

# 4CV

## *Quickly:*

This is my third 4CV & I got it from the original owner in 1968 by leaving a note under the windscreen wiper. Originally original, it is now wildly modified & in the intervening years it had various degrees of departure from how it came from the factory. Most of the modifications have been to make it go, stop & handle better & it now does all three rather well.

Crudely put, it is only the body shell which is still original & it's basically R10 bits in a 4CV shell with a different motor (R5 Alpine/Gordini) & quite a lot of weight moved to the front. The modifications were sufficiently extensive to require formal approval, inspection & a compliance plate (now fitted). Most of the work was done by my regular Renault mechanic but various specialists have done some aspects.

I am enjoying it in its current form & won't be selling it.

## *Slowly:*

*more elaborately but easy for the mostly uninterested to scroll past, or selectively dip into*



BMW Kakerlake Alpina

Yes, you're right; it *is* a BMW. For some years in the fifties, BMW made the 4CV under licence (as happened with the Isetta bubble car). It had some of BMW's own modifications like a front radiator with, of course, twin kidney shaped intakes & was, curiously, badged as both a BMW (rear) & a Renault (front). It was called the BMW Kakerlake ('cockroach' in German).

This is a rare RHD Alpina sports version that was fitted with a pushrod, hemi-head motor (derived from BMW's excellent six cylinder design - as also used by Bristol in the post-war 400 series). Intriguingly, given the similarity in name, Alpina then licensed the design to Jean Rédélé at Alpine who used it in the A106R rally machine (years before Gordini came up with a similar, though inferior, design as used initially in the René Bonnet Djet & then the Gordini version of the R8 & in the A110). The motor in this particular vehicle is not the original one but an Alpine-built version of the Alpina motor (sourced, I'm told, from a crashed A106R). Sort of ironic that BMW made a licensed version of the 4CV & its sports version was by Alpina who then licensed their motor to Alpine who were making a sports coupe based on the same 4CV design. Sometimes truth can be stranger than fiction\*. This particular BMW Kakerlake Alpina is the only known survivor of a handful of RHD versions made.

I have owned it since January 1968, having bought it from its original owner who had rallied it in the UK with some minor success but to the ruination of the original Alpina motor which was, sadly, discarded. The "cockroach" was in poor condition upon purchase & has received some refurbishment & some (reversible) modification.

(\* - just not this time; this tale's mostly fiction - inspired by the grille)

*Or, with greater veracity:*

I bought my 4CV (in January 1968, in Adelaide) from its original owner by the simple expedient of placing a note under a wiper saying: 'if you would like to sell me your 750, then I will pay you more than it is worth; my phone # is . . . .'. He phoned & I bought (I still have the original handwritten receipt for it) & I have had it in various versions ever since. One attraction was that (being built in 1958 - although first registered in 1960) it is the later 3-stud wheel type. I had just become 4CV-less, a state not to be borne, so ...

It is my third 4CV.

My first 4CV (& first car) was a bog-standard spider-wheel one that a mate knew of; well, standard except for a Dauphine Gordini motor. I'd learnt to drive on my mother's bog-standard Dauphine (on cross-plies!) & my maternal grandfather had had a 760 & my father a '55 750, so they were familiar. I wasn't keen on them until I had fun fanging the Dauphine around on dirt roads (surprisingly capable but the steering's stupidly slow). The engine on the 4CV (with its non-standard, & very loud, tailpipe & "muffler") was an attraction to an embryonic hoon & I bought it. I enjoyed that 4CV. It died - my fault.

I got a spider-wheel shell from a wrecker & built another one up. Quite an experience for a beginner but a splendid small Renault garage gave oversight, support & advice. The motor came across from the first one but had had its block cracked in the smack (rammed by the adjacent battery) so I scouted up a block & rebuilt the engine with the Gordini bits & new rings & bearings. I also sourced a 4 speed Gordini rear-end & refurbished it for fitment complete with its later-style transverse cross member (a bit of hacksaw work on the old tubular cross member's mounting brackets). Then some Dauphine front drums, some pure leading-arm toe-control arms (a "must" for any 750 or Dauphine), one turn hack-sawed off the rear springs &, at the rear only (money! - I was an undergraduate), some "performance" tyres: Michelin X 135-380 "Stop" pattern (& yes there was another pattern: the SDS; in fact there were two further ones: the XRN & the X M&S). These were a step up from cross-plies but rather "snappy" at the limit in the wet. That 4CV was quite nice. Then it got X tyres at the front too - even nicer. But: one had to put the rear pressures up to around 40 psi (fronts around 25) before having a fang, or the soft-side-walled X would fold under & the positive-cambering wheel would dig in a rim & over one flipped. A mate borrowed it while I was on a lengthy army exercise. He had a dice around the Adelaide hills with an Izuzu Bellett GT coupe. He hadn't raised the pressures; that 4CV flipped & died - his fault (& he paid for it).

So, third time lucky? Yes.

My current 4CV was immediately modified with bits from its predecessors except for the motor (reason? I had a buyer for it & needed the money). It also got painted with some genuine R1134 Gordini blue paint (by me, using a vacuum cleaner - it worked but was a bit, um, textured - left me with a taste for matte, not gloss, finishes though). Still, I had fun in it & I drove it to Melbourne when I left Adelaide to pursue postgraduate research. Then it was driven to Sydney, Hobart, back to Melbourne, then trucked to Rockhampton & (very deliberately finally) to Launceston as I chased yet more study & various academic positions. This one had a smack too (not my fault) & I bought the only other (derelict) one in Rockhampton & removed the front wings, jig-sawed off the front panel & bolted & riveted it in place of my bent one. That was the last time I did any major work on cars myself. The wreck also had a rear guard that was better than the one that got bent when a girlfriend in Adelaide whacked it into a Plane tree at the rear of Adelaide Uni (hey, these were the sixties!). So, for a while it was a mix of French Racing Blue & (wreck) dark green. I brush-painted over all this with anti-rust white paint. Horrible - but still an improvement.

Mechanically, it acquired at various stages over the years: a Gordini motor again, a rear transverse leaf camber-compensator (much recommended), some R1130 R8 front discs (basically a bolt-on fit) & then a (cut & weld job) R10 front cross member & suspension, steering & discs. Wheels & tyres (& tyre pressure tuning of handling balance) were a matter of continuing interest & change. Off went the X & on went (135) ZX. Then 145 XZX went on the rear. Then the XZX were moved to the front & 175/70-13 Pirelli CN36 SM tyres on 5.5x13 wheels (cut down 15s) went on the rear. That worked rather well (the CN36 was Pirelli's first steel-belted radial & it was a magic "wet" tyre after the less than wonderful XZX, ZX, X & B7 Dunlop cross-plyes - in order of increasing lethality). The Pirellis were replaced by some 185/65-13 Michelin MXF (lovely taut tyres) with XZX on the 15" front still. Then the fronts got 165/70 Michelin MXT on 4.5x14 (cut down 15") wheels; & it got repainted in FRB again.



Evolution of rear tyres: (current) 185/60-14 Continental EcoContact3, CN36 SM & X

But: my regular mechanic noticed that it had cracks in the longitudinal chassis rails where the rear cross member bolts on. Not surprising really, given its decades of being banged over dirt roads (& non-roads) & torsionally twisted on bitumen ones. Solution? Plate-reinforce & reweld.

However this was then a time of thought. Why not do more than this? Let's do a major conversion. Hey, it might take a year or two, but ... .

That was 1999. It was finally finished mid 2012 - although it had been on the road sans-Webers for some months before that. A longer process than anticipated then - but it was quite involved. The modifications were sufficiently radical to require formal submission of a proposal to the state registration authorities & then, once that proposal had been given "in principle" approval, the modifications had to be signed off by one of the 4 or 5 engineers around the state that the Department commissions for such "weirdo" certification work. I don't know about other states but in Tasmania that whole process was a hassle-free exercise in sanity & reasonableness. I wrote a small essay on

what I was intending to do & included a bit of Renault history outlining how the vehicle would be comparable to things that Renault had itself done with Gordinis & Alpines (no mention of BMW or Alpina!) & submitted that essay along with the form. A few phone conversations with the relevant bureaucrat ensued &, although favourably disposed, he recommended that I seek early involvement of the engineer who would have to finally approve the work. I took the proposal away to that engineer & we discussed the plan. Excellent rational discussions, with some minor changes made in line with his suggestions & some suggestions of his rejected for reasons I advanced. Most of the work would be done by my regular Renault mechanic but some of the trickier stuff I hired various specialists, including the engineer, to do. The modifications took so long that I had to re-apply under some new regulations but that was painless & it is now avec compliance plate attached to the "firewall". So, what is its current form? Rather changed from how it was when first I owned it almost 45 years ago & absolutely "sorted" & delicious. I would have "killed" to have had it in this form back then but, quite possibly, it might have killed a younger, sillier driver.

Basically, all that remains of the original is the body shell. I'll group the changes under headings.

***Body:***

- stripped, sandblasted, etch-primed & painted FRB again (surprise!) with two white (tape) stripes in line with the driver;
- lots of rust removal, new metal, reinforcements, & so on - & litres of fish oil (yes, I know sharks are endangered but so are 4CVs);
- R10 front cross-member was already welded in & rear was now bolted in & a new (R10) floorpan cross-member welded in to receive the front of the semi-trailing rear toe-control arms;
- front modified to suit front radiator (BMW-style inlet slots & a fan shroud/tunnel to an exhaust slot beneath vehicle);
- rear X cross bracing bars above rear axle (engineer);
- engineer-fabricated, CAMS-specification, single person half-cage cum roll-hoop (rear seat sacrificed); &
- flared (metal) front & widened rear guards (engineer).



Roll hoop & harness



Front flares apparent & a glimpse of the camber compensator

***Engine & transmission:***

Standard R5 Alpine (1397, hemi) engine except for:

- fabricated mounting arrangements (block drilled for screws to replace ground-off mount points!);
- water pump removed & (Davies-Craig) electric one plumbed in (excellent - it circulates briefly after turn off);
- electronic pointless ignition conversion (HotSpark);
- tuned-length (thank you to Alan Moore from Qld. for the sums - Alan's R16TS powered 4CV is also acknowledged as the idea for my number plate) 4:2:1 stainless steel & ceramic-coated extractors - which I decided to have circumnavigate the engine to get pipe length; I couldn't manage much "muffler" length & what there is, is straight through, so it is rather noisy on full throttle - an attraction for a vestigial hoon;
- fabricated inlet manifolds to my design (no it wasn't straightforward) & twin 40 DCOEs fed through a K&N panel filter from a cold-air box drawing from the area by the slot in front of the right wheel;
  - it gives 65kw (around 87bhp) at the wheels so, assuming the 25-30% loss that these set-ups seem to have, that would equate to around 115-120bhp gross at the flywheel - this is a 30% increase on the standard (except for extractor & water pump) Alpine motor, which dyno-ed at 50; that motor in standard fitment is listed as 93 bhp gross but I'm assuming that, even with some beneficial changes, mine was a bit down on that;
- &
- standard late-type R10 transaxle (out to wheels) - this is a source of concern as motors like these break standard diffs (although I'm gentle in first); there's a nice fiddle adding an inboard bearing supporting the half shaft that might be advised and stronger R16 (or R5A) internals in the R10 casing is a common fix that might have to happen.



Rather a lot of fiddling to fit it all in

### ***Running Gear:***

Front suspension, steering & brakes: standard R10 except for:

- to reduce the steering ratio from 3.7 to around 2.5, a Coleman Prolite 1.5:1 "steering quickener" was fitted (by the engineer - he did one in my R8 too) - this is an in-steering-column reduction gearbox designed for American dirt oval racers & it's a great modification, transformative - the single best thing that I've done;
- 130 mm alloy spacers on the coils (R8 Gordini & A110 rough road rallying gear) to raise the front (lots of weight shifted to the front, you see; & it would "bottom" on one favourite corner with a dip);
- Koni R8G "red" dampers (some fiddling in modification of the lower mounting brackets to suit the shorter R8G damper stroke); &
- 4.5 x 14 wheels (reinforced cut-down 15s retaining standard offset) fitted first with 165/65-14 Continental EcoContact3 tyres (very nice "wet" tyres) and now with PremiumContact2 tyres (even better in the wet & a bit crisper - I have them all round on the Djet).

Rear suspension & brakes: standard R10 (including semi-trailing toe-control arms) except for:

- one turn removed from standard rear coils ( $>3^\circ$  negative camber - good, lower C.G. - good, stiffer spring rate, thus roll stiffness - bad; overall: worth it);
- shorter droop straps (335 mm long);
- transverse leaf camber compensator spring (long used & bought originally from John Ould Motors in Melbourne - as fitted by them to their R10 GT model) - now with one extra half-length leaf;
- Koni R8G "red" dampers (some fiddling);



- 5.5 x 14 wheels (reinforced cut-down 15s retaining standard offset) fitted with 185/60-14 Continental EcoContact3 tyres; &
- unlike with my R8, what I *haven't* done is remove the rear pressure restriction valve in the brake lines; normally one does this to limit front brake lock-up but I've shifted so much weight to the front that this isn't an issue.



Camber compensator & a too-low "muffler"

### ***Miscellaneous:***

- instruments & column shroud & stalks come from an early R12 with spot-on speedo gearing given transaxle ratio similarities & the near identical diameter of the R12's 155/80-13 & my 185/60-14 tyres; (spare is, incidentally, a 145/65-15 which also has nearly the same diameter - a horrible Nankang but it's just a spare; the Djet and R8 have decidedly better Conti spares in the same size);
- the steering wheel is a rather nice "period" (70s?) Renault-badged small diameter 4-spoke alloy one but it's mysterious as to source vehicle type - perhaps aftermarket;
- wipers are two-speed & arms now park flat;
- fabricated two tube front bumper (actually a wallaby bar - I live in semi-rural Tasmania after all) & no rear bumper (I like the curvaceous rump of the bare 4CV);
- driver's seat is an aftermarket "sports" bucket & is fitted with a 4-point harness (much recommended) & a 3-point fixed belt (not both worn at once!) with front passenger seat from a Mini;
- re-trimming of various cabin bits (beige cum sand cum camel);
- 3-core radiator from a Mini, which is a perfect fit in the nose;
- 40+ litre baffled fuel tank was fabricated (by the engineer & in 3mm steel plate!! - I expressed concern about rupture) to fit in the front with battery, tools, spare wheel & so on;
- a pair of Cibie Oscars (that I bought in 1970 for my MG Midget);
- some idiosyncratic badgework; &

- yes, the tail-lights are from a VW & moved to the guards (why not? - I'm clearly not committed to "preserved in aspic" originality & they give me rear winkers).



More fiddling to fit things in but note neat fit of Mini radiator (& compliance plate at rear)



Mystery wheel

Basically, this is the culmination of 45 years' fettling of fang-worthy 4CVs & I honestly can't think of a thing that I would change (within reason - after driving my Djet, I'd love a mid-engine & proper wishbone rear suspension but ... ). Were it to be a race car, then things would be different but it's a road car. It goes, stops & handles nicely, very nicely actually. For a rear-engined Renault with a short wheelbase, it is remarkably communicative, biddable & un-snappily adjustable at the limit - even in the wet (current favourite pressures are 34F & 38R); & it is happy on uneven surfaces so long as I have clearance (exhaust! - & the camber compensator sits low; although it doesn't hurt anything if it gets a whack, as it simply swivels back).



This bit's straight :-( but it gets twisty later :-))

So, henceforth I foresee further fanging & not further fiddling - it's finished (unless of course it breaks something).

*Peter Davson-Galle*