be significant and I will stay with the present needles and ignition timing.

Interestingly when coasting down the hill at 70 mph there was a positive pressure of 0.8" H<sub>2</sub>O due to the ram effect of forward motion. The filter intake does not face into the airstream but rather athwartships. The ram air pressure at 70 mph is 2.4" H<sub>2</sub>O so we get about 30% ram recovery which is probably useful.

I will run the car with the settings for the paper air filter and perhaps later engage in some exhaust gas analysis to fine tune the mixture.