2CV HEADLIGHTS IMPROVEMENT
Revision 7

Ah, that should make a difference...

Graeme Dennes

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Background

We know the standard 2CV headlights are not the brightest on the highway. This article focuses on the 2CV headlight globes and the replacement options available to increase the light output to make night-time driving safer and more comfortable.

2CV P45t Globes

The 2CV headlights are designed to use globes with the P45t mounting base, such as the globes shown in Figs. 1 and 2. Many other vehicles of the period also used P45t globes, so what follows also applies to those vehicles. Fig. 1 shows the original 45W/40W incandescent globe fitted to the 2CV, such as the Narva 49211. Fig. 2 shows the later 65W/60W H4 halogen globe which can be fitted to provide increased headlight brightness, an example being the Narva 48884. Figs. 3 and 4 show some basic dimensions in mm of the P45t base and glass envelope. Other manufacturers may produce equivalent globes. I expect most 2CVs today will have the Fig. 2 globes fitted.

Fig. 1

P45t Base

Fig. 2

P45t Base

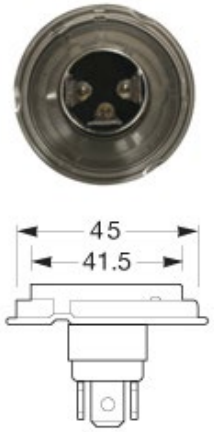


Fig. 3

P45t Base

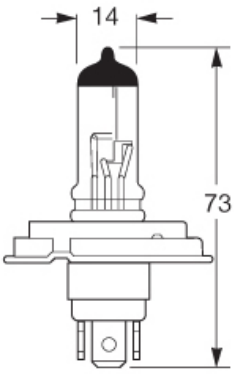


Fig. 4

P45t Base

Optional P43t Globes

There are two further H4 headlight globes which could be of interest to 2CV owners, shown at Figs. 5 and 6. Fig. 5 shows the more recent higher brightness 65W/60W H4 halogen globe, such as the Narva 48382, while Fig. 6 shows the newest, state-of-the-art, much higher brightness, white light LED globe from Narva, with part number 18434, for which the brightness is specified as 5000 lumens per pair at a colour temperature of 5700K. These LED globes have well-defined Z-pattern beams on low beam. Both globes are fitted with the P43t mounting base. Figs. 7 and 8 show some basic dimensions in mm of the P43t base and glass envelope. Again, other manufacturers may produce equivalent globes.

Fig. 5

P43t Base

Fig. 6

P43t Base

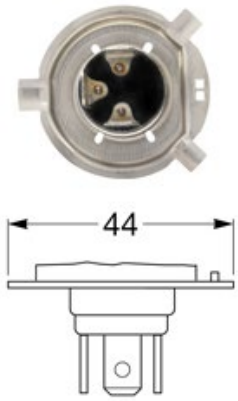


Fig. 7

P43t Base

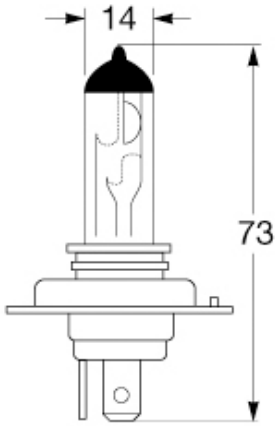


Fig. 8

P43t Base

Well, what are we waitin' for? Plug 'em in, turn 'em on and let's go!

Whoaaaaa, hold your horses. Not so fast…

And the problem Baldrick?
There is just a minor hiccup in using the Figs. 5 and 6 globes, m'lord. And the problem is Baldrick? Well, m'lord, the P43t mounting base is physically different to the P45t mounting base used in the 2CV headlights, so the brighter P43t globes cannot be *directly* fitted to the 2CV, no matter how hard we keep pushing!

And the solution Baldrick?
The solution is to buy or make an adapter which fits between the base of the P43t globe and the P45t headlight reflector, allowing us to fit our choice of the higher brightness Fig. 5 or Fig. 6 globes to our 2CV.

Further, when the adapters and our chosen P43t globes are fitted to the 2CV, there is no permanent modification made. The lights can be quickly reverted to the original types by replacing the P43t globes and adapters with the original P45t globes.

Eureka! The writer recently located an off-the-shelf purpose-designed adapter to do this job, shown fitted to a P43t globe at Fig. 9 below. A pair of the adapters is shown at Fig. 10. The adapters are of the same form, fit and function as the writer's hand-made metal adapters described in earlier revisions of this document.

When these adapters and the Fig. 6 LED globes are fitted to the 2CV, you will have the very best and brightest 2CV headlights available.

The adapters are available by online order from **Classic Car LEDs** in the UK and are labelled as: P45T R2 H5 HB12 410 to P43T H4 BULB ADAPTER.

The adapter is shown at this website link:

https://www.classiccarleds.co.uk/products/p45t-r2-h5-to-p43t-h4-bulb-adapter?_pos=1&_psq=adapter&_ss=e&_v=1.0

Fig. 9 Adapter fitted to P43t H4 globe

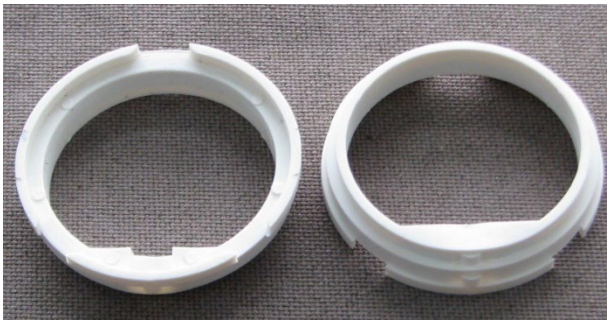


Fig. 10 A pair of the adapters

Globe Retention Clips

When fitting the adapters and the selected globes to the headlights, ensure the two small over-centre spring retention clips on the reflector, which secure the globe and the adapter in place, are doing their intended job. To be safe, the writer threaded a single loop of 1.2mm solid copper wire through the clips and around the central body of the globe, twisting the wire ends together. This ensures the clips remain locked in place. Should the globes ever need to be removed from the reflector, snip the copper wire first.

Narva 18434 LED Globe Low Beam Z-Pattern

The photo at left (from Narva) shows the low-beam Z-pattern for the Narva 18434 LED globe: a horizontal edge to the right of centre to minimise dazzling of oncoming drivers, and a rising edge to the left of centre to illuminate the road edge, street signs, etc. Text-book perfect! (The lines in the lower half of the photo are reference lines.)

WARNING NOTICE: HEAT DAMAGE

Although there are even higher-brightness P43t globes available for use in the 2CV, keep in mind that the headlight glass lenses and metal reflectors must be able to tolerate the heat produced by the chosen headlight globes without being damaged. If the heat produced is excessive, the glass lenses may crack and/or the silvering on the reflectors may be damaged, rendering the headlights useless.

WARNING NOTICE: DIM-DIP HEADLIGHTS

If your 2CV was manufactured in the UK during 1987 or 1988, it will be fitted with "dim-dip" headlights which were required by UK regulations at that time.

When the dim-dip function is active, it causes a reduced voltage to be supplied to the low-beam filaments for the intention of reducing the brightness. This has the following ramifications:

For standard incandescent headlight globes (Fig. 1): No harm is done.

For halogen headlight globes (Figs. 2 and 5): Under-voltage operation can destroy halogen globes because these globes cannot operate correctly in under-voltage situations due to the halogen cycle being interrupted. This prevents the tungsten silvering deposited on the inside of the glass envelope from being removed from the glass and returned to the filament, thus the globes become darkened beyond use.

For LED headlight globes (Fig. 6): LED globes will generally not operate correctly in under-voltage situations and may be destroyed.

The safest solution? Temporarily or permanently disable the "dim-dip" function and fit the Fig. 6 LED headlight globes and adapters described here.

Conclusion

The adapters are the perfect solution for enabling the Fig. 5 or Fig. 6 globes to be easily fitted to your 2CV in a non-permanent manner. The writer purchased and fitted four of the Fig. 6 LED globes and four of the adapters to his 2CVs to replace the Fig. 5 globes and hand-made metal adapters previously used. With the latest LED globes fitted, night-time driving is much safer and very much more comfortable. Ah, *now* I can see!

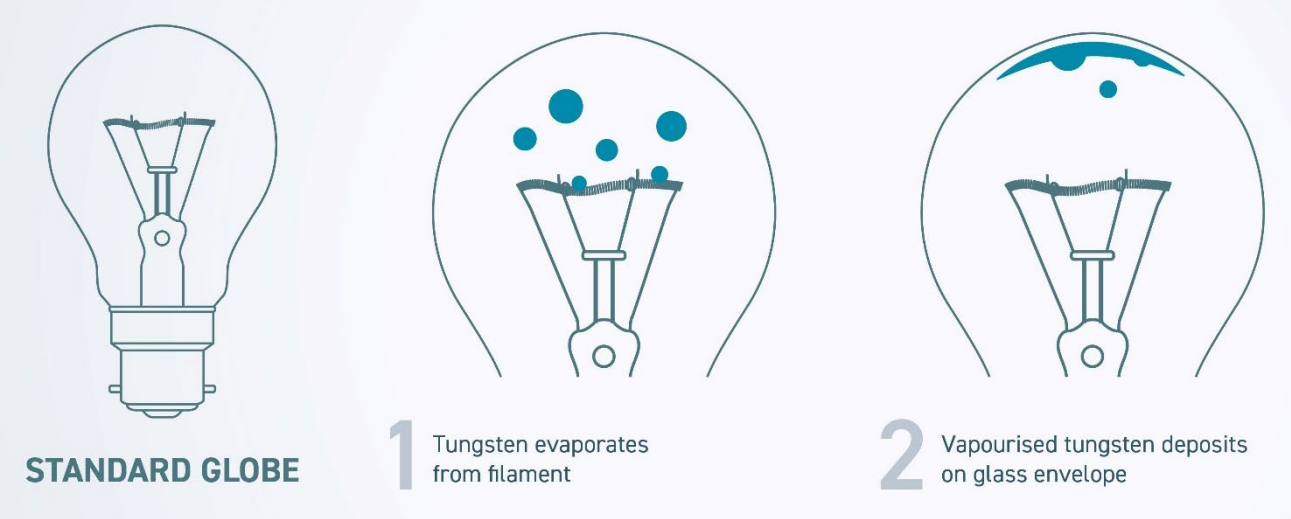
ADDENDUM

How do halogen globes work?

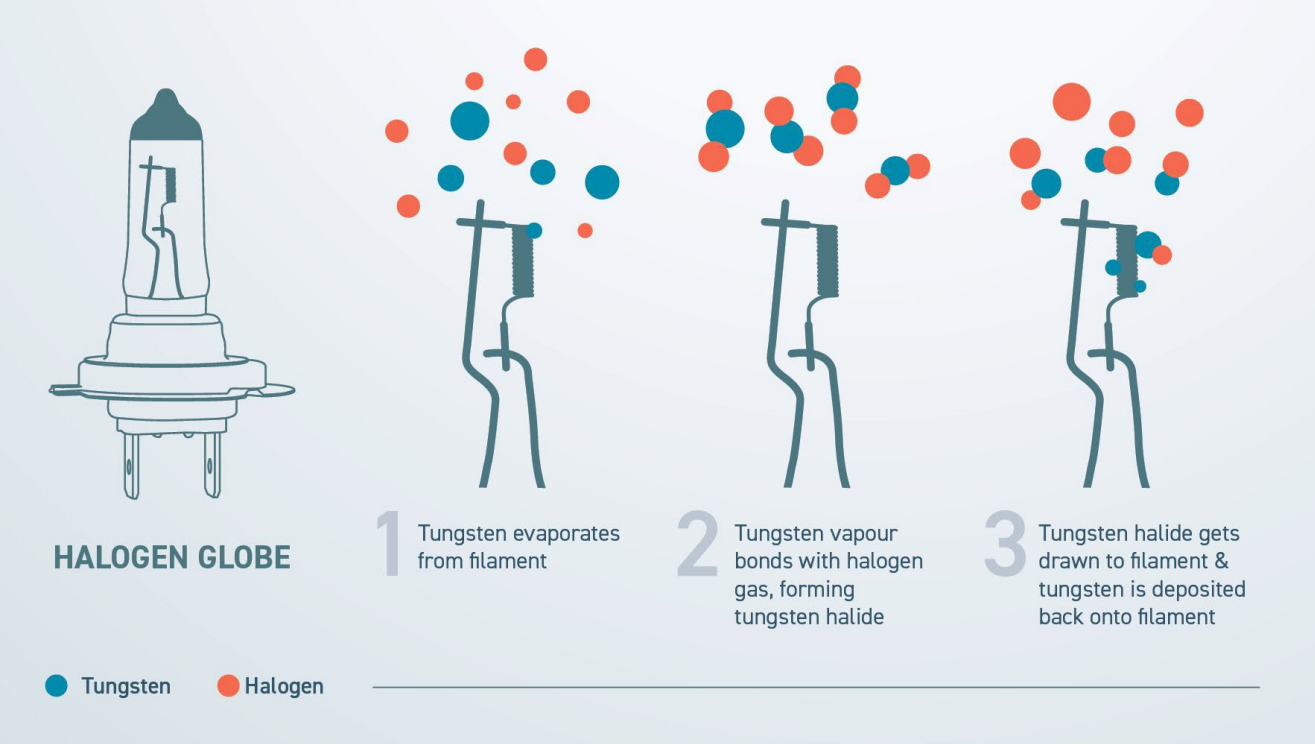
The halogen globe is the most widely used form of lighting in the automotive industry today. It has been the global standard since its introduction in 1962 with the "H1" style headlight. The enduring popularity of the halogen globe is due to its cost effectiveness and efficiency in power demand, and the fact that they are relative safe and easy to change.

A halogen globe is slightly different to the standard incandescent globe. An incandescent globe is made up of a tungsten filament surrounded by a gas such as argon and/or nitrogen inside a glass envelope. Just like any other metal, when heated, tungsten gets white hot and emits bright light.

The problem with standard high-brightness tungsten globes is that during operation, tungsten slowly evaporates from the hot filament and deposits itself on the inner surfaces of the glass globe, leaving a black mark. This results in a reduction (shielding) of the light output and reduces the life of the globe.



A halogen globe still uses a tungsten filament, but it is encased within a small glass envelope which is filled with gas from the halogen group, such as Bromine or Iodine. The interesting thing about halogen gases is that they effectively recycle the evaporated tungsten. When the globe is operating, the halogen gas combines with the tungsten molecules deposited on the glass envelope and deposits the tungsten molecules back onto the hot filament. This helps extend the life of the globe and means that the tungsten filament can run much hotter (with higher light output) without risk of burn-out. Thus, halogen globes can be much brighter, making them perfect for night driving.



High performance halogen globes such as the Narva 48382 add extra gases to extend the life of the globe. These gases include Xenon, Argon, Radon and other inert gases which protect the filament in two ways. Firstly, they make the halogen reaction more efficient, thus resulting in less tungsten being deposited onto the envelope. Secondly, they make the filament less likely to evaporate as they increase the pressure within the envelope.

Conclusion

While halogen globes have been the standard for many years and are well respected in their design, the advances in technology over the past 10-15 years has seen some amazing developments in automotive lighting with the introduction of Xenon and LED technologies.

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
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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

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from which photos/drawings/diagrams have been sourced.

My thanks to Narva for the diagrams and text used in the Addendum.

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