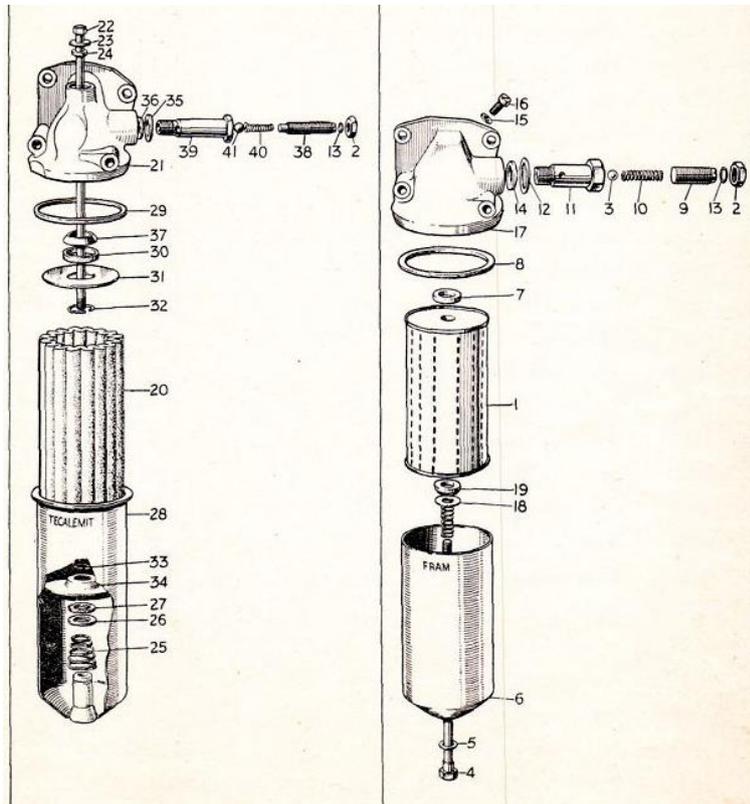


Triumph Roadster oil filters (Part II)

by Paul Alting van Geusau

The Roadster 2000 oil filter

According to the Standard Vanguard Service Instruction Manual, in fact three types have been used on Vanguard engines, starting with a Tecalemit full-flow (very similar to the 1800 filter!) a Fram and Purolator oil filter. I found the following picture in my original Roadster parts book:



However, although the Roadster 2000 has the early Vanguard engine I have not seen the Tecalemit filter on a Roadster 2000 yet.

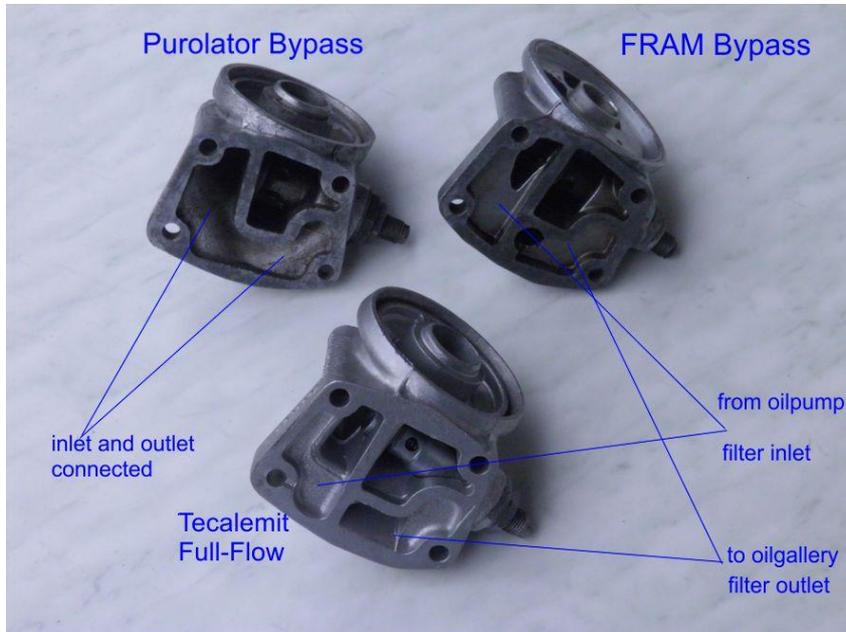
Adapters to make the Purolator or Fram filter head suitable for use of a spin-on filter element are readily available at Flexolite

<http://www.flexolite.co.uk/pdf/Oil%20filter%20adaptor%20list.pdf>

Actually, they fit both the bypass and the later introduced new Tecalemit TR3 and TR4 full flow filter heads. However, when selecting a spin-on oil filter it should be kept in mind that the bypass filter type (thus a filter with small pore size and low flow rate) should be ordered. As far as I can deduce from the offers on the internet this is not always taken into account and not many by-pass spin-on filters appear available. Moreover, the spin-on screw thread of the by-pass filter elements mostly is different from the usual full-flow filter elements. More about this later.

All types of filter heads suitable for the Vanguard engine use the same gasket and without any modification they will fit to the engine block. Because of their better protection of the engine adopting a full-flow type of filter, in particular now that these elements have gone through many years of development, is recommended. Full-flow spin-on filters are readily available, which is also a consideration for adopting a full-flow filter. The only problem

thereby is that full-flow filter heads are in short supply and when you are lucky to find one, they can be expensive. A closer look at the Purolator and Fram filter heads at the face where the filter head is mounted to the cylinder block showed a remarkable difference between the two. While the Purolator filter head has a common entry and outlet for the oil, the Fram filter head has separate inlet and outlet connections in the same manner as the Tecalemit TR3- TR4 filter head.



Joining inlet and outlet is done inside the filter head but some simple modifications allow the Fram bypass head to be changed to a full flow type of filter. One passage has to be blocked, one passage has to be opened and the by-pass bleed has to be closed as well. In the following explanations the modifications are described in more detail.

As a matter of interest attention is drawn to the picture below, found in a Vanguard book. So either also Purolator filter heads have been used with separate inlet and outlet connections or the picture is wrong and it shows the Fram head instead.

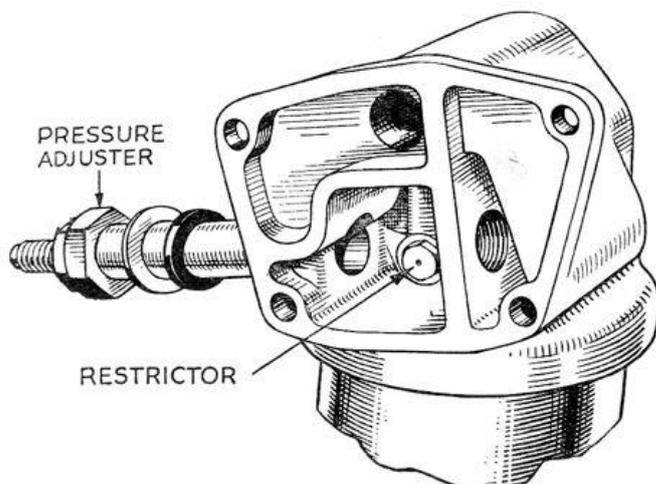


Fig. 63. Purolator by-pass filter, showing restrictor jet and pressure release valve.

The 2000 spin-on filter adapters

As was indicated here above, adapters for the Roadster filters are readily available. I found two types, one of two-pieces construction, with a separate central portion and a telescoping outer ring (picture left below) and one of unit construction (picture right). The left one, is preferred because it allows better setting of the filter and seals during fastening. Both these adapter sets have a problem in that the threaded support for the oil filter, having 6 axial holes, is a bit weak and when fastened care should be taken to not tighten it up to hard otherwise you might lose your filter! Although I personally have not encountered any problem some TR2 - TR4 owners report losing their oil filter with disastrous effect. So for those that do not want to take a risk an alternative fixing means is discussed later.



The exploded view below shows the filter assembly for the full flow filter which is, as regards the filter element, very similar for the by-pass filters. It shows quite a number of parts to be reassembled (10 to 17) when changing the filter element. These parts are omitted when using a spin-on filter element.

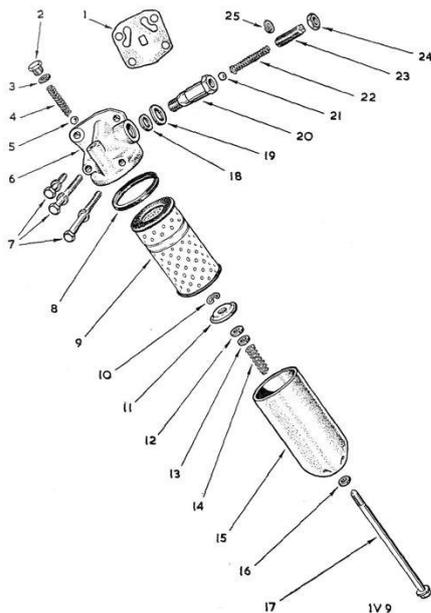


Fig. 64. Exploded view of full flow filter.

- 1 Gasket.
- 2 Plug.
- 3 Washer.
- 4 By-pass valve spring.
- 5 By-pass valve bolt.
- 6 Filter body.
- 7 Attachment bolts.
- 8 Rubber seal.
- 9 Filter element.
- 10 Circlip.
- 11 Filter element support.
- 12 Rubber seal.
- 13 Washer.
- 14 Spring.
- 15 Container.
- 16 Rubber seal.
- 17 Retaining bolt.
- 18 Rubber seal.
- 19 Washer.
- 20 Relief valve body.
- 21 Relief valve ball.
- 22 Relief valve spring.
- 23 Relief valve adjusting screw.
- 24 Locknut.
- 25 Lead wire seal.

Below is the spin-on adapter model with the separate central portion shown with the Tecaletit TR3- TR4 full-flow filter head.



The inner, central part is fixed with the spin-on threaded (3/4" UNF) support to the filter head. The threaded support has 6 axial bores so that the filtered oil can flow via the central opening to the outlet opening at the back of the filter head.

The central part serves as a sliding guide for the aluminium adapter ring which on its bottom enters into a groove of the filter head, the groove being provided with a sealing ring. The face of the adapter ring serves to contact the rubber sealing ring of the spin-on filter element. When spinning the filter element onto the threaded support the sealing rings are compressed in succession and provide a seal. Oil can freely flow through the openings of the adapter ring and enter the outer surface of the filter element from where it flows to the inside of it.

Such adapters also fit onto the Fram and Purolator by-pass filter heads without modifications. As was mentioned before the attention has to be given to the fact that a by-pass spin-on filter element is selected instead of the usual full-flow one.

Modification of the Fram filter head to become a full-flow head

The modifications to the face of the Fram filter head shown in the pictures below are not necessary when using the TR2- TR4 adapters. I made these modifications essentially for use with the hybrid filter WP1144. When modifying for full-flow use the Flexolite adapter and all that has to be done is to plug the by-pass passage and drill the central opening deeper to provide a passage to the outlet opening.



Below you see the parts before and after assembly.



It is now possible to add another readily available accessory for measuring oil pressure and oil temperature or, as was described by Nigel Maude in the March 2009 Review, add an oil cooler assembly.



The Fram head has no filter by-pass valve like the Tecalemit but since usually the spin-on filter elements have one build-in, this is not a problem.

Modification of the Fram filter head for use of the WP1144 hybrid filter

Since this filter has two outlets the aluminium ring and central fixing arrangement have to be slightly modified to allow for double outlets.

The Roadster 1800 Tecalemit oil filter

As was noted earlier the Roadster 1800 Tecalemit filter is of the full flow type and modification to allow the use of a spin-on filter element is quite straightforward. From the pictures below you can see that it needs a few parts, similar to those for the 2000oil filter heads, so to adapt it to the use of the spin-on filter element. However, these parts have to be manufactured because they are, as far as I know, not available (those available for the TR2 – TR4 do not fit). Since the Tecalemit is a full flow filter a readily available spin-on full-flow filter element can be used. Since most full-flow filters have an integrated by-pass valve the by-pass valve in the Tecalemit head can be plugged.



The conversion allows quick return to the unmodified state.

All the parts have to be manufactured and if you cannot do it yourself perhaps the following description will help you to explain to your mechanic what you want.

My modification consists essentially of three additional parts. An aluminium ring, similar to the TR2-TR4 spin-on adapter but with a larger bore for a stainless steel centering piece and a hollow fixing arrangement. The stainless steel centering piece is provided with bores to allow access of oil to the oil filter and at the same time centers the aluminium ring while allowing some up and down movement of it. When screwing on the spin-on filter that arrangement allows perfect setting of the sealing rings (one in the groove in the filter head and one on the spin-on filter). The central hollow fixing arrangement consists of three parts, a short tube provided with a sealing "O"-ring and screwthread for accepting the spin-on filter, a drilled extension to allow the filtered oil to escape to the outlet opening of the filter head and a fixing screw, for clamping the tube arrangement to the filter head. Of course you can also use the fixing means provided with the TR2-TR4 adapter but I think it is obvious that the arrangement shown below is more robust.



Assembled:



Suitable Spin-on Adapters and filters

On the website of the company Flexolite

<http://www.flexolite.co.uk/pdf/Oil%20filter%20adaptor%20list.pdf>

you can find a suitable adapter for the various Roadster filter heads.

For the Triumph Roadster are available:

Fram filter	FA063
Tecalemit filter	FA064
Purolator filter	FA065
TR2 to TR4	FA066

If these numbers represent different adapters or only a car reference number I do not know. I think the adapters must be very similar in view of the fact that no distinction is made between the different TR model filter heads.

These spin-on adapters have a $\frac{3}{4}$ " UNF thread for mounting the filter element. Most full-flow filter elements have such a screw thread. The only other requirements are that the filter element should have an internal by-pass valve and that the rubber sealing ring has an inner and outer diameter of about 57 mm (2.42") and 65 mm (2.81"), respectively.

Suitable full-flow filters are the Fram PH3600, the Bosch 0 451 103 211 (also O 600) or the Mahle OC110.

I did not find by-pass flow filter elements with a $\frac{3}{4}$ " UNF thread. Suitable models have either a $\frac{5}{8}$ "- 18 or M20x1,5 thread.

The 5/8" thread was used on early by-pass filters such as the Fram PB50 (now P3404, see also Hastings LF117) or the filter for the Fiat 1100, for example Hengst H17W25 which is an equivalent to the PB50.

Newer types use the M20x1,5 thread but I did not find many. A good and not very expensive filter is the Alco SP1238 for the Porsche 911, model 993, which has separate full flow and a by-pass flow oil filters, the latter apparently protecting the hydraulic lifters of this engine.

After quite some searching I also found a Mann filter catalogue with more filter information, in particular the flow rate and connection screw threads, so that selection of a suitable filter is easier:

https://www.mann-hummel.com/fileadmin/user_upload/service/catalogues/pdf/MH_Liquid_Filters_en.pdf

A commonly used full flow filter is the W 719/14 and a higher capacity W 940 variant is an interesting alternative. The WP1170 is a by-pass filter but it has a M22x1,5 screw thread. The WP 1144 is a combined by-pass/full-flow filter with 3/4 UNF thread but it needs a suitable adapter, such as described above in relation to the modified Fram filter head, for the double outlet use.