THE VETERAN AND VINTAGE VAUXHALL REGISTER AUSTRALIAN NEWSLETTER JUNE 2023

Hello Everyone.

Ian Hayward from Queensland sent me the photograph below of an M Type 14-40. Written on the back of the photograph is 'Doctor Woodburn Darling Point 6.5.65. Does anyone know of the car? Could it be the one that was owned by Noel Williams who lived in Buderim.

M Type 14-40

Leigh Whitfield from Victoria allowed me to reprint his rather extensive article on M and LM 14-40 Vauxhalls.

Vauxhalls “Vintage Viva” - The 14 HP and 14/40.

When Vauxhall Motors Ltd. began production after 1918, they re-introduced the pre-war 30-98 as the E-type and the 25h.p. War Staff car as the D-type, now with familiar "works" bodies. These big Vauxhalls had gained reputations of performance and reliability and it seemed expedient to extend this to a more readily available car. It was the first light car since the A-type, the first new post-war model and was completely new in design. It appeared in late 1921. As with some other companies, the formula for a successful light car resulted in 14 HP, and so it was with Vauxhall's new design.

M Type Princeton Tourer

The "Fourteen" was aimed at a wider market, and this, along with R.A.C. taxing at the time, influenced the design. The chassis lay-out was simple and fairly conventional, and the bodies were light and styled in the well-established tradition of the other models. All-up weight was low and controls were light, and overall gearing was about average for the period. Materials and construction were of the same high quality and standards laid down by the forerunners, and the car's performance and economy were above average. It soon became the financial mainstay of the fleet, undergoing various changes and an increase in production until the end of the series in 1927.

M Type Melton roadster

The first expression of the model, designated the M-type, was outwardly a scaled-down version of the current D-type. The proportion and style of the body was almost identical, though smaller in size. The general construction and appearance retained a fair degree of the early tradition, particularly in body features where fittings and upholstery were-of similar pattern. The chassis however bore little relation to the early cars. A channel frame was used, and though crossed braced in three places with channel section it remained light and whippy. A thin bar braced the rear end of the frame, but there was no bracing at the front.

Front suspension was semi-elliptic leaf springs suspended from a Vee-shaped front axle. King pin and hub design were conventional. There were no front brakes and wheels were metric heavy steel plate discs. Front track was 4' 4 1/2" and tyre size was 815-105. Cantilever springs were used as rear suspension, and were connected to the rear axle casing with ball joints. Wheel base was 9' 7".

A semi sub-frame was blocked out from the web of the frame channel to clear the flanges and support the two rear engine mounts situated on an extension of the bell-housing about in line with the flywheel. The front mounting was central, blocked out from the front chassis member, which also supported the radiator. The blocking piece contained the bearing for the crank dog.

The motor was designed by C.E. King, then Chief Engineer of the company. It has four cylinders cast in one iron-block, with a bore of 75mm and a 130mm stroke, giving a capacity of 2.297 litres. The common detachable head is aluminium, and the separate crankcase and sump are also aluminium. The crankshaft was carried in three main bearings, and is drilled for forced lubrication to all main and crank-pin bearings. The aluminium pistons are of the slipper' type and have a complete ring formed at the base of the slippers. The gudgeon pins float freely, both in connecting-rods and pistons.


THE AUTOCAR. ADVERTISEMENTS. MARCH 7TH, 1924. 43

The 14-40 h.p. Vauxhall 'Princeton' touring car. Seats four or five. Liberal leg room back and front. The front seat is adjustable for reach. Superior hood and side curtain equipment. Tecalemit grease-gun lubrication. Down to the smallest detail a car of very high finish £595

Other 14-40 h.p. Vauxhall cars: 'Melton' two-seater £595; 'Norfolk' four-door saloon, £685; 'Grafton' coupé-cabriolet, £720; 'Wetherby' all-weather, £745; 'Wyndham' saloon, £745.

Vauxhall
THE CAR SUPERB-EXCELLENT

A vastly better '14-40'

Petrol consumption 30 m.p.g.

Power development 40 b.h.p.

IMPORTANT improvements in the current pattern are duralumin connecting rods, and a new shape of combustion chamber.

The effect of these refinements on engine balance and explosion conditions wonderfully improves the performance of the car, good as it was before.

An exceptionally good car made better still, the 14-40 h.p. Vauxhall is ranked by the "Daily Mail" Motoring Correspondent among the best six four-cylindered cars in the world, ignoring price.

You must try it to realise the advance which has been made in the medium-powered car. You must try it also if you would discover a car that will revive for you the joy of driving.

The 'Princeton' with hood and side curtains up

23-60 h.p. Vauxhall: prices from £895, four-wheel brakes £55 extra.
30-98 h.p. Vauxhall: 'Velox' four-seater with four-wheel brakes, £1220.

VAUXHALL MOTORS LIMITED
LUTON, BEDFORDSHIRE
LONDON: 174-182 GREAT PORTLAND STREET, W.1
Telephone: Museum 8216 (3 lines)

5 MENTION OF "THE AUTOCAR," WHEN WRITING TO ADVERTISERS, WILL ENSURE PROMPT ATTENTION. C15

The total reciprocating weight of each line is 1.75 lb. while the rotating weight of the connecting rod big end is also 1.75 lb. brought about by the addition of a balance weight. The crankshaft has a diameter of 1.75 inches throughout, the width of the bearings being: Forward end 2.4 inches, Centre 2.1 inches, Flywheel 2.65 inches, Conrod 1.75 inches. The ratio, therefore of the piston area to the projected crankpin area is 2.22 to 1 so that the load factor on the crankpin bearing is a very light one. Compression ratio was 5.1-1 and a brake mean pressure of 108 lb/p.s.i. was obtained at a speed of 1750 r.p.m. Maximum power was 43.5 b.h.p. at a speed of 2600-2700r.p.m.

The head was perhaps the first to embody all the successful side-valve head design by Ricardo, with its "turbulent" flow chamber shape and offset spark-plugs over the inlet stream. It also had small petrol taps for cold starts. The inlet valves had a port diameter

of 1.4 inches and a lift of 0.35 inches, and exhaust valves a port diameter of 1.31 inches with the same lift. All valves were operated by means of pushrods having curved slippers. Engine timing was by straight cut gears with a fibre idler connecting magneto, camshaft and crankshaft gears. A high tension magneto, a Watford type F04 provided the spark with the manual advance and retard on the steering wheel identical to the other models.

An updraft Zenith carburettor was fed by an Autovac petrol pump from a 10 gallon petrol tank in the rear. The cooling system was through a honeycomb radiator, achieved partly by thermo-syphon and also by a brass impellor. An impressive two-bladed fan drew air fairly inefficiently. The clutch was single plate with friction linings riveted to the flywheel and pressure plate. It was light and short in operation, though not as smooth as the Hele-Shaw multiplate clutch used before.

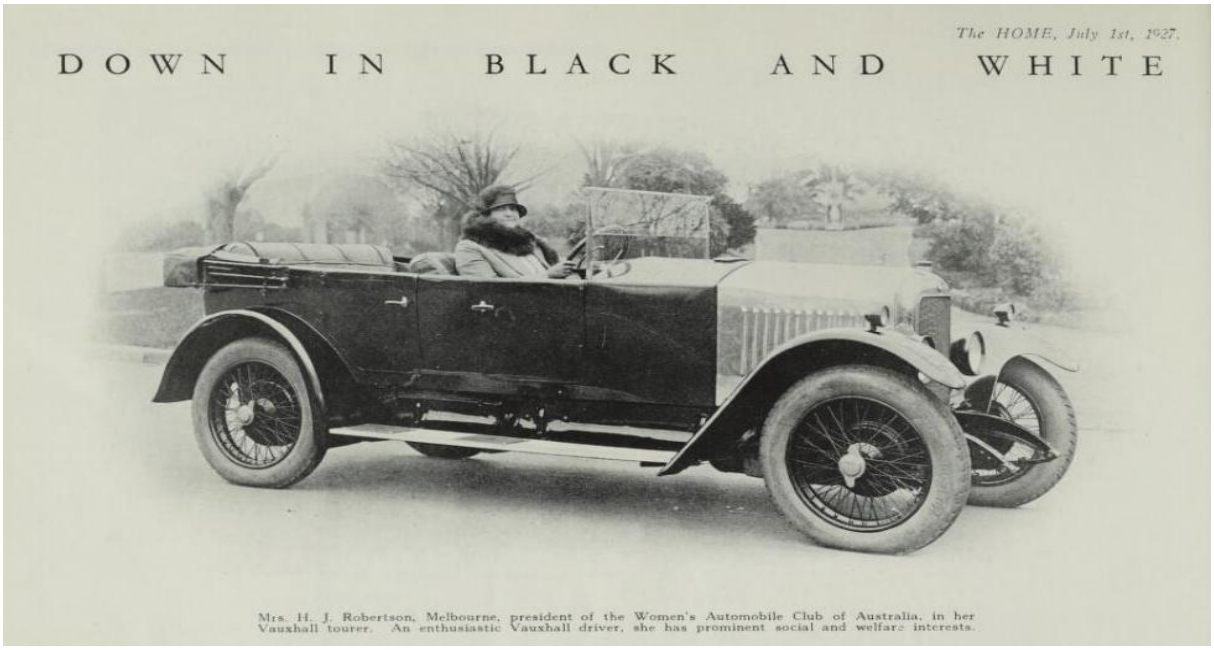
A feature not so conventional was a unit gearbox, which, being placed behind the engine mounts, took the load off the small front mount. The gearbox was of normal, straight cut design, having three widely spaced ratios corresponding to road speeds of 6.25, 12.5 and 20.9 miles at 1000 r.p.m.

The direct gate-change was on the right hand side moving from right to left and was fairly slow due to a flywheel that was perhaps unnecessarily heavy. Built into the back of the gearbox was a Hardy-Spicer type universal joint. This was encased by a spherical joint for a brass cone sleeve in which the torque tube was free to slide. The sleeve and spherical joint were also lubricated from the gearbox and the whole was covered with a leather gaiter.

The other end of the torque shaft was splined for the pinion. The torque tube was fixed to the pinion housing of the aluminium axle casing, a point which was slightly weak and subject to cracking at the webs under severe torsional stress. Crown wheel and pinion were spiral bevel, the pinion having ten teeth and the crown wheel forty five. These were well supported in large bearings and were adjustable for play and noise by either moving the crown wheel across, or packing out the pinion. The very robust axles had large felt seals close to the crown wheel. The outer ends were splined and passed through a block of "Swedish" steel which was dowelled to the hubs. This dowelling point was reputed to be designed to break first under heavy loading.

Vauxhalls braking policy began to improve and although there were no front brakes, the cast-iron rear drums contained two rows of brake-shoes, traditionally one for the hand brake and now one for the footbrake, giving adequate results. Connection was by rods. The steering was worm and sector, the sector being bronze and adjustable.

All joints were sprung ball joints. The turning circle was about 40 feet, quite good for a car of its size, and full lock to lock required only a little more than one turn. Yet the steering was light and sensitive and has remained one of the attractive features of the car. It certainly lived up to the famous steering reputation. The steering wheel was fairly thick and of small diameter, and in the centre was arranged the usual Vauxhall quadrant for adjustment of throttle and ignition control. Factory body styles included the Princeton tourer, Melton roadster, Bedford, Wyndham and Norfolk saloons and the Grafton coupe.



The LM 14/40 was introduced in late 1924. Differential and rear axle design remained much the same with minor differences to the casing. Wire wheels replaced the disc wheels. These were 21" well-based with three planes of spokes and 51-splined hubs, often used on other quality makes. Tyre size was 5.25-21 for the open cars, and 600-21 for the heavier saloon cars. Because of the new wheels on different hubs, the track was widened to 5'2" and wheelbase was lengthened to 9'9". Brakes were vastly improved. The O.E. and O.D. models by now had front wheel brakes of suspect design but the L.M. gained well-designed and efficient Girling type brakes on the front wheels, operated by a system of toggles to expand the brake shoes. Drums were cast iron and finned and were about 11" in diameter. A worm gear adjustment was provided and when properly set proved to be very effective under hard braking. Cables were used for connections to the front, and the whole system was now fully compensated, left to right, front to rear.

A considerable body change came with the L.M. The radiator remained the same in size and shape but a cellular type core replaced the honeycomb core. There were several bodies available. These were the Melton two seater, Welbeck all weather saloon, Grafton coupe-cabriolet, Bedford saloon, Wyndham saloon. Kimberley enclosed limousine and the most popular of all, the Princeton tourer. This now became a five seater and was wider from the bulkhead back.

The aluminium dashboard was not coined and there was a rearrangement of the instruments. The front seat was now adjustable on brass runners and the toolbox as a foot rest remained. Windscreen was slightly wider and the top section now gained an attractive V-shaped lower edge.

All minor fittings remained the same although door handles became similar to those on the Velox and Kington bodies. The front mud-guards reverted to the raked back style, and headlights and side-lights were now Lucas. One spare wheel was normally fitted into the near-side guard. A second spare could be fitted on request. Tools, including a hub puller, jack and handle were supplied. In general the car resembled a scaled down 23/60, thus continuing the remarkable "family" likeness.

Performance was notably improved, although the car was slightly heavier, now about 23 cwt. It could comfortably reach 65 mph and cruise at 50 mph, well above average for its class. The better aspirated motor could spin up to about 3500 r.p.m. which meant that 50 mph in third gear was possible. It is noted that each speed of the intermediate gears at the same engine speed is about two-thirds of the next gear, a relation also found on the 0E's and the OD's, thus giving a versatile range for any condition. Fuel economy, road holding and ride remained the same.

The company began to step up production rate and by the end of 1925 about 1300 had been built. The price in 1925 was £595. During this time a couple of small changes had been affected. The clutch was redesigned, from about chassis no.2651 onwards. The linings were now not fixed to the flywheel and pressure plate, but to each side of the centre clutch plate. The plate was slotted into twelve segments, each alternatively bent outwards to provide smoother engaging, and linings then fixed to the segments.

In November 1925, General Motors took control of the company, and although no sweeping changes were made, it is possible that they instrumented the third phase of the model. This occurred during the early months of 1926. Although the chassis remained similar, the Princeton body was altered. The high bonnet fashion was beginning to gain favour and so the radiator was made 2 1/2" taller. The body followed suit, but to compensate, the windscreen was made shorter by about the same amount. The chassis numbers were about LM2750 or perhaps a little earlier.

Certain other minor changes came also. Two cast aluminium brackets were now bolted to the inside of the bulkhead to support the dashboard, the right hand one also being used to support the bush for the steering shaft. The aluminium dashboard was discarded for a flat timber veneered board of greater depth, and containing two side compartments but otherwise similar instruments. A ventilated tool box now appeared on the running board.

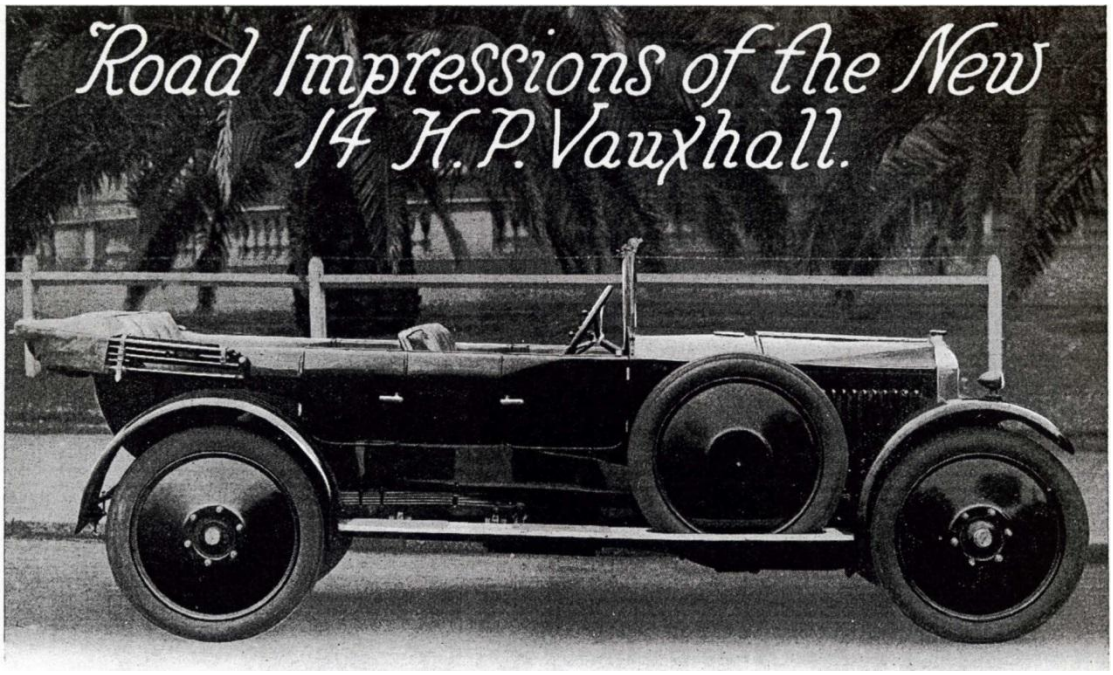
The car was road-tested by "Autocar", February 1926, and here they described the new tubular front axle, designed for the front braking system. It is probable that the new axle appeared at this time. With it came underslung front springs and a change in shackle design for the rear springs.

An eccentric-type oil pump was added to the timing cover on chassis no. LM3451. At the same time a redesigned oil pressure relief valve was fitted. A little later on, at LM3950, a non-return ball valve was fitted to the main oil pump, thus improving oil pressure.

At LM 4350 the capacity of the petrol tank was increased from 10 gallons to 12 gallons, and at LM4750 a different type of switch-box was used, the cut-out switch now being separate. Cast iron pistons were sometimes fitted, probably to the motors exported to Australia after LM 4716.

By this time General Motors were exporting chassis in C.K.D. condition to Australia and were sent to various agents for assembly and new bodies. The body builders, notably Holden & Flood, generally copied the shape, but were now constructed partly of steel. Fittings and trim never matched the standards of the "works" bodies and some later bodies had steel "steer-horned" single piece windscreens, thus ending the by now almost unique Vauxhall characteristic, the straight sided vertical windscreen. There were some interesting bodies built, however, Lindsay and Carey constructed a compromise in width between the M and LM, retaining the low radiator. The whole was of aluminium, but fittings and trim were to normal Australian-American standards. By now production had reached a peak and costs began to drop. In 1926 the price was about £550 and finally in 1927, it fell to £495. It is probable that no chassis were built after 1926, with the coming introduction of the R-type. There had been 3517 LM's built, making a total of about 5500 in total.

During the War a great number were scrapped for aluminium, and it is believed that only about 30 remain in England. However, many more have survived in Australia, particularly the third phase with Australian-built bodies.



SPECIAL NOTE TO READERS: The cars whose road performances are reviewed upon this page from time to time are placed in our hands by the respective Agents on the understanding that we shall be free to make such tests as we wish, and that the critique which ensues shall be unbiassed by consideration of support received in the advertising columns of this journal. The ready co-operation of the agents has been particularly pleasing, while the following is typical of many comments which have reached us from readers since the publication of the first of the series in the last number. "I am glad you are giving Road Impressions of new vehicles. We in the country could never hope to keep in touch if not for such a Journal as yours."

Considerable interest attaches to the new addition to the Vauxhall line - the 14 h.p. model.

This car is priced in Sydney at £800, being £400 below the price of the next highest powered model of the same make. The car, which we were afforded the opportunity of trying out, was the first to be landed, and had covered its first hundred miles at the time the test was made.

The aim of the makers has been to reduce weight, and steel and aluminium alloys have been used extensively with this object in view. The weight of the chassis is 15 cwt., and the complete car 21 cwt. The engine is of 4 cylinders, cast en bloc, the bore being 75 mm, and the stroke 130 mm. The detachable cylinder head is of aluminium. The induction pipe is heated from the exhaust. A novel feature is provided in the placing of the exhaust pipe, which dips at the front end of the engine, well away from the front seat footboards. The pistons are of aluminium alloy. All electrical fittings are on the opposite side of the engine to the exhaust. Ignition is by high tension Simm's magneto.

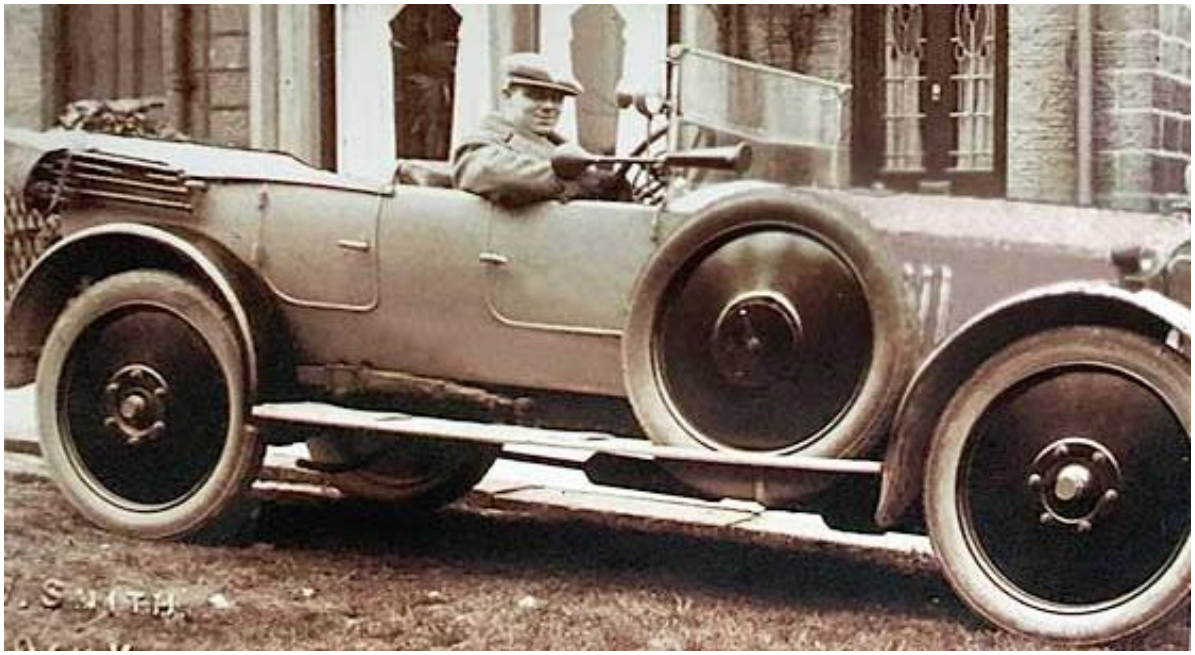
The carburettor is a Zenith, larger than usual. Autovac Feed system is employed. Lubrication is by plunger pump and filter. The clutch is a light single plate entirely enclosed in the fly wheel.

A departure from usual Vauxhall practice appears in the gearbox which has three forward speeds against the customary four.

The top gear ratio is 4.5 to 1; second gear 7.67, and first 15.8. The wheelbase is 114 inches, and the track 54 inches.

Viewed on the road the car conforms to the general lines of the Vauxhalls. The radiator is of the shape which has characterised past models. The line from radiator cap to the base of the windshield shows very little rise, and continuing to the back of the rear seat almost a straight line is preserved. The effect is a low set appearance, which is accentuated by the comparatively shallow depth of the doors. There are four of these, the one on the driver's side opening clear of the spare wheel. The appearance of the seats is novel, the backs of both resembling the back of the seats most favoured on suburban railways. With the seats themselves set low the support to the back thus extends particularly high. There is storage space under both cushions of the front seat. Beneath the driver the tyre jack is stored. The back of the front seat moves out and lifts (being hinged at the top), disclosing space for rugs. Similarly, behind the back cushions of the rear seat there is space designed for the holding of the side curtains when not in use, and a compartment for spare tubes.

Those tools most resorted to, such as spanners, are stored beneath the door-flap of the left-hand front door. Each tool has its holder, and, lying flatly against the inside of the doors, permits the flap to be brought over and clipped down without bulging. The other tools are contained in a "foot-rest tool-box" in the tonneau.



The hood folds back to the line of the body when down. The side curtains, when fitted, open with the doors.

The battery-box and spare tyre are accommodated towards the fore part of the running board, on the near and driver's sides respectively. The wheels are steel disc detachable, 815 x 105 mm. The petrol tank of ten gallons capacity is in the rear.

On taking the driver's seat it is noticed that the steering wheel is of large diameter, with spark and throttle controls; the electric horn button is on the edge of the side panel, just past the door; the instrument board is of polished aluminium, with the faces of all indicators set flush. The wind-shield is perpendicular, of two panes, the lower being fixed to the cowl deck and immovable. It may be argued that the ventilator in the cowl provides sufficient air to the leg-spaces of the front seat; but for our part we should have preferred both panes adjustable. The speedometer is of French make, with a pointer which jumps instantly from mile mark to mile mark with changing speeds. The car is termed a four-seater, and allows comfortable room for that number. At a pinch, it would be possible to accommodate three lightly built people in the tonneau.

The car was taken on a lengthy run extending over 100 miles, the petrol tank being full at the start. The outstanding impressions at the end of the run were of a quick flow of power and a remarkable steadiness on the road despite the general lightness of the car. The springing is semi-elliptic in front, and long cantilevers at the rear. The latter are bolted to the extreme ends of the back axle, the wide spacing being apparently a material factor in keeping the car steady on the road. These road-holding abilities were tried at several places where it was thought the tendency would be for the back wheels to skid around, but in every case the car ran around with all wheels holding. This steadiness contributes also to the impression of power, the driver's idea of travelling speed several times being much below that shown on reference to the speedometer.

The controls are smooth. The steering is very sensitive, and the footbrake brings the car up quickly and without a jerk by hardly more than the weight of the foot. The handbrake has a long shank which brings it close to the right knee for instant operation.

The car performed with as little vibration at 40 as at 20 miles an hour; indeed, with the steadiness on the road already commented upon, and the certainty of smooth braking, 40 was no more than a comfortable touring speed.

The highest speed obtained on a suitable stretch was 58 mph. The highest speed on second gear was 39 mph. The latter gear is comparatively quiet in operation, there being no suggestion of laboured friction on that gear. The engine was throttled down to seven miles an hour on top.

Tests of acceleration were made as follows:-

On Top Gear: From 10 mph to 30 mph in 14 1/2 seconds.

On Second Gear: From 10 mph to 30 mph in 10 seconds exactly.

On First and Second Gears: From 10 mph to 30 mph in 8 1/2 seconds.

These timings were carefully made by stop-watch, and afford an indication of the accelerative power of the car.

Returning to the city, the car was taken out towards South Head, the following performances were noted:

Convent Hill (on Watson's Bay tramline, beyond Rose Bay): Taken in top gear, speedometer never below 20 mph.

Facing back to the city, the tramline was left opposite the Rose Bay Jetty, and the ascent made up Cranbrook Road to Victoria Road and back onto the tram line. This is a road of good asphalt surface but of particularly steep and sustained gradient.

The car went about three-quarters the way up on top, the change into second made at 15 mph, and the top of the grade was reached at 30 mph.

Double Bay to Edgecliff P.O. Hill: Started at 20 mph, accelerated on the hill up to 28 mph, and finished at 23 mph - all on top.

Woolcott Street Hill: The tram sheds were passed at 25 mph, the speed mounted to 30 mph, and the top of Woolcott Street reached at 23 mph - a top gear climb

A careful checking of petrol at the conclusion of the run showed the average to be slightly in excess of 26 miles to the gallon. The engine was used during the whole of the running.

The test of this car leaves the conviction that the best British traditions have been maintained in the entry of the Vauxhall people into a lower-price zone than they have previously exploited, and the results of the tests show again how misleading to the colonial mind is the R.A.C. horse-power rating. It is given as 14 in this case. The car is said to develop 45 on the brake test.

Wilson Pre-selector Gearbox and Fluid Flywheel

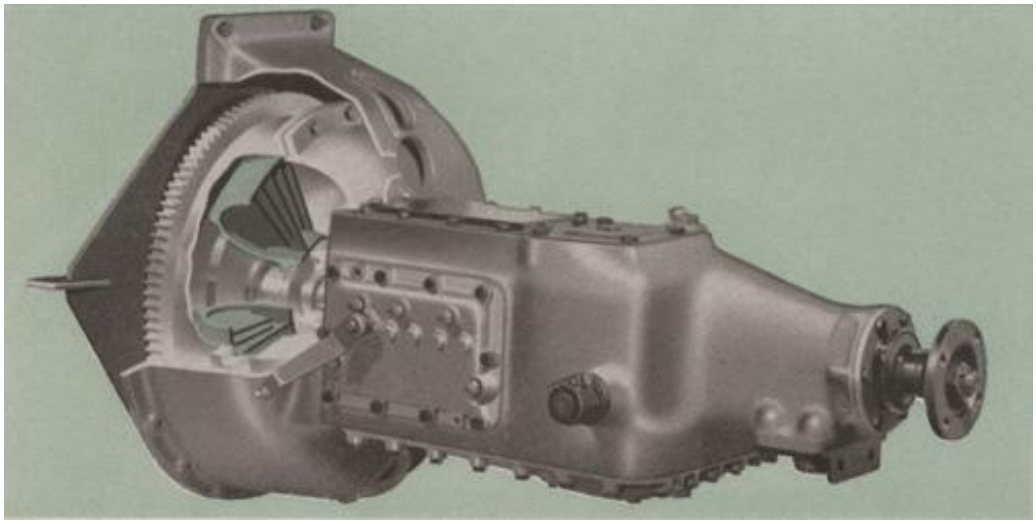
Walter Gordon Wilson had been working with epicyclic gearboxes since World War I and was involved in the development of the armoured Tank. Work on epicyclics led to him developing his 'Wilson Gearbox' which he tested in his own Vauxhall 14/40. When he showed the innovative gearbox to Vauxhall in 1926, they bought the patent rights.

Compared with the contemporary (non-synchromesh) 'crash', manual transmissions, the pre-selector gearbox was easier for drivers to operate smoothly, since they did not have to learn techniques such as double declutching. It also had faster shift times, could handle greater power outputs, had less mass and could shift under load. The driver, pre-selected the next gear using a lever mounted near the steering wheel, then pressed the 'gear change pedal' (often located in place of the usual clutch pedal) to activate the gearchange at the desired time.

However Vauxhall's new owners General Motors shelved the Wilson design, as they wanted to promote their own synchromesh easy-change system. Also the preselector system was expensive, and very few were ever fitted to 14/40's.

Wilson contacted John Siddeley (Lord Kenilworth – MD of Armstrong Siddeley) to help get his patents back. Siddeley was an astute businessman and could see the value of Wilson's invention for his own cars and, after an out of court settlement with General Motors, the patents were restored to Wilson. At the London Motor Show in October 1928 car maker Armstrong Siddeley unveiled their new 12 hp six-cylinder model with a *'pre-selective'* gearbox or *'self-changing gear'*, available as an option.

Wilson and Siddeley (as joint managing directors) setup a new company, Improved Gears on 28 December 1928 and they granted licenses to Daimler, Riley and Talbot Lago to manufacture pre-selector or epicyclic gearboxes. Having been granted a licence, Daimler adopted and adapted the design and introduced them to their range of cars in 1930.

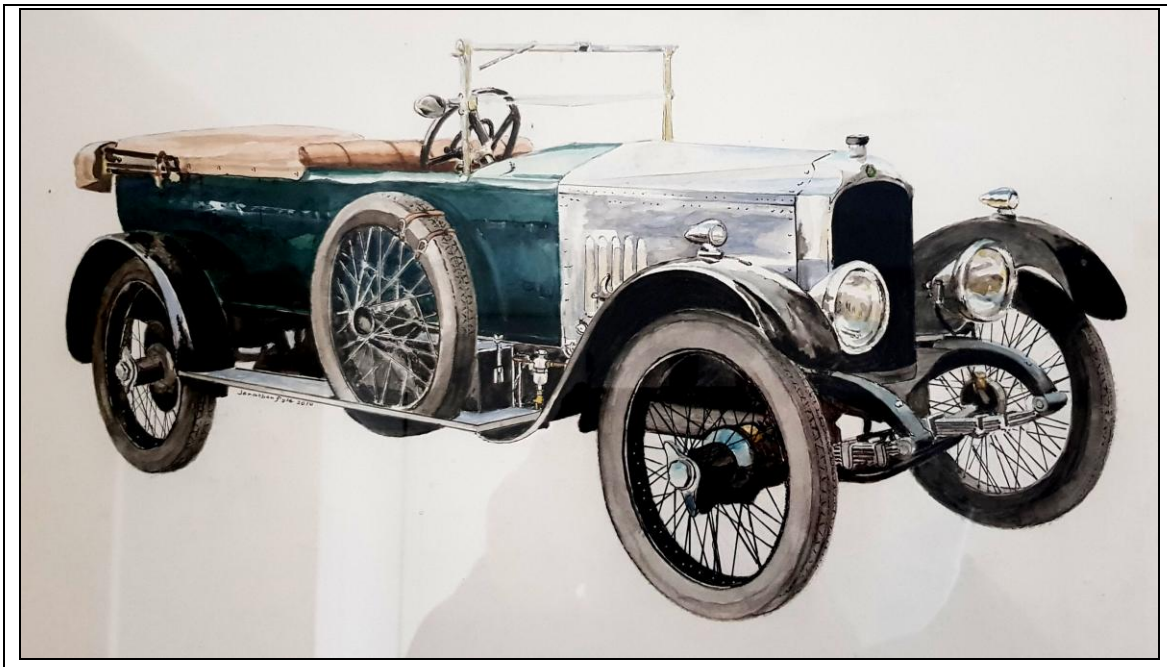


The Vauxhall parts depicted in the photograph below were left behind in Fairy Meadow by a young 17 year old David Stuart when he purchased Evan Quarmby's 23-60 OD1072 in 1962 that at the time was languishing on a vacant block of land. A few years ago Evan was given the parts by a nephew of the owner of the 23-60, the parts were in a shed still on the block of land where I retrieved the Vauxhall from.

These parts were obviously removed from the car for safe keeping as it lay in the paddock and some of them will go back on the 23-60 during its restoration by Evan.

The photograph below was taken when Richard Walton, Murray McDonogh and David Stuart visited Pat Ryan on our return to Sydney from the Bendigo swap meet in 2015. We went out for pub lunch with Pat and he had three of his cars ready for us to drive. Richard in Pat's supercharged MG TC, Murray was in OE91 and I was with Pat in the D Type TT special. On the way back to Pat's workshop following lunch we stopped on the side of the road so Pat could take this photograph.

When I was in South Australia last year I visited Ral Rainsford and was impressed with a drawing hanging on the wall Ral had done of D2965 when he owned it. Unfortunately the photograph was taken on my phone and doesn't do justice to the drawing as the colours are a little washed out. However I think you will agree the artist got it right with the drawing and could obviously draw old cars especially with wire wheels. Ral told me it was done from a photograph and was not overly expensive. For those with a keen eye you will notice the hood was fitted incorrectly to the car as it was upside down This was done as fitted correctly the hood rubbed on the rear of the body as one of the bows had been shortened.



D2965

The photograph below was taken in 1985 of Team Vauxhall at the Amaroo Race Circuit near Sydney.

14-40 LM4786 – OD966 – OD689 – A11.487 – OE116 – OD730 – OD1303 - OE95 – OE279

The photograph below is of the line up for the Le Mans start. Some of the drivers seem to be still running for their cars though most of them are onboard. Also in the line up was Black Bess OE108 (Chris Herbert entering from near side with his hand on driver's side of the body) which somehow missed being in the above photograph.

Amaroo race circuit in 1985

Below is the continuation of Mike Hipkins article on wheel shimmy.

E. Slack Inspection and Correction Methods

(f) Shock Absorbers (continued)

- Much has been said and written about setting shock absorbers - usually by off-the-car methods to set a theoretical torque resistance. I favour an on-the-car method which is described in a separate note.

- As part of the over-all wobble investigation, it is best to just tighten the shockers and road test to see if that makes a difference to wobble tendencies. Run over some rough road and judge the "feeling". If axle seems to move too freely, tighten the shockers and try again. If you over-tighten, the road roughness will feel very hard, so slack off a little.

- The friction discs in the shock absorbers can be damaged, so dismantling them might be worthwhile. Originally they were of greased timber but replacements can be of all sorts of materials.

(g) Chassis and Springs

- Very likely locations for slack are the four bolt clamps of the front axle to each spring. If you see rust at the bottom of the spring, the clamping is loose.

- Check by tightening all 8 nuts very well. This is not always easy as access to the nuts restricts the type of spanner or socket that will fit. If the bolts are to the original design, they have no hex heads to prevent them turning when tightening. To stop this, firmly clamp the shafts of the bolts with a vice grip. A second vice grip might even be needed.

- The rear shackle pins and bushes might be worn. However, it is not always easy to detect this. With wheels on the ground, try to shake the whole car sideways and observe for any side movement of shackles.

- With car jacked up, grab top of wheels and "shake" sideways.

- Check the bolts or rivets holding the top shackle block to the underside of the chassis rail. Tighten nuts, but if riveted loose replacement with bolts will be needed.

- Check that the chassis cross member under the radiator is firmly riveted or bolted. Check and tighten if bolted. Replace rivets if necessary.

- This member often suffers corrosion from leaky radiators and can be near to structural failure. This can only really be checked by removing the radiator but have a good look from all sides. Replacement or strengthening is a major task.

- Similarly, the cross member between dumb irons and supporting the kidney box can have loose rivets or bolts holding it to the chassis; this should be corrected.

E. Slack Inspection and Correction Methods (continued)

(h) Steering Dampers

Over the years, many damping devices have been fitted to control wheel wobble. Usually they are of the hydraulic shock-absorber type but friction dampers based on Hartford shock absorbers have also been used in some makes of cars.

Dampers are sometimes successful in controlling wheel wobble but really they are akin to treating the symptoms rather than the disease. They also usually make the steering feel heavier than usual or desired.

The only easily-made check/inspection is of the mountings between the front axle beam and the track rod. They are usually of the clamping type. As they take the full force of wobble they are easily shaken loose.

Friction dampers can probably be tightened, but check that steering is not too heavy.

F. TACKLING STEERING GEOMETRY

If all the work on finding and eliminating slack has been successful in controlling wheel wobble, the need to check and adjust the various aspects of steering geometry is reduced. However, getting the settings near to right can improve general steering and road-holding performance.

The first problem is to establish the existing geometry. Years ago, most good automotive garages could do a range of tests; unfortunately, it is now difficult to find anyone to check beam axles. The second problem is that making changes can involve anything from dismantling to significant structural changes.

Start with the ones a reasonably skilled car owner can tackle, which are toe-in and castor angle.

I believe that a significantly incorrect toe-in can contribute to wheel wobble so best get it right.

(a) Toe-In

1. Measurement

First, line up the wheels in the straight-ahead position. One needs a device to be able to measure the distance between the front wheel rims, at stub axle level, at the front and rear. Such devices can be borrowed from other enthusiasts but a simple one can be made with a length of timber or steel carefully cut to fit exactly between the rims at the front. Then move the rod to the rear of the rims and measure the gap with pieces of steel of known thickness and/or feeler gauges.

For Vauxhalls, Archer says the gap should be 5/32" to 3/16" for 21" wheels. If there is no gap, you have toe-out.

F. Tackling Steering Geometry
(a) Toe-In (continued)

2. Adjustments

Changing the gap is relatively easy if you have a track rod with threaded sections to adjust its length. However, most 30-98s and 23-60s have a fixed distance between the end ball joints. To adjust, undo the end cap at one end and determine whether there is a short, strong spring between the end cap and the outer ball cup. I favour the version of joint without a spring but that is another subject not to be covered here. The joint comprises an outer cup with spherical face, the ball on the steering arm and an inner cup with spherical face.

If the measured toe-in gap is not sufficient, the effective length of the track rod has to be increased. To do this, the inner ball cup has to be withdrawn. Unfortunately, this might not be easy. A strong magnet might do it. Other options are to drill a small hole "behind" the cup and, with a small spike, try to lever it out. Once loosened, the magnet might work. Otherwise, try the other end - its cup might come out. If not, remove the track rod and thump it end-on on a block of wood. Finally, apply some heat to the outside of he track rod and thump some more to free the cup.

As an example, if the increase in toe-in needed is, say, 1/8" (0.125"), a washer shim needs to be added behind the inner cup. Its OD must be a close fit to the ID of the tube, as the shoulder inside the track rod tube is usually rather small. The thickness of the washer must be less than 0.125" because the distance from the swivel centre to the ball end of the steering arm (call it A) is less than the distance from swivel to the rim (call it B). The difference depends on the wheel rim diameter in use. The washer needed should then be A/B x 0.125" thick.

3. Reassembly

Replace the inner cup, insert the ball end of the steering arm and check that there is still clearance between the shank above the ball and the hole in the end of the track rod. If not, remove ball and file (with difficulty) the side of the hole. Reassemble the whole joint and recheck the resulting toe-in; hopefully, it is suitable.

4. Excessive Toe-In

Now, if you find that you have excessive toe-in and a "fixed length" track rod and no pre-existing shim behind the inner cup, the track rod is too long; it is probably because the left or right steering arm has been damaged. There are options for dealing with this but the best is to very slightly bend one or both steering arms. I have no experience of this problem but consulting a truck axle expert could be a good start.

If there are already shims behind the inner cups at either end remove same until the measured toe-in is right..

F. Tackling Steering Geometry (continued)

(b) Castor Angle

1. Measurements

Measuring the existing angle and aiming to achieve the theoretically original correct angle is a waste of time, energy and money because there are so many factors that, over the years, have almost certainly changed. They include axle damage and repair, spring settings front and rear, wheel and tyre sizes and, of course, the presence or absence of wedges between the front axle spring pads and the underside of springs.

I have never attempted to measure existing actual castor angles but I'm told that it is not that easy to get it right.

There is, however, an exception in that measuring or attempting to measure the castor angles for left and right long pins/swivels can reveal that they are not the same due to some distortion of the axle beam. If the differences are significant, consult the truck axle experts.

Establishing appropriate castor angles, assuming there are no axle distortions, is best done by road test assessments and, dare I say it, trial and error adjustments.

2. Wander

If after the slack adjustments (Section E above) there is steering "wander" when cruising out on the open road, there is probably need for increasing the castor angle. On the other hand, if steering is heavy, the castor angle might be too much. However, heavy steering can be due to many other factors, not just castor angle. However, some experiments with reduced angle wedges might be worth doing. If reducing wedge angles promotes wander, then you have over-reduced.

If there is already wander on the road, first check to see if there are any wedges fitted. If so, is the thick end to the front or rear? With springs above the axle thick ends to the rear increases castor angle.

If there are wedges with thick end to the front and you have wander, loosen the four bolts clamping each spring and jack up the springs to remove the wedges. Retighten bolts and road test to assess tendency to wander or heavy steering.

If still some tendency for wander, a 1° wedge thick end to rear could be worth trying. However, if there is excessive steering box slack/steering wheel movement, eliminating wander might be more difficult.

If there are already wedges with thick ends to the rear, take them out and see if its degrees of taper are shown in casting or by stamping. If 2° or under, then replacing with 2½° or 3° wedges might correct wander. Some cars, other than Vauxhalls, can require 4° or even 5° wedges

F. Tackling Steering Geometry
(b) Castor Angle (continued)

3. Heavy Steering

If steering is rather heavy, a reduction in castor angle could be helpful. It is best to try gradual changes in wedge angles with road testing in between. The change from heavy to wander might take only half a degree change in wedges.

4. Wedge Suppliers

It is becoming hard to find a supplier of wedges at reasonable prices :

- ARB 4 x 4 Accessories seem to be getting out of wedge supplies,
- ARCHM Industries Ph. 03 9720 3397, recently found on line, could be a starting point,
- E-Bay is worth a try,
  Ask around, someone might have some spares.

(c) Camber

Camber is the angle, looking at the front, that the outer near vertical face of the wheel is to the ground. The Vauxhall Standard is 86½° (see attached drawing). Taking a look square-on at the front of the car, it is often fairly obvious whether one side has more camber than the other. The appearance should be that the wheels look to be further apart at the top than the bottom. For Vauxhalls the angles are not extreme but some vintage, particularly light, cars have and should have pronounced camber.

It is not too hard to measure camber. Two methods suggested are: first, fix two lengths of wood, steel or aluminium with bolt and wing nut to clamp near their ends Place horizontal one on ground and vertical one against the tyre top and bottom (avoiding the wheel centre nut). Clamp the bolt tight and measure the angle with a protractor.

Alternatively, use a plumbob and measure distances to top and bottom rims and then do a trigonometry calculation.

Having said all this, I don't know whether camber or uneven camber has any effect on wheel wobble. Some say it has.

Unfortunately, to change the camber one has to bend the axle beam. Owners have been known to do this on some cars but seeking help would be a good idea.

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F. Tackling Steering Geometry (continued)

(d) Scrubbing Distance

Please note that at this time I have little evidence that scrubbing distance settings affect wheel wobble. However, I have recently found the book "Chassis Design", on which there are some further comments in "H" below. I include scrubbing distance in this Note only because I am hoping that someone will find out whether it can affect wheel wobble or not.

1) Vauxhall Setting

By scaling from Vauxhall Drawing No. 1370 (copy attached) for braked axles with beaded-edge tyres, the tyre centre is about 7/8" outside the extended swivel-pin line. This distance is increased if the tyre diameter is decreased. The diameters of Vauxhall standard BE820x120 tyres and well-based 500x21 tyres are similar, so it would take more radical change to effect scrubbing distance. Factors affecting the settings are noted below.

(2) King Pin Inclination

The king pin inclination is also shown on the attached drawing. Looking at the front of the car, the king pins can be seen to be angled further apart at the top than at the bottom. Vauxhall Drawing No. 1370 shows the angle to the ground to be 83°30' and makes it clear that the scrubbing distance is also determined by camber angle.

(3) Measuring Scrubbing

Getting a good approximation of the distance is not too hard. Jack the wheel up and rub a little oil over the width of the tyre tread in its contact area with the ground. Slip in a sheet of paper, fix it to the ground with tape so it does not move. Lower the wheel, then raise again to see the oily print on the paper.

Remove the wheel and lower the chassis to running height. Then, with a straight-edge line it up, as best judged, with the inclination of the centre axis of the swivel/king pin joint. Mark on the paper where the end of the straight-edge axis line touches the paper. Having a second opinion on alignment could help.

The scrubbing distance is the distance on the paper between the extended king pin line and the tyre centre, albeit relying on the judgment of the king pin inclination. Now try the other wheel to see if there is a difference.

(4) Wheel Centre to Rim Off-Set

In a set of wheels, the rims off-set of rims to wheel centres might vary. Scrubbing distances are directly set by the off-set. The off-sets can be measured with a short straight-edge across the inner rim diameter as the distance to the back of the wheel centre flange measured with a steel rule.

If one comes to any conclusion about the need to alter scrubbing distance in order to correct wheel wobble, it might be possible to select wheels with particular off-sets for the front axle or to have wheel builders alter the off-set to a nominated off-set.

F. Tackling Steering Geometry
(d) Scrubbing Distance (continued)

(5) Wheel/Tyre Diameter

The original Vauxhall tyre sizes were BE 820/120 or 32 x 4.5 which give a similar effective rolling radii of about 16".

If the wheels are changed to 21" with 21 x 5.50 tyres, the rolling radius is reduced slightly to about 15.0" and the scrubbing distance will be increased slightly. Whether this has any effect on wobble I do not know but it seems likely that it would make steering heavier. Cars with BE tyres always seem to have lighter steering and this might be related to scrubbing distance as well as higher tyre pressures or the absence of front brakes.

G. CONCLUSIONS

To control wheel wobble :

- Clearly, the wheels should be balanced and the shock absorbers should be effective and tyre pressures right to high.
- Next, look for and correct slack as it is not too hard to do for many locations and is a highly likely cause of wobble problems.
- Slack corrections at steering box and swivel joints require dismantling and can be expensive.
- If wobble persists, look to applying some damping at joints.
- Tackling steering axle geometry corrections can be difficult and expensive but is necessary for good steering and performance.
- The last resort is to fit an hydraulic or friction damper between the beam axle and the track rod.

H. THE BOOK "CHASSIS DESIGN"

The full name of the book is "Chassis Design - Principles and Analysis". It was published in 2002 and written by W.F. & D.L. Milliken but based on notes by Maurice Olley.

I do not know much of Olley but it seems he was a highly respected automotive engineer who carried out many experiments when with Rolls Royce in the 1920s and Chevrolet in the 1930s, thus covering the period of development from beam axles to independent front suspensions. The book is highly technical and wheel wobble is only a small section of the scope covered.

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H. The Book "Chassis Design" (continued)

Olley describes several forms of front wheel instability including :

- shimmy;
- castor wobble;
- wheel hop;
- axle tramp;
- tyre scrub;
- wheel fight;
- brake hop.

They all have their own causes and characteristics and some are more applicable to IFSs than beam axles. The cures described are mainly modifications to the design of various front end components rather than dealing with the matters considered above.

The book also deals with refinements such as changing the size and moment of inertia of the steering wheel or the diameter of the steering column shaft but all based on experiments and tests. These highly sophisticated enterprises are not of a great deal of use to us fifty to one hundred years later.

However, there is mention of slack and much on damping. In particular increasing king-pin friction (damping) is advocated as is the importance of effective shock absorbers.

The castor angle discussion is mainly for IFS cars but the implication is that increasing the angle is beneficial. Also that toe-out in IFS cars can help. However, the gem from my point of view is the brief comment "...scrub damping tends to oppose wheel fight torque about king pins". Unfortunately it seems that no experiments on this were carried out.

The photograph below was taken in the high country of N.S.W. a few years ago now and was near Lake Crackenback when a number of us regularly used to go away in the cars between Christmas and New Year.

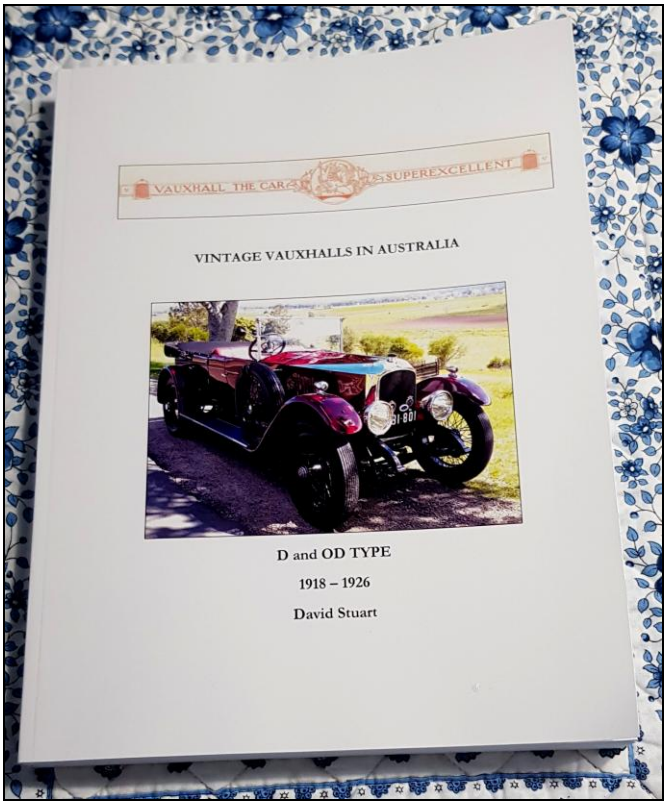
Vauxhalls in the high country at Lake Crackenback

Mark 2 Jaguar - Lancia Lambda - OE53 – OD793 – OD961 and OD494

Phil Jelfs from New Zealand had a lucky break recently when he went out to look at a Sunbeam radiator he was interested in and lo and behold there was also a D Type radiator there as well. The Vauxhall radiator had been put in the shed in the 50's and lay there all that time until purchased by Phil.

Phil is not interested in selling the radiator as it will go with other D Type parts he has to complete another car.

FOR SALES



The book I have written titled "Vintage Vauxhalls in Australia" is a record of all D Type and 23-60 Vauxhalls we know of that came new to Australia. The book is 413 pages and includes articles on the remaining cars we know of with many current photographs of the cars as well as their history and period photographs. The book also includes period photographs of unknown cars that have long gone though some of them we were able to identify the owners however not the chassis numbers.

The money from the sales of the book is going to The Veteran and Vintage Vauxhall Register and for this purpose an account has been opened for the Register. Peter Weir, Phil Virgona and myself are signatories to the account and the money will be used to maintain the Veteran and Vintage Vauxhall Register website as well as Vauxhall related events.

If you would like a copy of the book I have attached an order form to the email for you to fill out and email to me. The cost of the book is $90.00 per copy plus postage in a padded bag to anywhere in Australia is $15.00. If I receive orders for more than one book then a quote from the post office will be obtained and you will be informed of the postage cost prior to making payment. Postage cost for overseas orders can be obtained and this information supplied prior to payment.

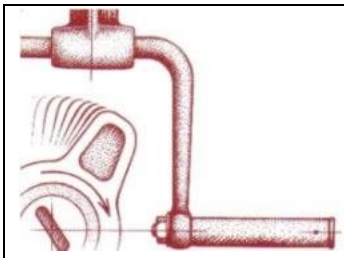
I also have a collection of Smiths clocks and speedos as per the photograph below. Most of them work however some will need servicing and cleaning. There are quite a lot of the same models to pick from so you should be able to match up a clock and speedo that match up in patina. A few are black faced with the majority silver faced.

They are all $150.00ea with the exception of the rim wind clocks that are $200 each.

Let me know if there is anything there you would like to purchase or have a better photograph taken.

You can ring me on mob 04282823260……Dave.

Bud Smith from Brisbane recently advised me that his 14-40 Vauxhall has sold and has gone to Adelaide. Bud sold the 14-40 LM5167 to make room for Greg Mackie's 23-60 OD592.



CRANK START ENGINEERING

John Kent - e-mail: jken3849@gmail.com

CRANKSTART ENGINEERING **John Kent (w) 03 5798 3053**

Parts - not exhaustive

Blade drive couplings for D, E, early OD and OE.

Bottom Water Elbow castings in alloy.

Head Gaskets - pending for OD and OE.

Timing chain conversion to roller chain for D, E, OD and OE models.

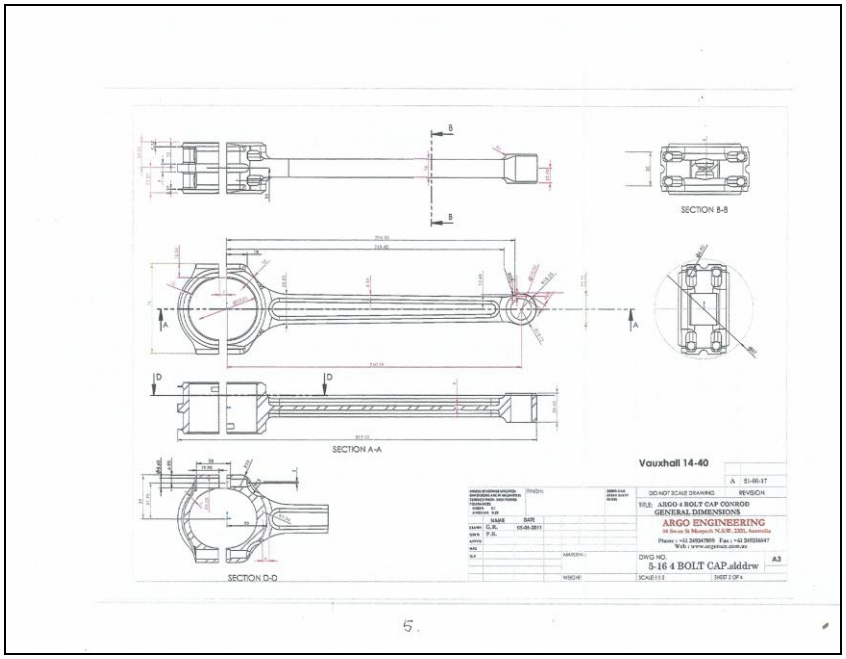
OE Cylinder Heads.

OE exhaust manifolds.

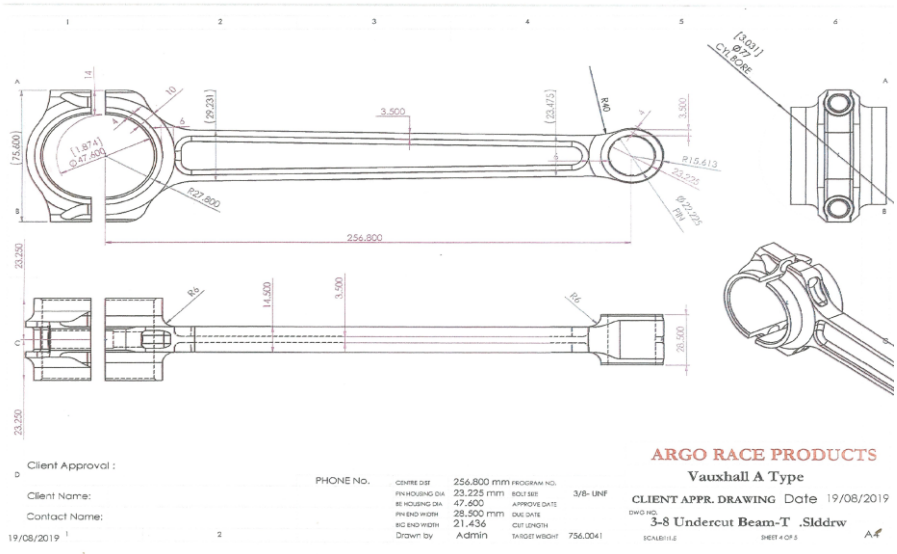
Services

All aspects of restorations and maintenance including sub assemblies.

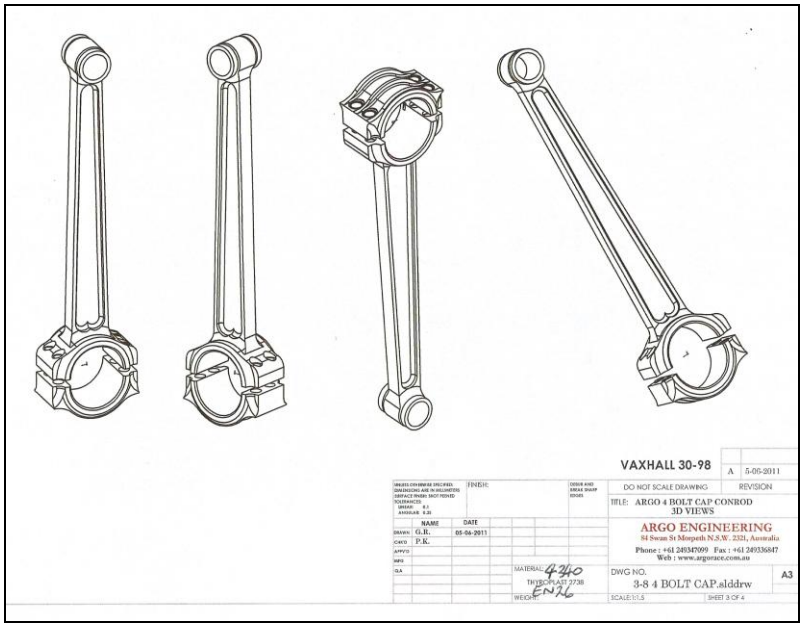
ARGO ENGINEERING – 84 Swan Street, Morpeth N.S.W. Phil and Adam Ph 02 49347099



14-40 Conrod



A Type conrod



30-98/23-60 conrod

For enquiries or placement of orders for new steel conrods direct contact on the above phone number to either Phil or Adam is required. You will need to discuss whether the rods are to be machined for poured or slipper bearings – they can do both.

From Leigh Whitfield.

The tourer at the bottom of page 9 of the April newsletter is one of the "Improved" late 1928/early 1929 75mm bore 20/60 R Types.

Murray McDonogh from the A.C.T. recently purchased his third 30-98 with OE112/OE13 from Rodney Henderson. The engine in this car was from OE13 the oldest known OE 30-98 to have come to Australia.

Murray took the photograph below of OE112 in the driveway at Rodney's home in Annandale prior to loading onto the tilt tray.

Rodney in OE112

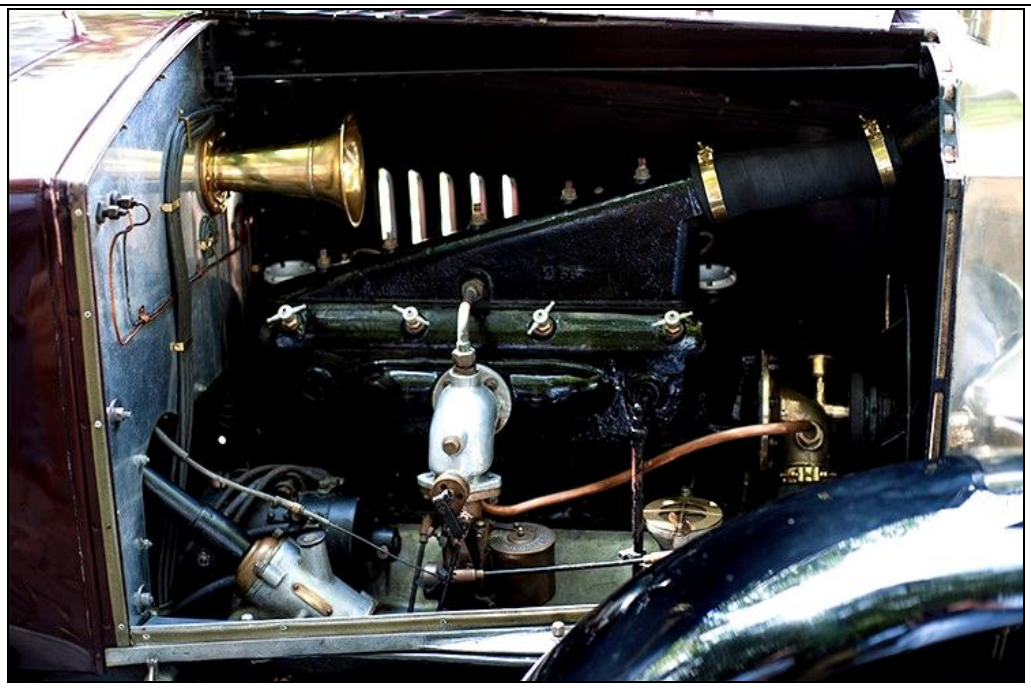
With the purchase of OE112 Murray will now sell his D Type chassis D3190 engine D3337A. Since he bought the D Type Murray has fitted new valves, valve springs and guides as well as having the cam followers overhauled. The car has actually done very little mileage since it was restored in South Australia by the previous owner.

It is a lovely example of a D Type in very nice patina with all the correct instruments and fittings.

Murray is asking $95,000 for the car.

Contact Murray direct on mobile: 0412774351

D3190



D3337A engine off side

D 3190 dashboard

With the recent passing of David Vinall his 30-98 OE238 is being sold and is now available for immediate purchase. The car is in Adelaide and is a lovely example of a late model 30-98 with a long history dating back to the 1940's with the V.S.C.C.A. I have set out below what is known of the car's owners. $350,000.00 firm.

OE238

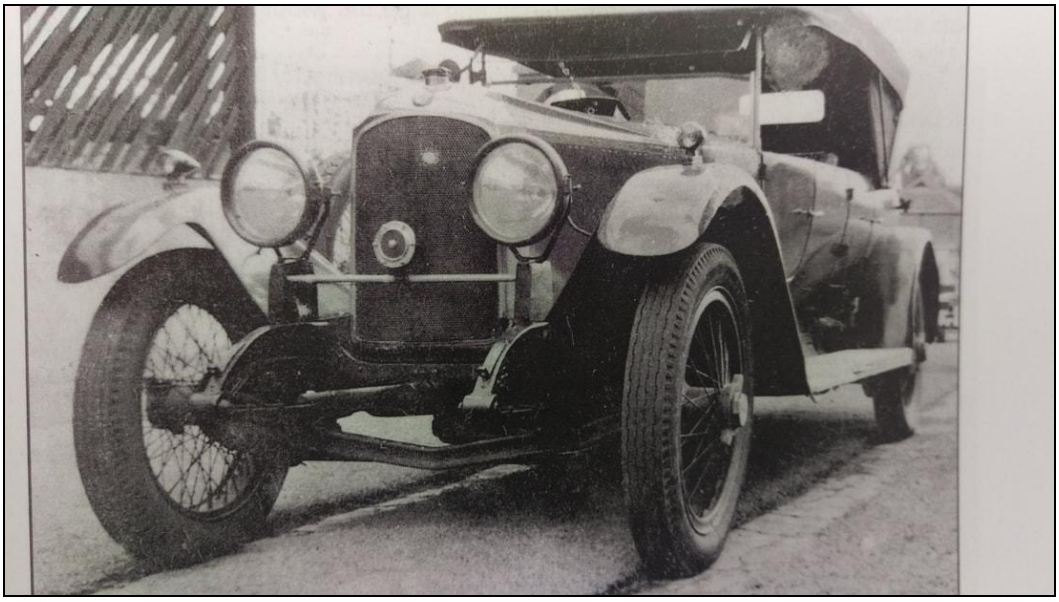
There are some spare parts as depicted in the photograph below and these will be sold separately with enquiries to Phillip.

If you are interested in viewing the car or the parts please contact Phillip Levi on mobile 0499147911 or email edlee@iinet.net.au

The 30-98 Register has the previous owners as : Jack Jeffrey, John Crouch, Frank Dent, Harry Thompsett (1947) Laurie Vinall, David Vinall 2022. John Crouch was unable to supply any history of the car prior to it being purchased by Jack Jeffrey. Jeffrey, Crouch, Dent and Thompsett were all early members of the V.S.C.C.A.

Barry Morris (OD231) from Queensland emailed to advise he is now the owner of OD599 that had languished untouched in Ben Boothby's garage in Brisbane for the past 45 – 50 years. Ben purchased the car in a dismantled condition and it remained that way until picked up by Barry. On first inspection Barry has found the body timber work to be remarkably preserved and in general the body skin and guards in good condition. There also appears little wear in the gearbox or pinion to the diff. Barry intends to cobble it back together with a repaint of the body and guards and see how it presents in an oily rag finish.

Below is a photograph of the car when all together many years ago possibly in the 1940 – 50's.



OD599

In a coming newsletter I will reprint an article on the car written by Peter Jackson who sold the car to Ben Boothy. The 23-60 was affectionately known as Fifi. Peter dismantled the car in the 60's to be restored however he moved to Sydney and it was in boxes when he sold it and as it remained until picked up recently by Barry.

OD599/OD599

OD599's radiator

Dave Stuart.

Mob: 04 2828 2360

Email: tubby2360@gmail.com