

# 2CV FUEL FILTER

## Revision 3



By Graeme Dennes

## 2CV FUEL FILTER

Revision 3

By Graeme Dennes

Please note:

Although this article applies directly to the 2CV, it applies in principle to all classic and earlier vehicles.

2CV owners usually change fuel filters during the vehicle's annual service. If the owner fits a preferred type of filter, then usually, that filter type will continue to be used. This may be how many of us manage our 2CV's fuel filter, but there's more to know as filters ain't filters!

The life of an internal combustion engine is substantially influenced by the cleanliness of the fuel burnt in the engine. The majority of today's modern vehicles use fuel filters which filter particles down to the 10-20 micron range, while some vehicles use 5-micron filters. (A micron is one millionth of a metre or one thousandth of a millimetre. For example, a human hair is around 60 microns diameter.) As well as protecting the engine in this manner, the fuel distribution system in modern vehicles is also protected. The question is: What can we do to help the 2CV engine and fuel system? After all, dirty fuel is dirty fuel and engine wear is engine wear. And the answer? *Fit a 10-micron fuel filter to the 2CV.* Well, that should be easy enough to arrange...

Citroën fitted a small inline plastic fuel filter to the 2CV, specified as a Champion L101 (Haynes manual, page 49). An internet search found several overseas suppliers selling this filter, with their web sites stating it filters to 10 microns. Ah, that's looking good! Contact was made with the suppliers to seek a link or reference to a Champion document which states the particle size specification for this filter. Although the suppliers responded quickly, *none were able to provide a reference or link to a Champion document.* (I chose not to ask where *their* stated 10-micron figures originated.) The next contact was to an overseas Champion filter distributor, who kindly sent me a link to a Champion filter document containing the specifications for the L101. It also included a link to the specifications for the L101's replacement, the Champion CFF100101. Unfortunately, the particle sizes for *both* these filters was not specified. After seeking further advice on the L101's particle size, the writer was advised that *this information is for use by their internal engineering department only!* It astounds me that particle size information is not formally available from the manufacturer, given that it is *the most critically important property of a fuel filter!* Um, hello...?

Ah, take a deep breath! Ok, let's try outside the box! What type of fuel filter should we be searching for? As our 2CVs are usually travelling only a few thousand kilometres between annual servicings, the surface area of the filtering element should not be of concern. Also, as the 2CV fuel pump pressure is just under 3 PSI, the maximum flow rate and maximum working (negative) pressure should also not be of concern.

This enabled the search criteria to be shortlisted to four requirements: (1) it should filter particles down to **10 microns**, in line with modern day vehicle fuel filters; (2) the fuel filter **must have** 6 mm (1/4 inch) fuel spigots to match the 5.5 mm inside diameter of the rubber fuel hose used in the 2CV; (3) it needs to be an in-line, standalone filter, and (4) it must be relatively small and lightweight so it can be self-supporting.

Ok. Let's check locally. An internet search on Australian web sites was done in the hope of finding a suitable filter from a local supplier. Numerous fuel filters were found which match the last three criteria, but *none provided particle size data*. One of the sellers was contacted in the hope of obtaining the data, and although very helpful, *the seller advised they didn't have that information and felt it may not be available!*

One could ask: why is such a critically important specification being withheld from the consumer?

Mmmm. Although pure supposition, the writer believes it could benefit filter manufacturers, distributors and retailers for the following reasons. All other things being equal, a 10-micron filter has to cost more to manufacture than a 40-micron filter because it is more restrictive to the fuel flow and therefore needs more surface area, increasing the manufacturing cost and thus the cost to the consumer. By deduction, perhaps a way to attract a customer to buy a filter is to keep the customer's cost down by selling lower-cost (read: larger particle size) filters. These will be priced much more in line with the customer's buying expectations, along with the advice that "this fuel filter fits your car". The customer may not mention particle size or even be aware of the term particle size or that it is a *critical* filter parameter. In a nutshell, excluding the particle size specification from the manufacturer's product data sheets certainly is a way to keep it out of sight and out of mind of the consumer. If you don't know about, you'll never go looking for it!

*The bottom line?* Why hide a critical filter specification? To repeat, who is benefiting from this action? As a consumer, the writer certainly is not! Hence this article! However, as already noted, this is all pure supposition by the writer, and there may well be justifiable reasons for why the particle size is not formally stated or made available on request. The writer just can't think of any justifiable reasons...

Ok, moving right along. The fuel filters provided by popular local filter brands were also canvassed. A suitable range of fuel filters from Repco and Ryco were identified which match the last three criteria. Some of them stated the particle size while some did not. The respective product managers were contacted in the hope of obtaining particle size data, and fortunately, the data was provided for all the filters requested by the writer. Thank you Repco and Ryco! The results? The popular Repco filters RPF1003, RPF1005, RPF1022, RPF1415 and RPF9192 are specified at 40 microns, whilst the popular Ryco filters Z4, Z14, Z750 and MF1-12 are specified at 17 microns. Regrettably, in view of the writer's first search criteria, none of these filters is a match. Keep searching!

As an aside, the writer now understands why there has always been plenty of sediment lying on the bottom of the fuel bowls of his 2CV carburettors when serviced, even though the vehicles usually travel less than 5000 Km each year. It also gives a snapshot of the amount of foreign material in the fuel sold in Australia!

The writer has been using the 40-micron Repco RPF1415 fuel filter for 14 years (well, not the same one!).

Any dirt particles in the fuel which are smaller than these particle size figures will pass through the respective filters. (This is not a criticism of Repco's RPF1415 fuel filter, but rather, a statement of self-criticism by the writer for not identifying the filter's properties sooner!)

Alright, let's do a global search. A grand total of **one, yes, one**, fuel filter matching the four search criteria was located by the writer – the Oregon 07-124. This filter is sold by Amazon.com.au, eBay and many North American retailers. A local supplier has not been found.

The photo at right shows the Oregon 07-124 fuel filter. The Oregon filter and specifications are shown on the manufacturer's web site at: [Oregon 10-Micron Fuel Filter](#).



It also shows information on USA/Canadian retailers. A link to the Oregon filter on Amazon.com.au is provided here: [Oregon Fuel Filter](#)

There may be other fuel filters which match the writer's search criteria. *Should the reader come to know of any, the writer would be grateful to receive the details from you.* Your information will be added to the next revision of this article for the benefit of all readers.

*Please note:*

*This article is not intended as an advertisement for the Oregon filter, but rather, is offered as information on the only 10-micron fuel filter known to the writer which suits the 2CV.*

### **Filter Testing Standards**

There are filter testing standards [shown here](#) which describe the methods used to test and specify the filtering performance of fuel filters. In the strictest sense, the micron figure alone does not completely describe the filtering performance of a filter. Given historical filter industry developments and today's vehicle industry norms and specifications, the micron figures will, in part, carry some useful information.

If a filter has a rating of "10 microns", it has some ability to capture particles as small as 10 microns; however, because there is no single accepted way to *measure and describe* the size of particles that a filter can capture and the total amount of particles that a filter can hold, more information is needed. For a micron rating to be truly useful, we must know the filter's removal efficiency for the specified particle size. When you see a filter marked "10 microns", you will not know exactly what that means unless you also have a description of the test method and standards which were used to determine that micron rating.

The most recognized and utilised test methods are prepared under the banners of the Society of Automotive Engineers (SAE) for North America and the International Standards Organisation (ISO) for the rest of the world. Specifically, the key standards are SAE J905, SAE J1488, SAE J1839 and ISO 4020. All these test methods require complex and sophisticated test equipment.



Filter micron ratings are often based on one of the following three testing methods, but variations are possible:

- a. **Nominal Micron Rating (NMR)** Expresses the ability of the filter to capture particles of the specified size at an efficiency between 50% and 90%. For example, a nominal filter rating of 90% at 10 microns means the filter captures 90% of the particles at the 10-micron size. NMR usually means the filter can capture a given percentage of particles of the stated particle size.
- b. **Absolute Micron Rating (AMR)**. Means that the filter is capable of removing at least 98.7% of the particles of the specified size. This rating is determined through a single-pass or multi-pass test in which fluid containing measurable particles is passed through a flat sheet of filter material. Particles that pass through are measured and counted. This rating is more informative than the NMR.
- c. **Multi-Pass Beta Rating (MPBR)**. The MPBR has been accepted by many filter manufacturers, **but the rating is not publicised by most of them as a means of identifying or specifying their filter properties.** (Emphasis by the writer.)

Most filter manufacturers follow these test methods, but several use test methods of their own design.

### Writer's Suspicions Confirmed

In line with the writer's earlier suspicions, the third test method above **confirms** that many filter manufacturers are deliberately withholding filter specifications from the consumer. So there we have it!



*Yeah, the tractor operator was needing a jump start...*

The photo above shows the writer's 2CV alongside wheat sowing machinery operating near Young, NSW. The overall length of the sowing machinery is 55 metres, and up to 30 acres per hour can be sown (yes, that's one acre every two minutes!), with all the individual steps done in a single pass, including the fertiliser. The machinery operation and the sowing rates are computer controlled by the operator in the cabin. The all-up cost of this rig would buy *several dozen* very good condition 2CVs!

The three fuel filters used in the 12.5 litre diesel engine in the John Deere tractor shown above remove particles down to 10 microns. Yes, that's probably good enough for the 2CV as well!

## Photos from Raid Cape York 2022



The writer took the above photo at the service station in Seisia at the top of Cape York Peninsula. This is red dust country, as depicted in the photo. The need for a 10-micron fuel filter is paramount at the Top End, given the greater propensity for dust and dirt to gain entry to the engine via the fuel.



Five of the Raid 2CVs at the northern-most tip of Cape York Peninsula in 2022. Again, plenty of red dust to make its way into the engine.



## LIST OF ARTICLES BY THE WRITER

The articles written by the writer, listed below, may be freely downloaded from either of the following club websites by clicking on the adjacent links and locating the articles. Both websites maintain the latest revisions of the articles. Before using the articles, please ensure the latest revisions are being used, as the articles are updated on an as-required basis by the writer and given new revision numbers.

Citroen Classic Owners' Club of Australia: [Technical Articles](#)

Citroen Car Club of Victoria: [Tech Tips](#)

1. 2CV 40-Litre Fuel Tank
2. 2CV API GL-4 Gearbox Oil
3. 2CV Battery Charging Circuit
4. 2CV Battery Problems Solved
5. 2CV Brake Saga
6. 2CV Buyer's Questions
7. 2CV Carburettor Cover Screws
8. 2CV Carburettor Jets and Adjustments
9. 2CV Engine Problems
10. 2CV Fuel Filter
11. 2CV Fuel Gauge and Battery Meter
12. 2CV Gearbox Output Hubs
13. 2CV Gearbox Unwinding Debacle
14. 2CV Hard Luck Stories
15. 2CV Headlights Improvement
16. 2CV Ignition Coil
17. 2CV Knife Edges Replacement
18. 2CV Low Oil Pressure Beeper and Lights On Beeper
19. 2CV Maintenance - Part 1 of 2
20. 2CV Maintenance - Part 2 of 2
21. 2CV Oil Breather
22. 2CV Oils and Maintenance Advice From Burton
23. 2CV Points Ignition Reinstallation
24. 2CV Roof Rack
25. 2CV Secondary Choke Butterfly Adjustment
26. 2CV Spare Parts to Carry
27. 2CV Valve Clearance Adjustment
28. 2CV Workshop
29. Better Fuel Hose Clamps – **applies to all vehicles**
30. Better UHF CB Car Radio Performance – **applies to all vehicles**
31. Ignition Coil Ballast Resistors – **applies to all vehicles**



## FINAL STATEMENT

My acknowledgement and grateful appreciation is given to the web sites from which photos/drawings/diagrams have been sourced.

If material copyrighted by others has been inadvertently used in this document without permission, then upon receiving advice, the writer will remove the material immediately.

This article may be updated in the future and assigned a new revision number.

Before using the information in this article, ensure the latest revision is being used.

If you have questions about the information in this article, if you find errors or incorrect statements, if you have suggestions for improvement, or should you wish to republish this article in your club magazine, please - contact the writer at: [gdennes@gmail.com](mailto:gdennes@gmail.com)

The hosting or republishing of this article without the formal consent of the writer is not authorised and will constitute an infringement of copyright.

Copyright © Graeme Dennes 2023, 2024